FARMER PARTICIPATION IN FARMER-LED WATERSHED GROUPS: A CASE STUDY IN THE WESTERN LAKE ERIE BASIN

By

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ABSTRACT

FARMER PARTICIPATION IN FARMER-LED WATERSHED GROUPS:
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Working toward a reduction of phosphorus runoff in the western Lake Erie basin, a farmer-led watershed organization known as the Farmers Advisory Committee (FAC) was formed in the River Raisin watershed west of Lake Erie. This study sought to better understand the reasons for farmers to a) join the FAC and b) what factors contribute to their continual participation. The goal of the research was to improve the FAC moving forward and increase farmer participation. The research was conducted as a case study through 1) Participant Observation and 2) Group Interviews with a Concept Modeling Exercise. The study found that major reasons for farmer participation in the FAC include the opportunity to influence policy decisions, the chance to learn about new agricultural technologies, and a strong relationship with the group facilitator. The study also illuminated differing opinions on farmer needs and motivators between farmers and agricultural partner participant groups. Moving forward, this study will help increase understanding between these two parties, and better tailor the FAC to farmer needs.

This thesis is dedicated to Mom, Dad, Aaron, and JELS 2.0.
Thank you for always believing in me and providing unending support.
And to MSU Hillel for always giving me a space to write peacefully.

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KEY TO ABBREVIATIONS

BMP(s) – Best Management Practice(s)

EPA – United States Environmental Protection Agency

FAC – Farmers Advisory Committee

GLRI – Great Lakes Restoration Initiative

HAB(s) – Harmful Algal Bloom(s)

MAEAP – Michigan Agricultural Environmental Assurance Program

MDARD – Michigan Department of Agriculture and Rural Development

USDA – United States Department of Agriculture

NASS – USDA National Agricultural Statistics Service

NRCS – USDA Natural Resources Conservation Service

NSF – National Science Foundation

WLEB – Western Lake Erie Basin

INTRODUCTION

Lake Erie is a vital part of the Great Lakes system, providing ample resources to its surrounding states. In the summer of 2014, Toledo, Ohio was advised not to use their tap water for a week due to the health risks associated with a toxic harmful algal bloom (HAB). In addition, the following summer of 2015 showed the largest harmful algal bloom on record in the Western Lake Erie Basin. There are several contributors to this problem, and one of the major sources is nutrient runoff from agricultural land. The current demand on agricultural producers to feed the growing population of the world may in some instances lead to farming practices that contribute phosphorus to waterways. Additional involvement of farmers in conservation efforts could help to improve water quality management in the Western Lake Erie Basin (WLEB).

Programs that promote best management practices and dissemination of information within agricultural communities in the Western Lake Erie Basin have drawn participation from many farmers and producers. However there is still a large portion of the agricultural community who are not engaged. There have been increasing amounts of harmful algal blooms in Lake Erie, partially due to the need for more water quality management efforts in Michigan. The State of Michigan's current strategy for farmer engagement in environmental programs has been successful in gaining participation from a small percentage of farmers in the watershed, but in order to see decreased levels of harmful algal blooms it will be necessary to involve more of the watershed in the process.

To work toward improved water quality, community-led groups have been formed as a way for farmers to engage with each other on pertinent issues. In addition, the groups serve as a forum for agricultural community members to discuss current technologies, learn about new research, and network with their neighbors. A group in the River Raisin watershed known as the

Farmers Advisory Committee (FAC) aims to reduce phosphorus runoff to the WLEB. This group was formed in 2013 as a result of a representative from the Michigan Department of Agriculture and Rural Development's (MDARD) Michigan Agriculture Environmental Assurance Program (MAEAP) facilitating water quality cruises in the WLEB. The primary focus of MAEAP, a statewide program in Michigan, is to provide farmers with incentives to voluntarily incorporate best management practices on their land. To support the FAC's development, MDARD obtained funding from the National Fish and Wildlife Foundation. In addition the Natural Resources Conservation Service (NRCS) through the Great Lakes Restoration Initiative (GLRI), a federal designation of funds to support Great Lakes research, has contributed $57 million in investments toward conservation work on farms in the Western Lake Erie Basin (NRCS, 2015). Recently the River Raisin Watershed Council and the Lenawee Conservation District secured additional funding from The Mott Foundation in addition, to maintain the group efforts.

The MAEAP program creates the groundwork for the mission of the FAC, which seeks to engage farmers in conservation through a networking and information sharing process. The FAC also aims to promote best management practices (BMPs) on agricultural land in order to reduce the impact on the WLEB water quality. The group is composed mainly of farmers who own or lease land in the River Raisin watershed, but spans to environmental professionals and agricultural business representatives in the watershed as well. A number of the agricultural partners and business professionals who participate in the FAC are also farmers, either in the watershed or in another part of Michigan. The FAC has recruited around 100 farmers so far over its first year, creating a solid member base.

However, there still is resistance from farmers external to the group to participate. Of the 6,601 farms in the River Raisin watershed shown in Table 2, the FAC membership is a small section of

this population (NASS, 2012). As Morton states, “interactions among local citizens” create the “social pressures” and attitude shifts that lead to better environmental management (2009). This study explores the motivators that have lead to engagement of the current farmers in the FAC in order to gain more membership moving forward.

CHAPTER 1

LITERATURE REVIEW

1.1 – Background

The concept of farmer-led watershed groups is a renewed governance vision for moving beyond mere public involvement to community ownership over watershed issues (Morton, 2011). In order to best improve the conditions in the western Lake Erie basin, it may be necessary to engage farmers in a way that is both productive for them and in line with their initiatives. These groups are modeled after a popular grassroots ecosystem management movement that has been developing since the 1980s (Morton, 2008; Weber, 2000). The movement's focus is collaboration, and the specific needs of the community at hand (Weber, 2000). Allowing citizens control over local policy increases their connection to the issues in their geographical area, while increasing their interest in active management of their resources (Weber, 2000).

Collaborative efforts have been in place since the 1990s in the Great Lakes basin, and currently there are many collaborative watershed management groups in place in the region (Konisky, 2001). Farmer-led watershed groups are formed to involve farmers in decisions made within a community about water quality management (Morton, 2008). Involvement in decision-making gives farmers a sense of ownership over what happens in their watershed (Morton, 2008). For farmers, this is a valuable way to provide guidance for watershed management and regulation, making solutions more practical for the agricultural community.

1.2 – Current Successful Farmer-Led Watershed Groups

While farmer-led watershed management groups are unique to their area due to differing water issues and citizens, there is a general model that has been proven to work across the

Midwest in the past decade. The many groups that are prominent in the Midwestern United States include the Hewitt Creek Watershed Project in Iowa, Wisconsin Farmer-Led Watershed Council Project in Wisconsin, and the Upper Sugar Creek Farmer Partners in Ohio. These programs developed from university programs, and have evolved into their own individual entities with several branches. Some groups have also worked with the other Midwestern farmer-led groups to network and share ideas.

The Hewitt Creek Watershed Project began in 2000 via Iowa State Extension in the Hewitt Creek Watershed of Iowa. Involved farmers received state funding with the assistance of Extension agents. The group's goal was to provide farmers with nutrient management education and bring them together for discussion in order to remove the watershed from the United States Environmental Protection Agency's (EPA) Impaired Waters List (Morton, 2008). Deliverables included the development of an incentive structure that would be evaluated each year. In the time the group has been assembled, they have explored several methods of farmer incentives for incorporating best management practices (BMPs). Over time, the group has expanded to multiple locations, all run by farmers. There have been additional groups added in Lime Creek, Coldwater, Northern Iowa, and Dry Run Creek. The groups have seen increasing involvement from low-adopting farmers due to the incorporation of field days and educational activities. In addition, regular water quality sampling has shown an overall reduction in nutrients. [1]

The Wisconsin Farmer-Led Watershed Council Project started in 2013 in Wisconsin, and was modeled after the Hewitt Creek Watershed Project. It was initially developed through a joint effort between University of Wisconsin Extension and the Wisconsin Department of Natural Resources. It includes four sub watersheds: three in the St. Croix River Basin, and one in the Red

[1] A majority of information about the Hewitt Creek Watershed Project is found on their website, rather than in refereed journal articles: https://hewittcreek.wordpress.com/.

Cedar Basin. All of these watersheds feed into the Mississippi River. Professionals from University of Wisconsin Extension facilitated the group. The main goal of the program was to improve water quality by reducing phosphorus levels through performance-based incentives. Funding came from a private foundation in Minneapolis, and the farmers were in charge of allocating the money. Funding has been allocated entirely by the farmers, and is focused on water quality sampling to test for phosphorus levels in the waterways and soil. [2]

The Upper Sugar Creek Farmer Partners began in 2000 in Ohio as part of collaboration between The Ohio State University and the EPA. It stemmed from the EPA's community capacity building program entitled the Sugar Creek Method. The group was one of several formed in the Sugar Creek Watershed with the goal of improving water quality of the streams. The group engages local citizens of the watershed, involving them in decision-making and coordination. The Upper Sugar Creek Farmer Partners have been funded since 2000 by grants from the United States Department of Agriculture (USDA), EPA, and the National Science Foundation (NSF) through The Ohio State University. University faculty, along with agency partners and research associates, facilitate the group. The unique factor of the group is that there is a very close relationship between the researchers and communities, allowing residents of the watershed to provide input on issues that are important to their region. [3]

1.3 – Key Concepts

[2] Due to the infancy of the Wisconsin Farmer-Led Watershed Council Project, research is still in the initial phases. Therefore information about this group is found on their website, rather than in refereed journal articles: http://blogs.ces.uwex.edu/wflcp/.
[3] A majority of information about the social structure of the Upper Sugar Creek Farmer Partners is found on their website, rather than in refereed journal articles: http://ohiowatersheds.osu.edu/groups/upper-sugar-creek-farmer-partners.

For the formation of collaborative watershed management groups, citizens have to be involved in their community and interested in the common good. Parisi et al. discuss the concept of civic responsibility in a community, which is "the ability of people to come together and act collectively toward developing initiatives aimed at complementing, rather than replacing, existing federal, state, and local regulations (2010)." In order to create a strong collaboration, people in the community must feel a sense of connection and the desire to take ownership of issues that may face their surroundings. A community that fits this description likely displays strong social capital, or inter-personal trust that facilitates coordination (Parisi et al., 2010). Social capital creates better communication between various stakeholders, which leads to effective collaborative management groups (Parisi et al., 2010). In addition, a strong presence of social capital can increase the citizens' likelihood to address the needs of the community as a whole rather than their individual priorities (Salamon et al., 1998). Close bonds within a community can aid the success of watershed management groups.

A community where the citizens exhibit trust for each other and strong collaboration is more likely to move toward and enact meaningful change. Community and social capital bring citizens to actively strive for change, benefitting the whole network (Davenport and Seekamp, 2013). This is one of the fundamental notions in the concept of community capacity, which is defined as "the interaction of human, organization, and social capital existing within a given community that can be leveraged to solve collective problems and improve or maintain the well-being of that community (Chaskin, 1999)." Trust and the ability to organize are critical components to solution-based collaborations in communities. In turn, community capacity is necessary to the formation and sustainability of watershed management groups.

When community capital is present, citizens feel inspired to participate in neighborhood organizations for the benefit of the community. This concept is known as collective action, which Foster-Fishman et al. highlight as the individual's choice to become involved in the issues that face their community (2007). Collective action stems from the fact that people living in a neighborhood often have "common goods" that they value relatively equally (Oliver, 1984). Action supporting these common goods benefits everyone in the community. This is emphasized by the relationships within the community, and the level of social capital (Marwell et al., 1988). When coupled with ability, willingness to act on behalf of the community is an essential step toward productive collaboration.

Development of cohesive natural resource management practices can further enhance the citizen effect, aiding the success of farmer-led watershed groups. One such process, coordinated resource management (CRM), was "developed by Soil Conservation Service (SCS) employees in Nevada and Oregon in the 1950s" and has been particularly prominent with citizen watershed groups (Kenney, 1999). This practice involves the collaboration of many different governmental and citizen parties to find an agreed upon management plan for natural resource issues (Kenney, 1999). In order to invent the most successful solutions, all stakeholders must be involved in the brainstorming process. This type of collaboration is beneficial to community watershed groups, since it spurs a tone of unity.

Continued collaboration is essential to the sustainability of a farmer-led watershed group. It is crucial that participants in the group feel ownership over the initiatives. The group benefits greatly from the use of collaborative planning, which emphasizes the "sharing of power and a joint responsibility among all participants for success as well as for failure (Reisert et al., 2015)." If participants feel directly involved in the planning and execution of the watershed group, they

will have a stronger connection with the organization's mission. This can increase the efficiency of the watershed group and ensure continual participation from members.

1.4 – Criteria for Successful Watershed Groups

Variation in the membership leads to more diverse opinions, and frequently more successful outcomes. It is important for the group to include stakeholders from several sectors involved in the watershed, such as government, non-profit organizations, universities, and community members. Collaborative watershed management allows the group to move forward with action plans (Konisky and Beierle, 2011). This is a result of the direct communication between the diverse groups of stakeholders with common interests (Innes and Booher, 2000). Especially important is the involvement of both governmental and non-governmental stakeholders (Kenney, 1999). Working together, the group is able to create solutions to problems facing the watershed (Kenney, 1999). These solutions can then be applied to the specific water issues, fueling further work for the watershed group to tackle. Positive outcomes stem from this open collaboration between stakeholders.

The farmer-led watershed group must provide a useful forum for sharing between individuals. The group's inherent network requires open lines of communication for success (Booher and Innes, 2002). Communication also must be efficient for the group (Salamon et al., 1998). Specifically, information must be shared between individuals in a way that benefits the collective action of the group (Booher and Innes, 2002). In addition, it is important for farmers to learn from one another's practices (Morton, 2008). This leads to their interest in gaining further information (Morton, 2008). When information is useful to the farmers, they are likely to be increasingly open to new ideas. Overall, any communication must be genuine, maintaining a strong level of trust amongst the group (Booher and Innes, 2002).

Strong relationships within the farmer-led watershed group help to bond the members. Trust is a vital component of the group, contributing directly to its productivity. Participants involved in the watershed group must trust each other in order for the group to mobilize around a particular issue (Salamon et al., 1998). If this is absent, participants may not feel comfortable sharing their opinions or ideas (Leach and Pelkey, 2001). The relationship between the facilitator and participants must also be strong. Facilitators should be experienced in the role and also neutral to the topics discussed within the watershed group (Leach and Pelkey, 2001). Participants must feel that they are gaining knowledge and value from the facilitator and each other in the process (Booher and Innes, 2002). This reciprocity, combined with trust, helps to create authenticity that strengthens the group's cohesion long-term (Booher and Innes, 2002). As the group continues to develop, these relationships turn into strong collaborations.

The most attractive feature of farmer-led watershed groups is the ability for citizens to be in charge of the direction of the group. A benefit to this type of collaboration is that group members are significantly integrated into the group's planning process (Innes and Booher, 2000). As Morton states, "the uniqueness of [farmer groups] is that the group agenda and direction are farmer directed and controlled (2008)." In the case of farmer-led watershed groups, farmers are in control of the direction and goals of the group, tailoring the group's initiatives to the specific needs of the community. The stakeholders involved in the group then work in conjunction to ensure the goals are met, creating plans for addressing watershed issues (Johnson et al., 2001). This format gives participants a sense of control over the decisions made about their community.

1.5 – Stakeholder Motivation to Join Watershed Groups

There are basic factors that lead to farmer participation in farmer-led watershed groups, including their opinions and availability. Stakeholders must have the means and time to

participate regardless of their motivation to do so (Perkins, 2010). This limits the type of people who are able to become involved with the group, unless specific measures are taken to make the group more accessible (Perkins, 2010). Further, citizens need to be interested in participating in the group (Stephan, 2005). It is difficult to gain large numbers of participants from the beginning, but developing citizens who show interest in the process into community leaders can help to encourage participation (Foster-Fishman et al., 2007). During the initial stages of the watershed group, it is important to engage potential leaders so the group can grow to represent the diversity of a community (Foster-Fishman et al., 2007). Since the membership goal of a watershed group is to accurately represent a community, participation should be widespread.

The strength of the community influences the amount of participation in farmer-led watershed groups. Existing relationships determine the level of trust and understanding between parties. Chavis and Wandersman found that a person's sense of community influences their choice to participate in a group that works toward the improvement of their neighborhood (1990). This stems from the citizen's feeling of "rootedness" in their community, which strengthens the longer a person lives in a particular place (Wandersman et al., 1987). When a person feels more settled in their neighborhood, they are more willing to work toward the common good (Stephan, 2005). Further, a person's interest in the common good positively influences their participation in community initiatives (Oliver, 1984). Feeling a tie to the community through place and goals leads to more participation in farmer-led watershed groups.

Recognition of a natural resource threat and the opportunity to address that issue are strong influencing factors of participation in these groups. In order for citizens to become involved in watershed groups, they must first understand that there is an opportunity to improve their watershed's health. Once they become aware of the issue, the citizen can make the decision

to participate in collective action to form a solution (Stephan, 2005). This gives a focus to the group, aligning participants. Citizens that choose to participate in the watershed group generally have a specific goal for their involvement that spans from the connection of their individual interests and those of the group (Wandersman et al., 1987). When participants feel they are addressing issues that are applicable to them, they are more willing to become involved in farmer-led watershed groups.

In some cases, farmer-led watershed groups are formed as a reaction to an environmental disaster and the participants preemptively join the group to avoid repercussions they may face if they do not work toward a solution. In these situations, often participants become involved in the farmer-led watershed groups to "get state and federal agencies off their backs (Morton, 2008)." In the face of a crisis where farmers may be getting blamed for their practices, a motivation for joining the group is proving they are taking action to improve the situation. This also leads to strong group dynamics, since all of the citizens in the community are under pressure and interested in the particular issue (Innes and Booher, 2000). An important factor to take into account in this situation however, are the group dynamics within the community regarding feelings about others' actions. In a community where citizens are closely bonded, one's perception of fellow citizens' propensity to act on behalf of the collective good determines their motivation to participate in a citizen group (Oliver, 1984). Community dynamics play a strong role in the ability of a watershed to react to these resource crises.

Participants are more readily engaged in the watershed group when an experienced facilitator is present. While the ultimate goal of farmer-led watershed groups is to transfer all leadership to farmers, a facilitator is necessary to begin the process and guide the group while it develops. Ansell and Gash state, "a facilitator's role is to ensure the integrity of the consensus-

building process itself (2007).” It is important for a leader to establish an initial direction for the group, ensure the process stays focused on the initiatives around which the group assembled. The facilitator is also responsible for continual recruiting of a wide array of participants, designating leadership responsbility to participants over time, and maintaining morale of the group (Lasker et al., 2001). Participants will eventually take a more active role in the group, but the facilitator is the party who ensures this occurs.

1.6 - Continual Stakeholder Participation in Watershed Groups

Once farmers have become involved with watershed groups, their continual participation rests on the feeling that their needs have been met. The benefits received from becoming involved in the group need to outweigh the costs participants endure in the process (Pretty and Ward, 2001). Farmers need to believe their time and energy are well spent by participating in a watershed group, making it worthwhile. If farmers attend group meetings or events and feel they are able to influence change through this outlet, participation can potentially “boomerang,” with farmers encouraging other farmers to join (Perkins, 2010). As long as the group serves as a productive use of time for participants, community involvement will expand.

A farmer-led watershed group’s strength forms and centers around the relationships within the organization. Participants in the group must trust others in the group while sharing opinions (Ansell and Gash, 2007). Without an open forum for the sharing of information and ideas, watershed groups are not able to instill change. If trust is not present between members of the group, it is the facilitator’s job to encourage interaction (Ansell and Gash, 2007). Information sharing between participants is important to the group’s development around watershed initiatives (Morton, 2008). The group structure relies on a wide array of knowledge and experience from its participant base (Stephan, 2005). Ultimately, the information gathered

through the group can help to better inform future watershed management plans (Johnson et al., 2001).

The opportunity to be involved in the decision-making process is a large factor of continual participation from farmers in farmer-led watershed groups. A strong characteristic of the groups is that participants are involved in an interactive process, where all parties are engaged regardless of their level of support for a plan (Ansell and Gash, 2007). This ensures the group discusses issues together, formulating solutions as a whole. This inclusive process "inspires communities to engage in constructive controversy in order to arrive at workable community decisions (Flora and Flora, 1993)." When a watershed group works together to arrive at solutions, the agreed upon plans are more readily implemented and serve as stronger recommendations for officials.

CHAPTER 2

METHODS

2.1 – Research Questions

This study addresses two key research questions that aim to discover the reasons for farmers to become engaged with the FAC.

- What are the factors that motivate farmers to join farmer-led watershed management groups?
- What aspects of the group make farmers want to participate?

To explore these questions, a model (Figure 1) was created. It is expected that farmers will join these groups when their personal characteristics, communication relationships, and expectations match the mission of the group. If the internal group processes are attractive to the farmers, they will be more likely to return.

2.2 – Methods Strategy

This study explored the research questions by evaluating the conceptual model in (Figure 1) within the River Raisin watershed in southeastern Michigan, focusing on the FAC as a case study. A qualitative case study gives researchers the chance to examine a phenomenon in depth, providing greater understanding of that phenomenon (Dyson and Genishi, 2005). The findings from the close study of a group of people can help to inform future research on a broader scale. They can also give insight into how social interactions within the participant group could relate to those of a larger population (Dyson and Genishi, 2005).

This case study of the FAC was formed around a conceptual framework based on farmer engagement models from existing literature, as well as experiential knowledge of the initial

stages of the FAC. It details the incentives farmers would have to become involved with farmer-led watershed groups, and what aspects of the group lead to continual engagement. The conceptual framework provides a starting point for the research, allowing the study process to further examine these ideas (Baxter and Jack, 2008).

The framework used in the model (Figure 1) was influenced by those found in literature about farmer participation in farmer-led watershed groups, and then expanded to include details unique to the case study of the FAC. The model is original in the way the concepts are organized, but utilizes a similar breakdown to that found in the literature of farmer motivation categories. Additionally, models found in the literature exhibited a flow chart process, whereas the conceptual framework I developed incorporates a reinforcing loop. The process of motivation does not end when the farmer begins to participate in the group, but instead leads to more participation and continues to reinforce the motivators, either new or old.

The concepts shown in this model were explored through interactions with farmers, environmental professionals, and agricultural business representatives who are involved in the FAC. Analysis looked at themes present in the data and whether the farmers' attitudes were congruent with those of the environmental professionals and agricultural business representatives. The goal of analyzing the differences in opinions between the three participant categories was to evaluate whether communication between these groups of participants is effective and improve the FAC moving forward.

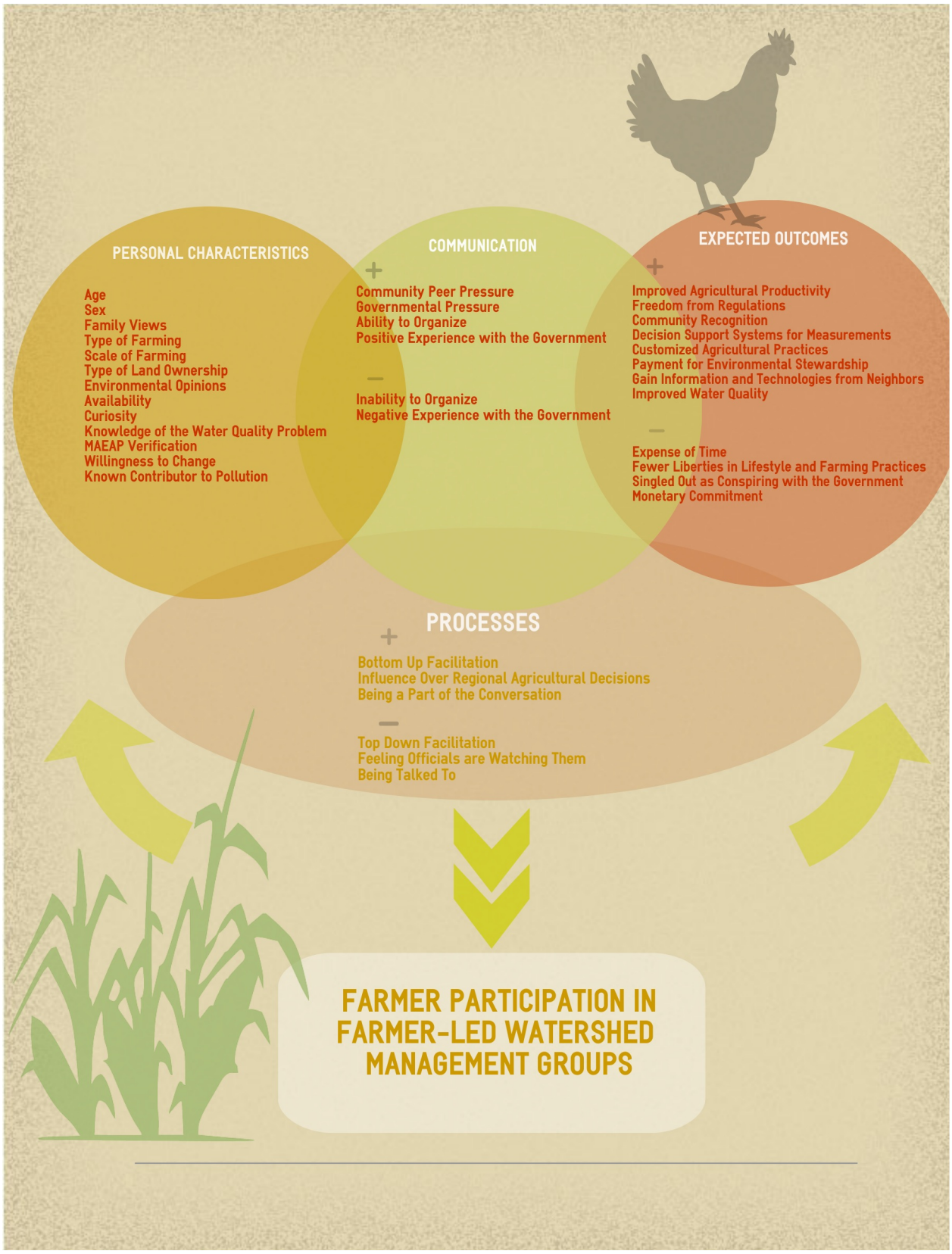

Figure 1: Initial Conceptual Model

2.3 – Initial Model

The model (Figure 1) follows four separate components that lead to participation in farmer-led watershed groups: (1) Personal Characteristics, (2) Communication, (3) Expected Outcomes, and (4) Processes.

2.3.1 – Personal Characteristics

These are one of the initial influencers on farmers' decisions to take part in farmer-led watershed groups. They are the innate values that farmers hold, that dictate their thought processes when incorporating conservation practices. They include personal features, agriculture classifications, and opinions.

2.3.2 – Communication

This category visits the ways agricultural social networks influence farmers' decisions. It also looks at the relationship between farmers and the agricultural partners working within the watershed, and the capacity of the overall community to support a farmer-led watershed group.

2.3.3 – Expected Outcomes

These are what farmers could gain or lose as a result of participating in a farmer-led watershed group. They vary from tangible items such as increased income to more conceptual things like social outcomes.

2.3.4 – Processes

These cover not only what initially motivates farmers to attend a farmer-led watershed group meeting, but the factors that make them want to return. They are the inner functions of the farmer-led watershed group, including the way the group is facilitated and the social atmosphere.

The model depicts the supposed decision-making process that a farmer goes through when evaluating whether to participate in the FAC. The flow of the model is a continual

reinforcing loop, where farmers are more likely to participate as a result of becoming more involved with the FAC.

2.4 – Process

2.4.1 – Participant Observation

The research was conducted in two phases. The first phase was participant observation of four FAC field events throughout the summer. The field days are methods utilized heavily by the Hewitt Creek Watershed Project and Wisconsin Farmer-Led Watershed Council Project, in order to actively engage farmers in the watershed groups. This is done through education and interactive activities around topics that interest farmers. Participants at the FAC field events consisted of farmers, environmental professionals, agricultural business representatives, policymakers, and researchers who were involved in the FAC and/or the River Raisin watershed. Field events took place on the water within the Michigan and Ohio portions of the Lake Erie Basin, and also at local museums or destinations in the multi-state region.

Participant observation is a form of ethnography, a common research method in the field of cultural anthropology. The method stems from an understanding that "social worlds are created and sustained in and through interaction with others (Emerson et al., 2011)." It involves varying levels of immersion of the researcher into a group of people in order to observe interactions and social dynamics from the inside. The researcher becomes a "witness" to the events that occur among a group of people, and how they react (Goffman, 1989). This leads to a very intimate understanding of relationships within a community or group.

In order to gain this level of knowledge about the FAC, I joined the group's field days as a regular participant. The participant observation method used in this research was active membership. In active membership, the researcher becomes a part of the group, interacting with

members as a fellow participant (Adler and Adler, 1987). During the field events I interacted with other participants casually and observed the actions that occurred during and outside of formal programming and presentations. The groups of participants at the field events featured a core group of individuals, but varied slightly with the scheduling and type of event. As I observed, I wrote short field notes in a small journal about what I saw. Particularly, I focused on the interactions between FAC members, facilitators, presenters, and event staff. I also observed the physical positioning and proximity between participants and facilitators, and the levels of attentiveness shown by participants during events. Field notes were expanded shortly after the event in order to capture additional details and my reactions from the events. The notes were then typed into narrative-style field notes using code names for participants.

One of the events where I observed was a full day with two tall ship sails along the Detroit River in Detroit, Michigan. The sails were meant to give farmers a sense of the Great Lakes. The first group of the day was mostly farmers with a few environmental professionals, some of who gave presentations on agricultural or policy topics. The second group contained more environmental professionals, some of who were also farmers.

Another event I observed was a trip to The Ohio State University Stone Laboratory and the islands of Put-in-Bay, Ohio. This trip was educational, with data-enriched presentations, visits to the water quality testing laboratories, informational sessions on native and invasive fish species in Lake Erie, and a physical sampling session on Lake Erie. The participants were mostly farmers, with some environmental professionals.

The third event I observed was the Maumee River Day in Toledo, Ohio. The day started with a cruise up and down the Maumee River, featuring a guided tour and information sessions from both the tour crew and environmental professionals. The rest of the trip was spent at the

Great Lakes Museum, learning about the history of the Great Lakes. The participants were mainly farmers, mixed with some environmental professionals and policymakers. The data collected from this phase of research helped to inform the methods and plans for the second phase.

2.4.2 – Group and One-on-One In-Depth Interviews

The second phase of research was group and individual in-depth interviews with the three categories of participants involved in the FAC: (1) Farmers, (2) Environmental Professionals, and (3) Agricultural Business Representatives. The initial research methodology included just three larger focus groups, but due to lack of participants, I chose in-depth group and one-on-one interviews instead. This change enabled more participant reach, and in turn more varied data. Overall, I conducted eight interviews with a total of 22 participants; six group interviews and two one-on-one interviews. Groups ranged from two to five participants. Of those interviewed, ten were in the farmer category, seven were in the environmental professional category, and five were in the agricultural business representative category. Some of the participants in the environmental professional and agricultural business representative categories were also farmers.

The farmers chosen in the study were a fairly accurate representation of the types of farmers who reside in the River Raisin watershed as noted in the United States Department of Agriculture's National Agricultural Statistics Service (NASS) data found in Table 2 (2012). The distribution of farm types presented in the farmer participant sample was representative of the farmer population in the River Raisin watershed based on counties. According to Table 2, 44% of farmers in the River Raisin watershed are cash crop farmers (corn and wheat for grain) (NASS, 2012). Of the other farmers in the watershed, sheep and lamb farmers represent 5.41% and farmers of other animals hold 16% (NASS, 2012). Within the farmer participant sample for

group and one-on-one interviews, 80% were cash crop farmers (corn and wheat for grain, or soy). Sheep and lamb farmers and farmers of other animals represented 10% each of the rest of the sample. Based on comparison of these proportions, the farmer participant sample was an accurate representation of the types of farmers found in the watershed. Since I did not gather information for all farmer participants on whether they rent or own their land, I do not know if the sample was representative of these particular statistics.

Date	Sample Group	# Participants
12/16/15	Environmental 1	5
1/12/16	Farmer 1	3
2/15/16	Agricultural Business 1	3
2/26/16	Farmer 2	2
2/26/16	Farmer 3	5
4/1/16	Environmental 2	1
4/4/16	Environmental 3	1
4/14/16	Agricultural Business 2	2

Table 1: Group Interview Samples

The three aforementioned participant categories were a conclusive summary of the types of people involved in the FAC events. As is true of a case study, choosing a smaller population to study allowed a very detailed understanding of the group (Dyson and Genishi, 2005). Participants for each category were selected via purposeful sampling based on their profession and involvement in the FAC events. Purposeful sampling aims to answer research questions by selecting participants that will provide the information the researcher feels will be necessary (Patton, 2002). In particular, this study used maximum variation sampling. Maximum variation sampling is a selection of a wide variety of participants to create a rich sample and highlight patterns across different groups of people (Patton, 2002). This sampling method was chosen to gain the most detailed insight on the motivations for farmers to get involved with the FAC. This gave the study the option to explore the perspectives of participants who are involved in different

aspects of the group. FAC participants were split into the three categories based on their field of work, and interviewed in participant groups consisting of those in the same category.

I chose interviewing as a method for this study to gain deeper insight from participants, learning more about the individual stories and opinions within the FAC membership. Interviews are an exchange of information between participants and the researcher, through questioning (Bloor and Wood, 2006). The purpose of this type of inquiry is to gain better understanding of the "lived experience of other people and the meaning they make of that experience (Seidman, 2013)." Interviews supply expert information from participants that is essential to understanding the case study.

I decided to utilize an informal in-depth interview structure in order to elicit a conversational atmosphere. In-depth interviews allow the participants to feel more natural about discussing topics with the researcher. During in-depth interviews, the researcher follows a set of questions but allows a more conversational atmosphere than that of a structured interview. This method can be useful in seeking to verify themes discovered through participant observation or other data collection, while gaining additional insight (Gubrium and Holstein, 2002). In a group interview the researcher asks questions in the same fashion as a one-on-one interview, but participants each respond to the question on their own and in turn can comment on the responses of others (Bloor and Wood, 2006). One of the great benefits of this method is that the researcher potentially gains the added benefit of conversation among participants about the questions.

Each group or individual was engaged in conversation around the same question set. The interview questions aimed to understand farmer perception of water quality issues, relationships of farmers and watershed professionals to the Great Lakes, opinions on the FAC and its facilitation, relationships between farmers and environmental or agricultural business

professionals in the watershed, relationships between farmer neighbors, and how farmers acquire new agricultural technological information. The interviews were conducted through broad initial questions, which were followed by in-depth questions related to the conversation that occurred. The goal of the interviews was to gain a general background about the participants and their feelings about watershed management. In addition, the questions aimed to seek information about social infrastructure within the watershed.

2.5 – Analysis

2.5.1 – Interview Group Models

I compiled results from the group interview modeling activity into individual models for each interview or group interview. I then sorted the eight models into the previously mentioned three participant categories. The models were compiled based on participant category to create three "master" models; one for each participant category. In the compilation process I noted which model components were unique to just one interview, in common with just two interviews, or in common with all interviews in the participant category. I delineated the components that were common with two interviews in the participant category with a purple highlighted box, and those in common with all interviews in the participant category with a yellow highlighted box.

I compared and contrasted the three compiled models to find similarities and differences in model components. Through the comparison process, I extracted themes that spoke of general opinions on why farmers become involved with the FAC. In addition, the comparison demonstrated how the different participant categories interpreted farmer participation in the FAC. For instance, the components that were in common between all three compiled models showed the areas where different participant categories feel the same reasons bring farmers to the

FAC. In contrast, the differing components highlighted the areas that the participant categories have varying opinions on what brings farmers to the FAC. This provided a lot of depth to the study, allowing me to examine not only overall what participants feel is most important in a farmer's consideration to be involved with the FAC, but also where different participant categories think differently or similarly about farmers and their participation in this group.

In addition, I compared and contrasted the three models with the initial model built from literature and participant observation. I analyzed the models for components that were in common or differed from the initial model. This exercise produced a great deal of interesting themes and results depicting how closely the study participants agreed with the literature already available on farmer-led watershed groups. In addition, it showed how observations from FAC events and actual input from the participants were similar and different.

2.5.2 – Participant Observation

I analyzed the participant observation data through open coding and theme coding. The process of open coding consisted of reading through the written narrative line-by-line and recording comments or themes that are important (Emerson et al., 2011). The purpose of this type of coding is to view the data from the outside, interpreting any meaning behind the actions of participants, and figuring out what is important about the data (Dyson and Genishi, 2005). The ideas that emerged from this round of coding helped to influence the general theme codes I picked for further coding of the data.

I then developed themes into short codes that I used to sift through the written data, encouraging analytical thought about the data (Emerson et al., 2011). For each code, I identified and marked passages to show the occurrence of the theme in the data (Emerson et al., 2011). I noted the thematic codes next to passages of the data that followed that particular theme. Then I

compared and contrasted themes to identify relationships between the phenomena that emerged from the data (Emerson et al., 2011). After initial analysis, I compared participant observation and interview data for further identification of patterns. In addition I used the themes from the participant observation data to enhance the initial model used in the other phase of this study.

2.5.3 – Group and One-on-One In-Depth Interviews

I analyzed the group interview data utilizing a similar process as with the participant observation data. I analyzed the written data through open coding to look for any themes or ideas that were prevalent, noting specific interesting passages. In addition, I made comments while reading the data line-by-line to encourage analytical thought from an outside perspective (Dyson and Genishi, 2005). I used patterns from this process to create thematic codes for deeper analysis of the data (Miles et al., 2014). I refined and developed these topics into codes and used them for further rounds of focused coding analysis (Emerson et al., 2011). I then applied the codes to sections or lines of the data that represented that particular theme, using different colors to easily view the frequencies of themes (Miles et al., 2014).

I detected thematic patterns by searching for recurrences of themes (Dyson and Genishi, 2005). The original goal of the research was to have another researcher review several group and individual interview transcripts to calculate inter-coder reliability, but due to time constraints the external researcher was only able to review a couple of the interviews. Thus, the themes and coding are mainly a result of my coding process. I compared and contrasted the patterns in the group interview data with those from the participant observation data to discover relationships. I pulled broad themes from the matrices to compare with group interview model results.

CHAPTER 3

FINDINGS

3.1 – Interview Models Explanation

The interview models are a result of the group modeling exercise conducted during group interviews with the study participants (Figures 2-4). Like the design of the initial model, participant answers were divided into three categories: (1) Personal Characteristics, (2) Communications, (3) Expected Outcomes, (4) Processes.

Answers that were held in common between at least two groups of participants in a cohort are demarcated in a purple highlighted box. Answers that were in common with all groups of participants in a cohort are notated using a yellow highlighted box. The data in the Communication, Expected Outcomes, and Processes categories are divided into sections depicting positive or negative influencers. For instance, positive motivators include aspects that would lead farmers to become involved, and negative motivators include aspects that would convince farmers not to participate.

3.1.1 – Interview Model Results

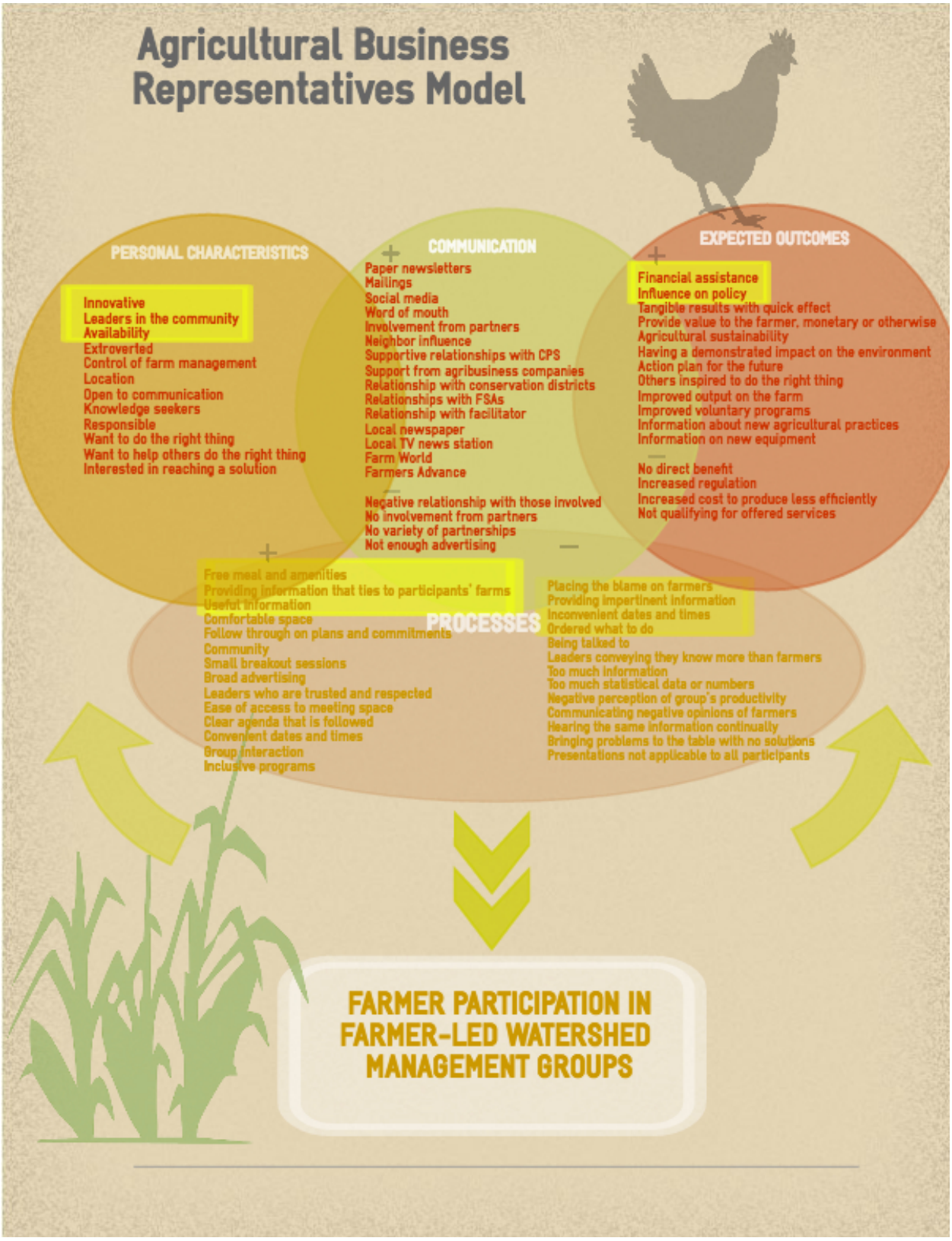

Figure 2: Agricultural Business Representatives Model

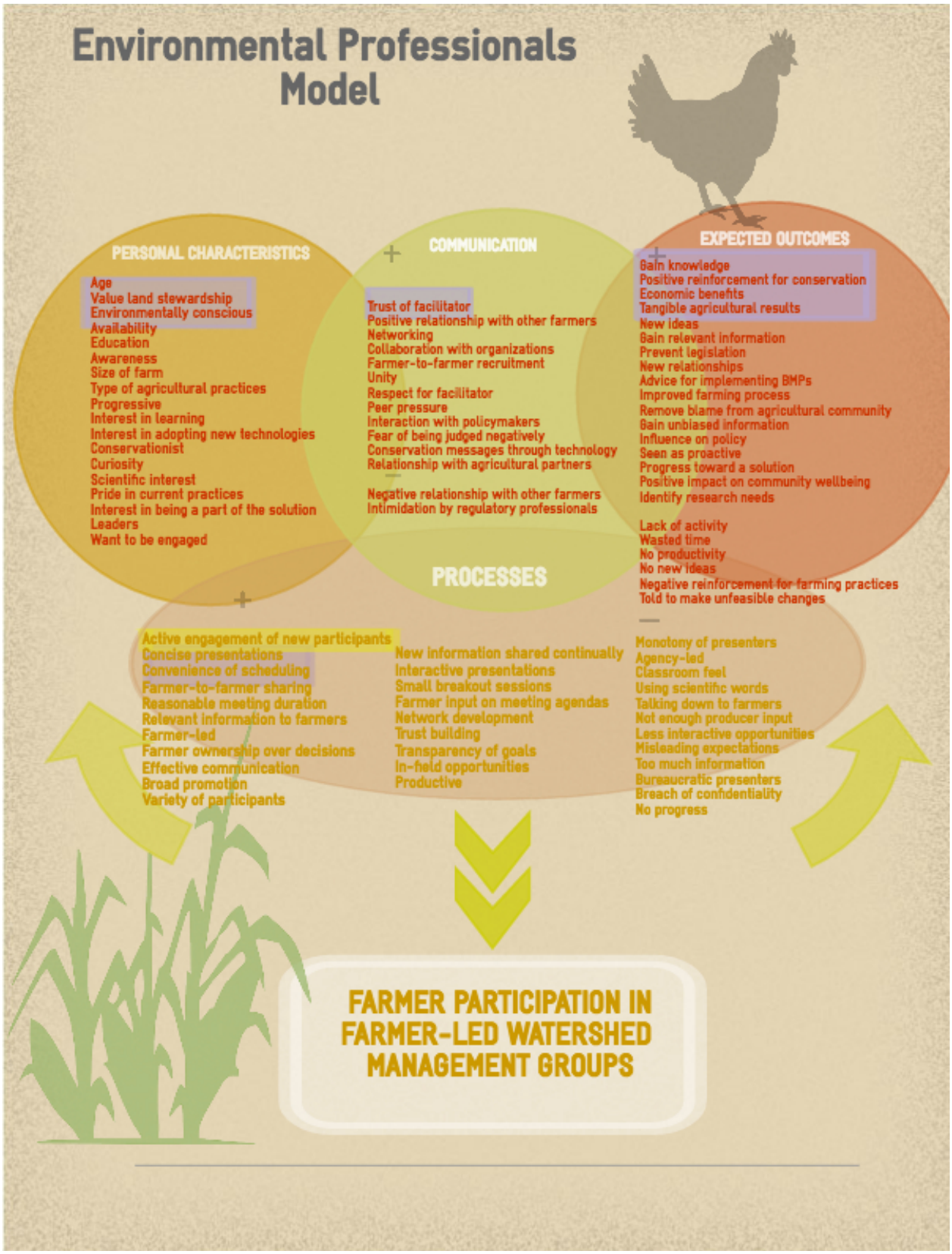

Figure 3: Environmental Professionals Model

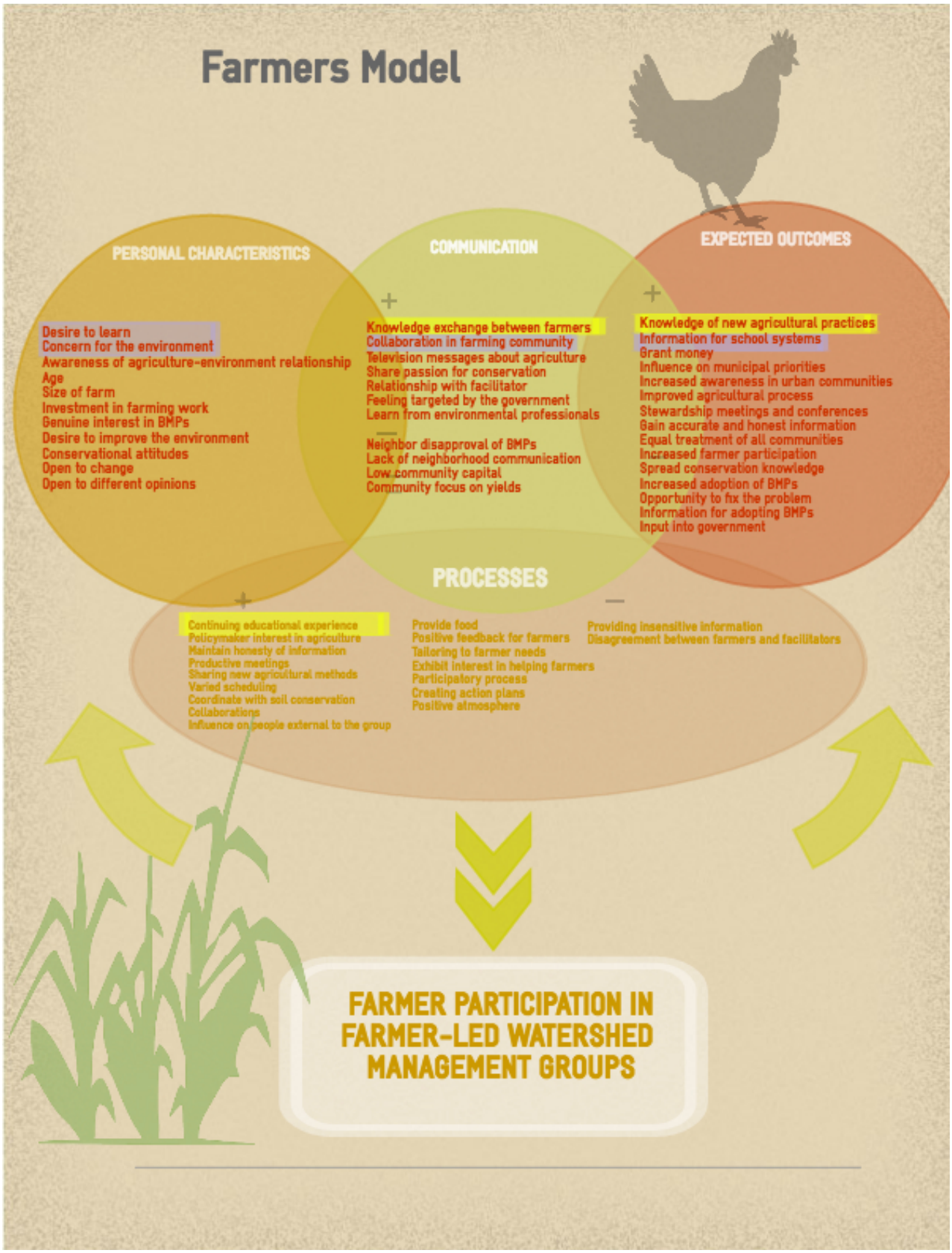

Figure 4: Farmers Model

3.2 – Results

The interview models provided valuable insights into participant opinions on farmer engagement in the FAC. There were some model components on which all three participant categories agreed, and many where sentiments differed. In addition to data on why farmers get involved with the FAC, the interview models showcased the specific ways in which the thinking between the participant categories differ. These areas are explored in this section, along with interpretation of the data.

3.2.1 – Participant Category Results

All participant categories agreed on a select few model components, suggesting that there are mutual understandings of several reasons farmers join the FAC. These components were the farmers' relationship with the facilitator in the Communications category, the ability for farmers to have input into policy and governmental issues in Expected Outcomes, and meeting schedule convenience in the Processes category. An interesting factor to note is that there were no components in common with all three participant categories under the Personal Characteristics category. These similarities suggest that there may be some areas that are not flexible for farmers when considering participation in the FAC. Specifically, the similarities show that the FAC may require extra trust, tangible outcomes, and consideration of practicality for farmers to participate.

Within the farmer participant category, several model components were agreed upon either by two group interviews or by all interview groups. In the Personal Characteristics section, two farmer participant groups both listed a desire to learn and concern for the environment as factors for farmer participation in the FAC. In the Communication category, two participant groups agreed that collaboration in the farming community contributed to farmer involvement in the FAC. In addition, all three groups listed a knowledge exchange between farmers as a reason

for participation. Under the Expected Outcomes category, two farmer participant groups stated that gaining information to share for school lesson plan material and field trips was a reason to participate. In particular, these participants mentioned the Michigan Breakfast on the Farm program. Further, all three groups listed the gathering of knowledge on new agricultural practices as a reason for farmers to become involved in the FAC. Finally, all farmer participant categories agreed that providing continuing educational experiences through the FAC bring farmers back to the group. Based on this data, it seems that farmers believe a great number of the participants who are involved in the FAC initially come to the group because of a desire to be good environmental stewards and contribute through networking within the agricultural community. It also suggests that the farmers involved in the FAC are extremely interested in utilizing the FAC as a way to gain knowledge on agricultural practices through education and networking.

In the environmental professional participant category, there were many components on which only two of the groups agreed, and only one component agreed upon by all groups. For the Personal Characteristics category, two groups agreed that age, land stewardship values, and environmental conscientiousness were influencers on farmer participation in the FAC. Further, two groups listed trust of the facilitator in the Communication category as an important factor in farmer involvement with the FAC. In the Expected Outcomes category, knowledge gathering, positive reinforcement for conservation practices, receiving economic benefits, and seeing tangible agricultural results on their field were agreed by two groups to be important gained benefits for getting involved with the FAC. Lastly, two groups agreed that concise presentations and convenient scheduling of meetings were important group processes that keep farmers in the FAC. All three groups agreed that active engagement of new participants contributes to this.

These commonalities speak a lot to the weight environmental professionals seem to place on environmental conservation and farmer commitment to observing decreased agricultural impact to watersheds with land practice changes. In addition, it suggests that environmental professionals infer that farmers are mainly focused on seeing results and receiving monetary benefits as a result of their participation in the FAC.

The agricultural business representative participant category displayed many more components in common amongst all interview groups. In the Personal Characteristics category, all groups agreed that farmers who participate in the FAC are innovative, leaders in their community, and have the availability necessary to become involved. There were no components in the Communication category that all interview groups listed in common. In the Expected Outcomes category, all groups listed financial assistance and influence on policy as benefits farmers wish to receive from their participation in the FAC. The common components in the Processes category that keep a farmer involved are a free meal and other amenities, providing information that is customized for individual participant farms, and relaying useful information to the farmers. Components agreed upon by all groups in this category that would discourage participation were placing the blame on farmers, providing impertinent information, scheduling meetings at inconvenient dates and times, and telling farmers how to act. These results suggest that agricultural business representatives place a great deal of focus on the importance of meeting the personal needs of farmers, as well as engaging farmers in ways they desire.

3.2.2 – Participant Category Results Comparison

Participant categories as a whole also had many inter commonalities and differences between model components. Environmental professional and agricultural business representative participants had significantly more components in common than either group had with the farmer

participants. Specifically, environmental professional and agricultural business representative participants listed 18 of the same model components, compared to ten and seven components agreed upon with farmer participants respectively. This suggests a different understanding of farmer motivations between the agricultural partners and farmers involved in the FAC, and a separation between the farmer and partner participants. This separation was suggested during one of the tall ship cruises:

> Environmental Professional 1 stands to the side apart from the groups, watching the activity. Environmental Professional 2 is talking to a group while standing. Environmental Professional 3 talks to us about cover crops, while standing at the head of our group with a poster.

This shows a physical separation between the environmental professionals and the farmer participants, which could translate into misunderstanding of farmer expectations due to lack of engagement with the farmer participants. While there are many moments at Field to the Great Lakes FAC events where the non-farmer participants are involved in the same capacity as farmers, the structure of the educational activities often involves environmental professionals delivering semi-formal presentations about various topics, creating a barrier between the farmer and non-farmer participants.

A related and notable finding in the model data is that environmental professional and agricultural business representative participants collectively only had one model component in the Processes category in common with farmer participants. Environmental professional participants displayed no common components in this category with farmers, and agricultural business representatives listed only one. But on the other hand, environmental professional and agricultural business representative participants held eight components in common for the

Processes category. This further suggests that there is disconnect between how environmental professional and agricultural business representative participants feel the FAC should be structured, and how farmer participants feel on the same issue.

Agricultural business representative and environmental professional participants also emphasized that using too many scientific figures or lofty data at FAC meetings or events via presentations could be a deterrent to continual farmer involvement. Conversely, farmer participants did not mention this, but cited more emotional issues that would lead to farmers discontinuing their involvement. For instance, farmers stated that providing insensitive information or a disagreement between the farmer participants and facilitators of the FAC would likely lead to less farmer participation. This may suggest a misinterpretation on part of the agricultural business representative and environmental professional participants of what most greatly affects farmer participation.

Aside from the Processes category, environmental professional participants held the most model components in common with the farmer participants of the two non-farmer participant categories. In particular, the two participant categories listed five of the same components for the Personal Characteristics category, one in the Communication category, and four in the Expected Outcomes category. From this data it seems that environmental professional participants may have a better understanding of farmer participants' needs for a successful FAC experience than do agricultural business representatives. This is observed in participant observation data from a tall ship cruise as well:

> An agricultural business representative comes to our group to discuss their work. They sit with us on the bench opposite me. I chat with Farmer 1 for a moment, asking if they'd been on the water before. Farmer 1 proudly states, "Never been on a boat ever! This is

> the first time." Some of the participants in the group are looking at the buildings on the skyline, trying to figure out which is what. The agricultural business representative assures, "I'm not here to sell you anything, just to tell you what the company is about. Farmer 2 walks away from the group. The agricultural business representative continues talking to the group about the company. Farmer 1 excitedly bursts, "Oh look! It's Cobo. Cobo Hall, Cobo Arena." Farmer 3 chats with Farmer 1 about the buildings. Farmer 1 casually chats with Farmer 4.

During the presentation from the agricultural business representative, participants appear to be restless and distracted. This differs greatly from the behavior during presentations given by environmental professional participants. For instance, behavior during the latter presentations is represented in this passage from the same tall ship cruise:

> Environmental Professional 3 begins discussion of hairy vetch. Farmer 1 contributes, "It's hard to kill." The participants are captivated by Environmental Professional 3 as they talk about different cover crops; their gazes are unchanging and they listen intently. They are also engaged, asking questions. In a conversation about using clover on the farm, Farmer 2 interjects, "I understand that, but I'm growing it quite well."

The sheer fact that participants are discussing the topic of interest during this presentation shows more interest in these areas. While this data does not depict exactly what factors led to more unending attention to the environmental presentations, it suggests that the environmental professional and farmer participants seem to have a better, more understanding relationship in some aspects.

The relationships shown here in the data display the ways in which different study participant categories interpret farmer motivations for coming to the FAC. While there are many

ways in which groups and participants agreed, there are some areas where there seems to be a misunderstanding. This is especially true of agricultural partners' models and those of the farmers. It seems there is the opportunity for better mutual understanding of farmer needs and their goals for the FAC.

3.3 – Comparison of Interview Models and Initial Conceptual Model

The different groups involved in this study had varied opinions about what factors bring farmers to the FAC and what makes them continue to participate. The group interview models were both similar and different from the initial model in many ways. All the interview models had some components in common with the initial model, which was constructed from literature and observations of the FAC. The relationships between the group interview and initial models show the variation in how environmental professionals, agricultural business representatives, and farmers interpret the FAC.

Overall, environmental professionals and agricultural business representatives held views more similar to those found in the conceptual model (Figure 1). A majority of agricultural business representative and environmental professional groups developed models that were similar to the conceptual model. All agricultural business representatives agreed with conceptual model components under Personal Characteristics and Outcomes. In addition, at least two groups of environmental representative participants agreed with multiple components of the conceptual model under Personal Characteristics, and one component under Outcomes. This suggests that the agricultural business representative and environmental professional participants seem to develop their understanding of why farmers participate in the FAC from literary resources that examine motivators of other watershed groups' participants to join.

This could mean there is a potential misunderstanding between the environmental and agricultural business participants and farmer participants in the FAC as to why farmers choose to participate. It could also signify that instead of consulting with farmers about their participation in the FAC, agricultural business representatives and environmental professionals involved in the group refer to scientific journals and literature to gain this information.

The environmental professional participant groups' models seemed to strongly relate to literature and observations of the community relationships and innate features that lead farmers to participate in the FAC. The environmental professional participants' models matched most closely with the Personal Characteristics and Communications sections of the initial model. This suggests that environmental professionals gain much of their understanding of farmer characteristics and networks through literature and observations. Since the environmental and farmer group models have some similarities in these two categories, it seems that environmental professionals are not lacking in knowledge about motivators for farmers in these areas. However, the strong relationship between the environmental professionals' and initial models in these two categories suggests that these areas are of particular focus to environmental professionals. This could be related to the fact that environmental professionals are very involved in agricultural processes that relate to sociological factors and/or personal farmer motivations for conservation.

In addition, the agricultural business representatives' models seemed to demonstrate the most understanding of the results farmers are interested in receiving from participation in the FAC. The agricultural business representatives' models matched most closely with the Outcomes and Processes categories of the model. This shows more of a focus on what farmers are receiving from the FAC and the group dynamic they prefer. The models suggest that agricultural business representatives may be more aware of the needs farmers possess, and what motivates them to

take action. This makes sense when considering the role many agricultural business representatives play with the farming community.

Conversely the farmer participant groups did not have as many components in common with the initial model. At least two farmer participant groups listed one similar component to the initial model under Personal Characteristics. In addition, farmer participant group models held components in common with the initial model under Communications and Process. The farmer group models did not have similarities to the initial model under Outcomes. Because of this it seems the literature differs from the feelings possessed by farmer participants in the study about their motivations to join farmer-led watershed groups. It also suggests that initial observations of the FAC meetings and events, as well as interactions between farmer participants, are not a definitive way to determine farmer motivations to join the FAC.

3.4 – Comparison of Data and Literature

There are many ways in which the data supports conclusions from the literature, and several areas in which they differ. In some aspects, the literature describes farmer-led watershed groups that are more advanced and further along in their development process, which could explain some of the disagreements between the literature and data. The data from this study supports the criteria set forth by the literature for successful farmer-led watershed groups in part, but suggests the FAC would need refinement in order to meet the full criteria. This section is an examination of the ways in which the data from this study compare and contrast with general literature about farmer-led watershed initiatives, and a more specific look at some criteria put forth by Wright Morton for successful farmer-led watershed groups (2008).

The FAC possesses the same facilitative leaders described in the literature on group needs. Wright Morton states that “an energetic passionate local citizen and/or agency staff or

university personnel that have a vision for changing land use practices in the watershed" can facilitate a farmer-led watershed group (2008). The FAC utilizes both of these figures; the first being a conservation district and Michigan Department of Agriculture and Natural Resources staff member, and the others being enthusiastic local citizens. The FAC utilizes a core group of passionate citizens from the farming community to provide insight into meeting planning for the facilitator and other organizational leaders.

Data about the relationship between the facilitator and participants closely supported the literature. In relation to joining the FAC, all participants of the study agreed that the relationship to the facilitator is an extremely important factor in the decision. The literature describes this interpersonal relation as reciprocal and one that requires trust in order to be successful (Booher and Innes, 2002). It emphasizes that participants must feel comfortable sharing ideas and equally comfortable with the information shared with them (Booher and Innes, 2002). The data showed that there seems to be a strong relationship with the facilitator, and that this was a major component that led to farmer participation in the FAC.

The literature also emphasizes the need for trust between participants, which the data did not show as such a priority. Leach and Pelkey comment that if this trust is not present, participants may not feel comfortable sharing their thoughts with others in the group (2001). While the data discussed in extent the need for trust of the facilitator, it did not include the importance of trust among participants. This suggests that the FAC may not yet be developed to the extent of a cohesive organization of members who feel comfortable sharing ideas with one another.

The study supported in some ways, literature emphasizing that strong community capital leads to more participation in neighborhood organizations. Farmer participants in this study

seemed to stress that their relationships with other farmers in the watershed were more of a factor in joining the FAC than their relationships with environmental professionals and agricultural business representatives. This directly demonstrates the significance of community capital. Foster-Fishman et al. describe the concept of collective action in their literature, which is an individual's decision to join a group focusing on local issues. Community capital and the presence of valued "common goods" in a neighborhood are large factors in collective action (Oliver, 1984). In the case of the FAC, farmer participants suggested that collective action and community capital are closely connected.

An interesting observation to note here is that in contrast, agricultural business representative and environmental professional participants did not emphasize the importance of relationships between farmers in a community to being involved in the FAC as much as those between farmers and the environmental professionals or agricultural business representatives. The data from this study was therefore only partially in support of the literature on this topic. This suggests as well that environmental professionals and agricultural business representatives in the FAC may not fully understand the internal dynamics and relationships in the farming community and the FAC as well as assumed.

Some data from the study supports literature about open and efficient communication and the necessity of farmer-to-farmer sharing at group meetings. Salamon et al. state that communication must be efficient in the group (1998). In addition, Wright Morton emphasizes the need for sharing and learning amongst farmers, and that this type of behavior is essential for development of the group (2008). Environmental professional participants in particular agreed on the importance of information sharing between farmers. These participants also all felt that concise delivery of information to farmers at FAC meetings and events was crucial to the success

of the group, thus supporting the literature. Farmer participants on the other hand did not agree with this as intensely. Many farmer participants discussed their desire to come to FAC meetings to learn from professionals in the field, but only a few emphasized the need for sharing with other farmers. One farmer participant in particular reflects on how relationships influenced their decision to come to the FAC:

> Well just basically keeping up with the stuff that's going on, you know, the people that's in the know are supposed to let us know what's going on so we can be educated to points. You know, a lot of stuff that's going on we don't know until someone shows us, tells us whatever.

Another farmer however speaks about sharing between farmers as an expected outcome from the group: "The idea of being able to talk to other people and see what they are doing compared to what you are doing, and making an assessment…" The data from farmer participants in some ways matches the conclusions in the literature on information sharing. The incongruence on this topic between environmental professional and farmer participants is significant because it seems there might be a disagreement on what should be the focus of the FAC.

An area that is not as significantly discussed in the study is the necessity for watershed group participants to agree there is a problem, which is one of the main criteria set forth in Wright Morton's 2008 article. The participants express many different opinions on this topic, but there is not an overall consensus shown in the data to support this literature. For instance, some participants talked about farmers at the FAC wanting to do the right thing for the environment, and be good environmental stewards. This was not an opinion that was widespread among participants however. This could be partially related to the sensitivity surrounding the water

quality issues in the WLEB, and also the fact that perhaps not all participants are in agreement on this topic.

Whether FAC members agree that there is a problem or not, the data heavily supported literature stating that a major reason for farmer participation in farmer-led watershed groups is to be involved in governmental processes or have influence on policy. Wright Morton explains that in some watersheds there may be an underlying desire for farmers to "get state and federal agencies off their backs (2008)." There is evidence in the data from all participants for both eliminating government pressure on farmers and simply having input into agency initiatives or policies. When asked about what outcomes farmers desire from becoming involved in the FAC, a farmer responds:

> Possibly preventing legislation, stuff like that is a positive for farmers. I think that is a big reason they get into meetings and preserving their rights to do different things.

This farmer describes a general paranoia farmers may feel, and the need to get involved in policy work so that the government will allow the agricultural community to continue their normal practices. Another farmer describes the need to get involved and have influence on government processes, "You know we had the opportunity that somebody's gonna have influence over the committees so, why not be me or anybody else?" This study showed strong evidence of feelings that farmers need to be involved in the decision-making process for regulation on agriculture, so that they can ensure any actions are taken with the farmers' needs in mind.

The data did not strongly support literature discussing the importance of tailoring information and watershed group meetings to farmer needs. While farmers were very vocal about opinions regarding the FAC, only one farmer interview mentioned tailoring topics, meetings, and other events to ensure they are most useful for farmers. Environmental professionals also did not

emphasize the need to tailor information to farmer needs, but one environmental professional participant group stated the need for the FAC to be farmer-led. The only interview groups that all heavily discussed the issue of tailoring information to farmer needs were the agricultural business representative participants. In addition, farmer participants agreed that learning new information was a major reason for coming to the FAC meetings. Literature states that in this type of watershed group, farmers must be in control of the direction and planning process of the group (Innes and Booher, 2000; Morton, 2008). Without this factor, it is difficult for a watershed group to transition into being farmer-led. It is important that the FAC utilizes the meetings and events as an opportunity to provide farmers with customized information. The FAC would also benefit from moving toward a more inclusive process.

The study aligned with literature stating that continual participation from farmers rests on their feeling that the watershed group meetings produce meaningful outcomes that assist goals of farmer participants. Farmers want to ensure that their time spent at meetings and events is worthwhile to their needs as agricultural producers. According to Pretty and Ward, the benefits of participating in the group must outweigh the costs farmers spend in time and money to be involved (2001). All participant groups in the study agreed that this is a huge factor in farmer decisions to return to the group regularly. It seems that all parties involved in the FAC understand that the meetings and events must be efficient and accomplish results in order to ensure support from the agricultural community.

In addition all participants recognized the essential need for watershed group meetings and events to be conveniently scheduled and accessible to farmers. This data supports parts of the literature on this topic but omits others. Perkins addresses the need for scheduling that takes farmers' lives into consideration (2010). The participants in the study all agreed that this was a

major component of farmer participation in the FAC, and that it was important to work out logistics that meet the demands of farmer schedules. However, the Perkins literature goes further to discuss personal limitations, overall farmer availability, and other more holistic needs that must be considered in the planning process of watershed group meetings and events (2010). The data from the study did not show this depth of discussion around scheduling and availability.

The FAC displays the recommendation found in literature to feature a varied membership in the watershed group. Innes and Booher discuss the necessity for communication and collaboration between stakeholders from different sectors (2000). The participant groups for this study serve as a direct example of the diversity seen in the FAC membership. It seems the group has a variety of opinions and backgrounds present at meetings and events. This interdisciplinary atmosphere may contribute to the FAC's success so far.

Along the same line, the data supported literature that recommended watershed groups accurately represent the diversity of a community. The literature stated that a watershed group should work on engaging potential leaders from different backgrounds from the beginning in order to best represent the watershed (Foster-Fishman et al., 2007). The leaders are then responsible for recruiting different participants and delegating responsibility to participants in hopes of expanding the facilitation of the group to farmers (Lasker et al., 2001). Farmer participants had different opinions on these processes than did environmental professional and agricultural business representative participants. Farmer participants emphasized in interviews that it was most important for the FAC to engage and educate urban citizens in the community. Conversely, environmental professional and agricultural business representative participants voiced the concern with providing more outreach and engagement to other farmers in the community. This juxtaposition is interesting, and suggests different goals from the various

groups of participants. It is also important to note that both parties are in support of the literature in different ways.

The study supported many of the themes discussed in the literature and Wright Morton's criteria for farmer-led watershed groups, but also suggested the FAC has room for improvement that will allow the group to mature. An area highlighted in the data was the need for farmers to move into more significant leadership roles in the FAC, and for them to play a stronger role in the decisions affecting the direction of the group. The data seemed to show that while farmers have some input into the agenda and processes of the FAC, there could be room for improvement in the development of farmer leadership.

3.5 – Discussion of Farmer-Led Component

Evaluation of data from this study strongly suggests that the FAC has considerable improvements to make before the group is considered to be as mature as other farmer-led watershed groups in its leadership structure. The goal, and Morton would argue necessity, of a farmer-led watershed group is for farmers to be in control of the direction and planning of the group (2008). The FAC displays early characteristics of potential to develop into this type of group, but still needs refinement.

Overall, it does not seem from interview data that the FAC is truly farmer-led. There is evidence that farmers have been encouraged to provide input into the planning process of the group, and that farmer needs have been considered. A farmer participant relays, "We were given the opportunity to have input in certain individuals who are conservationally minded." This farmer discusses the fact that in some capacity, farmers have been encouraged to provide suggestions and be involved in setting the mission of the group. This is a crucial first step in gaining farmer leadership of the FAC and is very important for ensuring the FAC meets the

needs of the agricultural communities targeted. However, this quote and the lack of discussion of farmer leadership at the FAC suggests that the group has not progressed from farmers simply providing input, to taking ownership of the FAC's direction.

The need for the FAC to be farmer-led was discussed in one environmental professional participant category interview, however. The participant in the interview stated, "In my opinion I think it could use a little more producer input, so gaining that would be necessary to make the group sustain. It can't just be led by agency people every time; and then it's not a farmers advisory group." The interview participant expressed the need for more farmer leadership in the group, suggesting as well that agency professionals have mainly led the FAC to this date. The participant continues later in the interview:

> You have to have ownership in what is happening for it to be meaningful; farmer ownership that's a big one. We have such a huge proportion of agencies and people being paid to be there relative to actual producers, so it's important that the farmers are owning it.

This statement also visits the fact that a large proportion of the FAC is agency professionals or other agricultural partners. The interview participant speculates that more farmer involvement in the FAC could help to encourage the farmer participants to take more ownership of the group. This is a very important concept, as the ultimate goal of farmer-led watershed groups is the empowerment of local communities, allowing them ownership over decisions about their local watershed.

The FAC still seems to have several necessary developments before the group can progress to qualifying as a truly farmer-led watershed group. Since farmers are actively being engaged and encouraged to contribute feedback and directional advice, it is likely that the FAC is

headed in the direction of being farmer-led. One of the limiting factors appears that farmers have not yet volunteered to take leadership over the group. Without the desire from the farming community and availability to step into the leadership role, it will be difficult for the FAC to become farmer-led.

3.6 – Lessons Learned

Data from this study have illuminated several areas where there is room for improvement in the FAC. The development of the group is of utmost importance, in order to engage more farmers in the River Raisin watershed, and address the HAB issues in the WLEB. With a better understanding of the reasons farmers get involved with the watershed group, and where the opinions of agricultural partners differ and are similar to those of farmers, the FAC can continue to develop in a way that allows it the best chance of success.

One area in which improvements could be made is communication between all parties involved in the FAC. With more insight from farmers into the factors that motivate their involvement in the FAC, agricultural business representatives and environmental professionals working in the watershed are able to have a more conclusive understanding of farmer intentions. This not only has the potential to improve communication within the watershed greatly, but also allow agricultural partners to further refine the ways they interact with farmers in the region.

Along the same lines, this knowledge is helpful to strengthen relationships within the watershed, especially between agricultural partners and farmers. With a mutual understanding of farmer needs and their desired outcomes for conservation programs such as the FAC, the working relationship between agricultural partners and farmers could greatly be improved. This is due to the fact that open communication and better knowledge of the people with who you do work greatly helps to improve the quality of the projects on which you collaborate. It also allows

agricultural partners to ensure they are tailoring their programs and work to the items and issues about which farmers are truly passionate. This would ensure farmers know their voices are being heard, and contributes to the agricultural producers' feeling of ownership over the happenings in their watershed.

The FAC itself would also be greatly improved with a better understanding between all parties involved. For instance, if farmers feel more empowered to take action and become involved in the issues that surround their watershed, the FAC would potentially see an increase in membership and the level of involvement from farmers. This is the ultimate goal of the group, and would eventually be the type of action that could lead to a reduction in HABs in the WLEB. In addition, the physical processes involved in planning and executing the FAC meetings and events would be improved. Since it currently does not appear that all parties involved in the FAC have the same opinions on how the FAC should be run, or how the farmers would like the FAC to be run, this information will be quite useful. The data from this study has the potential to provide some very valuable ground framework that would be useful in making future plans for the FAC, and ensuring the group is properly tailored to farmer participant interests.

In addition, those who currently facilitate the group can utilize this data to create next steps for engaging farmer participants in the process and encouraging more of a participatory environment. The end goal of the FAC seems to be for the farmers to take control of the facilitation with just minimal guidance from agency or environmental professionals. In order to proceed to this level of engagement, current FAC facilitators will need to be able to interpret the needs of farmer participants and engage the farming community on their terms.

CHAPTER 4

CONCLUSION

4.1 Implications

In order to address the water quality issues in the WLEB, it is essential that the community, agricultural partners, and governmental agencies implement a highly collaborative watershed management plan. This will require a wealth of input to be gathered from the farming communities, and the ability of the agricultural partners and governmental agencies to be receptive to the needs of the farmers in the watershed. Empowering local farmers to take control of water quality management in the region will also be beneficial to the work of the agencies, enhancing regional environmental programs. One of the major goals of this plan should be to transfer the decision-making responsibilities and facilitation of the FAC to farmer participants while the current facilitators take a more passive role in the group. This would include the addition of funding acquisition and distribution to the wealth of farmer responsibilities in the FAC. Farmer leadership and advocacy for improved water quality in the WLEB is necessary to involve more farmers in the FAC and by effect, best management practices on farmland.

A caveat to a collaborative watershed management plan is that it requires the desire and willingness of farmers to take the lead of the movement. The FAC has been challenged by a limited amount of farmer participants who strive for leadership roles in the group. Wright Morton describes farmer leadership as one of the most important factors of a farmer-led watershed group (2008). It is hard to incite willingness to take control if the desire is not present among farmer participants. This is especially true in the case of the FAC, where willing external facilitators have become the established status. While the watershed groups that served as an example for this research are currently more farmer-led, they started in a similar state to the

FAC. The engagement method used by the other watershed groups was unanimously tied to the dissemination of soil data and field days on local farms. By using a similar technique, the FAC could inspire increased farmer participation in the group and build an organization of farmers that is motivated to provide the leadership the FAC needs to improve water quality.

Effective communication and understanding of agricultural interests are vital to ensuring the FAC's structure and subject matter are arranged in ways that will engage the most farmers in the region. This case study illuminated some of the potential gaps in communication between farmers and agricultural partners in the River Raisin watershed. Without constant feedback between both farmers and agricultural partners, understanding of needs on either side cannot be accomplished. Like other watershed groups have done, the FAC and its member base could benefit from re-organization of the implementation process for the group, utilizing feedback from farmer participants and others in the community to structure the FAC in a way that attracts more membership. With continual evaluation of the information provided via the group, the facilitators can ensure the group is properly tailored toward topics in which farmers are interested.

Further, the implementation of the FAC should be restructured from a group of facilitators simply gaining input and suggestions from farmers, to allowing the farmers that have expressed ideas to move forward with them and take control. As the group is currently set up, there is a core group of facilitators and select farmers who serve as the primary planners. This group gains information from the farmer participants who attend events and meetings through surveys and discussions, and then works to implement the ideas on behalf of the farmer participants with encouragement of farmers to join. To improve this process, the facilitators could encourage farmers who contribute ideas to also be involved in the planning and

implementation of putting them in action. As a result the farmers would gain ownership over small pieces of the water quality management efforts within the FAC. This kind of mobilization could lead to more widespread action within the farming community to take control of the FAC and inspire more change in the watershed.

The most important finding from this case study and the lessons learned through other farmer-led watershed groups is that farmers often become involved with these groups out of the desire to gain information and share with other farmers to directly improve their agricultural business. Ultimately the farmers have shown interest in agricultural technologies and information that relates to their main interest: farming practices. This has been shown by the immense success field days and soil testing have demonstrated in increasing membership of farmer-led watershed groups in Iowa and Wisconsin. One aspect of this method for engagement is the reframing of environmental messaging. Direct communication is most effective with careful planning of word choices that inspire interest in the farming community. By approaching topics of environmental conservation and water quality from the lens of agriculture, it is easier to engage farmers around these issues. Field days and soil tests are ways of examining the process of implementing best management practices on the farm, encouraging widespread incorporation of these practices.

With improvements in farmer engagement, farmer-led watershed groups would have the potential to grow and spread beyond the WLEB into other parts of the state or Midwest. Moving forward, the focus in Michigan should be to refine a model of farmer-led watershed management organization that can be replicated successfully in other regions. This method succeeded in the Misssissippi River Basin, with the Wisconsin Farmer-Led Watershed Council Project directly implementing their group utilizing the framework from Hewitt Creek. Although the FAC was not

a successor of these groups, it follows a similar pattern of creation that can be replicated. Cross-comparison of farmer-led watershed groups is extremely valuable and helps to strengthen the group model. Strong communication around the dissemination of this model will be extremely valuable moving forward, to learn and grow from the experiences of other farmer-led watershed groups.

4.2 Recommendations

Future research could explore the topics and events farmers who have not become involved in the FAC would like to be offered by the group. While this is a crucial area to study, it has proven difficult in many studies to engage those farmers who have not already become involved in conservation efforts. This issue of engagement of farmers who have not yet become active in conservation could be improved by increasing the level of farmer leaders in the FAC and within the community. These farmers would become advocates of the group processes to incur watershed improvements.

In addition, research exploring the direct success of the FAC would be useful to the evaluation of the group. This research could examine whether events such as the Field to the Great Lakes sails and field days have changed or influenced farmer opinions on watershed issues. Further, studies could question whether any increased awareness or change in opinion has led to direct actions to improve water quality through agricultural practice modification. Further exploration of the success rate of the FAC on many different levels would be imperative to improving the group and creating better, more useful groups in other regions. In addition this research could help the groups better target their initiatives for improving water quality.

Beyond direct research around the FAC, developing a consortium of active and influential farmer-led watershed groups would be useful to the success of these groups across the

region. Continual communication between farmer-led watershed groups can help to ensure that all groups are developing consistently and gaining knowledge from the other organizations. This would be an exceptional networking opportunity and could serve as a way for groups to share ideas and stories. Participants would also benefit from connecting with a larger network of agricultural partners and farmers involved in these types of organizations.

4.3 – Limitations

Acknowledgment of limitations for this study is important to understanding the knowledge gained from this research. As with any qualitative research, there are inherent researcher biases. It is important to note that the participant sample for this study was not a comprehensive representation of the overall River Raisin watershed population, or of the FAC membership base. The small group of participants was chosen to provide a diversity of opinions and variation of interpretations of the FAC, but there is always room for additional outside opinions to enhance the discussion.

The innate qualities of a case study limit the study to a specific population or group within a region in an effort to study a small sample in great detail. In this case, the study only covered the FAC and not the entire River Raisin watershed to gain more understanding of this group in particular. It is important to note also that a majority of the farmers who attend the FAC meetings and events are already involved in conservation practices, some even with the MAEAP program. In addition, the FAC meetings and events are considered to be the first step in obtaining MAEAP certification, which may deter farmers who are not interested in conservation or BMPs from considering attending the events in the first place. The FAC in itself is already a small sample of the entire River Raisin watershed population.

The creation of the conceptual model in Figure 1 was also created from my interpretation of literature on the topic and assumptions about farmer-led watershed groups. I am an outsider of the agricultural community, so my views and observations may vary greatly from those of farmers. Creating a factually sound conceptual model would require input from farmers in the watershed to gain complete insight into the FAC.

Time was a constraining factor as well, so the interview data was not exhaustively tested for inter-coder reliability. While the main data analysis for this research involved the interview models, the interview data was used as supplementary material to support analysis of the models. It is possible that there is researcher bias found in the thematic analysis of the interview transcripts. This could have led to some generalization of data into themes that may have been viewed slightly differently had inter-coder reliability been thoroughly performed.

APPENDIX

APPENDIX A

River Raisin Farm Statistical Data

	Hillsdale	Jackson	Lenawee	Monroe	Washtenaw
# Farms	1530	1073	1618	1144	1236
Acres of land in farms	262,363	183,111	344,347	214,506	170,154
Avg size of farm (acres)	171	171	213	188	138
# beef cattle farms	191	178	124	69	114
# milk cattle farms	85	30	26	6	29
# hogs and pigs farms	48	38	35	37	43
# sheep and lamb farms	87	80	42	39	109
# corn for grain farms	392	305	482	454	294
# corn for silage or greenchop farms	84	41	39	12	54
# wheat for grain farms	141	119	298	206	210
# Full owner farms	1131	741	1088	679	837
# Part owner farms	362	304	414	390	331
# Tenants in farms	37	28	116	75	68
Acres of owned land in farms	77,990	59,081	101,621	52,809	50,808
Acres of rented land in farms	98,329	69,518	133,659	107,720	62,366

Table 2: River Raisin Farm Statistical Data This table features each county in the River Raisin watershed with statistics from the USDA National Agricultural Statistics Service (NASS) database (2012)[5]

[5] The USDA NASS data referenced in Table 2 can be found at the following website: https://www.nass.usda.gov/ (2012)

APPENDIX B

Group and One-on-One Interview Question Guides

Farmer Focus Group Questions

Tell me the story of how you got involved in the Farmers Advisory Committee.
- How did you learn about the Farmers Advisory Committee?

How did you feel at your first Farmers Advisory Committee meeting?

What initially brought you to the Farmers Advisory Committee?

What did you take away from the Farmers Advisory Committee meetings?

How often do you interact with environmental professionals (for example, conservation organization representatives, watershed organization staff, conservation district staff, Extension educators focused on water quality)?
- What makes those relationships productive?
- What makes those relationships unproductive/unhelpful?

To what extent do you and your neighbors exchange information about protecting water quality? About soil and water conservation?
- To what extent is your relationship with your neighbors tense around soil and water conservation issues?

How do you usually receive information about new agricultural technologies?

In Michigan, it's common knowledge that you aren't very far from a lake at any time! What is your relationship to the Great Lakes?

What do you feel is the most important aspect of your job?

Environmental Focus Group Questions

How did you get involved with the Farmers Advisory Committee?
- How did you learn about the Farmers Advisory Committee?

What was positive about the first FAC meeting? What made you decide to come back?
- What do you feel is positive to farmers about the FAC meetings?

What do you feel is important about water quality management?
- What do you feel is not important in water quality management?

How often do you interact with farmers?
- What makes those interactions productive?
- What makes those interactions unproductive/unhelpful?

How do you feel farmers relate to their neighbors around water quality issues?

Where do you learn about new agricultural technologies?
- How do you think farmers learn about new agricultural technologies?

In Michigan, it's common knowledge that you aren't very far from a lake at any time! What is your relationship to the Great Lakes?
- What are farmers' relationships to the Great Lakes?

What do you feel is the most important aspect of agricultural business to farmers?

REFERENCES

REFERENCES

Adler, Patricia A., and Peter Adler. *Membership Roles in Field Research*, 1987.

Ansell, Chris, and Alison Gash. "Collaborative Governance in Theory and Practice." *Journal of Public Administration Research and Theory* 18, no. 4 (2008): 543–71.

Baxter, Pamela, and Susan Jack. "Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers." *The Qualitative Report* 13, no. 4 (2008): 544–59.

Bloor, Michael, and Fiona Wood. *Keywords in Qualitative Methods: A Vocabulary of Research Concepts*, 2006.

Booher, David E., and Judith E. Innes. "Network Power in Collaborative Planning." *Journal of Planning Education and Research* 21, no. 3 (2002): 221–36.

Chaskin, Robert J. "Defining Community Capacity: A Framework and Implications from a Comprehensive Community Initiative," 1999.

Chavis, David M., and Abraham Wandersman. "Sense of Community in the Urban Environment: A Catalyst for Participation and Community Development." *American Journal of Community Psychology* 18, no. 1 (1990): 55–81.

Davenport, Mae A., and Erin Seekamp. "A Multilevel Community Capacity Model for Sustainable Watershed Management." *Society & Natural Resources* 26, no. 9 (2013): 1101–11.

Emerson, Robert M., Rachel I. Fretz, and Linda L. Shaw. *Writing Ethnographic Field Notes*. Second Edition. Chicago and London: The University of Chicago Press, 2011.

Flora, Cornelia Butler, and Jan L. Flora. "Entrepreneurial Social Infrastructure: A Necessary Ingredient." *The Annals of the American Academy of Political and Social Science* 529, no. 1 (1993): 48–58.

Foster-Fishman, Pennie G., Daniel Cantillon, Steven J. Pierce, and Laurie A. Van Egeren. "Building an Active Citizenry: The Role of Neighborhood Problems, Readiness, and Capacity for Change." *American Journal of Community Psychology* 39, no. 1–2 (2007): 91–106.

Goffman, Erving, and Lyn H. Lofland. "On Fieldwork." *Journal of Contemporary Ethnography* 18, no. 2 (1989): 123.

Gubrium, Jaber F., and James A. Holstein. *Handbook of Interview Research: Context and Method*, 2002.

Haas Dyson, Anne, and Celia Genishi. *On the Case: Approaches to Language and Literacy Research*. NCRLL. New York, NY: Teachers College Press, Columbia University, 2005.

Innes, Judith E., and David E. Booher. “Public Participation in Planning: New Strategies for the 21st Century,” 2000.

Johnson, Nancy, Helle Munk Ravnborg, Olaf Westermann, and Kirsten Probst. “User Participation in Watershed Management and Research.” *Water Policy* 3, no. 6 (2002): 507–20.

Kenney, Douglas S. “HISTORICAL AND SOCIOPOLITICAL CONTEXT OF THE WESTERN WATERSHEDS MOVEMENT1.” *JAWRA Journal of the American Water Resources Association* 35, no. 3 (1999): 493–503.

Lasker, Roz D., Elisa S. Weiss, and Rebecca Miller. “Partnership Synergy: A Practical Framework for Studying and Strengthening the Collaborative Advantage.” *Milbank Quarterly* 79, no. 2 (2001): 179–205.

Leach, William D., and Neil W. Pelkey. “Making Watershed Partnerships Work: A Review of the Empirical Literature.” *Journal of Water Resources Planning and Management* 127, no. 6 (2001): 378–85.

Marwell, Gerald, Pamela E. Oliver, and Ralph Prahl. “Social Networks and Collective Action: A Theory of the Critical Mass. III.” *American Journal of Sociology*, 1988, 502–34.

Maxwell, Joseph A. *Qualitative Research Design: An Interactive Approach: An Interactive Approach*, 2012.

M. Konisky, David. “Innovations in Public Participation and Environmental Decision Making: Examples from the Great Lakes Region.” *Society &Natural Resources* 14, no. 9 (2001): 815–26.

Miles, Matthew B., A. Michael Huberman, and Johnny Saldana. *Qualitative Data Analysis: A Methods Sourcebook*. Third Edition. Los Angeles, London, New Delhi, Singapore, Washington DC: SAGE Publications, Inc., 2014.

Morton, Lois Wright. “The Role of Civic Structure in Achieving Performance-Based Watershed Management.” *Society & Natural Resources* 21, no. 9 (September 16, 2008): 751–66. doi:10.1080/08941920701648846.

Morton, Lois Wright, and Susan S. Brown, eds. *Pathways for Getting to Better Water Quality: The Citizen Effect*. Springer Science+Business Media, LLC, 2011.

“NRCS Investments in the Western Lake Erie Basin.” United States Department of Agriculture Natural Resources Conservation Service, August 2015. file:///Users/shaynanana/Downloads/Western_Lake_Erie_Basin%20(1).pdf.

Oliver, Pamela. “‘ If You Don’t Do It, Nobody Else Will’: Active and Token Contributors to Local Collective Action.” *American Sociological Review*, 1984, 601–10.

Parisi, Domenico, Michael Taquino, Steven Michael Grice, and Duane A. Gill. “Civic Responsibility and the Environment: Linking Local Conditions to Community Environmental Activeness.” *Society and Natural Resources* 17, no. 2 (2004): 97–112.

Patton, Michael Quinn. *Qualitative Evaluation and Research Methods* ., 1990.

Perkins, Patricia E. Ellie. “Public Participation in Watershed Management: International Practices for Inclusiveness.” *Physics and Chemistry of the Earth, Parts A/B/C* 36, no. 5 (2011): 204–12.

Pretty, Jules, and Hugh Ward. “Social Capital and the Environment.” *World Development* 29, no. 2 (2001): 209–27.

Reisert, Jessica, Clare M. Ryan, and Johann Köppel. “Stakeholder Participation in Collaborative Watershed Planning in Washington State.” *Journal of Environmental Assessment Policy and Management* 17, no. 03 (2015): 1550027.

Salamon, Sonya, Richard L. Farnsworth, and Jody A. Rendziak. “Is Locally Led Conservation Planning Working? A Farm Town Case Study1.” *Rural Sociology* 63, no. 2 (1998): 214–34.

Seidman, Irving. *Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences*, 2013.

Stephan, Mark. “Democracy in Our Backyards A Study of Community Involvement in Administrative Decision Making.” *Environment and Behavior* 37, no. 5 (2005): 662–82.

Wandersman, Abraham, Paul Florin, Robert Friedmann, and Ron Meier. “Who Participates, Who Does Not, and Why? An Analysis of Voluntary Neighborhood Organizations in the United States and Israel.” In *Sociological Forum*, 2:534–55. Kluwer Academic Publishers, 1987.

Weber, Edward P. “A New Vanguard for the Environment: Grass-Roots Ecosystem Management as a New Environmental Movement.” *Society & Natural Resources* 13, no. 3 (2000): 237–59.