THE OUR WATER - GENESEE COUNTY COMMUNITY WATER QUALITY CONSORTIUM

for improving water quality in the Genesee County Watersheds and the Great Lakes

A Social Survey

For the Genesee County Watersheds

2017

TETRA TECH

THE SOCIAL SURVEY
FOR THE WATERSHEDS OF GENESEE COUNTY

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DRAFT

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EXECUTIVE SUMMARY

In late winter and early spring of 2016, the Our Water consortium in conjunction with the Genesee County Drain Commissioner's office conducted a social survey within the urbanized watershed areas of Genesee County. The format was a mail survey with the option given to complete it on-line. Administered by the Genesee County Drain Commissioner's office, and partially funded through a Department of Environmental Quality Stormwater, Asset Management and Wastewater (SAW) Grant, the social survey produced a statistically significant sample for the County. A total of 958 were mailed out and 345 responses were collected for a confidence level of 94.7% for the survey. Individual responses from residential landowners are confidential and anonymous. The survey assessed: public awareness, perception, and knowledge of the watershed and storm pollution issues; current activities impacting water resources; and willingness to take action to protect water resources. Following are some of the key findings revealed by the survey.

RESULTS

Perceptions of Current Water Quality

Thirty-four percent of respondents indicated that they thought that the current water quality had stayed the same over time, all though 32% said they didn't know. Respondents were not required to answer for each of the activities. Hence the high "No Response" rate. When asked whether local water quality was "good" for various activities the following results were reported:

Question #	Poor	Okay	Good	No Response
For canoeing / kayaking / other boating	8%	30%	34%	28%
For eating locally caught fish	29%	21%	15%	35%
For swimming	22%	35%	18%	25%
For picnicking and family activities	6%	31%	44%	19%
For fish habitat	14%	26%	23%	37%
For scenic beauty	6%	36%	48%	10%

The overwhelming majority of respondents perceive the non-contact recreational uses to be 'good' to 'okay'; only a small fraction rated these uses as 'poor.' Non- contact recreational uses include; canoeing, kayaking, boating, picnicking, family activities, and general scenic beauty.

Your Water Resources

About 64% of respondents said they spent leisure time on Genesee County water body in the last year. The activities that they indicated they did, in order of preference were:

1.0	For scenic beauty	74%
2.0	Hiking/walking/cycling along shoreline	46%
3.0	For fish habitat	37%
4.0	For swimming	35%
5.0	For canoeing / kayaking / other boating	35%
6.0	For eating locally caught fish	29%

The six top waterbodies mentioned were the Holloway Reservoir, Mott Lake/Bluebell Beach, the Flint and Shiawassee Rivers and Fenton and Silver Lakes.

If local residents' needs are being met by the currently perceived water quality conditions, then it will be difficult to motivate them to improve conditions. For marketing purposes it would be best to communicate proposed actions as necessary to preserve the current level of amenities for the future rather than improving conditions for activities that may not be supported.

Personal Responsibility

The results of the questions on benefits and responsibilities statements indicate that respondents believe it is their responsibility to help protect local water quality, their actions have an impact, and believe that their quality of life depends on it. They do not appear to be willing to sacrifice water quality even if slows economic development. They are only somewhat inclined to change how they do things and even less likely to want to pay for improvements. These results suggest a slight disconnect between comprehending the importance of water quality and respondents' willingness to take immediate action or pay to ensure its continuance into the future.

A deep analysis through the creation of constructs by combining the answers from multiple questions confirms the above findings. Respondents recognize the importance of having good water quality and that their actions impact it. They also recognize that the cost of protection (economics) influences decisions.

These findings are encouraging since it commonly requires a high level of conviction by individuals to carry through with their intentions (to protect water quality) if the barriers to implementation are high.

Water Impairments, Sources of Pollutants, and Consequences of Poor Water Quality

Water quality testing and expert opinion have identified: sediment, bacteria, oil and grease, arsenic, pesticides, and temperature as key water impairments. These impairments emanate from multiple sources and impact waterbodies in a variety of ways (consequences). Sources of these impairments are located throughout the watershed and have led to the State classifying two area as not attaining some of the designated uses. The survey results indicated a *low* awareness of the sources of water impairments, the impairments themselves, and the consequences associated with the presence of these impairments.

Practices to Improve Water Quality

The survey looked at respondents' awareness of, and willingness to adopt various best management practices (BMPs) designed to protect water quality. Results from this section are complex. In summary, the respondents believe they are doing a good job of implementing BMPs (about 50% reported they were currently using many of the practice), which may or may not be true. Respondents were overwhelmingly willing to adopt the majority of the residential practices surveyed. BMPs requiring construction received the least support, perhaps due to the perceived expense.

Awareness Indicators

Indicators to measure respondent awareness of the "types", "sources" and "consequences" of pollutants were constructed using the respective sections. An indicator for respondent awareness of the "practices to improve water quality" was also constructed. The indicators were calculated by re-coding the answers and then summing the new values for each respondent and dividing by the number of responses that apply.

Respondents indicated an overall awareness of pollutants, sources, consequences and the practices available to improve water quality. The gap between their awareness scores and knowledge scores reported above points to a lack of confidence in what they think they know is true and being confident enough to make decisions. These results indicate that although there needs to be a continued general education effort there is also an emerging need for technical information and support aimed at improving local water quality that people can access and implement behavioral changes and building confidence in their actions.

Making Management Decisions

This section solicited responses on perceived constraints to adopting new management practices. Examples of constraints included cost, skill level required to implement, and available equipment. Only two of the nine constraints pose barriers (out-of-pocket expenses and access to necessary equipment) to roughly one-third of the residential respondents.

The results of questions on constraints were supported by two indicators, one on behavior and the other on adopting key practices that were constructed from a variety of questions. The indicator results suggest that overall, respondents do not perceive themselves having major constraints to changing their behavior (attitude) nor to adopting key practices (structural). There is a substantial standard deviation on these indicators but results (based on valid responses) are fairly robust and therefore reliable.

Septic Systems

Thirty-five percent of residential property owners had septic systems. The average age for respondents' septic systems was 33 years, while the median score was 35 years. The age of the septic systems presents a looming problem.

Information Sources and Policy

The top trusted source indicated by residential respondents was MSU Extension, by about 18% over other sources. The other five sources ranged between 50% - 63% support with no other clear preference. MSU Extension was also the most trusted source in the 2006 survey.

The primary disseminators of information with regard to stormwater management are the Drain Commissioner's Office and the Flint River Watershed Coalition. Both sources were rated by respondents as being in the moderate rage with regard to trust. This has implications with how messages/information is distributed; supporting sources should always be clearly cited, thus lending credibility to the message.

It is also recommended that MSU Extensions and the County Health Department's roles be expanded/strengthened based on the respondent reported trust level. Partnering for the purposes of disseminating information as well as joint events are two possible actions that might be explored.

<u>Information Methods</u>

Newsletters/brochures/fact sheets and the internet, were the methods of communication that were most preferred.

The top two preferred information formats are indeed the primary avenues that the "Our Water" group disseminates information. Cross pollinating between the two is a necessity and should be continued. Other vehicles should refer to these two primary methods of information. Based on the results from the 2006 survey, newspapers/magazines should be a part of the media methods employed. Radio appears to have a declining audience.

RECOMMENDATIONS

The following recommendations are based solely on the results of the Social Survey and the detected changes from the 2016 survey. Furthermore, there are not intended to be any recommendations that duplicate NPDES Phase II storm water permit requirements (e.g. street sweeping). The recommendations are as follows:

1. Move to the next stage in the public education process. Respondents indicated they knew the key actions that need to be taken to protect local water quality. Public education should move towards incorporating more information on impairments and the consequences associated with them; techniques available to protect waterways (e.g. no-mow buffers); and providing technical assistance for the practices such as rain barrels and rain gardens.

2. Focus marketing messages on enjoying the local scenic beauty, and Hiking/walking/cycling along the shoreline. These are the most important activities to respondents.
3. All existing and new programs should be cross referenced with the constraints identified by respondents as documented in this report, and then tailored to help the target audience reach the desired behavior. For example, work with local suppliers to provide technical information for the installation of rain barrels.
4. Institute a proactive septic system program aimed at the inspection and maintenance of existing systems.
5. All information disseminated should refer back to the 'Our Water" website. Information should be coordinated between agencies. Not all information sources carry equal credibility with all stakeholders, so the message and delivery mechanism (e.g. internet) should be coordinated to be most effective.
6. The internet is increasingly becoming the preferred information delivery method. Efforts should be made to strengthen links between the subwatershed program information page and trusted information sources, such as with the MSU Extension.

INTRODUCTION

PURPOSE OF THE STUDY

The social data collected for this project is intended to develop indicators to serve both as intermediate measures for the purpose of performance review, and information to assist in the design of effective outreach and education interventions for Non-Point Source (NPS) pollution management. The purpose of the evaluation is to collect baseline information on environmental awareness and attitudes for the Genesee County watersheds. This project was in part funded through a Department of Environmental Quality Stormwater, Asset Management and Wastewater (SAW) Grant.

PROBLEM DEFINITION AND RATIONALE

Data collection is for socio-behavioral information. Municipal NPS projects, both structural and non-structural, aim to reduce pollution and involve the interaction of humans with their natural environment. Evaluating the effectiveness of programs to reduce NPS water pollution, therefore, needs to include an assessment of the human behavior underlying the pollution. Water quality problems have built up over many decades and may take decades to amend. Even when appropriate practices are put into place, there will be a lag before water quality shows improvement. Confirming the adoption of corrective practices, and beneficial attitudinal changes, are more immediate indicators of anticipated water quality change.

Evaluating the social component of NPS water quality programs and projects involves more than identifying changes in behavior in critical areas of the watershed; it also requires consideration of the continuum of knowledge, awareness, attitudes, constraints, and capacity that eventually leads to behavioral change. Because decisions regarding individual behaviors are influenced by a complex interplay of factors, measuring the precursors or contributing factors leading to the change will give managers additional information that will help insure that funded activities will accomplish water quality goals, and provide direction for future projects. If an NPS project or program positively influences the precursors, it is advancing the goal of achieving the desired behavioral change.

Measuring change in behavioral precursors requires the use of a variety of *social indicators* that represent or reflect those precursors. *Social indicators are measures that describe the capacity, skills, knowledge, values, beliefs, and behaviors of individuals, households, organizations, and communities.* By measuring these indicators, water quality managers can determine whether policies, programs, and initiatives are likely to lead to the intended behavioral change in a watershed's most critical areas and, ultimately, to improvements in water quality.

In 2006 a phone survey was administered prior to the commencement of the public outreach effort. The purpose of the survey focused on determining the publics' current actions and willingness to adopt the *Seven Simple Steps* program (http://www.cleargeneseewater.org/). Since 2006, the science of stormwater management social surveys had advanced significantly, as evidenced by the SIPES program (see below) and although not statistically significant, the information collected will be used for comparison when applicable.

TOOLS

This project used the Social Indicator Planning and Evaluation System (SIPES) for NPS management and an on-line data tool – the Social Indicators Data Management and Analysis (SIDMA) system (both can be found at http://35.8.121.111/si/Projects/ProjectsHome.aspx).

STUDY DESIGN AND ANALYSIS

Questions

The data collected for this project was intended to serve both as an intermediate measure for the purpose of performance review, and as information to assist in the design of effective interventions outreach, and education interventions for NPS pollution management. Data will help to answer a variety of questions related to awareness, attitudes, and behavior related to NPS pollution. Questions in the survey aimed to help determine public awareness or misconceptions about topics such as:

- Connections between storm water and pollution
- The community's level of concern about pollution
- Individual practices that contribute to NPS
- Individual characteristics and barriers to behavior change

Questions and answers have been designed to provide information in order to work towards the following intended outcomes:

- Increased awareness of relevant technical issues and/or recommended practices;
- Changed attitudes to facilitate desired behavior change;
- Reduced constraints to behavior change;
- Increased capacity to leverage resources in critical areas;
- Increased capacity to support appropriate practices;
- Increased adoption of practices to maintain or improve water quality;
- Increased adoption of improved management of septic systems; and
- Increased efficiency and effectiveness in delivery of information to the public.

Sample Size

The project planned to survey a sample population of the target audience, of 383 residential landowners. A total of 958 were mailed out and 345 responses were collected for a confidence level of 94.7% for the survey. Individual responses from residential landowners are confidential and anonymous.

Survey Process

The survey process included a series of mailings. Respondents were given the option to complete the survey on-line or return the survey by mail. Identification numbers, included in the mailed survey packet, were required to access the on-line system in order to ensure that duplication did not occur.

The survey was administered using the following steps:

Step 1: Sent an initial letter of introduction to notify the homeowner that they would be receiving a survey and to stress the importance of completing and returning it.
Returned letters were dropped and replaced on the master list of recipients.
Step 2: Two to two-and-a-half weeks after the introduction letter was mailed, the survey itself was delivered, along with an accompanying letter and pre-paid return envelope.
Step 3: One to two weeks after the survey was delivered, a reminder post card explaining the importance of filling out the survey is sent.
Step 4: Three to four weeks after the first survey is sent out, a second survey and accompanying letter were mailed out.
Step 5: A final survey and letter were mailed out two to three weeks after the second survey was delivered.
Respondents who submit surveys have their names removed from the follow-up list and are not contacted again throughout the process.

SIDMA DATA ANALYSIS AND INTERPRETATION

The SIDMA report presents the frequency of the results and the averages for each survey question. The report also produces calculated scores for the social indicators. Average values for each question provide a quick and easy way to understand how respondents answered each question. The SIDMA report provides an idea of the overall strengths and weaknesses within the watershed. Are people familiar with the practices you are hoping to have installed? Does the population as a whole understand the sources and consequences of the pollutants of concern? These are the sorts of questions answered by frequency and average data. The SIDMA report also helps to find important relationships in the survey results. While the averages will help identify characteristics that may facilitate or impede practice adoption for the watershed, it may miss important trends that can help focus future efforts.

ORGANIZATION OF THIS DOCUMENT

The surveys for the residential land owners contained thirteen (13) categories of questions. This document looks at each questionnaire category. Within each category, information is presented on the specific questions asked, the raw results, and a brief analysis with observations. A copy of the survey instrument used is in Appendix A. A summary of overall recommendations follows the survey categories results.

The following survey question categories are included in this report:

1.0 Rating of Water Quality
2.0 Your Water Resources
3.0 Your Opinions
4.0 Water Impairments
5.0 Sources of Water Pollutants
6.0 Consequences of Water Pollutants
7.0 Practices to Improve Water Quality (residential)
8.0 Septic Systems
9.0 Specific Constraints to Practices
    8.1 Rain Gardens
    8.2 Rain Barrels
10.0 Reported Behavior
11.0 Making Management Decisions
12.0 Information Sources and Policies
13.0 About You (demographics)

1.0 RATING OF WATER QUALITY

This section is intended to gauge the respondents' perceptions of water quality as well whether it meets the perceived need for various water-related recreational activities.

SURVEY QUESTION

Overall, how would you rate the quality of the water in your area?

Please indicate with a (√).	Poor	Okay	Good	Don't Know
1. For canoeing / kayaking / other boating				
2. For eating locally caught fish				
3. For swimming				
4. For hiking/walking/cycling along the shoreline/river banks?				
5. For fish habitat				
6. For scenic beauty				

RESULTS

Table 1 provides the raw results from the survey along with the results presented as a percentage of responses. Each response *poor*, *okay*, and *good* were assigned a numeric point value (1, 2, and 3 respectively) for purposes of computing an average response, *don't know* responses were ignored. The average response is described narratively based on the following criteria: Poor (1.00 to 1.39), Poor-Okay (1.40 to 1.79), Okay (1.80 to 2.20), Okay-Good (2.21 to 2.60), and Good (2.61 to 3.00). Results for the response categories are provided in a bar chart shown in Figure 1. Shown in Figure 2 is a graphical representation of the averaged results for each of the activity questions.

Table 1 - Overall Water Quality Rating

Question	Response Category [score] Response Percent (count)				Mean (Std Dev)	Number of Responses
	Poor [1]	Okay [2]	Good [3]	Don't Know [NA]		
1. For canoeing / kayaking / other boating	8% (27)	30% (97)	34% (108)	28% (88)	Okay-Good 2.35 (0.68)	320
2. For eating locally caught fish	29% (94)	21% (66)	15% (47)	36% (114)	Poor-Okay 1.77 (0.8)	321
3. For swimming	22% (69)	35% (113)	18% (59)	25% (80)	Okay 1.96 (0.73)	321
4. For picnicking and family activities	6% (19)	31% (100)	44% (139)	19% (61)	Okay-Good 2.47 (0.63)	319
5. For fish habitat	14% (43)	26% (81)	23% (72)	38% (120)	Okay 2.15 (0.75)	316
6. For scenic beauty	6% (20)	36% (113)	48% (150)	10% (32)	Okay-Good 2.46 (0.63)	315

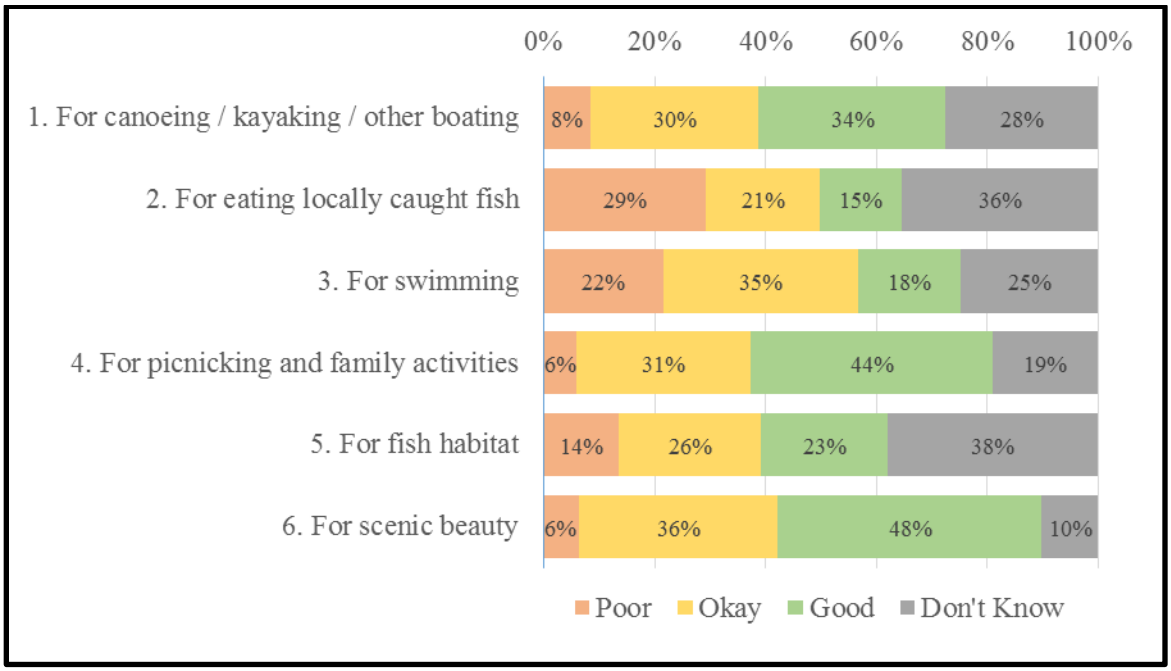


Figure 1 - Overall Water Quality Rating

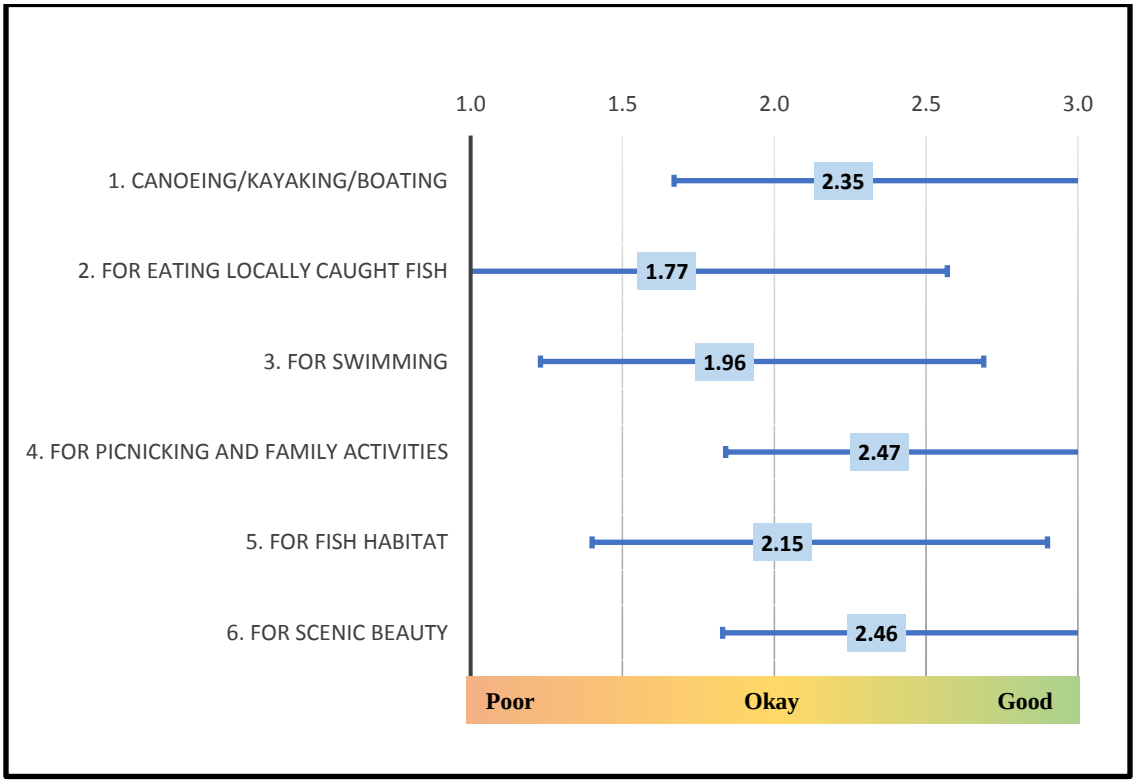


Figure 2 - Averaged Water Quality Rating

DISCUSSION

The majority of respondents indicated that current water quality was "good" for its scenic beauty and for picnicking and family activities. The majority of respondents said that the water quality was on the border between "okay" and "good" for Canoeing/Kayaking/Other Boating and just "okay" for Swimming and Fish Habitat. Finally, the majority of respondents thought that local water quality was poor for Eating Fish Caught in Local Waters. These activities will be matched with the activities that are most important to respondents in the next section.

2.0 YOUR WATER RESOURCES

This section is designed to determine respondents' basic knowledge of their local water resources. It consists of three questions.

SURVEY QUESTIONS

1. Do you know where the rain water goes when it runs off of your property?
   - ☐ No
   - ☐ Yes

2. If you answered 'Yes' above, where does your rain water drain to?

3. Of these activities, which is the most important to you? (*check all that apply*)
   - ☐ Canoeing / kayaking / other boating
   - ☐ Eating locally caught fish
   - ☐ Swimming
   - ☐ Hiking/walking/cycling along the shoreline
   - ☐ Fish habitat
   - ☐ Scenic beauty

4. Have you spent leisure time on a water body/river in Genesee County in the past 12 months?
   - ☐ No
   - ☐ Yes
   - ☐ Do Not Know

5. If yes, what water bodies/river?

6. Regarding the quality of the water in the lakes, rivers, and streams in your community... is it... (*please select one*)
   - ☐ Getting much worse
   - ☐ Getting somewhat worse
   - ☐ Staying the same
   - ☐ Getting somewhat better
   - ☐ Getting much better
   - ☐ Do Not Know

RESULTS

Table 2 summarizes the results from the question regarding "Do you know where the rain water goes when it runs off your property?" A total of 333 responses to the question were received out of the 345 surveys received (97% response).

Table 2 - Where Rain Goes

Responses	Response Percentage
No	33%
Yes	67%
Total	100%

A follow up question was asked that if the respondent answered *yes* then they were asked to write in a response to "where does your rain water drain to?" Of the 67% that answered *yes* only four respondents did not indicate where the rain water drained to. Since the ability to verify the accuracy of the answers is beyond the scope of this survey, they were assumed to be accurate. In the 2006 survey only 31 people out of 308 answered correctly.

Table 3 and Figure 3 summarize the most important activities according to the respondents. Respondents were asked to check all activities that applied to them. 319 out of the 345 surveys received had one or more responses to this question (for a response rate of 92%).

Table 3 - Important Activities

Responses	Response 2006	Response 2016	Change
Scenic beauty	-	74%	NA
Hiking/walking/cycling along the shoreline	48%	46%	-4%
Fish habitat	-	37%	NA
Swimming	48%	35%	-27%
Canoeing / kayaking / other boating*	55%	35%	-36%
Eating locally caught fish**	48%	29%	-40%

**2006 survey separated 'other boating' and is what is reported above.*
*** 2006 survey asks "Do you eat locally caught fish" and is what is reported above.*

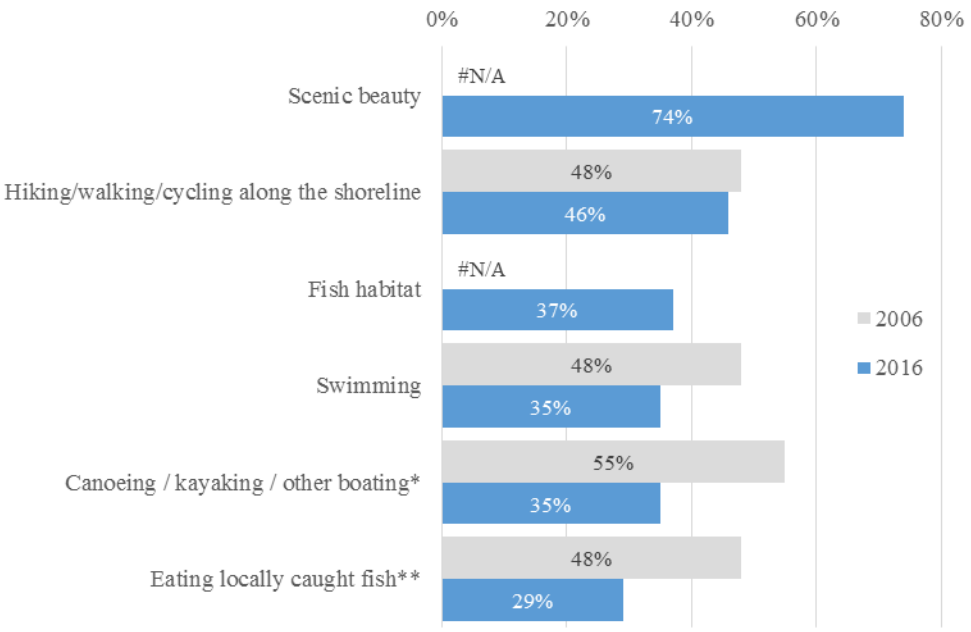


Figure 3 - Important Activities

Provided in Table 4 are the results to the question *have you spent leisure time on a waterbody/river in Genesee County in the past 12 months.* A total of 334 survey responses were received for this question out of the 345 total surveys returned (97% response rate). Compared to the same question on the 2006 survey, 32% more people responded that they had spent leisure time on the water.

Table 4 - Leisure Time on the Water

Response	2006	2016	Change
No	73%	64%	-13%
Yes	27%	36%	32%
Do Not Know	0.3%	0.6%	100%
Total	100%	100%	-

People who responded yes to the leisure question were asked to identify what waterbody they had visited and were allowed to indicate more than one. Of the 91 respondents who said yes, 120 waterbodies were named. The top six bodies of water mentioned are provided in Table 5. Other bodies of water were also cited but were mentioned fewer than 5 times.

Table 5 - Leisure Time Waterbodies

Waterbody	Number of times mentioned	Mentioned on the 2006 Survey
Holloway Reservoir	20	Yes
Mott Lake/Bluebell Beach	12	Yes
Flint River	11	Yes
Shiawassee River	9	No
Fenton Lake	9	Yes
Silver Lake	5	No

Results for Question 6 on how the water quality is perceived to be changing over time are presented in Table 6 and Figure 4. Of the 345 returned surveys, a total of 336 valid responses were received (97% response rate). Overall, respondents indicated that they felt like the water quality of local waterways was remaining the same or perhaps slightly worse. A large percentage (31.8%) said they "did not know"

Table 6 - Perceived Change in Water Quality

Perceived Change	Response
Getting much worse	2%
Getting somewhat worse	17%
Staying the same	34%
Getting somewhat better	13%
Getting much better	2%
Do not know	32%
Total	100%

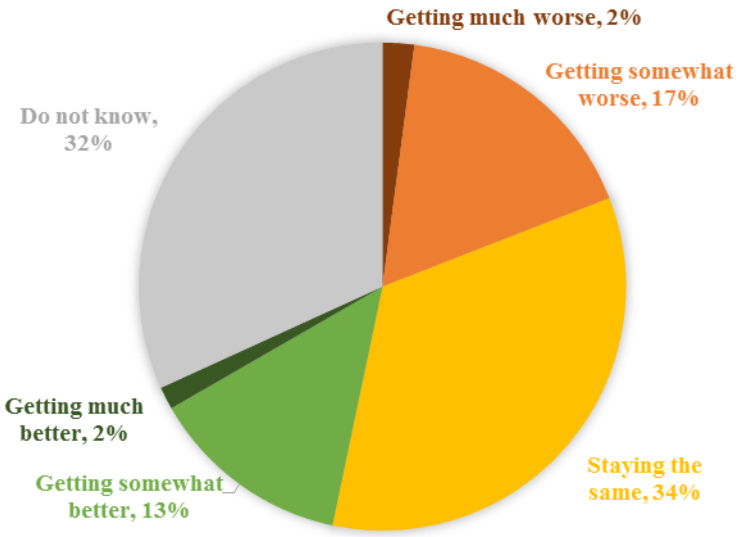


Figure 4 - Perceived Change in Water Quality

In the 2006 survey 59.4 percent of respondents said that they thought that local water quality had either 'stayed the same' (37.3%) or was 'getting somewhat better' (22.1%). The results between the 2006 and 2016 surveys are consistent.

DISCUSSION

Respondents' knowledge of where rain goes has improved from 2006 and the results were anticipated due to the need for long-term (think a generation) continual education to change the population's knowledge and perceptions about the nature of stormwater. Although modest, the gains realized over the last ten years should be celebrated. Furthermore, these results are an indication that the current program is working and should be continued.

The most important activities to respondents were 1. Enjoying scenic beauty/enjoyment (74%); 2. Hiking/walking/cycling along the shoreline (46%); 3. Fish habitat for fishing (37%); 4. Swimming (35%); 5. Canoeing /kayaking /other boating (35%); and lastly Eating fish caught in local waters (29%). The reported usage from the 2006 survey is generally greater than for the 2016 but not all categories were the same between the two surveys. The higher response rate may be attributed to the lower average age of the 2006 respondents.

Comparison of the perceptions of the current water quality and the activities that respondents like to engage in would seem to indicate that they perceive the current conditions as being sufficient to support these activities.

If local residents' needs are being met by the currently perceived water quality conditions, then it will be difficult to motivate them to improve conditions. In terms of marketing watershed activities, it would be most effective to communicate activities as necessary to preserve the current level of amenities for the future rather than improving them for activities that may not be broadly supported (e.g., swimming).

3.0 YOUR OPINIONS

The questions in this section are designed to elicit a response to specific statements regarding the benefits, sense of personal responsibility and norms surrounding the protection of water quality at the producer or household level.

SURVEY QUESTIONS

Please indicate your level of agreement or disagreement with the statements below.

Please indicate with a (√).	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. The way that I care for my lawn and yard can influence water quality in local streams and lakes.					
2. It is my personal responsibility to help protect water quality.					
3. It is important to protect water quality even if it slows economic development.					
4. My actions have an impact on water quality.					
5. I would be willing to pay more to improve water quality (for example: though local taxes or fees)					
6. I would be willing to change the way I care for my lawn and yard to improve water quality.					
7. The quality of life in my community depends on good water quality in local streams, rivers and lakes.					

8. If you discovered that your current methods of disposal of household hazardous wastes, such as paints, cleaning products, pesticides and automotive oil, was different than what is recommended, which of the following is most accurate? (***Check One***)

8.a: I would comply with the recommendations, …..

- ☐ regardless of the **cost**. (greater than $10)
- ☐ if there were little or **no cost** associated. (less than $10)
- ☐ only if there was **no cost** associated.
- ☐ I would not comply with the recommendations.

8.b: I would comply with the recommendations,

- ☐ regardless of the **inconvenience**.
- ☐ as long as there is **little inconvenience**.
- ☐ only if it is **convenient**.
- ☐ I would not comply.

RESULTS

A summary of the respondents' perceived benefits and responsibilities is provided in Table 7 and Figure 5. Shown in Figure 6 is a graphical representation of the averaged results for each of the activity questions. In order to calculate an overall average and standard deviation for each question, the responses "strongly disagree", "disagree", "neither agree nor disagree", "agree" and "strongly agree" were assigned a point value of 1 through 5, respectively. A mean and standard deviation (SD) were then computed using the assigned point value. Figure 5 graphs the mean (illustrated as the horizontal bar), and plus/minus one standard deviation (illustrated as the vertical bar) of the resultant score computed for each question.

Table 7 - Your Opinions

Question #	Response Category [score] Response Percent						
	Strongly Disagree [1]	Disagree [2]	Neither Agree nor Disagree [3]	Agree [4]	Strongly Agree [5]	Mean (SD)	Total Responses
1. The way that I care for my lawn and yard can influence water quality in local streams and lakes.	2%	7%	15%	52%	24%	Agree 3.87 (0.94)	332
2. It is my personal responsibility to help protect water quality.	1%	2%	11%	58%	27%	Agree 4.09 (0.75)	332
3. It is important to protect water quality even if it slows economic development.	2%	3%	17%	54%	25%	Agree 3.96 (0.85)	330
4. My actions have an impact on water quality.	1%	4%	16%	58%	22%	Agree 3.94 (0.79)	326
5. I would be willing to pay more to improve water quality (for example: though local taxes or fees)	18%	22%	35%	21%	5%	Indifferent - Agree 2.73 (1.12)	332
6. I would be willing to change the way I care for my lawn/yard to improve water quality.	3%	6%	31%	47%	13%	Indifferent 3.62 (0.9)	330
7. The quality of life in my community depends on good water quality in local streams, rivers and lakes.	1%	3%	16%	54%	26%	Agree 4.01 (0.8)	333

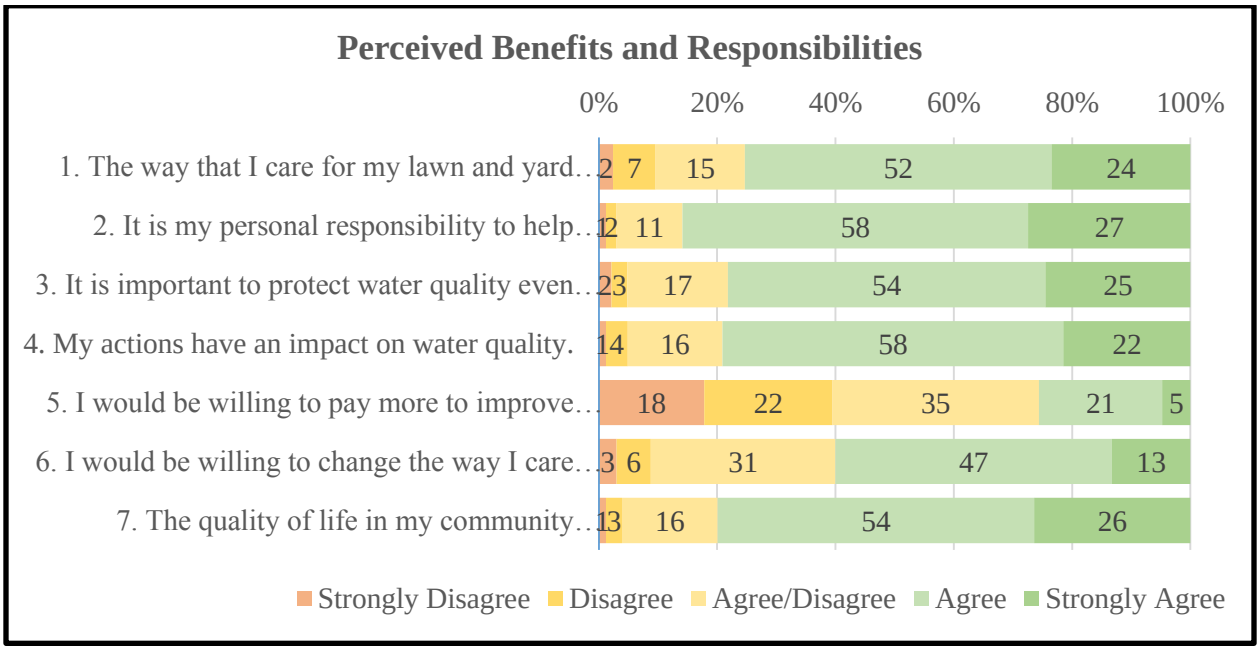


Figure 5 - Perceived Benefits and Responsibilities

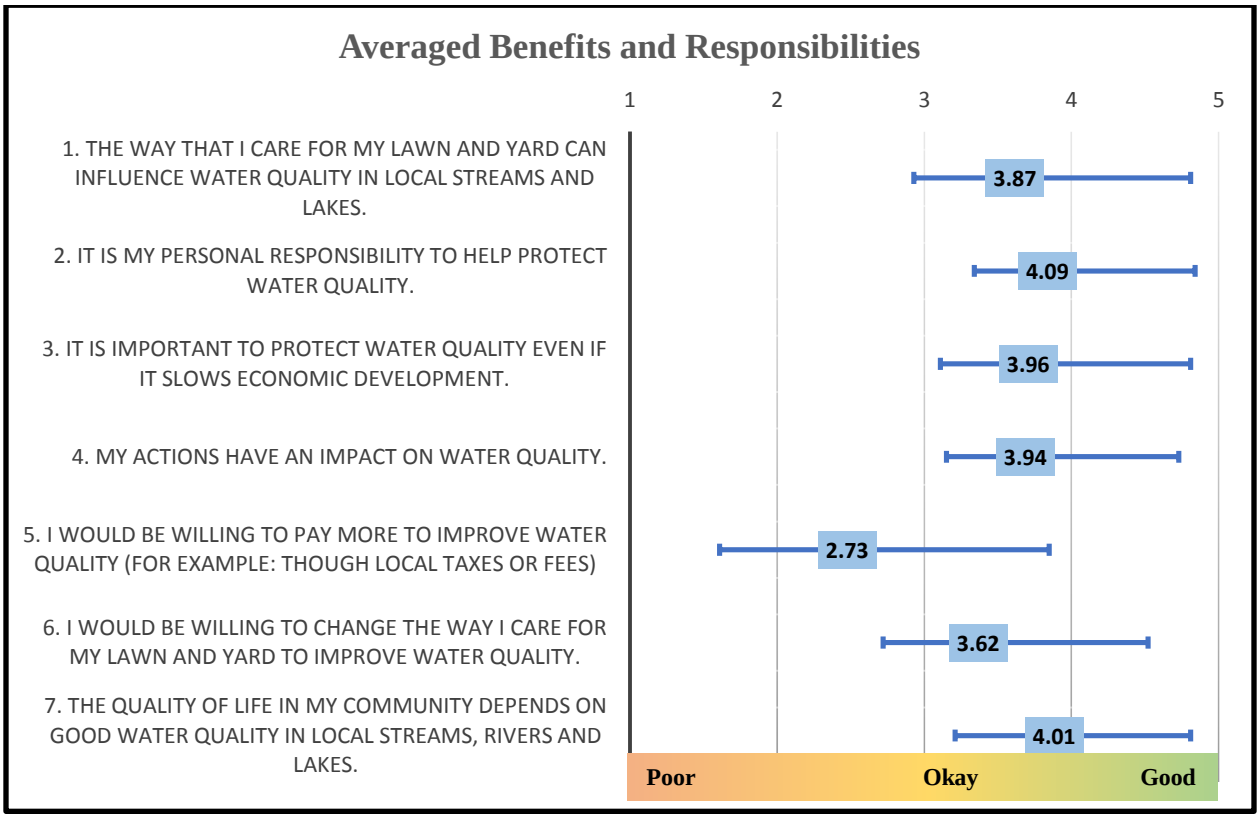


Figure 6 - Averaged Benefits and Responsibilities

The next set of questions relate to respondent attitudes and actions as they pertain to household hazardous waste.

If you discovered that your current methods of disposal of household hazardous wastes, such as paints, cleaning products, pesticides and automotive oil, was different than what is recommended, which of the following is most accurate? {Check One} I would comply with the recommendations, **(Responses: 324)**

Table 8 - Household Hazardous Waste Disposal

Responses	Response % 2006	Response % 2016	% Change
Regardless of the cost. { greater than $10}	35%	33%	-2%
If there were little or no cost associated. { less than $10}	50%	47%	-3%
Only if there was no cost associated.	13%	19%	6%
I would not comply with the recommendations.	2%	1.5%	-.5%
Total	**100%**	**100%**	

The results from this question indicate that only about 33% to 35% of the people would be willing to change their current handling of household hazardous waste regardless of the cost of the recommendation. *This suggests that **cost** is a significant factor to about 63% - 66% of the population. Also, only a small percent (<2%) would not comply with recommendations. This suggests that if cost effective practices are available they will be adopted.* These figures have remained relatively stable over time (within the margin of error).

If you discovered that your current methods of disposal of household hazardous wastes, such as paints, cleaning products, pesticides and automotive oil, was different than what is recommended, which of the following is most accurate? {Check One} I would comply with the recommendations, **(Responses: 317)**

Table 9 - Household Hazardous Waste Compliance with Recommendations

Responses	Response % 2006	Response % 2016	% Change
Regardless of the inconvenience.	52%	51%	-2%
As long as there is little inconvenience.	36 %	39%	3%
Only if it is convenient.	10%	9%	-1%
I would not comply.	2%	0.5%	-1.5
Total		**100%**	

The responses suggest that 'inconvenience' does not seem to be a barrier to respondents implementing the recommended procedures. It can therefore be concluded that people will do the right thing as long as there is little or no cost associated with the request.

ANALYSIS AND OBSERVATIONS

The results of the questions on benefits and responsibilities statements (at the beginning of the 'Your Opinion' section) indicate that respondents believe it is their responsibility to help protect local water quality (#2), their actions have an impact (#4 & #1) believing that their quality of life depends on it (#7). They do not appear to be willing to sacrifice water quality even if slows economic development (#3). And are only somewhat inclined to change how they do things (#6) and even less likely to want to pay for improvements (#5).

These results suggest a slight disconnect between comprehending the importance of water quality and respondents' willingness to take immediate action or pay to ensure its continuance into the future.

The above questions were used to create constructs. These constructs are designed to elicit a respondent's strength of feelings concerning their attitudes and personal responsibility. The indicator value for an individual respondent is calculated by averaging the values of their responses. Projected values are the average of individual scores. Some of the questions used to score this indicator are scored in reverse because of negative phrasing. The attitude construct has a value range of 1 (low) to 5 (high) while the willingness to take action construct ranges from 1 (low) to 2 (high).

Table 10 - Attitudinal Indicator Results

Ind. #	Indicator	Mean	SD	Valid Responses	Total Responses
2.1	General water-quality-related attitudes	Favorable 3.75	1	2,350	2,350
2.2	Willingness to take action to improve water quality	Positive 1.48	0.3	606	606

SD = standard deviation

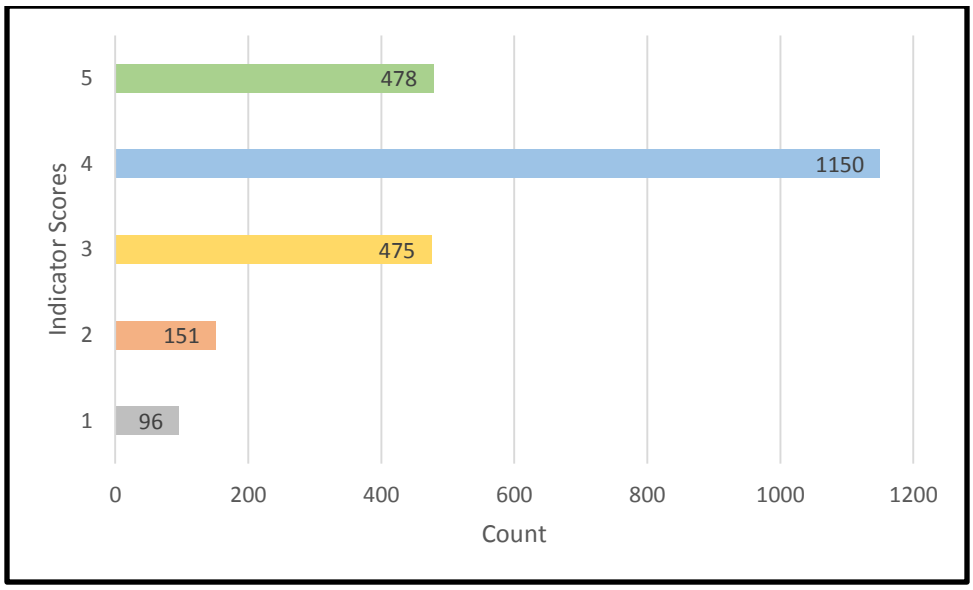


Figure 7 – General Water Quality-Related Attitudes

Respondents indicated generally strong attitudes for each of the attitudinal constructs. They recognized the importance of having good water quality and that their actions impact it. There was also recognition that the cost of protection (economics) influences decisions. Respondents generally felt responsible for their actions that have an impact on water quality.

These findings are encouraging since it commonly requires a high level of conviction by individuals to carry through with their intentions (to protect water quality) if the barriers to implementation are high.

4.0 WATER IMPAIRMENTS

This question asks respondents to indicate from a list, how much of a problem they perceive each of the potential pollutants and conditions to be in their area.

SURVEY QUESTIONS

Below is a list of water pollutants and conditions that are generally present in water bodies to some extent. The pollutants and conditions become a problem when present in excessive amounts. In your opinion, how much of a problem are the following water impairments in your area?

Please indicate with a (√).	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
1. Sedimentation (dirt and soil) in the water					
2. Bacteria and viruses in the water (such as E.coli / coliform)					
3. Oil and grease.					
4. Arsenic					
5. High water temperature					
6. Pesticides					

RESULTS

Table 11 summarizes the results from the survey, and Figure 8 provides the same information in a graphical form. In order to calculate an overall average and standard deviation for each question the responses "not a problem," "slight problem," "moderate problem," and "severe problem" were assigned a numerical point value of 1 through 4 respectively. The "don't know" response was ignored in the computations. A mean and standard deviation (SD) were then computed using the assigned point value. Figure 9 graphs the mean (illustrated as the horizontal bar) and plus/minus one standard deviation (illustrated as the vertical bar) of the resultant score computed for each question.

Table 11 - Perceived Water Impairments

Question and #	Response Category [score] Response Percent					Mean (SD)	Total Responses
	Not A Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know		
	[1]	[2]	[3]	[4]	[5]		
1. Sedimentation (dirt and soil) in the water	22%	16.%	20%	6%	36%	Slight 2.15 (1)	322
2. Bacteria and viruses in the water (such as E.coli / coliform)	15%	11%	19%	18%	37%	Slight - Moderate 2.63 (1.14)	325
3. Oil and grease.	22%	13%	12%	11%	41%	Slight 2.21 (1.15)	324
4. Arsenic	15%	11%	11%	12%	51%	Slight- Moderate 2.39 (1.16)	322
5. High water temperature	26%	8%	9%	4%	53%	Not a Problem - Slight 1.79 (1.02)	319
6. Pesticides	12%	10%	16%	14%	48%	Slight - Moderate 2.61 (1.12)	320

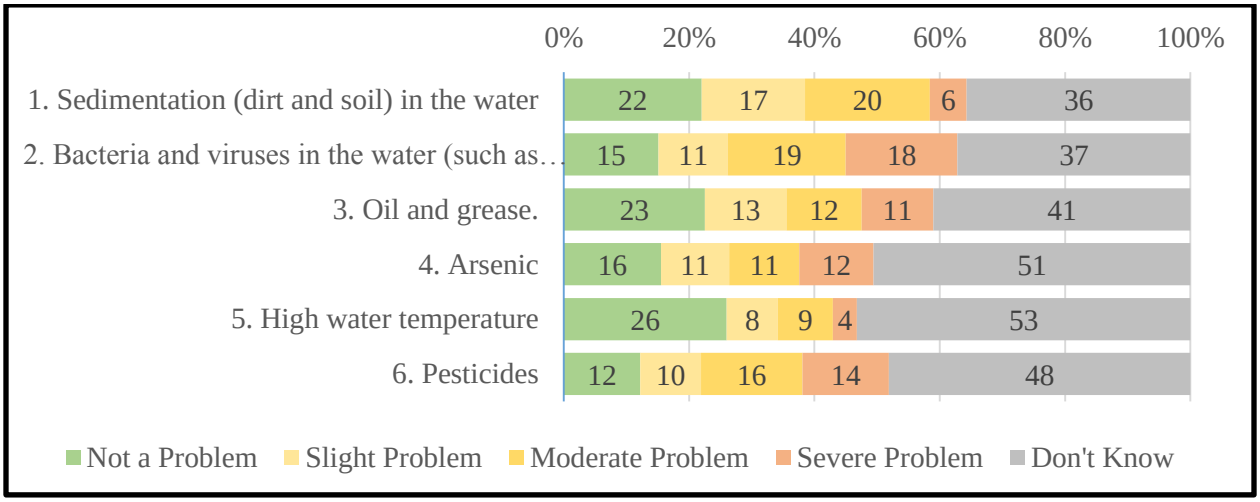


Figure 8 - Perceived Water Impairments

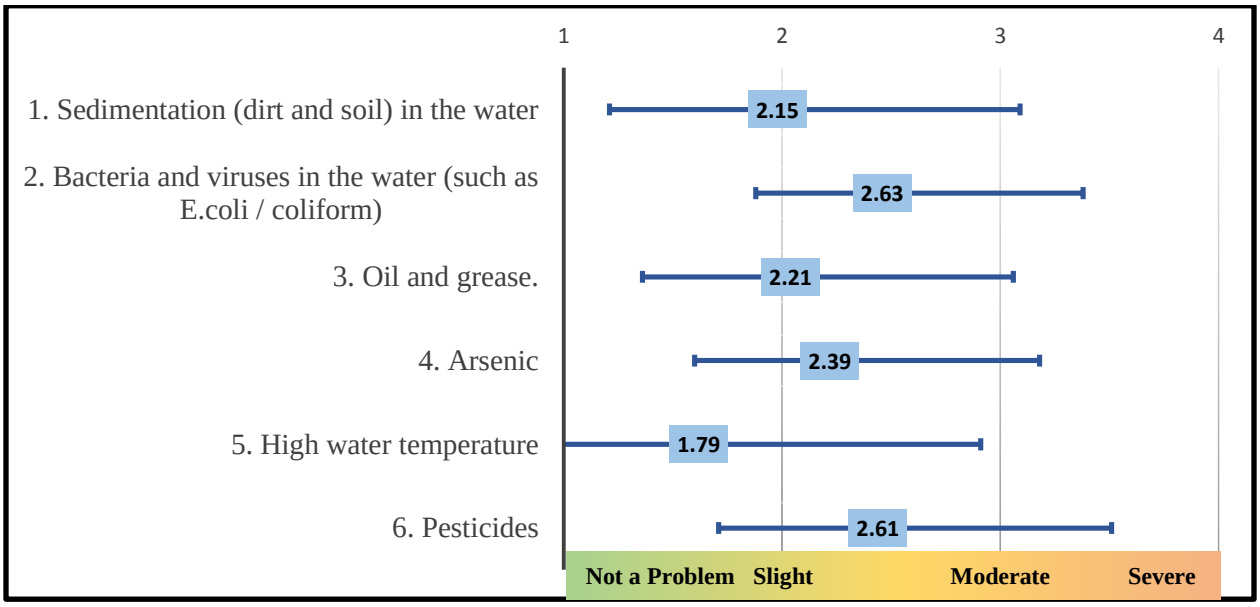


Figure 9 - Averaged Water Impairments Results

ANALYSIS AND OBSERVATIONS

A total of 1,932 responses were provided, however, 856 of these were "don't know" which equates to forty-four percent (44%) of all responses. Pollutants most likely to be marked "don't know" were arsenic and high water temperature. Only *E. coli* (18.8%), and Pesticides (16.2%) were seen by the most respondents as being as moderate problems. The majority of respondents indicated that the following pollutants were Not a Problem: High Water Temperatures (26%); Oil and Grease (22.5); Sediment (22%) and; Arsenic (15.5%). The fact that no pollutant categories were ranked on average by all respondents as being severe, combined with the number of categories that were perceived as not being a problem (when in fact there is strong scientific and anecdotal evidence that they are), suggests that there is a need to continue and maybe even augment the current public education effort.

5.0 SOURCES OF WATER POLLUTANTS

This question asks respondents to indicate from a list how much of a problem they perceive each of the potential sources of pollutants to be in their area.

QUESTIONS

The items listed below are sources of water quality pollution across the County. In your opinion, how much of a problem are the following sources in your area?

Please indicate with a (√).	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
1. Discharges from industry into streams and lakes					
2. Discharges from sewage treatment plants					
3. Soil erosion from construction sites					
4. Soil erosion from shorelines and/or streambanks					
5. Excessive use of lawn fertilizers and/or pesticides					
6. Grass clippings and leaves entering storm drains					
7. Improper disposal of household wastes (chemicals, batteries, florescent light bulbs, etc.)					
8. Improper disposal of used motor oil and/or antifreeze					
9. Improperly maintained septic systems					
10. Waste material from pets					
11. Urban stormwater runoff					

RESULTS

Table 12 summarizes the results from the survey and Figure 10 provides the same information in a graphical form. In order to calculate an overall average and standard deviation for each question, the responses "not a problem," "slight problem," "moderate problem," and "severe problem" were assigned a numerical point value of 1 through 4 respectively. The "don't know" response was ignored in the computations. A mean and standard deviation (SD) were then computed using the assigned point value. Figure 11 graphs the mean (illustrated as the horizontal bar) and plus/minus one standard deviation (illustrated as the vertical bar) of the resultant score computed for each question.

Table 12 - Perceived Water Pollution Sources

Question and #	Response Category [score] Response Percent					Mean (SD)	Total Responses
	Not A Problem [1]	Slight Problem [2]	Moderate Problem [3]	Severe Problem [4]	Don't Know [5]		
1. Discharges from industry into streams and lakes	17%	13%	18%	17%	35%	Moderate 2.54 (1.14)	326
2. Discharges from sewage treatment plants	17%	10%	18%	16%	39%	Moderate 2.55 (1.15)	325
3. Soil erosion from construction sites	20%	19%	17%	6%	38%	Slight 2.17 (1)	322
4. Soil erosion from shorelines and/or streambanks	20%	20%	17%	6%	37%	Slight 2.17 (0.98)	322
5. Excessive use of lawn fertilizers and/or pesticides	7%	18%	27%	15%	33%	Moderate 2.72 (0.93)	322
6. Grass clippings and leaves entering storm drains	15%	22%	25%	10%	28%	Slight - Moderate 2.41 (0.96)	323
7. Improper disposal of household wastes (chemicals, batteries, florescent light bulbs, etc.)	11%	14%	20%	15%	40%	Moderate 2.65 (1.05)	323
8. Improper disposal of used motor oil and/or antifreeze	12%	16%	18%	15%	39%	Moderate 2.59 (1.07)	324
9. Improperly maintained septic systems	16%	13%	15%	8%	48%	Slight 2.27 (1.06)	322
10. Waste material from pets	22%	18%	15%	6%	38%	Slight 2.09 (1)	321
11. Urban stormwater runoff	16%	13%	18%	10%	42%	Slight 2.37 (1.07)	323

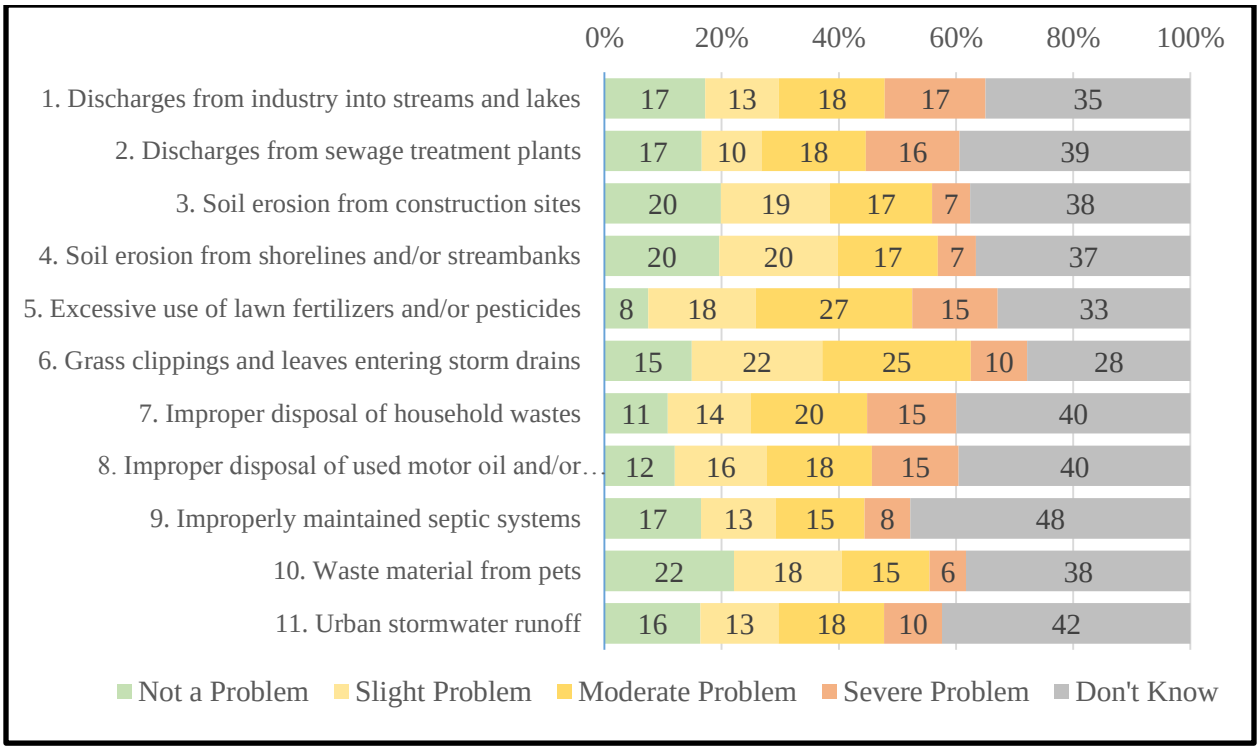


Figure 10 - Perceived Sources of Water Pollutants

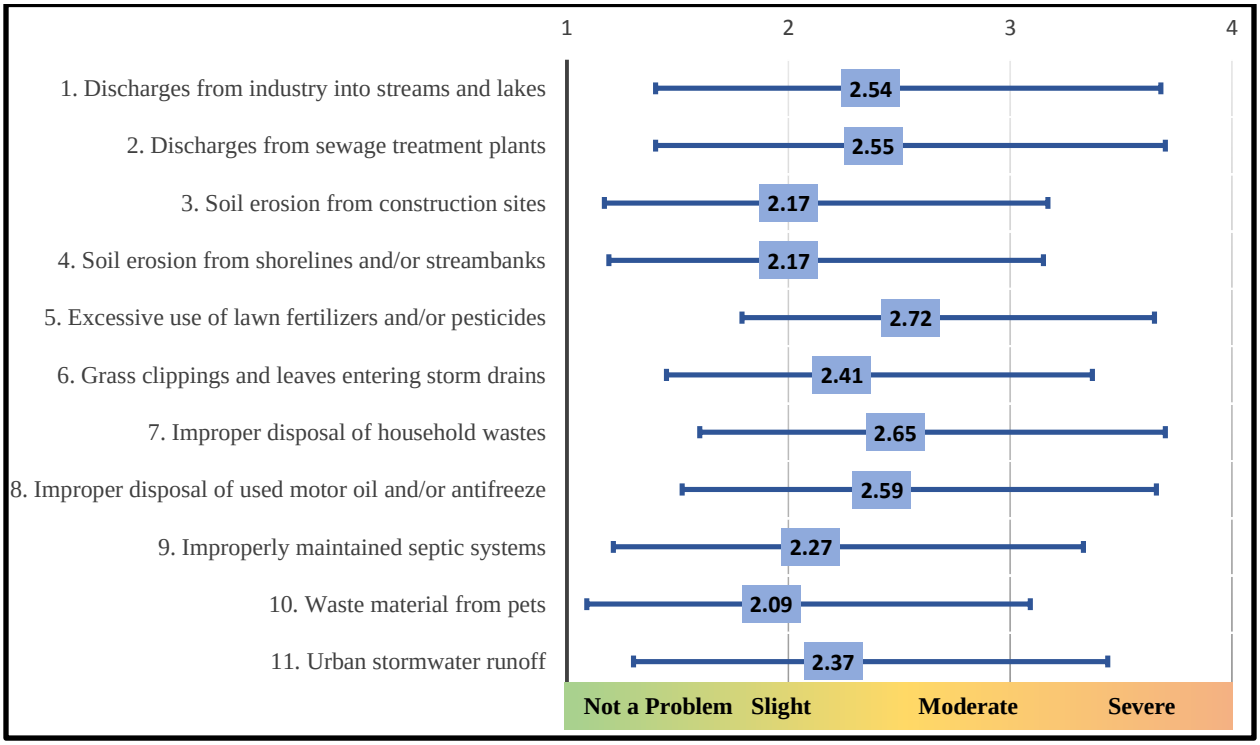


Figure 11 - Averaged Sources of Water Pollutants

ANALYSIS AND OBSERVATIONS

Out of a possible 11 questions, a total of 3,553 responses were received. However, 40% of these were "don't know".

The most frequently marked source as "don't know" was *improperly maintained septic systems (47.8%)*; and *urban runoff (42.4%)*. Respondents ranked the all of the other sources except *grass clippings and leaves* (27.9%) as "don't know" for over 35% of the time.

There were no problems rated as "severe' when all respondents' answers were averaged. The top "moderate problem" sources identified by were *excessive use of lawn fertilizers and/or pesticides* (26.7%) and *grass clippings and leaves entering storm drains* (25.4). The remainder of the pollutant sources were ranked as either slight problems of not a problem.

When considering the assigned point value of the responses and averaging the data together, the sources ranked highest were: *excessive use of lawn fertilizers and/or pesticides* (2.72), improper disposal of household wastes (2.65); improper disposal of used motor oils and/or antifreeze (2.59) and discharges from sewage treatment plans (2.55) and industry (2.54).

Overall, the responses seem to indicate that a lack of knowledge about pollutants and local water ways, with about 40% of respondents' indicating they didn't feel comfortable enough to make an informed evaluation about the listed pollutant impacts. Note this is not necessarily that they didn't know that these pollutants were bad but more likely a case that they did not have sufficient knowledge of the impacts themselves.

6.0 CONSEQUENCES OF WATER POLLUTANTS

This series of questions asks respondents to indicate from a list, how much of a problem they perceive each of the consequences of poor water quality to be in their area.

QUESTIONS

Poor water quality can lead to a variety of consequences for communities. In your opinion, how much of a problem are the following issues in your area?

Please indicate with a (√).	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
1. Beach closures					
2. Contaminated fish					
3. Reduced beauty of lakes or streams					
4. Reduced quality of water recreation activities					
5. Excessive aquatic plants or algae					
6. Odor					
7. Lower property values					

RESULTS

Table 13 summarizes the results from the survey, and Figure 12 provides the same information in a graphical form. In order to calculate an overall average and standard deviation for each question, the responses “not a problem”, “slight problem”, “moderate problem”, and “severe problem” were assigned a numerical point value of 1 through 4 respectively. The “don’t know” response was ignored in the computations. A mean and standard deviation (SD) were then computed using the assigned point value. Figure 13 graphs the mean (illustrated as the horizontal bar) and plus/minus one standard deviation (illustrated as the vertical bar) of the resultant score computed for each question.

Table 13 - Consequences of Water Pollutants

Question and #	Response Category [score] Response Percent: Not A Problem [1]	Slight Problem [2]	Moderate Problem [3]	Severe Problem [4]	Don't Know [5]	Mean (SD)	Total Responses
1. Beach closures	25%	19%	27%	13%	17%	Slight 2.32 (1.06)	327
2. Contaminated fish	18%	12%	18%	17%	35%	Slight - Moderate 2.52 (1.15)	326
3. Reduced beauty of lakes or streams	23%	24%	28%	10%	16%	Slight 2.29 (0.99)	326
4. Reduced quality of water recreation activities	21%	20%	28%	11%	20%	Slight 2.37 (1.02)	326
5. Excessive aquatic plants or algae	13%	17%	24%	16%	30%	Moderate 2.61 (1.04)	324
6. Odor	24%	18%	17%	16%	25%	Slight 2.34 (1.13)	322
7. Lower property values	25%	12%	14%	20%	30%	Slight - Moderate 2.40 (1.23)	326

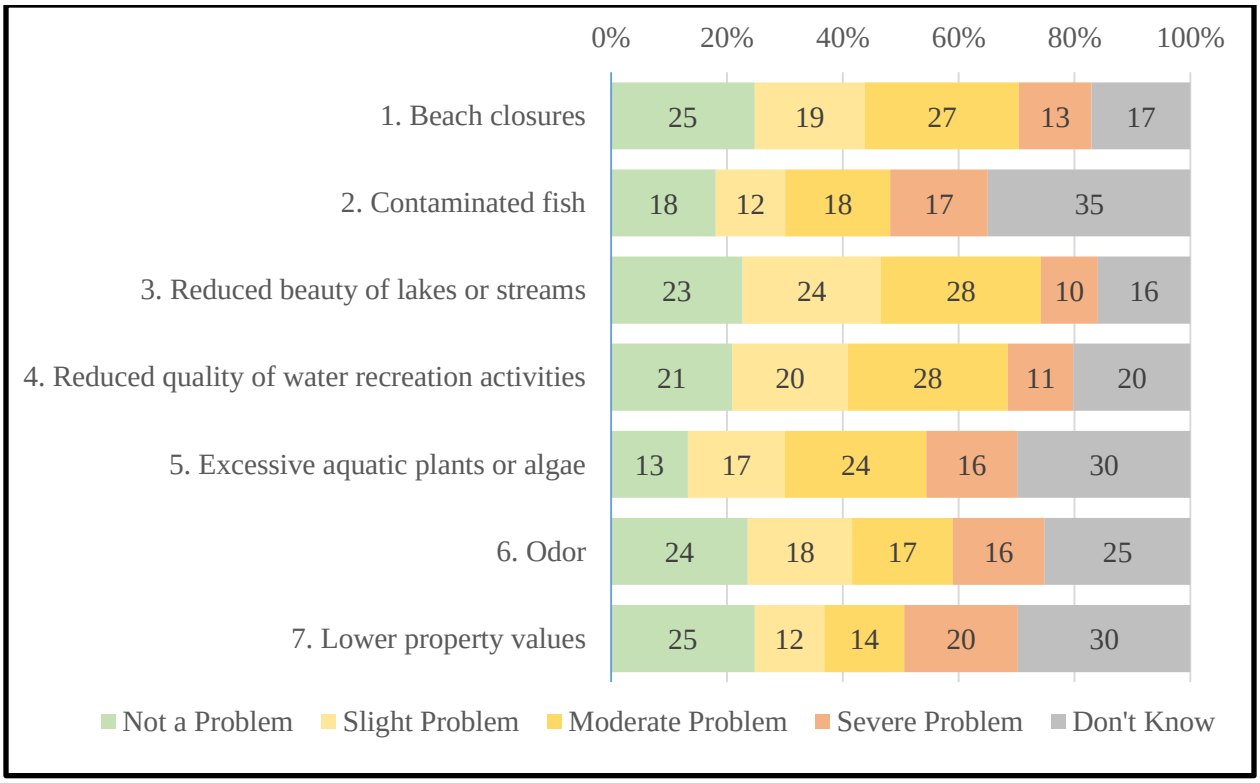


Figure 12 – Perceived Consequences of Water Pollutants

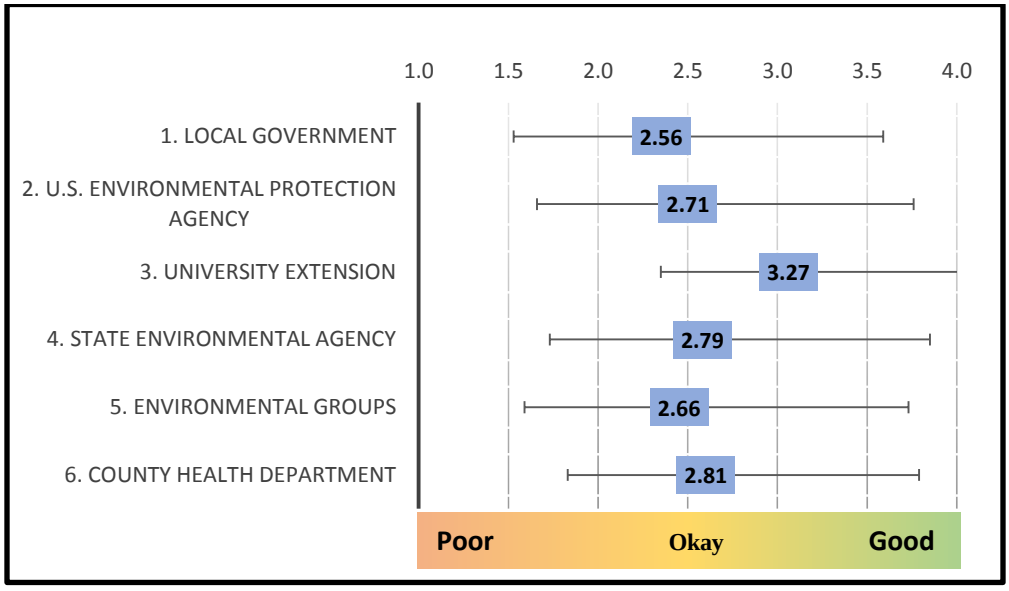


Figure 13 - Average Consequences of Water Pollutants

ANALYSIS AND OBSERVATIONS

Out of a possible 7 questions, there was a 94% response rate. On average twenty-five percent (24.7%) of these were "don't know." More than a third of respondents indicated that they did not know if the following problems were in their area: *contaminated fish* (35%),

Respondents indicated that the top two issues that were "not a problem" were *lower property values* (24.8%), and *odor* (23.6).

Most of the consequences were viewed by respondents as being moderate problems with *reduced beauty of lakes or streams* (27.6%), *reduces quality of water recreation activities (27.6%), beach closures (26.6%)* and *excessive aquatic plants or algae (24.4%).*

When considering the assigned point value of the responses and averaging the data together, the perceived problem that ranked highest was *excessive aquatic plants or algae*.

7.0 PRACTICES TO IMPROVE WATER QUALITY

Property owners were asked their opinion on nineteen (13) stormwater management practices. The questions are intended to measure overall awareness, experience, and willingness to use practices tied to improving water quality. Respondents were asked to indicate one of the following: does not apply; never heard of it; I've heard of it, but I'm not very familiar with it; I am familiar with it, but I've never done it; I have tried it, but I no longer do it; I currently use it.

QUESTIONS

Please indicate which statement most accurately describes your level of experience with each practice listed below.

Please indicate with a (√).	**Not relevant for my property**	**Never heard of it**	**Somewhat familiar with it**	**Know how to use it; *not using it***	**Currently use it**
1. Following the manufacturer's instructions when fertilizing lawn or garden					
2. Keep grass clippings and leaves out of the roads, ditches, and gutters					
3. Follow pesticide application instructions for lawn and garden					
4. Recycle automotive oil					
5. Properly dispose of pet waste					
6. Properly dispose of household waste (chemicals, batteries, florescent lights, etc.)					
7. Plant trees/shrubs					
8. Construct pond					
9. Protect streambanks and/or shorelines with vegetation					
10. Improve stream habitat					
11. Use vegetated filter strips					
12. Use grass swales					
13. Manage runoff from roofs					

RESULTS

Table 14 presents the average responses from all participants for their current actions for practices to improve water quality.

Table 14 - Practices to Improve Water Quality

Question #	Response Category [score] Response Percent					Mean (SD)	Total Responses
	Not relevant for my property [NA]	Never heard of it [1]	Somewhat familiar with it [2]	Know how to use it; not using it [3]	Currently use it [4]		
1. Following instructions for fertilizing	20%	2%	12%	20%	45%	Familiar 3.38 (0.81)	324
2. Keep grass clippings out of roads, ditches,	15%	4%	12%	12%	57%	Familiar 3.45 (0.89)	326
3. Follow pesticide application instructions	19%	1%	11%	20%	50%	Familiar 3.46 (0.75)	326
4. Recycle automotive oil	27%	2%	5%	11%	56%	Using it 3.65 (0.71)	328
5. Properly dispose of pet waste	35%	8%	6%	10%	41%	Familiar 3.28 (1.07)	319
6. Properly dispose of household waste	7%	1%	18%	12%	62%	Familiar 3.45 (0.85)	328
7. Plant trees/shrubs	18%	4%	11%	13%	53%	Familiar 3.41 (0.91)	322
8. Construct pond	69%	8%	7%	8%	8%	Somewhat Familiar 2.5 (1.15)	321
9. Protect streambanks with vegetation	65%	7%	13%	7%	9%	Somewhat Familiar 2.48 (1.07)	327
10. Improve stream habitat	67%	9%	12%	6%	6%	Somewhat Familiar 2.24 (1.04)	324
11. Use vegetated filter strips	57%	29%	6%	6%	2%	Never Heard 1.55 (0.89)	325
12. Use grass swales	56%	29%	6%	6%	4%	Somewhat Familiar 1.64 (1)	321
13. Manage runoff from roofs	17%	11%	19%	10%	43%	Familiar 3.03 (1.13)	323

ANALYSIS AND OBSERVATIONS

For discussion purposes the responses to the thirteen (13) management practices are organized into the following categories: 1) greater than fifty percent (50%) of the respondents have already adopted the practice 2) mixed results and; 3) greater than forty percent (40%) of respondents indicated that the management practice "does not apply."

Over 50% of Respondent's Currently Use

Questions that fell in this grouping included those on leaves/grass clippings, pesticide instruction, Automotive oil recycling, household waste, and planting trees/shrubs. Response rates range from fifty to sixty-two percent (50% to 62%) in this grouping. There is an aver 20 percent or greater spread between the "currently use" and the "know how to use it; not using it" categories. This illustrates opportunities for additional gains for further adoption of these management practices.

The message for these management practices should be a two pronged approach that 1) positively reinforces the adoption of these practices and 2) communicates the correct management techniques.

Mixed Use

Respondents gave no clear answer for the management practices in the mixed results category. Responses were not distributed evenly throughout the possible answers, but there was a tendency towards either the "does not apply" or "never heard of it" answers. Management practices for *fertilizer instructions, pet waste disposal* and *management of roof runoff* (questions numbers 1, 5 and 13) are in this grouping.

Overall, the responses in this category point to the need for education on basic stormwater management concepts, as well as application techniques. The generally mixed rating in the "know how to use it; not using it" further reinforces this dual need.

Majority of Respondents (greater than 50%) replied "Does Not Apply"

Questions in this grouping included those on a constructed pond, *pet waste, stabilize channel, and shoreline vegetation and structure, habitat, filter strips and swales*. For each of the management practices in this group, the response rate in the "does not apply category" was over forty percent (50%). This indicates that there may not be many opportunities for the public at large to implement these practices. The management practices in this grouping may, in fact, not apply if the landowner does not reside adjacent to a river or have sufficient property for their implementation.

The general willingness to adopt these management practices, even though not all respondents will be able to implement them, points to the need to develop programs targeted to specific residents. That is, educational messages should be tailored and distributed to specific target audiences.

AWARENESS INDICATORS

Awareness Indicators are constructed from responses across questions. The two focuses of these indicators are the "types", "sources", and "consequences" of pollutants as well as the practices to improve water quality. These indicators provide a deeper understanding of respondent perception, knowledge, and actions.

Indicators to measure respondent awareness of the "types", "sources" and "consequences" of pollutants were constructed using the previous sections. An indicator for respondent awareness of the "practices to improve water quality" was also constructed. The indicators were calculated by re-coding the answers (see Table 15 and Table 16) and then summing the new values for each respondent and dividing by the number of responses that "apply", (i.e., the respondent did not indicate "Don't Know" or "Not Relevant" -- the denominator for the Construct Question is the total number of rows for which the individual provided a response other than "Don't Know" or "Not Relevant"). The indicator results are presented below in Table 17 and have a value range from 1-2, less aware - more aware.

Table 15 - Indicator Re-Coding for Types, Sources and Consequences

Indicator	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
Original Value	1	2	3	4	NA
Indicator re-coding	1	1.5	2	2	NA

Table 16 - Indicator recoding for Practices to Improve Water Quality

Indicator	Not relevant for my property	Never heard of it	Somewhat familiar with it	Know how to use it; not using it	Currently use it
Original Value	NA	1	2	3	4
Indicator re-coding	NA	1	1.5	2	2

Table 17 - Awareness Indicators

Indicator	Mean	SD	Valid Responses	Total Responses
Awareness of *types of pollutants* **impairing waterways.**	Slight Problem 1.56	0.4	1,087	1,962
Awareness of *sources of pollutants* **impairing waterways.**	Slight Problem 1.62	0.4	2,239	3,607
Awareness of *consequences of pollutants* **to water quality**	Slight Problem 1.6	0.4	1,740	2,312
Awareness of *appropriate practices* **to improve water quality.**	Somewhat Familiar 1.64	0.4	3,321	4,950

Respondents indicated an overall awareness of pollutants, sources, consequences and the practices available to improve water quality. The gap between their awareness scores and knowledge scores reported points to a lack of confidence in what they think they know is true and being confident enough to make decisions.

These results indicate that although there needs to be a continued general education effort there is also an emerging need for technical information and support aimed at improving local water quality that people can access and implement behavioral changes and building confidence in their actions.

8.0 SEPTIC SYSTEMS

This section is intended to solicit information from respondents owning septic systems, to determine their knowledge and behavior regarding their systems.

QUESTIONS

(Section 11 on the Survey)

1. Do you have a septic system?

- ☐ No **(If you checked here, Skip to Section 12)**
- ☐ Don't Know
- ☐ Yes

2. If you answered 'yes' to the previous question, in what year was it installed? **(it's okay to approximate)**

3. Within the last five years, have you had any of the following problems? (***Check all that apply***)

- ☐ Slow drains
- ☐ Sewage backup in house
- ☐ Bad smells near tank or drain field
- ☐ Sewage on the surface
- ☐ Sewage flowing to ditch
- ☐ Frozen septic
- ☐ Other
- ☐ None
- ☐ Don't know

RESULTS

Table 18 - Septic System Ownership

Do you have a septic system? **(Responses: 322)**

Responses	Response Totals	Response Percentage
No	205	63%
Yes	112	35%
Valid Responses with construction year	88	
Range of construction	1925-2016	
Average year built	1983	
Median year built	1981	
Do not Know	5	2%
Total	**322**	**100%**

Table 19 - Septic System was NOT Working Properly

Within the last five years, have you had any of the following problems? (Check all that apply)- **(Responses: 176)**

Responses	Response Percentage
Slow drains	14%
Sewage backup in house	7%
Bad smells near tank or drain field	3%
Sewage on the surface	1%
Sewage flowing to ditch	1%
Frozen septic	0%
Other	4%
None	77%
Don't know	3%

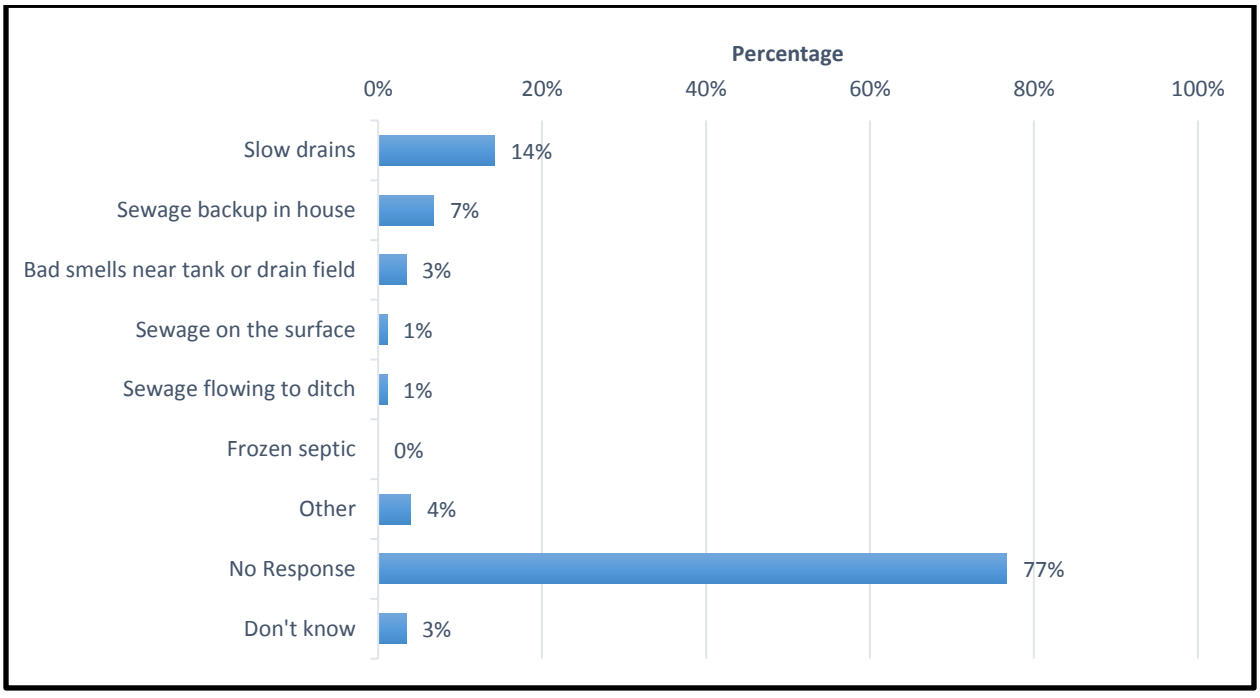


Figure 14 - Septic System Problems

Thirty five percent (34.8%) of property owners had septic systems. The average age for a septic system was 33 years. The median (half the scores are above and half below) is 35 years. These results indicate that there is likely a significant number of aging septic systems (greater than 25 years) that may be contributing bacteria to local waterways.

Over two-thirds (76.7%) of respondents reported that their septic system is functioning properly. This would *suggest* that the majority of the systems are in working order and have been maintained.

ANALYSIS AND OBSERVATIONS

There are many septic systems within the watershed, many of them quite old. They pose a potential threat to local waterways if not maintained properly. Fortunately, a majority of respondents indicated that they believe their systems were in working order. The overwhelming level of trust (+40%; Question 10) for MSU Extension to provide relevant information would seem to point towards voluntary and educational programs as being the preferred management approach.

9.0 SPECIFIC CONSTRAINTS OF PRACTICES

9.1 RAIN GARDENS QUESTIONS

Section 8 on Survey - Rain Garden: A garden that uses native plants to absorb and filter stormwater collected off a roof, parking lot, sidewalk, or driveway.

1. How familiar are you with this practice?

☐ Not relevant
☐ Never heard of it
☐ Somewhat familiar with it
☐ Know how to use it; not using it
☐ Currently use it **(Please skip to the questions below on Rain Barrels)**

2. If the practice is not relevant, please explain why.

3. Are you willing to try this practice?

☐ Yes or already do
☐ Maybe
☐ No

How much do the following factors <u>limit your ability</u> to implement this practice?

Please indicate with a (√).	Not at all	A little	Some	A lot	Don't Know
4. Don't know how to do it					
5. Time required					
6. Cost					
7. The features of my property make it difficult					
8. Insufficient proof of water quality benefit					
9. Desire to keep things the way they are					
10. Physical or health limitations					
11. Hard to use with my farming system					
12. Lack of equipment					

RESULTS

Table 20 - Rain Garden Familiarity

How familiar are you with this practice? **(Responses: 333)**

Responses	Response Percentage
Not relevant	15%
Never heard of it	39%
Somewhat familiar with it	28%
Know how to use it; not using it	12%
Currently use it	6%
Total	**100%**

2. If the practice is not relevant, please explain why?

44 responses - The two most cited reasons were “do not have a garden” and “live in a condo”

Table 21 - Willingness to Adopt Rain Gardens

Are you willing to try this practice? **(Responses: 307)**

Responses	Response Percentage
Yes or already do	23%
Maybe	55%
No	22%
Total	100%

Table 22 - Perceived Barriers to Implementing Rain Gardens

How much do the following factors limit your ability to implement this practice?

Question #	Response Category [score] Response Percent					Mean (SD)	Total Responses
	Not at all [4]	**A little [3]**	**Some [2]**	**A lot [1]**	**Don't Know NA**		
Don't know how to do it	23%	13%	17%	21%	26%	A little- Some 2.52 (1.21)	293
Time required	17%	14%	25%	17%	28%	A little- Some 2.42 (1.09)	293
Cost	14%	11%	21%	24%	31%	Some 2.22 (1.13)	293
The features of my property make it difficult	21%	11%	14%	16%	38%	A little- Some 2.61 (1.2)	292
Insufficient proof of water quality benefit	21%	11%	16%	9%	43%	A little 2.77 (1.11)	285
Desire to keep things the way they are	33%	13%	16%	13%	25%	A little 2.87 (1.16)	287
Physical or health limitations	42%	9%	13%	13%	23%	A little 3.02 (1.18)	293
Hard to use with my farming system	49%	3%	3%	2%	43%	Not at All 3.74 (0.7)	281
Lack of equipment	22%	9%	14%	21%	35%	A little- Some 2.49 (1.25)	284

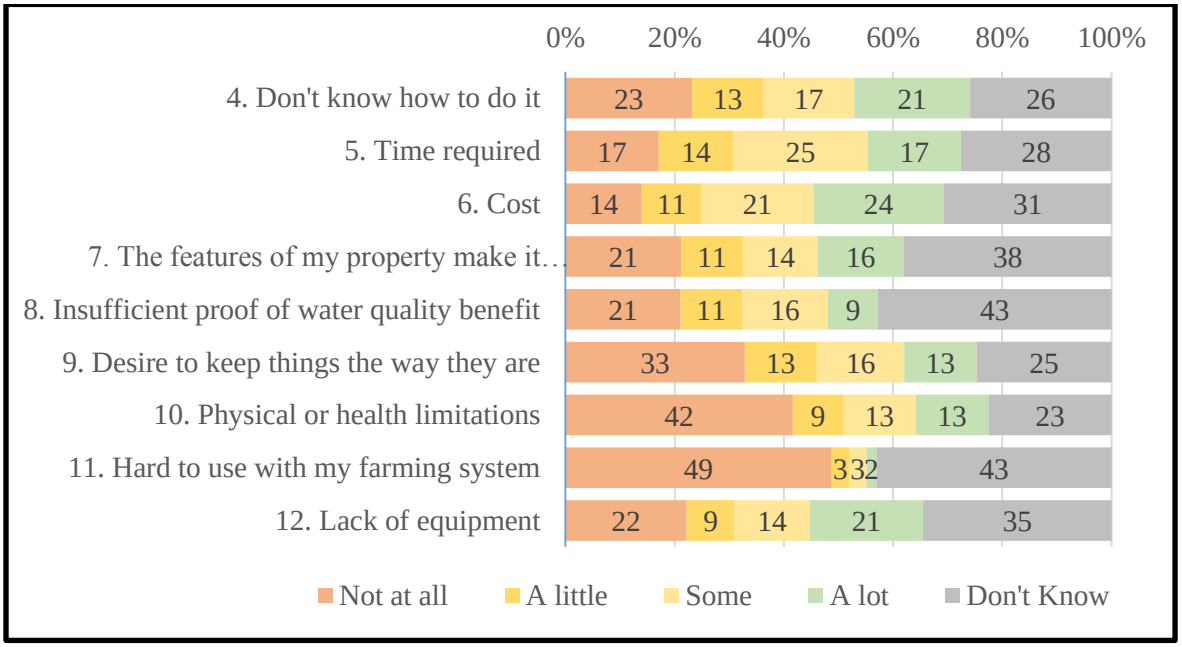


Figure 15 - Perceived Barriers to Implementing Rain Gardens

Almost forty percent (39.3%) of the respondents indicated that they had never heard of a rain garden with another twenty-eight percent (28.2%) indicating that they had only slightly heard of them. Combine this with the fifteen percent (14.8%) that indicated that rain gardens were not relevant to them and the prospect of having a campaign for the public to adopt them as a management practice would likely have low participation.

Over fifty percent of landowners (55.3%) indicated that they might be willing to adopt raingardens as a way to prevent runoff from entering local waterways. The lack of knowledge and willingness to adopt raingardens is reflected in the barriers to adoption responses that indicated that a full (43%) of property owners felt as if they had "insufficient proof of water quality benefit".

ANALYSIS AND OBSERVATIONS

The conclusion to be drawn from these results are that considerable work needs to be done to educate the public about raingardens and their benefits. This includes both general and technical information as well as demonstration projects.

9.2 RAIN BARRELS

Section 8 on Survey - Rain Barrels: Rain barrels are devices designed to collect stormwater from roofs and gutters that can later be used to water a garden, lawn, or house plants.

QUESTIONS

13. How familiar are you with this practice?

- ☐ Not relevant
- ☐ Never heard of it
- ☐ Somewhat familiar with it
- ☐ Know how to use it; not using it
- ☐ Currently use it **(Please skip to Section 9 below)**

14. If the practice is not relevant, please explain why.

15. Are you willing to try this practice?

- ☐ Yes or already do
- ☐ Maybe
- ☐ No

How much do the following factors <u>limit your ability</u> to implement this practice?

Please indicate with a (√).	Not at all	A little	Some	A lot	Don't Know
16. Don't know how to do it					
17. Time required					
18. Cost					
19. The features of my property make it difficult					
20. Insufficient proof of water quality benefit					
21. Desire to keep things the way they are					
22. Physical or health limitations					
23. Hard to use with my farming system					
24. Lack of equipment					

RESULTS

Table 23 - Familiarity with Rain Barrels

13. How familiar are you with this practice? **(Responses: 335)**

Responses	Response Percentage
Not relevant	8%
Never heard of it	8%
Somewhat familiar with it	38%
Know how to use it; not using it	36%
Currently use it	10%
Total	**100%**

14. If the practice is not relevant, please explain why? _____

34 responses - The most cited reason was “live in a condo”

Table 24 - Willingness to Adopt Rain Barrels

15. Are you willing to try this practice? **(Responses: 293)**

Responses	Response Percentage
Yes or already do	20%
Maybe	51%
No	29%
Total	**100%**

Table 25 - Perceived Barriers to Implementing Rain Barrels

How much do the following factors limit your ability to implement this practice?

	Response Category [score] Response Percent						
Question #	Not at all [4]	A little [3]	Some [2]	A lot [1]	Don't Know NA	Mean (SD)	Total Responses
Don't know how to do it	40%	12%	15%	13%	20%	A little 3.00 (1.16)	272
Time required	26%	16%	22%	15%	21%	Some 2.68 (1.13)	270
Cost	23%	13%	19%	21%	23%	A little - Some 2.50 (1.19)	269
The features of my property make it difficult	27%	15%	17%	14%	28%	Some 2.76 (1.15)	272
Insufficient proof of water quality benefit	35%	10%	12%	12%	32%	A little 3.00 (1.17)	269
Desire to keep things the way they are	37%	12%	16%	17%	19%	A little 2.85 (1.2)	271
Physical or health limitations	45%	8%	14%	15%	18%	A little 3.00 (1.21)	278
Hard to use with my farming system	51%	2%	4%	7%	36%	A little – Not at all 3.51 (1.02)	261
Lack of equipment	24%	8%	18%	25%	26%	A little – Not at all 2.41 (1.25)	267

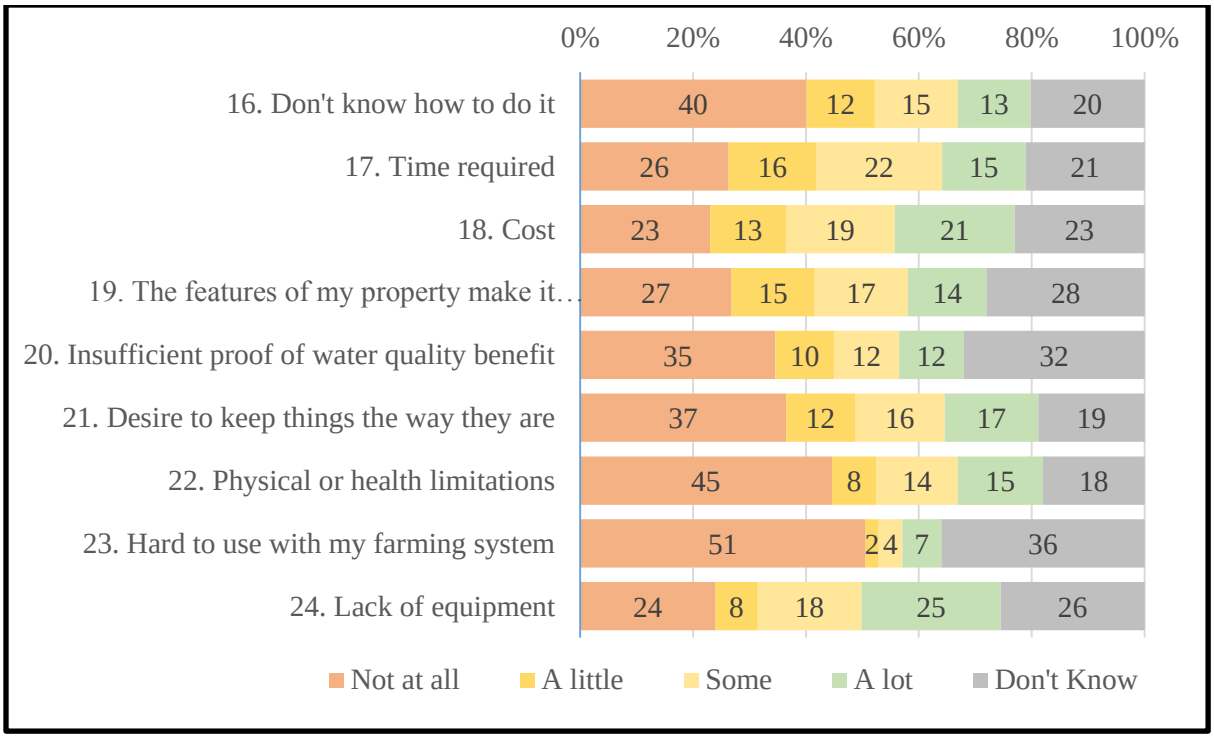


Figure 16 - Perceived Barriers to Implementing Rain Barrels

Over thirty-five percent of respondents said that they were familiar (37.8%) with or know how to use but are not using (35.4%) rain barrels. Yet, only ten percent are using them. Another ten percent said that they would use one (20.1%-10.2%) while fifty percent of the remaining sixty three percent (37.8%+35.4% - 10.2%) said they might try them. The major barriers to implementation were cited as being cost (2.5) and lack of equipment (2.41)

ANALYSIS AND OBSERVATIONS

The conclusion to be drawn from these results are that people know what rain barrels are and appear open to using them. The barrier to implementation seems to be cost. This point towards rain barrel "giveaways" and accompanying technical information on how to implement them as being an effective method to encourage adoption.

10.0 REPORTED BEHAVIOR

The following section summarizes respondents' self-reported behavior. This is accomplished through constructing indicators from questions that relate to the same concept. The purpose of these indicators is to determine if people are engaging in the desired behavior and if they are not, is it because of their lack of familiarity.

An indicator was constructed using the responses to respondent familiarity with rain barrels and gardens. The indicator was re-coded is shown in Table 26.

Table 26 - Behavioral Coding

Indicator	Not Relevant for my Property	Never heard of it	Somewhat familiar with it	Know how to use it; not using it	Currently use it
Original Value	9	1	2	3	4
Indicator Re-coding	0	0	0	0	1

The total number of responses equals the total number of responses to questions in "Practices to improve Water Quality" and each "How familiar are you with this practice' in the "Specific Constraints of Practices". The *Valid Responses* equal the number of non-"Not Relevant" responses among the total responses. The percent is the *Valid Responses* divided by the *Total Responses.*

Table 27 - BMP Behavior Indicator

Indicator	Percent	Valid Responses	Total Responses
Percentage of target audience implementing practices in critical areas	30.83	3,334	4,965

Results

Approximately 30% of the respondents are currently implementing practices to improve water quality.

Analysis and Observations

Since this indicator incorporates both every day practices and more specific ones (rain barrels and gardens) the assumption is that the latter is dragging down respondent percentage of use. The relevant responses for those currently implementing "Practices to Improve Water Quality" ranged from 40% - 62%. Having noted this, there exists significant room for improvement in the public's behavior. It is recommended that the current education program (seven habits) continue and look for additional avenues and methods for communicating with the public.

11.0 MAKING MANAGEMENT DECISIONS

This set of questions was required and is designed to collect information regarding the constraints individuals have for implementing practices to improve water quality. There were nine (9) questions.

In general, how much does each issue <u>limit your ability</u> to change your management practices?

Please indicate with a (√).	Not at all	A little	Some	A lot	Don't Know
1. Personal out-of-pocket expense					
2. My own physical abilities					
3. Not having access to the equipment that I need					
4. No one else I know is implementing the practice					
5. Approval of my neighbors					
6. Don't know where to get information and/or assistance about those practices					
7. Legal restrictions on my property					
8. Concerns about resale value					
9. The need to learn new skills or techniques					

And seven more on the disposal of material:

What is the most appropriate disposal method for the following:

Please indicate with a (√).	Curbside Pickup	Throw away in regular garbage that goes to a	Take to Household Hazardous Waste events in your community	Recycle box-center	Compost {yard waste-food}	Dump in commercial bin or on vacant land	Do not know
10. Unused pesticides-fertilizers							
11. Antifreeze							
12. Used/ Unused engine oil							
13. Pet waste							
14. Dry latex paint							
15. Oil paint							
16. Unused cleaning products-chemicals							
17. Leaves-grass clippings-year waste							

The following summarizes the responses received.

In general, how much does each issue limit your ability to change your management practices?

Question #	Not at all [4]	A little [3]	Some [2]	A lot [1]	Don't Know [9]	Mean (SD)	Total Responses
1. Personal out-of-pocket expense	11%	12%	32%	35%	10%	Some 1.99(1)	310
2. My own physical abilities	33%	14%	22%	22%	9%	Some - A little 2.64 (1.2)	315
3. Not having access to the equipment that I need	13%	14%	27%	30%	16%	Some 2.12 (1.06)	308
4. No one else I know is implementing the practice	36%	9%	13%	16%	26%	Some - A little 2.88 (1.23)	308
5. Approval of my neighbors	53%	6%	12%	7%	23%	A little 3.34 (1.04)	305
6. Don't know where to get information and/or assistance about those practices	25%	14%	22%	16%	23%	Some - A little 2.62 (1.14)	305
7. Legal restrictions on my property	39%	5%	10%	10%	36%	A little 3.14 (1.17)	303
8. Concerns about resale value	40%	10%	14%	11%	26%	A little 3.04 (1.16)	306
9. The need to learn new skills or techniques	36%	13%	19%	12%	21%	A little 2.92 (1.13)	303

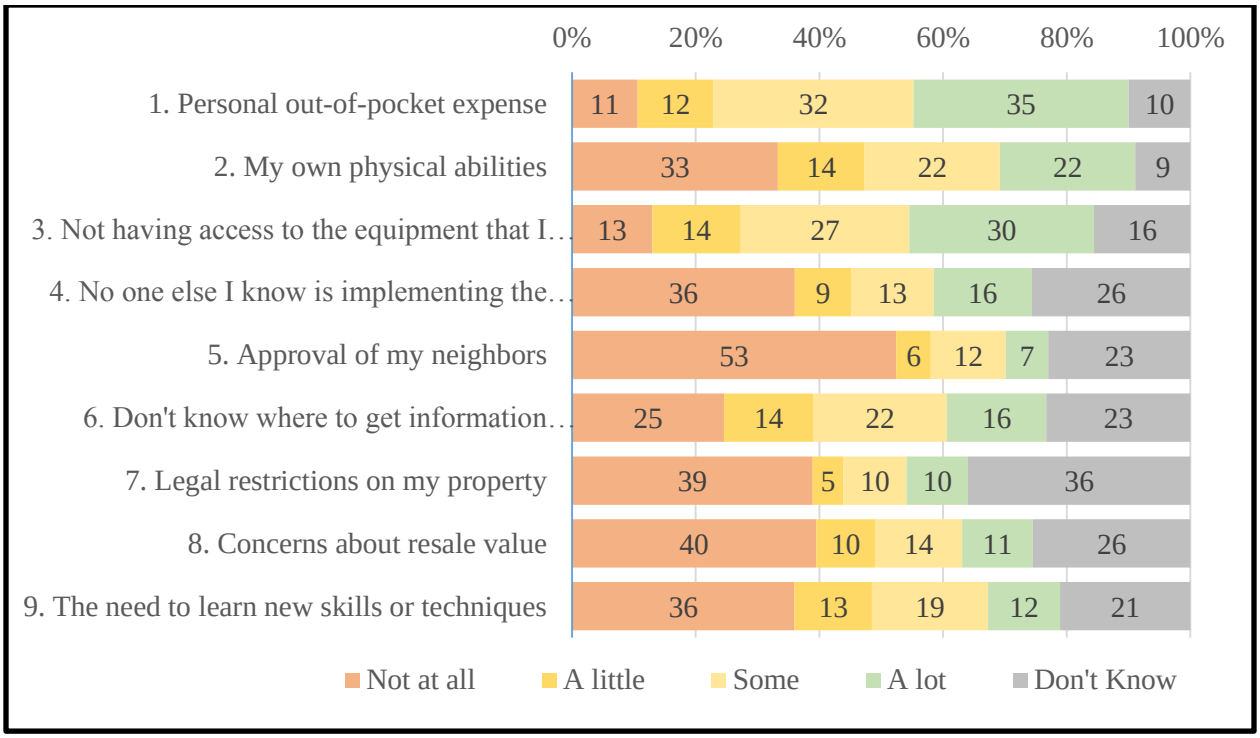


Figure 17 - Perceived Barriers to Implementing Best Management Practices

Respondents selected personal out-of-pocket expense (34.8) and not having access to the equipment I need (29.9%) as being the most significant barriers to implementation. None of the other proposed barriers were seen as being significant (i.e., the 'not at all' category was larger than any one of the other potential responses.).

The following indicators were derived from the answers to the questions in the tables previously presented (shown in the first column below). They are intended to gauge the constraints that people's behavioral change (internal) and external barriers present. The scale ranges from 1 (more constraint) to 4 (less constraint).

CONSTRAINTS

Ind. #	Indicator	Mean	SD	Valid Responses	Total Responses
Table 22 & Table 23	Constraints to *behavior* change;	2.71	1.2	2,203	2,781
Table 21 & Table 24	Constraints to *adopting key practices*	2.79	1.2	3,647	5,085

The indicator results suggest that overall, respondents do not perceive themselves having major constraints to changing their behavior (attitude) nor to adopting key practices (structural). There is a substantial standard deviation on these indicators but results (based on valid responses) are fairly robust and therefore reliable.

Table 28 - Appropriate Disposal Method

What is the most appropriate disposal method for the following:

Question #	Curb side pickup [1]	Throw away in regular garbage that goes to a landfill [2]	Take to Household Hazardous Waste events in your community [3]	Recycle Center [4]	Compost {yard waste-food} [5]	Dump in commercial bin or on vacant land [6]	Do not know [9]	Total Responses
10. Unused pesticides-fertilizers	7%	2%	69%	3%	1%	0%	18%	320
11. Anti-freeze	5%	1%	72%	5%	0%	0%	16%	319
12. Used-unused engine oil	4%	1%	70%	14%	0%	0%	11%	312
13. Pet waste	15%	27%	6%	0%	18%	3%	32%	308
14. Dry latex paint	15%	19%	50%	4%	0%	0%	12%	315
15. Oil paint	4%	2%	75%	5%	0%	0%	14%	318
16. Unused cleaning products-chemicals	5%	5%	72%	6%	0%	0%	12%	316
17. Leaves-grass clippings-year waste	41%	3%	1%	2%	46%	3%	5%	320

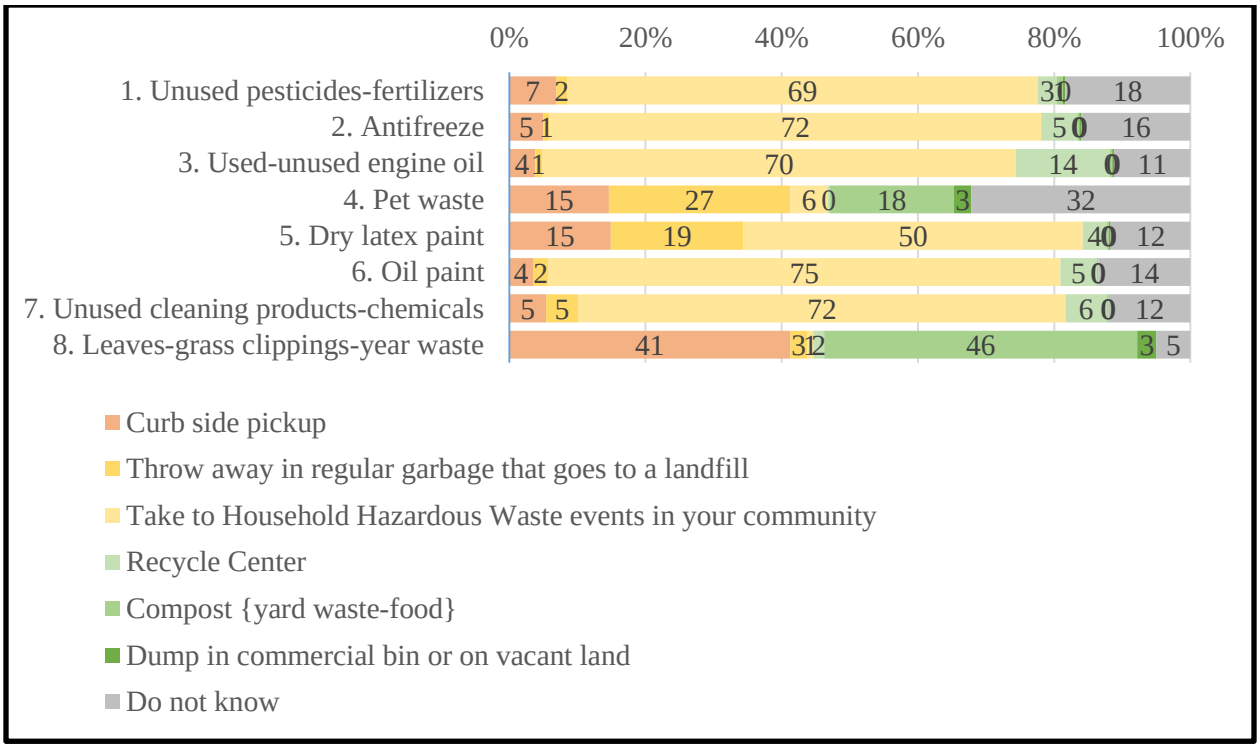


Figure 18 - Appropriate Disposal Method

Results

Each category needs to be viewed as separate and unique to determine if people are properly disposing of the waste. For example, 76% of people knew the proper method of disposal of used pesticides-fertilizers but due to the small amounts of these products required to pollute water it would be best if this number was closer to 100%. Similar reasoning applies to Antifreeze (77%), Engine Oil (87%), Oil paint (79%), and Unused cleaning products (77%).

Pet waste disposal results were varied with only 60% knowing one of the proper disposal methods and a full 32% that 'did not know'.

People struggled with how to dispose of latex paint with 50 % saying that it was a hazardous waste. Latex paint, once dry can be disposed of curbside and is not toxic.

Eighty-seven percent of people knew how to dispose of leaves-grass clippings.

Analysis and Observations

It is important to remember that although over 70% of respondents indicated they knew what the most appropriate method of disposal is, they may not necessarily be doing so. Maintaining low barriers to use of these methods helps insure they are in fact used. Furthermore, how methods are communicated to the public might need to be examined. The relatively high number of people (>10%) that did not know the proper method for disposal for seven waste items points to a need for a possible expansion of the delivery vehicles.

12.0 INFORMATION SOURCES

The question pertaining to information sources helps us to understand what sources the public trusts to give them information regarding water quality issues. The policy question is designed to better understand the actions that might be undertaken by local government that would be supported (or not) by the public. This question is similar to one asked in a previous survey of the watershed in 2004.

The question was:

People get information about water quality from a number of different sources. To what extent do you trust those listed below as a source of information about soil and water?

Please indicate with a (√).	Not at all	Slightly	Moderately	Very much	Am not familiar
1. Local government					
2. U.S. Environmental Protection Agency					
3. University Extension – MSU					
4. State environmental agency – DEQ, DNR					
5. Environmental groups –e.g. Flint River Watershed Coalition					
6. County Health Department					

Below is the summary of the responses.

Table 29 - Information Sources Level of Trust

People get information about water quality from a number of different sources. To what extent do you trust those listed below as a source of information about soil and water?

Question #	Not at all (1)	Slightly (2)	Moderately (3)	Very much (4)	Am not familiar (9)	Mean (SD)	Total Responses
1. Local government	18%	25%	30%	20%	8%	Slight - Moderate 2.56 (1.03)	319
2. USEPA	16%	19%	31%	25%	9%	Moderate 2.71 (1.05)	320
3. University Extension	6%	11%	23%	46%	15%	Moderate 3.27 (0.92)	319
4. State environment agency	15%	16%	31%	27%	11%	Moderate 2.79 (1.06)	317
5. Environmental groups	16%	19%	27%	23%	15%	Slight - Moderate 2.66 (1.07)	319
6. County Health Department	12%	17%	38%	25%	8%	Moderate 2.81 (0.98)	318

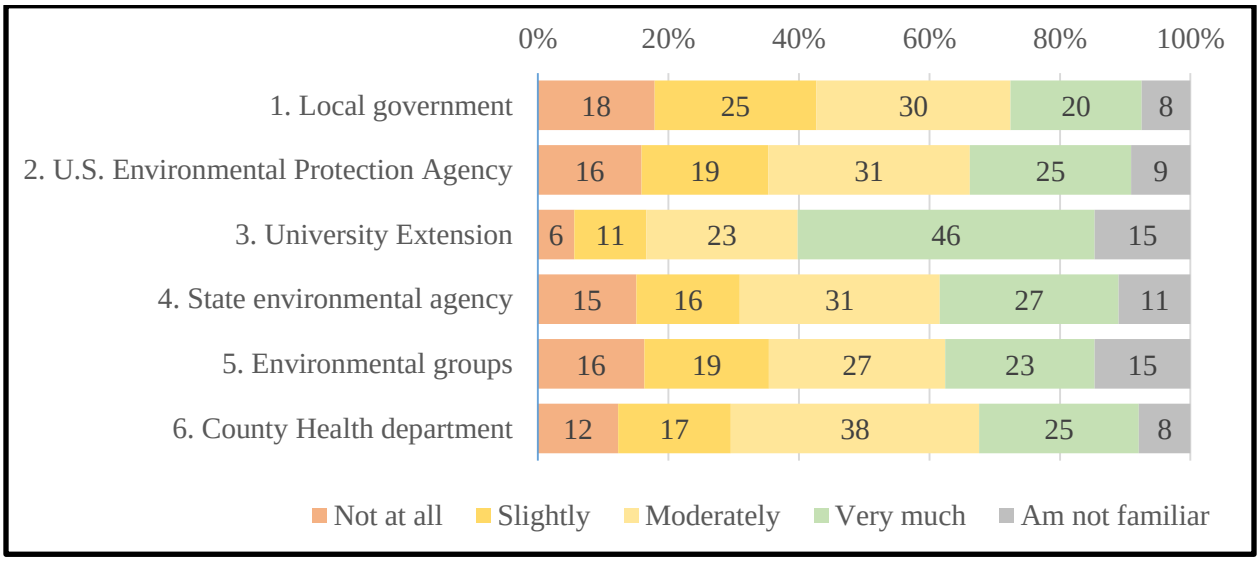


Figure 19 - Information Source Level of Trust

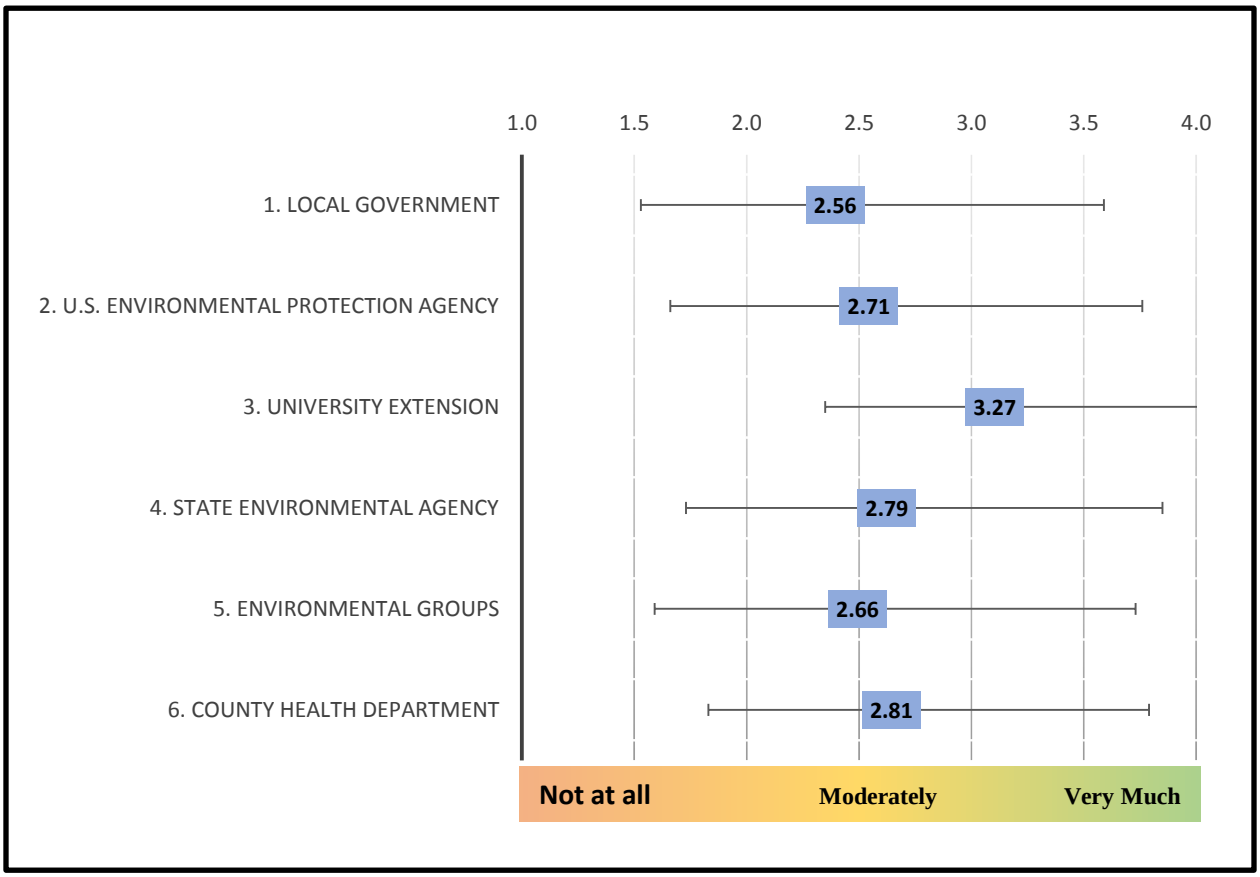


Figure 20 - Average Information Source Level of Trust

Results

Michigan State Extension was the identified as the most trusted source of information, by about 18% over the next closest agency (state environmental). If the "moderately' and "Very Much" are combined the remainder of the source agencies all fall in the 50% - 63% range, with the County Health Department ranking highest (62.6%) followed by the State Environmental agency (MDEQ) at 58%.

Analysis and Observations

The primary disseminators of information with regard to stormwater management are the Drain Commissioner's Office and the Flint River Watershed Coalition. Both sources were rated by respondents as being in the moderate rage with regard to trust. This has implications with how messages/information is distributed; supporting sources should always be clearly cited, thus lending credibility to the message.

It is also recommended that MSU Extensions and the County Health Department's roles be expanded/strengthened based on the respondent reported trust level. Partnering for the purposes of disseminating information as well as joint events are two possible actions that might be explored.

Comparison of 2006 to 2016 Survey

Most of the above set of questions were asked in the 2006 social survey. Table 30 compares the results between the two surveys. There are some significant differences and it should be noted that the 2006 survey was administered via the telephone while the 2016 was a mail survey. Different methodologies often produce different results, mainly due to the respondents' comfort level regarding privacy. Furthermore, the sample selection was different; the 2006 sample was taken from a provided phone list and contained a wider age range while the 2016 survey sample was derived from the County Assessor's office.

Table 30 - Comparison of Agency Trust between 2006 and 2016

	2006			2016		
Question #	Mean	Total Responses	Ranking	Mean	Total Responses	Ranking
Local government	2.72	279	1	2.56	319	5
University Extension	2.11	261	2	3.27	319	1
State environmental agency	1.62	273	5	2.79	317	3
Environmental groups	2.09	256	3	2.66	319	4
County Health Department	1.77	276	4	2.81	318	2

Results

There are some strikingly noticeable differences between the two surveys. In 2006, Local governments were ranked number one by respondents while in 2016 they came in last. The next largest difference is with the state environmental agencies which were ranked (5) last in 2006 and third in 2016. Conversely, the County Health Department rose from fourth to second in ranking. Environmental groups received a middling ranking in both surveys, while MSU Extension was consistent at first and second. Overall, the levels of trust for all agencies were reportedly higher in 2016 over 2006.

Analysis and Observations

The question is, what can be concluded from these mixed results and the only safe conclusion is that MSU-Extension is a trusted source of information. The previous recommendations for the 2016 survey are reinforced by the above findings, mostly because there is no one agency that respondents overwhelmingly trust.

INFORMATION MEDIA TYPES

The 2006 telephone survey asked what media type that respondents found most convenient (1 = very convenient to 5 = not convenient), while the 2016 asked where they would likely seek information (check all that apply). For the purposes of comparison the percentage of very convenient responses from the 2006 was used. Workshops/demonstrations/meetings, conversations with others, and none of the above were not in the 2006 survey.

Table 31 - Information Format

Where are you likely to seek information about water quality issues? (mark all applicable responses)
N = 328

Responses	Response % 2006	Response % 2016
Newsletters/brochure/fact sheet	49.1	47.6%
Internet	58.3	47.9%
Radio	43.3	16.5%
Newspapers/magazines	47.1	37.8%
Workshops/demonstrations/meetings	-	9.1%
Conversations with others	-	33.8%
None of the above	-	13.7%

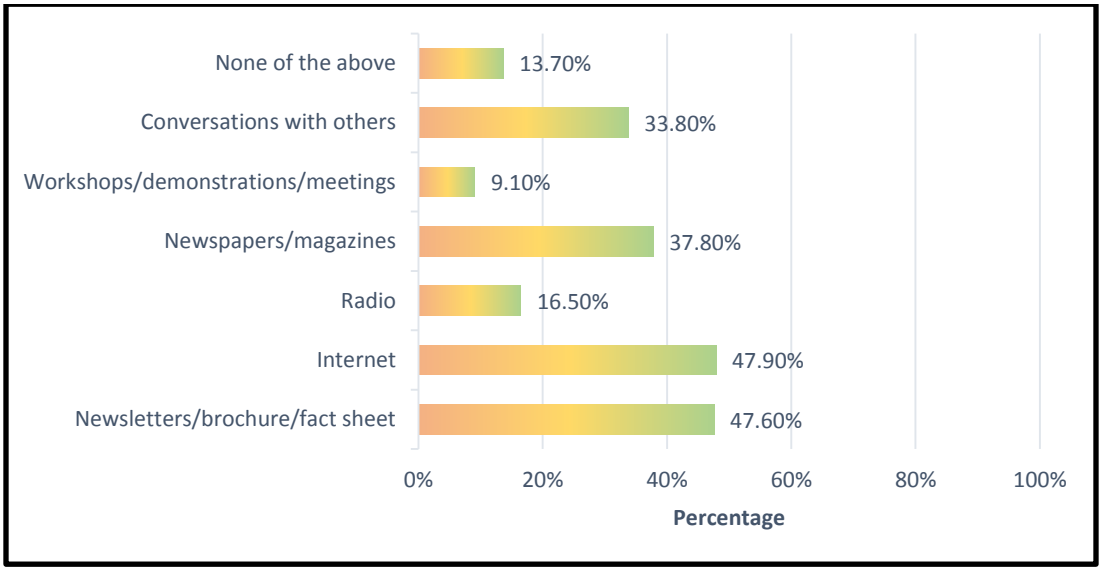


Figure 21 - Avenue Where Information is Sought 2016

Results

Table 31 summarizes the results from the survey and Figure 21 provides the same information in a graphical form. Newsletters/brochure/fact sheet and the internet were the leading preferred formats, followed by newspapers/magazines and conversations with others.

Analysis and Observations

The top two preferred information formats are indeed the primary avenues that the "Our Water" group disseminates information. Cross pollinating between the two is therefore recommended. Other vehicles need to always refer to these two primary methods of information. Based on the results from the 2006 survey, newspapers/magazines should be a part of the media methods employed. Radio appears to have a declining audience.

13.0 ABOUT YOU

This section asks a series of questions designed to collect demographic information from respondents in order to compare them to the census data. This will help to determine if the survey sample is representative.

Do you make the home and lawn care decisions in your household? N = 325

Responses	Response Percentage
No	11%
Yes	89%
Total	**100%**

What is your gender? = 321

Responses	Response Percentage
Male	60%
Female	40%
Total	**100%**

What is your age? N = 307

Responses	Response
Mean	59.68
SD	14.49
Range	23 - 70
Total	**100%**

What is the highest grade in school you have completed? N = 311

Responses	Response Percentage
Some formal schooling	3%
High school diploma/GED	22%
Some college	24%
2 year college degree	12%
4 year college degree	21%
Post-graduate degree	19%
Total	**100%**

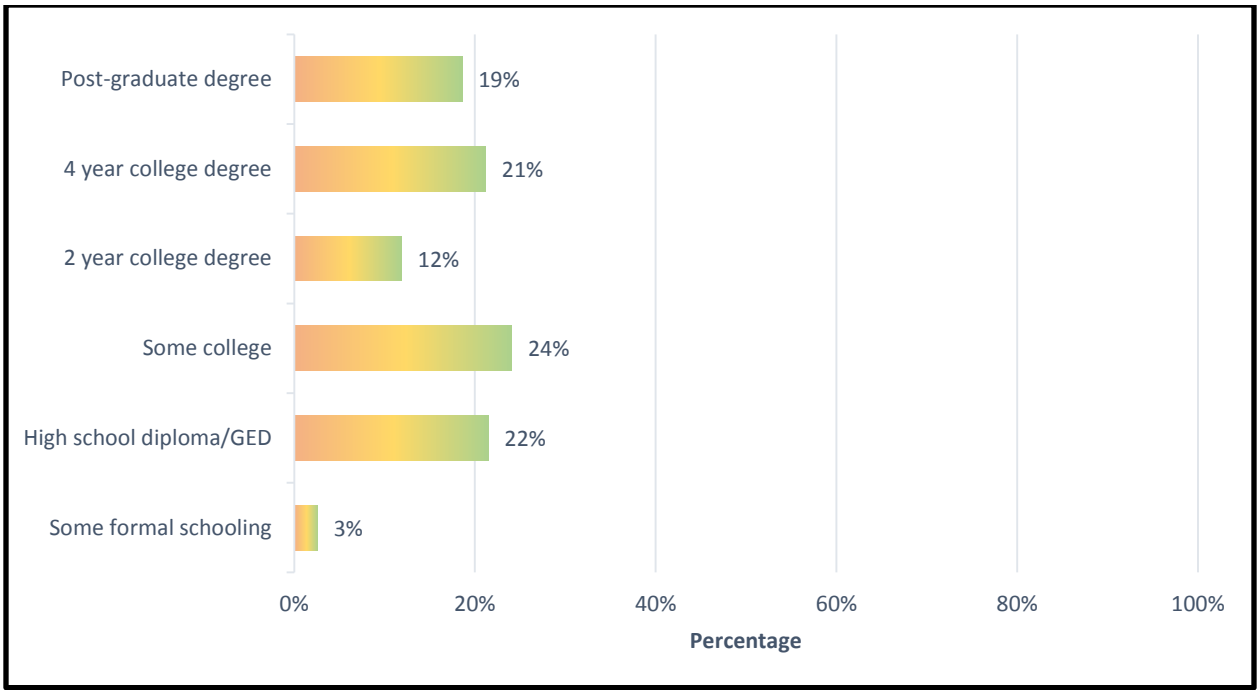


Figure 22 - Level of Education

What was your total household income last year?

Responses	Response Percentage
Less than $24,999	12%
$25,000 to $49,999	26%
$50,000 to $74,999	24%
$75,000 to $99,999	15%
$100,000 or more	23%
Total	**100%**

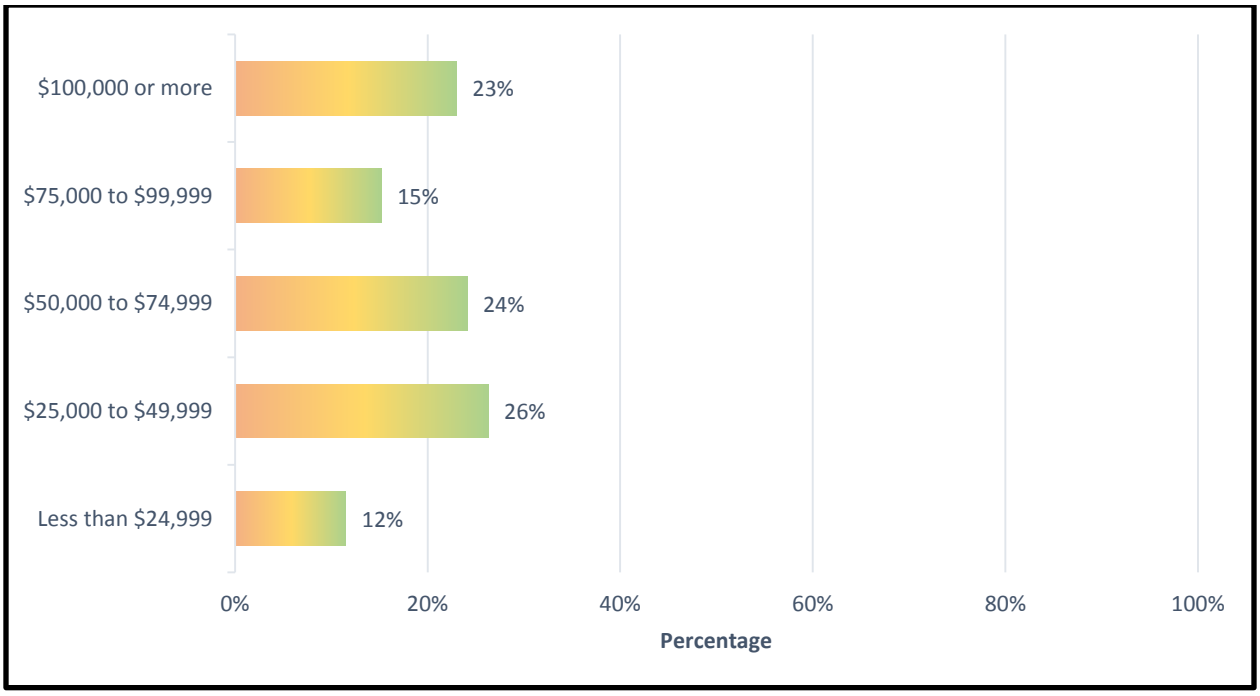


Figure 23 - Level of Income

What is your occupation? N = 291 (49%) of respondents self-reported as being retired.

What is the approximate size of your residential lot? N = 322

Responses	Response Percentage
1/4 acre or less	31%
More than 1/4 acre but less than 1 acre	33%
1 acre to less than 5 acres	23%
5 acres or more	13%
Total	**100%**

Do you own or rent your home? N = 322

Responses	Response Percentage
Own	99.4%
Rent	0.6%
Total	**100%**

How long have you lived at your current residence (years)? N= 315

Responses	Response Years
Mean	21.36
SD	15.47
Range	0 - 82

Which of the following best describes where you live? (N = 327)

Responses	Response Percentage
In a town, village, or city	37%
In an isolated, rural, non-farm residence	23%
Rural subdivision or development	37%
On a farm	3%
Total	**100%**

Do you use a professional lawn care service? (N = 325)

Responses	Response Percentage
Yes, just for mowing	6%
Yes, for mowing and fertilizing	9%
Yes, just for fertilizing and pest control	15
Yes, for mowing, fertilizing, and pest control	7%
No	63%
Total	**100%**

ANALYSIS AND OBSERVATIONS

Excluding the City of Flint, Genesee County is home to about 313,893 people (GCRC 2040 Long Range Transportation Plan). Furthermore in the urbanized area, as defined by the 2010 census, there are 114,641 owner occupied households; the target audience for the survey. Table 32 - Demographics - Survey Respondent vs Genesee County provides a comparison of some of the collected demographic information from the survey respondents to statistical demographic information for Genesee County.

Table 32 - Demographics - Survey Respondent vs Genesee County

Demographic		Genesee County not including Flint	Survey Profile
Age*	65+	15.7%	40%
	18 to 64	60.9%	55%*
	5 – 17	17.4%	-
	< 5	6%	-
Gender	Male	48.0%	60.1%
	Female	52.0%	39.9%
Education	< High school	11%	2.60%
	High School	70%	45.7%
	2 year degree or better	-	51.7%
	Bachelor degree or higher	19%	-
Income	Median Household Income	$42,000	$50,000 - $74,999
* Total is, 100% when non-response is included			

The following observations are noted:

- The average respondent was sixty-years old, had at least a high school education (97.4%), and earned a median household income of $50K to $75K per year. Sixty percent were men and forty percent women. As such the sample can be deemed representative.
- Since the survey targeted property owners the results reflected this with over ninety-nine percent ownership. About sixty-four percent of the lots were less than an acre which is consistent with the over seventy percent that live in a town, village, city, or subdivision. The average length of ownership is over twenty years.
- About thirty-seven percent of respondents use a lawn care service for either mowing, fertilizing, pest control, or some combination of the
- When the survey respondent profile is compared to Genesee County demographics the average age ranges from 18 – 64 (61%) compared to the mean respondent age (60). This means that respondents were on average older than for the County. Also, proportionately more men answered the survey than are in the population (over representation). These two issues were deemed acceptable since ninety percent of the respondents said they made the decision on managing their property.

14.0 LESSONS LEARNED AND RECOMMENDATIONS

There were two significant lessons learned that should be taken into consideration the next time the social survey is administered. The first is to better leverage local interest groups, such as the Flint River Watershed Coalition and the Chamber of Commerce, to make people aware of the survey and its importance. The second lesson learned was that despite living in an 'on-line' society, the majority of the responses (98% +) came via mail. A statistically significant sample was achieved but in the future it might be more easily obtained if a robust marketing of the survey and the available methods for taking it is undertaken in advance.

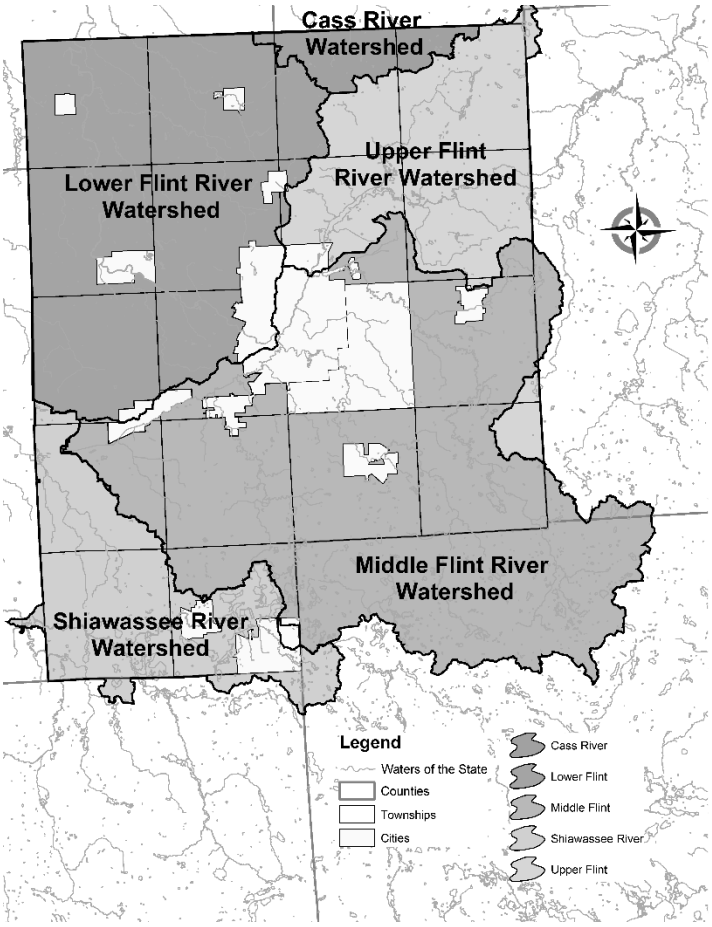
The following recommendations are based solely on the results of the Social Survey. Furthermore, there are not intended to be any recommendations that duplicate NPDES Phase II storm water permit requirements (e.g., street sweeping). The recommendations are as follows:

1. Move to the next stage in the public education process. Respondents indicated they knew the key actions that need to be taken to protect local water quality. Public education should move towards incorporating more information on impairments and the consequences associated with them; techniques available to protect waterways (e.g., no-mow buffers); and providing technical assistance for the practices such as rain barrels and rain gardens.
2. Focus marketing messages on enjoying the local scenic beauty, and hiking/walking/cycling along the shoreline. These are the most important activities to respondents.
3. All existing and new programs should be cross-referenced with the constraints identified by respondents as documented in this report, and then tailored to help the target audience reach the desired behavior. For example, work with local suppliers to provide technical information for the installation of rain barrels.
4. Institute a proactive septic system program aimed at the inspection and maintenance of existing systems.
5. All information disseminated should refer back to the "Our Water" website. Information should be coordinated between agencies. Not all information sources carry equal credibility with all stakeholders, so the message and delivery mechanism (e.g., internet) should be coordinated to be most effective.
6. The internet is increasingly becoming the preferred information delivery method. Efforts should be made to strengthen links between the subwatershed program information page and trusted information sources, such as with the MSU Extension.
7. The internet is increasingly becoming the preferred information delivery method. Efforts should be made to strengthen links between the subwatershed program information page and trusted information sources, such as with the MSU Extension. Linking of the "Our water" website and MSU Extension's Genesee County website would be one easy way to strengthen this relationship.

APPENDIX A

SOCIAL SURVEY

Your Views Genesee County's Water Resources



The Our Water-Genesee County Community Water Quality Consortium is conducting this survey to **identify the needs and concerns in your community regarding water quality.**

We ask that this survey be completed by the person in your household who makes most of the land management decisions and is at least 18 years old. Your participation in this survey is completely voluntary. Your answers will be kept confidential and will be released only as summaries where individual answers cannot be identified.

Unless otherwise instructed, please check the box that corresponds to the answer category that best describes you and your situation or opinion. The survey should take approximately 15-20 minutes to complete. Please read each question carefully.

If you prefer to take the survey on-line, please go to: http://www.cleargeneseewater.org
Be sure to enter the **identification number from the top page of this survey**.

1. Rating of Water Quality

Overall, how would you rate the quality of the water in your area?

Please indicate with a (√).	Poor	Okay	Good	Don't Know
1. For canoeing / kayaking / other boating				
2. For eating locally caught fish				
3. For swimming				
4. For hiking/walking/cycling along the shoreline/river banks?				
5. For fish habitat				
6. For scenic beauty				

2. Your Water Resources

1. Do you know where the rain water goes when it runs off of your property?

☐ No
☐ Yes

2. If you answered 'Yes' above, where does your rain water drain to?

3. Of these activities, which is the most important to you? (***check all that apply***)

☐ Canoeing / kayaking / other boating
☐ Eating locally caught fish
☐ Swimming
☐ Hiking/walking/cycling along the shoreline
☐ Fish habitat
☐ Scenic beauty

4. Have you spent leisure time on a water body/river in Genesee County in the past 12 months?

☐ No
☐ Yes
☐ Do not Know

5. If yes, What water bodies/river?

6. Regarding the quality of the water in the lakes, rivers, and streams in your community... is it... (***please select one***)

- ☐ Getting much worse
- ☐ Getting somewhat worse
- ☐ Staying the same
- ☐ Getting somewhat better
- ☐ Getting much better
- ☐ Do not Know

3. Your Opinions

Please indicate your level of agreement or disagreement with the statements below.

Please indicate with a (√).	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. The way that I care for my lawn and yard can influence water quality in local streams and lakes.					
2. It is my personal responsibility to help protect water quality.					
3. It is important to protect water quality even if it slows economic development.					
4. My actions have an impact on water quality.					
5. I would be willing to pay more to improve water quality (for example: though local taxes or fees)					
6. I would be willing to change the way I care for my lawn and yard to improve water quality.					
7. The quality of life in my community depends on good water quality in local streams, rivers and lakes.					

8. If you discovered that your current methods of disposal of household hazardous wastes, such as paints, cleaning products, pesticides and automotive oil, was different than what is recommended, which of the following is most accurate? (***Check One***)

8.a: I would comply with the recommendations, …..

- ☐ regardless of the **cost**. (greater than $10)
- ☐ if there were little or **no cost** associated. (less than $10)
- ☐ only if there was **no cost** associated.
- ☐ I would not comply with the recommendations.

8.b: I would comply with the recommendations,

- ☐ regardless of the **inconvenience**.
- ☐ as long as there is **little inconvenience**.
- ☐ only if it is **convenient**.
- ☐ I would not comply.

4. Water Impairments

Below is a list of water pollutants and conditions that are generally present in water bodies to some extent. The pollutants and conditions become a problem when present in excessive amounts. In your opinion, how much of a problem are the following water impairments in your area?

Please indicate with a (√).	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
1. Sedimentation (dirt and soil) in the water					
2. Bacteria and viruses in the water (such as E.coli / coliform)					
3. Oil and grease.					
4. Arsenic					
5. High water temperature					
6. Pesticides					

5. Sources of Water Pollution

The items listed below are sources of water quality pollution across the County. In your opinion, how much of a problem are the following sources in your area?

Please indicate with a (√).	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
1. Discharges from industry into streams and lakes					
2. Discharges from sewage treatment plants					
3. Soil erosion from construction sites					
4. Soil erosion from shorelines and/or streambanks					
5. Excessive use of lawn fertilizers and/or pesticides					
6. Grass clippings and leaves entering storm drains					
7. Improper disposal of household wastes (chemicals, batteries, florescent light bulbs, etc.)					
8. Improper disposal of used motor oil and/or antifreeze					
9. Improperly maintained septic systems					
10. Waste material from pets					
11. Urban stormwater runoff					

6. Consequences of Poor Water Quality

Poor water quality can lead to a variety of consequences for communities. In your opinion, how much of a problem are the following issues in your area?

Please indicate with a (√).	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
1. Beach closures					
2. Contaminated fish					
3. Reduced beauty of lakes or streams					
4. Reduced quality of water recreation activities					
5. Excessive aquatic plants or algae					
6. Odor					
7. Lower property values					

7. Practices to Improve Water Quality

Please indicate which statement most accurately describes your level of experience with each <u>practice</u> listed below.

Please indicate with a (√).	Not relevant for my property	Never heard of it	Somewhat familiar with it	Know how to use it; *not using it*	Currently use it
1. Following the manufacturer's instructions when fertilizing lawn or garden					
2. Keep grass clippings and leaves out of the roads, ditches, and gutters					
3. Follow pesticide application instructions for lawn and garden					
4. Recycle automotive oil					
5. Properly dispose of pet waste					
6. Properly dispose of household waste (chemicals, batteries, florescent lights, etc.)					
7. Plant trees/shrubs					
8. Construct pond					
9. Protect streambanks and/or shorelines with vegetation					
10. Improve stream habitat					
11. Use vegetated filter strips					
12. Use grass swales					
13. Manage runoff from roofs					

8. Specific Constraints of Practices

Rain Garden: A garden that uses native plants to absorb and filter stormwater collected off a roof, parking lot, sidewalk, or driveway.

1. How familiar are you with this practice?

☐ Not relevant
☐ Never heard of it
☐ Somewhat familiar with it
☐ Know how to use it; not using it
☐ Currently use it **(Please skip to the questions below on Rain Barrels)**

2. If the practice is not relevant, please explain why.

3. Are you willing to try this practice?

☐ Yes or already do
☐ Maybe
☐ No

How much do the following factors <u>limit your ability</u> to implement this practice?

Please indicate with a (√).	Not at all	A little	Some	A lot	Don't Know
4. Don't know how to do it					
5. Time required					
6. Cost					
7. The features of my property make it difficult					
8. Insufficient proof of water quality benefit					
9. Desire to keep things the way they are					
10. Physical or health limitations					
11. Hard to use with my farming system					
12. Lack of equipment					

Rain Barrels: Devices designed to collect stormwater from roofs and gutters that can later be used to water a garden, lawn, or house plants.

13. How familiar are you with this practice?

☐ Not relevant
☐ Never heard of it
☐ Somewhat familiar with it
☐ Know how to use it; not using it
☐ Currently use it **(Please skip to Section 9 below)**

14. If the practice is not relevant, please explain why.

15. Are you willing to try this practice?

☐ Yes or already do
☐ Maybe
☐ No

How much do the following factors <u>limit your ability</u> to implement this practice?

Please indicate with a (√).	Not at all	A little	Some	A lot	Don't Know
16. Don't know how to do it					
17. Time required					
18. Cost					
19. The features of my property make it difficult					
20. Insufficient proof of water quality benefit					
21. Desire to keep things the way they are					
22. Physical or health limitations					
23. Hard to use with my farming system					
24. Lack of equipment					

9. Making Decisions for my Property

In general, how much does each issue <u>limit your ability</u> to change your management practices?

Please indicate with a (√).	Not at all	A little	Some	A lot	Don't Know
1. Personal out-of-pocket expense					
2. My own physical abilities					
3. Not having access to the equipment that I need					
4. No one else I know is implementing the practice					
5. Approval of my neighbors					
6. Don't know where to get information and/or assistance about those practices					
7. Legal restrictions on my property					
8. Concerns about resale value					
9. The need to learn new skills or techniques					

What is the most appropriate disposal method for the following:

Please indicate with a (√).	**Curbside Pickup**	**Throw away in regular garbage that goes to a landfill**	**Take to Household Hazardous Waste events in your community**	**Recycle box-center**	**Compost {yard waste-food}**	**Dump in commercial bin or on vacant land**	**Do not know**
10. Unused pesticides-fertilizers							
11. Antifreeze							
12. Used/ Unused engine oil							
13. Pet waste							
14. Dry latex paint							
15. Oil paint							
16. Unused cleaning products-chemicals							
17. Leaves-grass clippings-year waste							

10. Information Sources

People get information about water quality from a number of different sources. To what extent do you trust those listed below as a source of information about soil and water?

Please indicate with a (√).	**Not at all**	**Slightly**	**Moderately**	**Very much**	**Am not familiar**
1. Local government					
2. U.S. Environmental Protection Agency					
3. University Extension – MSU					
4. State environmental agency – DEQ, DNR					
5. Environmental groups –e.g. Flint River Watershed Coalition					
6. County Health Department					

11. Septic Systems

1. Do you have a septic system?

- ☐ No **(If you checked here, Skip to Section 12)**
- ☐ Don't Know
- ☐ Yes

2. If you answered 'yes' to the previous question, in what year was it installed? **(it's okay to approximate)**

3. Within the last five years, have you had any of the following problems? (***Check all that apply***)

- ☐ Slow drains
- ☐ Sewage backup in house
- ☐ Bad smells near tank or drain field
- ☐ Sewage on the surface
- ☐ Sewage flowing to ditch
- ☐ Frozen septic
- ☐ Other
- ☐ None
- ☐ Don't know

12. About You

1. Do you make the home and lawn care decisions in your household?

- ☐ Yes
- ☐ No

2. What is your gender?

- ☐ Male
- ☐ Female

3. What is your age?

4. What is the highest grade in school you have completed?

- ☐ Some formal schooling
- ☐ High school diploma/GED
- ☐ Some college
- ☐ 2 year college degree
- ☐ 4 year college degree
- ☐ Post-graduate degree

5. What was your total household income last year?

- [ ] Less than $24,999
- [ ] $25,000 to $49,999
- [ ] $50,000 to $74,999
- [ ] $75,000 to $99,999
- [ ] $100,000 or more

6. What is your occupation?

7. What is the approximate size of your residential lot?

- [ ] 1/4 acre or less
- [ ] More than 1/4 acre but less than 1 acre
- [ ] 1 acre to less than 5 acres
- [ ] 5 acres or more

8. Do you own or rent your home?

- [ ] Own
- [ ] Rent

9. How long have you lived at your current residence (years)?

10. Which of the following best describes where you live?

- [ ] In an urban town, village, or city
- [ ] In an isolated, rural, non-farm residence
- [ ] Rural subdivision or development
- [ ] On a farm

11. Do you use a professional lawn care service?

- [ ] Yes, just for mowing
- [ ] Yes, for mowing and fertilizing
- [ ] Yes, just for fertilizing & pest control
- [ ] Yes, for mowing, fertilizing & pest control
- [ ] No

12. Where are you likely to seek information about water quality issues? **(check all that apply)**

- [ ] Newsletters/brochure/fact sheet
- [ ] Internet
- [ ] Radio
- [ ] Newspapers/magazines
- [ ] Workshops/demonstrations/meetings
- [ ] Conversations with others
- [ ] None of the above

Thank You

1. Please use the space below for any additional comments about this survey or water resources in your community.

APPENDIX B

SIDMA RESULTS

SIDMA
Social Indicators
Data Management and Analysis Tool

Survey Response Frequencies

Tabular results can be sorted by clicking on the appropriate arrow. Chart results can be viewed for each question by clicking on its text. The numeric values used in calculating mean and stadard deviations are presented in parentheses. 'Total Responses' refers to the number of users that provided an answer to a particular question. 'Valid Responses' refers to the number of users that provided a answer that was not "Don't Know" or "Not Relevant."

Our Water - Genesee County Community Water Quality Consortium

Rating of Water Quality

Overall, how would you rate the quality of the water in your area?

Question #	Poor (1)	Okay (2)	Good (3)	Don't Know (9)	Mean (SD)	Valid Responses / Total Responses
1. For canoeing / kayaking / other boating	8.6	29.9	34.3	27.2	2.35 (0.68)	236 / 324
2. For eating locally caught fish	28.9	20.9	15.1	35.1	1.79 (0.8)	211 / 325
3. For swimming	21.5	34.8	19.1	24.6	1.97 (0.73)	245 / 325
4. For picnicking and family activities	5.9	31.3	44	18.9	2.47 (0.63)	262 / 323
5. For fish habitat	13.4	25.9	23.1	37.5	2.15 (0.75)	200 / 320
6. For scenic beauty	6.3	36.1	47.6	10	2.46 (0.62)	287 / 319

Your Water Resources

1. Do you know where the rain water goes when it runs off of your property? **(Responses: 339)**
33% No
67% Yes

2. If you answered 'Yes' above, where does your rain water drain to?

3. Of these activities, which is the most important to you? {check all that apply} **(Responses: 324)**
35.2% Canoeing - kayaking - other boating
29% Eating locally caught fish
35.2% Swimming

46.6% Hiking-walking-cycling along the shoreline
36.7% Fish habitat
74.7% Scenic beauty

4. Have you spent leisure time on a water body-river in Genesee County in the past 12 months? **(Responses: 340)**
62.9% No
36.5% Yes
0.6% Do not Know

5. If yes, What water bodies-river? [ ]

6. Regarding the quality of the water in the lakes, rivers, and streams in your community... is it... {please select_ one} **(Responses: 342)**
2% Getting much worse
16.7% Getting somewhat worse
35.1% Staying the same
13.5% Getting somewhat better
1.5% Getting much better
31.3% Do not Know

Your Opinions

Please indicate your level of agreement or disagreement with the statements below.

Question #	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)	Mean (SD)	Valid Responses / Total Responses
1. The way that I care for my lawn and yard can influence water quality in local streams and lakes.	2.4	7.1	14.8	52.1	23.7	3.88 (0.93)	338 / 338
2. It is my personal responsibility to help protect water quality.	1.2	1.8	11	58.5	27.6	4.09 (0.75)	337 / 337
3. It is important to protect water quality even if it slows economic development.	2.1	3	17.3	53.3	24.4	3.95 (0.85)	336 / 336
4. My actions have an impact on water quality.	1.2	3.6	16	57.8	21.4	3.95 (0.79)	332 / 332
5. I would be willing to pay more to improve water quality (for example: though local taxes or fees)	17.5	21.6	34.9	21.3	4.7	2.74 (1.12)	338 / 338
6. I would be willing to change the way I care for my lawn and yard to improve water quality.	3	5.7	30.7	47	13.7	3.63 (0.9)	336 / 336
7. The quality of life in my community depends on good	1.2	2.7	16.8	52.8	26.5	4.01 (0.8)	339 / 339

water quality in local streams, rivers and lakes.							

8. If you discovered that your current methods of disposal of House hold hazardous wastes, such as paints, cleaning products, pesticides and automotive oil, was different than what is recommended, which of the following is most accurate? {Check One} I would comply with the recommendations, **(Responses: 330)**

32.7% regardless of the cost. { greater than $10}

47% if there were little or no cost associated. { less than $10}

18.8% only if there was no cost associated.

1.5% I would not comply with the recommendations.

9. If you discovered that your current methods of disposal of House hold hazardous wastes, such as paints, cleaning products, pesticides and automotive oil, was different than what is recommended, which of the following is most accurate? {Check One} I would comply with the recommendations, **(Responses: 323)**

51.1% regardless of the inconvenience.

39.6% as long as there is little inconvenience.

9% only if it is convenient.

0.3% I would not comply.

Water Impairments

Below is a list of water pollutants and conditions that are generally present in water bodies to some extent. The pollutants and conditions become a problem when present in excessive amounts. In your opinion, how much of a problem are the following water impairments in your area?

Question # ↓↑	Not a Problem (1) ↓↑	Slight Problem (2) ↓↑	Moderate Problem (3) ↓↑	Severe Problem (4) ↓↑	Don't Know (9) ↓↑	Mean ↓↑ (SD) ↓↑	Valid Responses ↓↑ / Total Responses ↓↑
1. Sedimentation (dirt and soil) in the water	21.6	16.8	19.8	5.8	36	2.15 (1)	210 / 328
2. Bacteria and viruses in the water (such as E.coli / coliform)	15.1	11.5	18.7	17.5	37.2	2.62 (1.13)	208 / 331
3. Oil and grease.	22.4	13	11.8	11.2	41.5	2.2 (1.15)	193 / 330
4. Arsenic	15.5	10.7	11	11.6	51.2	2.38 (1.16)	160 / 328
5. High water temperature	26.2	8.3	8.6	3.7	53.2	1.78 (1.01)	152 / 325
6. Pesticides	12	9.5	16.3	13.5	48.8	2.61 (1.11)	167 / 326

Sources of Water Pollution

The items listed below are sources of water quality pollution across the country. In your opinion, how much of a problem are the following sources in your area?

Question #	Not a Problem (1)	Slight Problem (2)	Moderate Problem (3)	Severe Problem (4)	Don't Know (9)	Mean (SD)	Valid Responses / Total Responses
1. Discharges from industry into streams and lakes	16.9	13.3	18.1	16.9	34.9	2.54 (1.14)	216 / 332
2. Discharges from sewage treatment plants	16.6	10.3	18.1	15.7	39.3	2.54 (1.15)	201 / 331
3. Soil erosion from construction sites	19.5	19.2	17.4	6.4	37.5	2.17 (0.99)	205 / 328
4. Soil erosion from shorelines and/or streambanks	19.3	20.8	16.8	6.4	36.7	2.16 (0.98)	207 / 327
5. Excessive use of lawn fertilizers and/or pesticides	7.3	18.3	26.8	14.3	33.2	2.72 (0.92)	219 / 328
6. Grass clippings and leaves entering storm drains	14.9	23.1	24.9	9.4	27.7	2.4 (0.96)	238 / 329
7. Improper disposal of household wastes (chemicals, batteries, florescent light bulbs, etc.)	10.6	14.9	19.8	14.9	39.8	2.65 (1.04)	198 / 329
8. Improper disposal of used motor oil and/or antifreeze	12.1	15.8	17.9	14.5	39.7	2.58 (1.06)	199 / 330
9. Improperly maintained septic systems	16.5	12.8	15.2	7.6	47.9	2.27 (1.06)	171 / 328
10. Waste material from pets	22.3	18.3	14.7	6.1	38.5	2.07 (1)	201 / 327
11. Urban stormwater runoff	16.1	14	17.6	10	42.2	2.37 (1.07)	190 / 329

Consequences of Poor Water Quality

Poor water quality can lead to a variety of consequences for communities. In your opinion, how much of a problem are the following issues in your area?

Question #	Not a Problem (1)	Slight Problem (2)	Moderate Problem (3)	Severe Problem (4)	Don't Know (9)	Mean (SD)	Valid Responses / Total Responses
1. Beach closures	25.5	18.9	26.1	12.3	17.1	2.3 (1.06)	276 / 333
2. Contaminated fish	18.7	12	17.8	16.6	34.9	2.5 (1.16)	216 / 332
3. Reduced beauty of lakes or streams	23.5	23.8	27.1	9.6	16	2.27 (1)	279 / 332
4. Reduced quality of water recreation activities	21.7	19.9	27.1	11.1	20.2	2.35 (1.03)	265 / 332
5. Excessive aquatic plants or algae	13.3	16.7	24.2	16.1	29.7	2.61 (1.04)	232 / 330
6. Odor	24.4	17.7	17.4	15.5	25		246 / 328

						2.32 (1.14)	
7. Lower property values	25.3	12	13.6	19.3	29.8	2.38 (1.23)	233 / 332

Practices to Improve Water Quality

Please indicate which statement most accurately describes your level of experience with each practice listed below.

Question #	Not relevant for my property (9)	Never heard of it (1)	Somewhat familiar with it (2)	Know how to use it; not using it (3)	Currently use it (4)	Mean (SD)	Valid Responses / Total Responses
1. Following the manufacturer's instructions when fertilizing lawn or garden	20.3	1.5	12.7	20.3	45.2	3.37 (0.82)	263 / 330
2. Keep grass clippings and leaves out of the roads, ditches, and gutters	15.1	3.9	11.8	11.8	57.4	3.44 (0.9)	281 / 331
3. Follow pesticide application instructions for lawn and garden	18.7	0.6	11.1	19.9	49.7	3.46 (0.75)	270 / 332
4. Recycle automotive oil	26.9	1.5	5.1	10.8	55.7	3.65 (0.7)	244 / 334
5. Properly dispose of pet waste	35.4	8	6.2	9.8	40.6	3.29 (1.07)	210 / 325
6. Properly dispose of household waste (chemicals, batteries, florescent light bulbs, etc.)	7.2	1.2	18	11.7	62	3.45 (0.85)	310 / 334
7. Plant trees/shrubs	18	4.3	11	13.7	53	3.41 (0.91)	269 / 328
8. Construct pond	68.8	8.3	7	8	8	2.5 (1.14)	102 / 327
9. Protect streambanks and/or shorelines with vegetation	65.5	6.9	12.3	6.6	8.7	2.5 (1.08)	115 / 333
10. Improve stream habitat	66.4	9.1	12.4	6.1	6.1	2.27 (1.05)	111 / 330
11. Use vegetated filter strips	57.1	28.7	6	6.3	1.8	1.56 (0.89)	142 / 331
12. Use grass swales	55.4	29.1	6.1	5.8	3.7	1.64 (0.99)	146 / 327
13. Manage runoff from roofs	16.7	10.9	19.1	9.4	43.8	3.03 (1.13)	274 / 329

Specific Constraints of Practices

Rain Garden *: A garden that uses native plants to absorb and filter stormwater collected off a roof, parking lot, sidewalk, or driveway.*

1. How familiar are you with this practice? **(Responses: 339)**

14.7% Not relevant

39.2% Never heard of it
28% Somewhat familiar with it
12.1% Know how to use it; not using it
5.9% Currently use it

2. If the practice is not relevant, please explain why.

3. Are you willing to try this practice? **(Responses: 313)**
23.3% Yes or already do
55% Maybe
21.7% No

How much do the following factors limit your ability to implement this practice?

Question #	Not at all (4)	A little (3)	Some (2)	A lot (1)	Don't Know (9)	Mean (SD)	Valid Responses / Total Responses
4. Don't know how to do it	23.2	13.1	16.8	21.5	25.5	2.51 (1.21)	222 / 298
5. Time required	16.8	14.1	24.6	17.2	27.3	2.42 (1.09)	216 / 297
6. Cost	13.8	11.4	20.5	23.9	30.3	2.22 (1.12)	207 / 297
7. The features of my property make it difficult	21.3	11.5	13.5	15.9	37.8	2.61 (1.2)	184 / 296
8. Insufficient proof of water quality benefit	21.8	11.4	15.6	9	42.2	2.8 (1.11)	167 / 289
9. Desire to keep things the way they are	33	13.4	16.2	13.1	24.4	2.88 (1.15)	220 / 291
10. Physical or health limitations	42.4	9.1	13.1	13.1	22.2	3.04 (1.18)	231 / 297
11. Hard to use with my farming system	49.1	3.2	3.2	1.8	42.8	3.74 (0.7)	163 / 285
12. Lack of equipment	22.6	9	13.5	20.8	34	2.51 (1.25)	190 / 288

Rain Barrels *: Devices designed to collect stormwater from roofs and gutters that can later be used to water a garden, lawn, or house plants.*

13. How familiar are you with this practice? **(Responses: 335)**
8.1% Not relevant
8.4% Never heard of it
38.2% Somewhat familiar with it
35.2% Know how to use it; not using it
10.1% Currently use it

14. If the practice is not relevant, please explain why.

15. Are you willing to try this practice? **(Responses: 295)**
20.7% Yes or already do
50.5% Maybe
28.8% No

How much do the following factors limit your ability to implement this practice?

Question #	Not at all (4)	A little (3)	Some (2)	A lot (1)	Don't Know (9)	Mean (SD)	Valid Responses / Total Responses
16. Don't know how to do it	39.8	12.4	14.6	13.1	20.1	2.99 (1.16)	219 / 274
17. Time required	26.5	15.4	22.1	15.1	21	2.67 (1.13)	215 / 272
18. Cost	23.2	13.3	19.2	21.4	22.9	2.5 (1.19)	209 / 271
19. The features of my property make it difficult	27.4	14.6	16.4	13.9	27.7	2.77 (1.15)	198 / 274
20. Insufficient proof of water quality benefit	35.1	10.3	11.4	11.4	31.7	3.01 (1.17)	185 / 271
21. Desire to keep things the way they are	37	12.1	15.8	16.5	18.7	2.86 (1.2)	222 / 273
22. Physical or health limitations	45	7.9	14.3	15	17.9	3.01 (1.21)	230 / 280
23. Hard to use with my farming system	50.6	2.3	4.2	6.8	36.1	3.51 (1.01)	168 / 263
24. Lack of equipment	23.8	7.8	18.2	24.9	25.3	2.41 (1.25)	201 / 269

Making Decisions for my Property

In general, how much does each issue limit your ability to change your management practices?

Question #	Not at all (4)	A little (3)	Some (2)	A lot (1)	Don't Know (9)	Mean (SD)	Valid Responses / Total Responses
1. Personal out-of-pocket expense	10.6	12.2	32.4	34.9	9.9	1.98 (1)	281 / 312
2. My own physical abilities	33.4	13.9	21.8	22.1	8.8	2.64 (1.21)	289 / 317
3. Not having access to the equipment that I need	12.9	14.2	27.4	30	15.5	2.12 (1.06)	262 / 310
4. No one else I know is implementing the practice	36.5	9	13.2	15.8	25.5	2.89 (1.23)	231 / 310

5. Approval of my neighbors	52.8	5.5	12.1	6.8	22.8	3.35 (1.04)	237 / 307
6. Don't know where to get information and/or assistance about those practices	24.4	14.7	21.5	16.3	23.1	2.61 (1.14)	236 / 307
7. Legal restrictions on my property	39	4.9	10.5	9.8	35.7	3.14 (1.17)	196 / 305
8. Concerns about resale value	39.6	9.4	14.3	11.4	25.3	3.03 (1.16)	230 / 308
9. The need to learn new skills or techniques	36.1	12.8	18.7	11.5	21	2.93 (1.13)	241 / 305

What is the most appropriate disposal method for the following -

Question #	Curb side pickup (1)	Throw away in regular garbage that goes to a landfill (2)	Take to Household Hazardous Waste events in your community (3)	Recycle Center (4)	Compost {yard waste-food} (5)	Dump in commercial bin or on vacant land (6)	Do not know (9)	Mean (SD)	Valid Responses / Total Responses
1. Unused pesticides-fertilizers	6.8	1.6	69.3	2.8	0.9	0.3	18.3	2.88 (0.67)	263 / 322
2. Antifreeze	5	0.9	72.3	5.3	0.3	0.3	15.9	2.95 (0.6)	270 / 321
3. Used-unused engine oil	3.8	1	69.7	13.7	0.3	0.3	11.1	3.08 (0.62)	279 / 314
4. Pet waste	14.8	26.8	5.5	0.3	18.1	2.6	31.9	2.82 (1.63)	211 / 310
5. Dry latex paint	14.8	19.6	49.8	3.5	0.3	0.3	11.7	2.5 (0.86)	280 / 317
6. Oil paint	3.4	2.2	75.3	5.3	0.3	0	13.4	2.96 (0.51)	277 / 320
7. Unused cleaning products-chemicals	5.3	4.7	71.7	6	0.3	0	11.9	2.9 (0.61)	280 / 318
8. Leaves-grass clippings-year waste	41	2.5	0.9	1.6	46.3	2.8	5	3.19 (1.99)	306 / 322

About You

1. Do you make the home and lawn care decisions in your household? **(Responses: 327)**

89.3% Yes

10.7% No

2. What is your gender? **(Responses: 323)**

60.1% Male

39.9% Female

3. What is your age? (Mean=59.63; SD = 14.47; Min = 23; Max = 93; Range = 70; n = 309)

4. What is the highest grade in school you have completed? **(Responses: 313)**

2.6% Some formal schooling
21.4% High school diploma/GED
24% Some college
11.8% 2 year college degree
21.4% 4 year college degree
18.8% Post-graduate degree

5. What was your total household income last year? **(Responses: 272)**

11.4% Less than $24,999
26.1% $25,000 to $49,999
23.9% $50,000 to $74,999
15.8% $75,000 to $99,999
22.8% $100,000 or more

6. What is your occupation?

7. What is the approximate size of your residential lot? **(Responses: 323)**

31% 1/4 acre or less
33.4% More than 1/4 acre but less than 1 acre
23.2% 1 acre to less than 5 acres
12.4% 5 acres or more

8. Do you own or rent your home? **(Responses: 323)**

99.4% Own
0.6% Rent

9. How long have you lived at your current residence (years)? (Mean=21.35; SD = 15.44; Min = 0; Max = 82; Range = 82; n = 316)

10. Which of the following best describes where you live? **(Responses: 328)**

36.6% In a town, village, or city
22.9% In an isolated, rural, non-farm residence
37.5% Rural subdivision or development
3% On a farm

11. Do you use a professional lawn care service? **(Responses: 326)**

5.5% Yes, just for mowing
8.9% Yes, for mowing and fertilizing
15.3% Yes, just for fertilizing and pest control
7.1% Yes, for mowing, fertilizing, and pest control
63.2% No

12. Where are you likely to seek information about water quality issues? **(Responses: 329)**

47.4% Newsletters/brochure/fact sheet
48% Internet
16.4% Radio

37.7% Newspapers/magazines
9.1% Workshops/demonstrations/meetings
33.7% Conversations with others
13.7% None of the above

Information Sources

People get information about water quality from a number of different sources. To what extent do you trust those listed below as a source of information about soil and water?

Question #	Not at all (1)	Slightly (2)	Moderately (3)	Very much (4)	Am not familiar (9)	Mean (SD)	Valid Responses / Total Responses
1. Local government	17.8	24.6	29.9	20.2	7.5	2.57 (1.03)	297 / 321
2. U.S. Environmental Protection Agency	15.8	19.3	31.1	24.8	9	2.71 (1.05)	293 / 322
3. University Extension	5.6	10.9	23.1	45.5	15	3.27 (0.92)	273 / 321
4. State environmental agency	15	16	30.7	27.3	11	2.79 (1.06)	284 / 319
5. Environmental groups	16.5	19.3	26.8	22.7	14.6	2.65 (1.07)	274 / 321
6. County Health department	12.5	17.2	38.1	24.4	7.8	2.81 (0.98)	295 / 320

Septic Systems

1. Do you have a septic system? **(Responses: 325)**
63.7% No
1.8% Don't Know
34.5% Yes

2. If you answered 'yes' to the previous question, in what year was it installed? [ ]
(Mean=1881; SD = 438.91; Min = 25; Max = 2016; Range = 1991; n = 93)

3. Within the last five years, have you had any of the following problems? (Check all that apply)- **(Responses: 177)**
14.1% Slow drains
6.8% Sewage backup in house
3.4% Bad smells near tank or drain field
1.1% Sewage on the surface
1.1% Sewage flowing to ditch
0% Frozen septic
4% Other
76.8% None
3.4% Don't know

Thank You

1. Please use the space below for any additional comments about this survey or water resources in your community.

APPENDIX C

SURVEY RESULTS 2006

Frequencies

2. Is your residence connected to a municipal sewer system or does it include a septic system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sewer	225	73.1	79.8	79.8
	Septic	57	18.5	20.2	100.0
	Total	282	91.6	100.0	
Missing	Refusal	1	.3		
	Don't Know	25	8.1		
	Total	26	8.4		
Total		308	100.0		

3. How many cars do you have in the household?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	20	6.5	6.5	6.5
	1	88	28.6	28.8	35.3
	2	130	42.2	42.5	77.8
	3	43	14.0	14.1	91.8
	4	17	5.5	5.6	97.4
	5	6	1.9	2.0	99.3
	6	1	.3	.3	99.7
	7	1	.3	.3	100.0
	Total	306	99.4	100.0	
Missing	System	2	.6		
Total		308	100.0		

4. How often do you change your own oil?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	44	14.3	15.4	15.4
	2	10	3.2	3.5	18.9
	3	13	4.2	4.6	23.5
	4	10	3.2	3.5	27.0
	5	208	67.5	73.0	100.0
	Total	285	92.5	100.0	
Missing	Don't Know	1	.3		
	System	22	7.1		
	Total	23	7.5		
Total		308	100.0		

5. How often do you change your own antifreeze?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	42	13.6	14.8	14.8
	2	7	2.3	2.5	17.3
	3	13	4.2	4.6	21.8
	4	5	1.6	1.8	23.6
	5	217	70.5	76.4	100.0
	Total	284	92.2	100.0	
Missing	Don't Know	2	.6		
	System	22	7.1		
	Total	24	7.8		
Total		308	100.0		

6. How often do you change your own transmission fluid?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	31	10.1	10.9	10.9
	2	6	1.9	2.1	13.0
	3	7	2.3	2.5	15.4
	4	4	1.3	1.4	16.8
	5	237	76.9	83.2	100.0
	Total	285	92.5	100.0	
Missing	Don't Know	1	.3		
	System	22	7.1		
	Total	23	7.5		
Total		308	100.0		

7. How often do you change your own brake fluid?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	36	11.7	12.6	12.6
	2	11	3.6	3.9	16.5
	3	9	2.9	3.2	19.6
	4	1	.3	.4	20.0
	5	228	74.0	80.0	100.0
	Total	285	92.5	100.0	
Missing	Don't Know	1	.3		
	System	22	7.1		
	Total	23	7.5		
Total		308	100.0		

8. How many times per year do you wash your cars?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	19	6.2	6.7	6.7
	1	3	1.0	1.1	7.7
	2	13	4.2	4.6	12.3
	3	10	3.2	3.5	15.8
	4	9	2.9	3.2	18.9
	5	13	4.2	4.6	23.5
	6	10	3.2	3.5	27.0
	8	3	1.0	1.1	28.1
	10	21	6.8	7.4	35.4
	12	29	9.4	10.2	45.6
	14	2	.6	.7	46.3
	15	18	5.8	6.3	52.6
	16	1	.3	.4	53.0
	17	1	.3	.4	53.3
	18	1	.3	.4	53.7
	20	14	4.5	4.9	58.6
	24	23	7.5	8.1	66.7
	25	4	1.3	1.4	68.1
	26	5	1.6	1.8	69.8
	28	1	.3	.4	70.2
	30	8	2.6	2.8	73.0
	36	1	.3	.4	73.3
	40	3	1.0	1.1	74.4
	41	1	.3	.4	74.7
	45	3	1.0	1.1	75.8
	48	8	2.6	2.8	78.6
	50	12	3.9	4.2	82.8
	52	25	8.1	8.8	91.6
	60	3	1.0	1.1	92.6
	70	2	.6	.7	93.3
	73	1	.3	.4	93.7
	75	2	.6	.7	94.4
	80	1	.3	.4	94.7
	90	2	.6	.7	95.4
	92	1	.3	.4	95.8
	100	12	3.9	4.2	100.0
	Total	285	92.5	100.0	
Missing	System	23	7.5		
Total		308	100.0		

9. Are they washed at a car wash, at home, or both?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Car Wash	151	49.0	57.0	57.0
	At Home	18	5.8	6.8	63.8
	Both	96	31.2	36.2	100.0
	Total	265	86.0	100.0	
Missing	Refusal	1	.3		
	System	42	13.6		
	Total	43	14.0		
Total		308	100.0		

10. How often do you wash your car in the driveway? Would that be ...

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	29	9.4	25.4	25.4
	Usually	12	3.9	10.5	36.0
	Sometimes	66	21.4	57.9	93.9
	Never	7	2.3	6.1	100.0
	Total	114	37.0	100.0	
Missing	System	194	63.0		
Total		308	100.0		

11. How often do you wash your car in the street?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	1	.3	.9	.9
	Sometimes	5	1.6	4.4	5.3
	Never	108	35.1	94.7	100.0
	Total	114	37.0	100.0	
Missing	System	194	63.0		
Total		308	100.0		

12. How often do you wash your car on the lawn or other unpaved surface?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	5	1.6	4.4	4.4
	Usually	8	2.6	7.0	11.4
	Sometimes	17	5.5	14.9	26.3
	Never	84	27.3	73.7	100.0
	Total	114	37.0	100.0	
Missing	System	194	63.0		
Total		308	100.0		

13. If you learned that your typical car washing behavior is not the recommended method for protecting the waterways in

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	179	58.1	68.3	68.3
	2	29	9.4	11.1	79.4
	3	20	6.5	7.6	87.0
	4	7	2.3	2.7	89.7
	5	27	8.8	10.3	100.0
	Total	262	85.1	100.0	
Missing	Don't Know	4	1.3		
	System	42	13.6		
	Total	46	14.9		
Total		308	100.0		

14. How concerned would you be if you saw your neighbor dumping liquid chemical waste in the dirt, or on the lawn?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	270	87.7	87.9	87.9
	2	21	6.8	6.8	94.8
	3	6	1.9	2.0	96.7
	4	2	.6	.7	97.4
	5	8	2.6	2.6	100.0
	Total	307	99.7	100.0	
Missing	Don't Know	1	.3		
Total		308	100.0		

15. How concerned would you be if you saw your neighbor dumping liquid chemical waste into a storm drain on the street?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	274	89.0	89.3	89.3
	2	14	4.5	4.6	93.8
	3	11	3.6	3.6	97.4
	4	2	.6	.7	98.0
	5	6	1.9	2.0	100.0
	Total	307	99.7	100.0	
Missing	Don't Know	1	.3		
Total		308	100.0		

16. How concerned would you be if you saw your neighbor dumping liquid chemical waste onto his driveway?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	244	79.2	79.7	79.7
	2	35	11.4	11.4	91.2
	3	13	4.2	4.2	95.4
	4	2	.6	.7	96.1
	5	12	3.9	3.9	100.0
	Total	306	99.4	100.0	
Missing	Don't Know	2	.6		
Total		308	100.0		

17. How concerned would you be if you saw your neighbor dumping used oil from vehicles on his driveway?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	245	79.5	80.1	80.1
	2	28	9.1	9.2	89.2
	3	18	5.8	5.9	95.1
	4	5	1.6	1.6	96.7
	5	10	3.2	3.3	100.0
	Total	306	99.4	100.0	
Missing	Don't Know	2	.6		
Total		308	100.0		

18. How concerned would you be if you saw your neighbor dumping used oil from vehicles on his lawn?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	257	83.4	83.7	83.7
	2	21	6.8	6.8	90.6
	3	12	3.9	3.9	94.5
	4	6	1.9	2.0	96.4
	5	11	3.6	3.6	100.0
	Total	307	99.7	100.0	
Missing	Don't Know	1	.3		
Total		308	100.0		

19. How concerned would you be if you saw your neighbor dumping used oil from vehicles into a storm drain?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	277	89.9	90.2	90.2
	2	15	4.9	4.9	95.1
	3	4	1.3	1.3	96.4
	4	3	1.0	1.0	97.4
	5	8	2.6	2.6	100.0
	Total	307	99.7	100.0	
Missing	Don't Know	1	.3		
Total		308	100.0		

20. How concerned would you be if you saw your neighbor pushing grass clippings into a pile at the curb?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	77	25.0	25.2	25.2
	2	23	7.5	7.5	32.8
	3	59	19.2	19.3	52.1
	4	25	8.1	8.2	60.3
	5	121	39.3	39.7	100.0
	Total	305	99.0	100.0	
Missing	Don't Know	3	1.0		
Total		308	100.0		

21. How concerned would you be if you saw your neighbor raking leaves into a pile on the street?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	74	24.0	24.3	24.3
	2	19	6.2	6.2	30.5
	3	53	17.2	17.4	47.9
	4	29	9.4	9.5	57.4
	5	130	42.2	42.6	100.0
	Total	305	99.0	100.0	
Missing	Don't Know	3	1.0		
Total		308	100.0		

22. How concerned would you be if you saw your neighbor raking leaves into a ditch?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	100	32.5	33.1	33.1
	2	36	11.7	11.9	45.0
	3	37	12.0	12.3	57.3
	4	17	5.5	5.6	62.9
	5	112	36.4	37.1	100.0
	Total	302	98.1	100.0	
Missing	Refusal	2	.6		
	Don't Know	4	1.3		
	Total	6	1.9		
Total		308	100.0		

23. How concerned would you be if you saw your neighbor burning leaves?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	146	47.4	47.9	47.9
	2	27	8.8	8.9	56.7
	3	42	13.6	13.8	70.5
	4	9	2.9	3.0	73.4
	5	81	26.3	26.6	100.0
	Total	305	99.0	100.0	
Missing	Don't Know	3	1.0		
Total		308	100.0		

24. How concerned would you be if you saw your neighbor dumping travel trailer waste into drain sewers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	262	85.1	86.8	86.8
	2	12	3.9	4.0	90.7
	3	10	3.2	3.3	94.0
	4	4	1.3	1.3	95.4
	5	14	4.5	4.6	100.0
	Total	302	98.1	100.0	
Missing	Don't Know	5	1.6		
	System	1	.3		
	Total	6	1.9		
Total		308	100.0		

25. How concerned would you be if you saw your neighbor dumping travel trailer waste onto a roadside?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	258	83.8	85.4	85.4
	2	16	5.2	5.3	90.7
	3	8	2.6	2.6	93.4
	4	6	1.9	2.0	95.4
	5	14	4.5	4.6	100.0
	Total	302	98.1	100.0	
Missing	Don't Know	4	1.3		
	System	2	.6		
	Total	6	1.9		
Total		308	100.0		

26. How concerned would you be if you saw your neighbor dumping household cleaning products into a storm drain in the st

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	255	82.8	84.4	84.4
	2	19	6.2	6.3	90.7
	3	11	3.6	3.6	94.4
	4	4	1.3	1.3	95.7
	5	13	4.2	4.3	100.0
	Total	302	98.1	100.0	
Missing	Refusal	2	.6		
	Don't Know	2	.6		
	System	2	.6		
	Total	6	1.9		
Total		308	100.0		

27. How concerned would you be if you saw your neighbor dumping household cleaning products into a sink or toilet?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	132	42.9	43.9	43.9
	2	18	5.8	6.0	49.8
	3	47	15.3	15.6	65.4
	4	27	8.8	9.0	74.4
	5	77	25.0	25.6	100.0
	Total	301	97.7	100.0	
Missing	Refusal	2	.6		
	Don't Know	3	1.0		
	System	2	.6		
	Total	7	2.3		
Total		308	100.0		

28. How concerned would you be if you saw your neighbor dumping household cleaning products onto the dirt or grass?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	189	61.4	62.8	62.8
	2	29	9.4	9.6	72.4
	3	33	10.7	11.0	83.4
	4	19	6.2	6.3	89.7
	5	31	10.1	10.3	100.0
	Total	301	97.7	100.0	
Missing	Refusal	2	.6		
	Don't Know	3	1.0		
	System	2	.6		
	Total	7	2.3		
Total		308	100.0		

29. How concerned would you be if you saw your neighbor disposing of animal manure by burying it?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	74	24.0	24.8	24.8
	2	20	6.5	6.7	31.5
	3	40	13.0	13.4	45.0
	4	23	7.5	7.7	52.7
	5	141	45.8	47.3	100.0
	Total	298	96.8	100.0	
Missing	Refusal	4	1.3		
	Don't Know	3	1.0		
	System	3	1.0		
	Total	10	3.2		
Total		308	100.0		

30. How concerned would you be if you saw your neighbor disposing of animal manure by throwing it in a ditch?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	146	47.4	49.5	49.5
	2	34	11.0	11.5	61.0
	3	33	10.7	11.2	72.2
	4	14	4.5	4.7	76.9
	5	68	22.1	23.1	100.0
	Total	295	95.8	100.0	
Missing	Refusal	5	1.6		
	Don't Know	5	1.6		
	System	3	1.0		
	Total	13	4.2		
Total		308	100.0		

31. How concerned would you be if you saw your neighbor disposing of animal manure by throwing it in the garbage?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	73	23.7	24.7	24.7
	2	20	6.5	6.8	31.5
	3	32	10.4	10.8	42.4
	4	24	7.8	8.1	50.5
	5	146	47.4	49.5	100.0
	Total	295	95.8	100.0	
Missing	Refusal	6	1.9		
	Don't Know	4	1.3		
	System	3	1.0		
	Total	13	4.2		
Total		308	100.0		

32. How concerned would you be if you saw your neighbor leaving animal manure where it falls?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	166	53.9	56.1	56.1
	2	32	10.4	10.8	66.9
	3	29	9.4	9.8	76.7
	4	21	6.8	7.1	83.8
	5	48	15.6	16.2	100.0
	Total	296	96.1	100.0	
Missing	Refusal	6	1.9		
	Don't Know	3	1.0		
	System	3	1.0		
	Total	12	3.9		
Total		308	100.0		

41. If you discovered that your current method of disposal of these products was different than what is recommended, ass

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I would comply with the recommendations, regardless of cost	102	33.1	35.1	35.1
	I would comply with the recommendations if there were little	145	47.1	49.8	84.9
	I would comply with the recommendations only if there was no	37	12.0	12.7	97.6
	I would not comply with the recommendations.	7	2.3	2.4	100.0
	Total	291	94.5	100.0	
Missing	Refusal	6	1.9		
	Don't Know	3	1.0		
	System	8	2.6		
	Total	17	5.5		
Total		308	100.0		

42. If you discovered that your current method of disposal of these products was different that what is recommended, ass

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I would comply with the recommendations regardless of inconv	152	49.4	52.2	52.2
	I would comply with the recommendations as long as there is	105	34.1	36.1	88.3
	I would comply with the recommendations only if it is conven	29	9.4	10.0	98.3
	I would not comply with the recommendations.	5	1.6	1.7	100.0
	Total	291	94.5	100.0	
Missing	Refusal	6	1.9		
	Don't Know	3	1.0		
	System	8	2.6		
	Total	17	5.5		
Total		308	100.0		

43. Local township or city hall?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	193	62.7	66.6	66.6
	2	30	9.7	10.3	76.9
	3	26	8.4	9.0	85.9
	4	5	1.6	1.7	87.6
	5	36	11.7	12.4	100.0
	Total	290	94.2	100.0	
Missing	Refusal	7	2.3		
	Don't Know	3	1.0		
	System	8	2.6		
	Total	18	5.8		
Total		308	100.0		

44. Local water treatment plant?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	97	31.5	34.3	34.3
	2	23	7.5	8.1	42.4
	3	36	11.7	12.7	55.1
	4	21	6.8	7.4	62.5
	5	106	34.4	37.5	100.0
	Total	283	91.9	100.0	
Missing	Refusal	7	2.3		
	Don't Know	10	3.2		
	System	8	2.6		
	Total	25	8.1		
Total		308	100.0		

45. Michigan State County Extension Office?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	58	18.8	21.0	21.0
	2	27	8.8	9.8	30.8
	3	33	10.7	12.0	42.8
	4	26	8.4	9.4	52.2
	5	132	42.9	47.8	100.0
	Total	276	89.6	100.0	
Missing	Refusal	7	2.3		
	Don't Know	17	5.5		
	System	8	2.6		
	Total	32	10.4		
Total		308	100.0		

46. A local business?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	205	66.6	70.7	70.7
	2	39	12.7	13.4	84.1
	3	11	3.6	3.8	87.9
	4	2	.6	.7	88.6
	5	33	10.7	11.4	100.0
	Total	290	94.2	100.0	
Missing	Refusal	7	2.3		
	Don't Know	3	1.0		
	System	8	2.6		
	Total	18	5.8		
Total		308	100.0		

47. Local university?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	124	40.3	42.8	42.8
	2	38	12.3	13.1	55.9
	3	48	15.6	16.6	72.4
	4	17	5.5	5.9	78.3
	5	63	20.5	21.7	100.0
	Total	290	94.2	100.0	
Missing	Refusal	8	2.6		
	Don't Know	2	.6		
	System	8	2.6		
	Total	18	5.8		
Total		308	100.0		

48. The County Health Department?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	111	36.0	38.9	38.9
	2	31	10.1	10.9	49.8
	3	45	14.6	15.8	65.6
	4	19	6.2	6.7	72.3
	5	79	25.6	27.7	100.0
	Total	285	92.5	100.0	
Missing	Refusal	8	2.6		
	Don't Know	7	2.3		
	System	8	2.6		
	Total	23	7.5		
Total		308	100.0		

49. Local fire station?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	227	73.7	78.3	78.3
	2	35	11.4	12.1	90.3
	3	5	1.6	1.7	92.1
	4	3	1.0	1.0	93.1
	5	20	6.5	6.9	100.0
	Total	290	94.2	100.0	
Missing	Refusal	8	2.6		
	Don't Know	2	.6		
	System	8	2.6		
	Total	18	5.8		
Total		308	100.0		

50. If you have a question about how to dispose of a product you suspect is hazardous, how likely are you to find out th

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	195	63.3	67.0	67.0
	2	34	11.0	11.7	78.7
	3	26	8.4	8.9	87.6
	4	12	3.9	4.1	91.8
	5	24	7.8	8.2	100.0
	Total	291	94.5	100.0	
Missing	Refusal	8	2.6		
	Don't Know	1	.3		
	System	8	2.6		
	Total	17	5.5		
Total		308	100.0		

52. The internet?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	169	54.9	58.3	58.3
	2	22	7.1	7.6	65.9
	3	20	6.5	6.9	72.8
	4	3	1.0	1.0	73.8
	5	76	24.7	26.2	100.0
	Total	290	94.2	100.0	
Missing	Refusal	8	2.6		
	System	10	3.2		
	Total	18	5.8		
Total		308	100.0		

53. A telephone hotline?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	224	72.7	77.2	77.2
	2	32	10.4	11.0	88.3
	3	10	3.2	3.4	91.7
	4	4	1.3	1.4	93.1
	5	20	6.5	6.9	100.0
	Total	290	94.2	100.0	
Missing	Refusal	8	2.6		
	System	10	3.2		
	Total	18	5.8		
Total		308	100.0		

54. Educational flyers or mailers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	141	45.8	49.1	49.1
	2	45	14.6	15.7	64.8
	3	51	16.6	17.8	82.6
	4	18	5.8	6.3	88.9
	5	32	10.4	11.1	100.0
	Total	287	93.2	100.0	
Missing	Refusal	8	2.6		
	Don't Know	3	1.0		
	System	10	3.2		
	Total	21	6.8		
Total		308	100.0		

55. The radio?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	125	40.6	43.3	43.3
	2	43	14.0	14.9	58.1
	3	47	15.3	16.3	74.4
	4	22	7.1	7.6	82.0
	5	52	16.9	18.0	100.0
	Total	289	93.8	100.0	
Missing	Refusal	8	2.6		
	Don't Know	1	.3		
	System	10	3.2		
	Total	19	6.2		
Total		308	100.0		

56. Local newspapers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	136	44.2	47.1	47.1
	2	45	14.6	15.6	62.6
	3	43	14.0	14.9	77.5
	4	13	4.2	4.5	82.0
	5	52	16.9	18.0	100.0
	Total	289	93.8	100.0	
Missing	Refusal	8	2.6		
	Don't Know	1	.3		
	System	10	3.2		
	Total	19	6.2		
Total		308	100.0		

57. Place of purchase?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	177	57.5	62.1	62.1
	2	34	11.0	11.9	74.0
	3	28	9.1	9.8	83.9
	4	15	4.9	5.3	89.1
	5	31	10.1	10.9	100.0
	Total	285	92.5	100.0	
Missing	Refusal	9	2.9		
	Don't Know	4	1.3		
	System	10	3.2		
	Total	23	7.5		
Total		308	100.0		

58. A local news broadcast?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	144	46.8	49.8	49.8
	2	42	13.6	14.5	64.4
	3	57	18.5	19.7	84.1
	4	18	5.8	6.2	90.3
	5	28	9.1	9.7	100.0
	Total	289	93.8	100.0	
Missing	Refusal	8	2.6		
	Don't Know	1	.3		
	System	10	3.2		
	Total	19	6.2		
Total		308	100.0		

59. A product label?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	230	74.7	79.6	79.6
	2	26	8.4	9.0	88.6
	3	16	5.2	5.5	94.1
	5	17	5.5	5.9	100.0
	Total	289	93.8	100.0	
Missing	Refusal	8	2.6		
	Don't Know	1	.3		
	System	10	3.2		
	Total	19	6.2		
Total		308	100.0		

60. A community or school newsletter?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	121	39.3	41.9	41.9
	2	47	15.3	16.3	58.1
	3	39	12.7	13.5	71.6
	4	29	9.4	10.0	81.7
	5	53	17.2	18.3	100.0
	Total	289	93.8	100.0	
Missing	Refusal	8	2.6		
	Don't Know	1	.3		
	System	10	3.2		
	Total	19	6.2		
Total		308	100.0		

61. A billboard?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	113	36.7	39.1	39.1
	2	39	12.7	13.5	52.6
	3	49	15.9	17.0	69.6
	4	30	9.7	10.4	79.9
	5	58	18.8	20.1	100.0
	Total	289	93.8	100.0	
Missing	Refusal	8	2.6		
	Don't Know	1	.3		
	System	10	3.2		
	Total	19	6.2		
Total		308	100.0		

62. Are fertilizers, pesticides, or herbicides used on your home's landscape?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	134	43.5	46.5	46.5
	No	127	41.2	44.1	90.6
	Don t Know	24	7.8	8.3	99.0
	Not Applicable	3	1.0	1.0	100.0
	Total	288	93.5	100.0	
Missing	Refusal	9	2.9		
	System	11	3.6		
	Total	20	6.5		
Total		308	100.0		

63. How many times per year do you estimate these products are applied to your yard?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	.6	1.5	1.5
	1	26	8.4	19.8	21.4
	2	42	13.6	32.1	53.4
	3	25	8.1	19.1	72.5
	4	14	4.5	10.7	83.2
	5	7	2.3	5.3	88.5
	6	8	2.6	6.1	94.7
	9	1	.3	.8	95.4
	10	1	.3	.8	96.2
	12	4	1.3	3.1	99.2
	16	1	.3	.8	100.0
	Total	131	42.5	100.0	
Missing	Don't Know	2	.6		
	System	175	56.8		
	Total	177	57.5		
Total		308	100.0		

64. Who applies these products?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	You	46	14.9	34.8	34.8
	A member of your household	28	9.1	21.2	56.1
	A lawncare professional	58	18.8	43.9	100.0
	Total	132	42.9	100.0	
Missing	Don't Know	2	.6		
	System	174	56.5		
	Total	176	57.1		
Total		308	100.0		

66. Does your community have an ordinance regarding fertilizer application?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	4.2	7.7	7.7
	No	156	50.6	92.3	100.0
	Total	169	54.9	100.0	
Missing	Refusal	8	2.6		
	Don't Know	120	39.0		
	System	11	3.6		
	Total	139	45.1		
Total		308	100.0		

68. Area businesses?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	196	63.6	69.3	69.3
	2	34	11.0	12.0	81.3
	3	23	7.5	8.1	89.4
	4	17	5.5	6.0	95.4
	5	13	4.2	4.6	100.0
	Total	283	91.9	100.0	
Missing	Refusal	9	2.9		
	Don't Know	5	1.6		
	System	11	3.6		
	Total	25	8.1		
Total		308	100.0		

69. Residents whose homes are located directly on a body of water?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	229	74.4	80.9	80.9
	2	21	6.8	7.4	88.3
	3	12	3.9	4.2	92.6
	4	11	3.6	3.9	96.5
	5	10	3.2	3.5	100.0
	Total	283	91.9	100.0	
Missing	Refusal	9	2.9		
	Don't Know	5	1.6		
	System	11	3.6		
	Total	25	8.1		
Total		308	100.0		

70. Residents who live in a home located within one mile of a body of water?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	167	54.2	59.2	59.2
	2	60	19.5	21.3	80.5
	3	32	10.4	11.3	91.8
	4	12	3.9	4.3	96.1
	5	11	3.6	3.9	100.0
	Total	282	91.6	100.0	
Missing	Refusal	9	2.9		
	Don't Know	5	1.6		
	System	12	3.9		
	Total	26	8.4		
Total		308	100.0		

71. Residents who live in a home located more than one mile from a body of water?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	124	40.3	44.3	44.3
	2	47	15.3	16.8	61.1
	3	62	20.1	22.1	83.2
	4	21	6.8	7.5	90.7
	5	26	8.4	9.3	100.0
	Total	280	90.9	100.0	
Missing	Refusal	9	2.9		
	Don't Know	7	2.3		
	System	12	3.9		
	Total	28	9.1		
Total		308	100.0		

72. Elected officials in a community?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	233	75.6	82.0	82.0
	2	26	8.4	9.2	91.2
	3	16	5.2	5.6	96.8
	4	3	1.0	1.1	97.9
	5	6	1.9	2.1	100.0
	Total	284	92.2	100.0	
Missing	Refusal	9	2.9		
	Don't Know	3	1.0		
	System	12	3.9		
	Total	24	7.8		
Total		308	100.0		

73. The Environmental Protection Agency (EPA)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	254	82.5	89.8	89.8
	2	13	4.2	4.6	94.3
	3	5	1.6	1.8	96.1
	4	3	1.0	1.1	97.2
	5	8	2.6	2.8	100.0
	Total	283	91.9	100.0	
Missing	Refusal	9	2.9		
	Don't Know	4	1.3		
	System	12	3.9		
	Total	25	8.1		
Total		308	100.0		

74. The Department of Environmental Quality (DEQ)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	250	81.2	89.3	89.3
	2	12	3.9	4.3	93.6
	3	8	2.6	2.9	96.4
	4	2	.6	.7	97.1
	5	8	2.6	2.9	100.0
	Total	280	90.9	100.0	
Missing	Refusal	9	2.9		
	Don't Know	7	2.3		
	System	12	3.9		
	Total	28	9.1		
Total		308	100.0		

75. Local law enforcement?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	146	47.4	51.4	51.4
	2	47	15.3	16.5	68.0
	3	51	16.6	18.0	85.9
	4	16	5.2	5.6	91.5
	5	24	7.8	8.5	100.0
	Total	284	92.2	100.0	
Missing	Refusal	9	2.9		
	Don't Know	3	1.0		
	System	12	3.9		
	Total	24	7.8		
Total		308	100.0		

76. The Department of Natural Resources (DNR)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	230	74.7	82.1	82.1
	2	28	9.1	10.0	92.1
	3	9	2.9	3.2	95.4
	4	6	1.9	2.1	97.5
	5	7	2.3	2.5	100.0
	Total	280	90.9	100.0	
Missing	Refusal	9	2.9		
	Don't Know	7	2.3		
	System	12	3.9		
	Total	28	9.1		
Total		308	100.0		

77. Local conservation or environmental groups?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	211	68.5	75.6	75.6
	2	33	10.7	11.8	87.5
	3	20	6.5	7.2	94.6
	4	7	2.3	2.5	97.1
	5	8	2.6	2.9	100.0
	Total	279	90.6	100.0	
Missing	Refusal	9	2.9		
	Don't Know	8	2.6		
	System	12	3.9		
	Total	29	9.4		
Total		308	100.0		

78. The County Drain Commissioner?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	249	80.8	89.2	89.2
	2	19	6.2	6.8	96.1
	3	6	1.9	2.2	98.2
	5	5	1.6	1.8	100.0
	Total	279	90.6	100.0	
Missing	Refusal	9	2.9		
	Don't Know	8	2.6		
	System	12	3.9		
	Total	29	9.4		
Total		308	100.0		

79. The County Health Department?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	238	77.3	84.4	84.4
	2	22	7.1	7.8	92.2
	3	12	3.9	4.3	96.5
	4	4	1.3	1.4	97.9
	5	6	1.9	2.1	100.0
	Total	282	91.6	100.0	
Missing	Refusal	9	2.9		
	Don't Know	5	1.6		
	System	12	3.9		
	Total	26	8.4		
Total		308	100.0		

80. How confident are you that you understand the concept of a watershed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	51	16.6	18.9	18.9
	2	30	9.7	11.1	30.0
	3	56	18.2	20.7	50.7
	4	21	6.8	7.8	58.5
	5	112	36.4	41.5	100.0
	Total	270	87.7	100.0	
Missing	Refusal	10	3.2		
	Don't Know	16	5.2		
	System	12	3.9		
	Total	38	12.3		
Total		308	100.0		

81. Is your residence located in a watershed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	34	11.0	12.0	12.0
	No	68	22.1	23.9	35.9
	Don t Know	182	59.1	64.1	100.0
	Total	284	92.2	100.0	
Missing	Refusal	12	3.9		
	System	12	3.9		
	Total	24	7.8		
Total		308	100.0		

86. The Michigan Department of Environmental Quality?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	184	59.7	67.4	67.4
	2	37	12.0	13.6	81.0
	3	37	12.0	13.6	94.5
	4	2	.6	.7	95.2
	5	13	4.2	4.8	100.0
	Total	273	88.6	100.0	
Missing	Refusal	12	3.9		
	Don't Know	11	3.6		
	System	12	3.9		
	Total	35	11.4		
Total		308	100.0		

87. The Drain Commission?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	136	44.2	48.7	48.7
	2	52	16.9	18.6	67.4
	3	63	20.5	22.6	90.0
	4	12	3.9	4.3	94.3
	5	16	5.2	5.7	100.0
	Total	279	90.6	100.0	
Missing	Refusal	12	3.9		
	Don't Know	5	1.6		
	System	12	3.9		
	Total	29	9.4		
Total		308	100.0		

88. The University of Michigan - Flint?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	167	54.2	60.5	60.5
	2	50	16.2	18.1	78.6
	3	37	12.0	13.4	92.0
	4	8	2.6	2.9	94.9
	5	14	4.5	5.1	100.0
	Total	276	89.6	100.0	
Missing	Refusal	12	3.9		
	Don't Know	8	2.6		
	System	12	3.9		
	Total	32	10.4		
Total		308	100.0		

89. Local government?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	76	24.7	27.2	27.2
	2	47	15.3	16.8	44.1
	3	89	28.9	31.9	76.0
	4	28	9.1	10.0	86.0
	5	39	12.7	14.0	100.0
	Total	279	90.6	100.0	
Missing	Refusal	12	3.9		
	Don't Know	5	1.6		
	System	12	3.9		
	Total	29	9.4		
Total		308	100.0		

90. The Conservation District?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	126	40.9	46.8	46.8
	2	72	23.4	26.8	73.6
	3	44	14.3	16.4	90.0
	4	6	1.9	2.2	92.2
	5	21	6.8	7.8	100.0
	Total	269	87.3	100.0	
Missing	Refusal	12	3.9		
	Don't Know	15	4.9		
	System	12	3.9		
	Total	39	12.7		
Total		308	100.0		

91. Private companies?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	25	8.1	8.9	8.9
	2	25	8.1	8.9	17.9
	3	77	25.0	27.5	45.4
	4	61	19.8	21.8	67.1
	5	92	29.9	32.9	100.0
	Total	280	90.9	100.0	
Missing	Refusal	12	3.9		
	Don't Know	4	1.3		
	System	12	3.9		
	Total	28	9.1		
Total		308	100.0		

92. The Michigan State County Extension Service?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	106	34.4	40.6	40.6
	2	60	19.5	23.0	63.6
	3	53	17.2	20.3	83.9
	4	17	5.5	6.5	90.4
	5	25	8.1	9.6	100.0
	Total	261	84.7	100.0	
Missing	Refusal	13	4.2		
	Don't Know	22	7.1		
	System	12	3.9		
	Total	47	15.3		
Total		308	100.0		

93. The Flint River Watershed Coalition?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	114	37.0	44.5	44.5
	2	49	15.9	19.1	63.7
	3	44	14.3	17.2	80.9
	4	17	5.5	6.6	87.5
	5	32	10.4	12.5	100.0
	Total	256	83.1	100.0	
Missing	Refusal	12	3.9		
	Don't Know	28	9.1		
	System	12	3.9		
	Total	52	16.9		
Total		308	100.0		

94. The County Health Department?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	163	52.9	58.6	58.6
	2	57	18.5	20.5	79.1
	3	35	11.4	12.6	91.7
	4	12	3.9	4.3	96.0
	5	11	3.6	4.0	100.0
	Total	278	90.3	100.0	
Missing	Refusal	13	4.2		
	Don't Know	5	1.6		
	System	12	3.9		
	Total	30	9.7		
Total		308	100.0		

95. For which of the following age groups is it most important to learn more about protecting waterways?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Elementary and pre-school age children	105	34.1	37.4	37.4
	Middle and high school age children	91	29.5	32.4	69.8
	Young adults ages 19 through 25	51	16.6	18.1	87.9
	Adults ages 26 through 55	29	9.4	10.3	98.2
	Adults over 55	5	1.6	1.8	100.0
	Total	281	91.2	100.0	
Missing	Refusal	12	3.9		
	Don't Know	3	1.0		
	System	12	3.9		
	Total	27	8.8		
Total		308	100.0		

96. For which of the following age groups is it second most important to learn more about protecting waterways?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Elementary and pre-school age children	26	8.4	9.3	9.3
	Middle and high school age children	105	34.1	37.6	47.0
	Young adults ages 19 through 25	89	28.9	31.9	78.9
	Adults ages 26 through 55	51	16.6	18.3	97.1
	Adults over 55	8	2.6	2.9	100.0
	Total	279	90.6	100.0	
Missing	Refusal	12	3.9		
	Don't Know	5	1.6		
	System	12	3.9		
	Total	29	9.4		
Total		308	100.0		

97. For which of the following age groups is it third most important to learn more about protecting waterways?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Elementary and pre-school age children	26	8.4	9.5	9.5
	Middle and high school age children	38	12.3	13.8	23.3
	Young adults ages 19 through 25	98	31.8	35.6	58.9
	Adults ages 26 through 55	71	23.1	25.8	84.7
	Adults over 55	42	13.6	15.3	100.0
	Total	275	89.3	100.0	
Missing	Refusal	13	4.2		
	Don't Know	8	2.6		
	System	12	3.9		
	Total	33	10.7		
Total		308	100.0		

98. Have you spent leisure time on a body of water in Genesee County in the past 12 months?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	77	25.0	27.1	27.1
	No	207	67.2	72.9	100.0
	Total	284	92.2	100.0	
Missing	Refusal	11	3.6		
	Don't Know	1	.3		
	System	12	3.9		
	Total	24	7.8		
Total		308	100.0		

100. Do you canoe or kayak in Genesee County?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	3.9	15.6	15.6
	No	65	21.1	84.4	100.0
	Total	77	25.0	100.0	
Missing	System	231	75.0		
Total		308	100.0		

101. Do you fish in Genesee County?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	37	12.0	48.1	48.1
	No	40	13.0	51.9	100.0
	Total	77	25.0	100.0	
Missing	System	231	75.0		
Total		308	100.0		

102. Do you boat, water ski, or use personal watercraft in Genesee County?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	42	13.6	54.5	54.5
	No	35	11.4	45.5	100.0
	Total	77	25.0	100.0	
Missing	System	231	75.0		
Total		308	100.0		

103. Do you hike along shorelines or stream banks in Genesee County?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	37	12.0	48.1	48.1
	No	40	13.0	51.9	100.0
	Total	77	25.0	100.0	
Missing	System	231	75.0		
Total		308	100.0		

104. Do you swim in Genesee County lakes or streams?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	37	12.0	48.1	48.1
	No	40	13.0	51.9	100.0
	Total	77	25.0	100.0	
Missing	System	231	75.0		
Total		308	100.0		

105. Regarding the quality of the water in the lakes, rivers, and streams in your community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Getting much better	7	2.3	2.9	2.9
	Getting somewhat better	54	17.5	22.1	25.0
	Staying the same	91	29.5	37.3	62.3
	Getting somewhat worse	61	19.8	25.0	87.3
	Getting much worse	31	10.1	12.7	100.0
	Total	244	79.2	100.0	
Missing	Refusal	13	4.2		
	Don't Know	39	12.7		
	System	12	3.9		
	Total	64	20.8		
Total		308	100.0		

106. Which one of the following do you think contributes the most to pollution in lakes, rivers and streams in the commu

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Wastewater treatment plant discharges	25	8.1	9.4	9.4
	Factories and industrial discharges	98	31.8	36.7	46.1
	Stormwater (rainwater) runoff into storm drains and roadside	47	15.3	17.6	63.7
	Sewage overflows	81	26.3	30.3	94.0
	Dirt erosion from stream banks and surrounding areas	16	5.2	6.0	100.0
	Total	267	86.7	100.0	
Missing	Refusal	12	3.9		
	Don't Know	17	5.5		
	System	12	3.9		
	Total	41	13.3		
Total		308	100.0		

108. The quality of local streams where I live affects Saginaw Bay.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	117	38.0	47.0	47.0
	2	29	9.4	11.6	58.6
	3	38	12.3	15.3	73.9
	4	15	4.9	6.0	79.9
	5	50	16.2	20.1	100.0
	Total	249	80.8	100.0	
Missing	Refusal	13	4.2		
	Don't Know	34	11.0		
	System	12	3.9		
	Total	59	19.2		
Total		308	100.0		

109. The quality of local streams where I live affects the Great Lakes.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	145	47.1	55.8	55.8
	2	23	7.5	8.8	64.6
	3	37	12.0	14.2	78.8
	4	17	5.5	6.5	85.4
	5	38	12.3	14.6	100.0
	Total	260	84.4	100.0	
Missing	Refusal	12	3.9		
	Don't Know	24	7.8		
	System	12	3.9		
	Total	48	15.6		
Total		308	100.0		

110. Is your residence located directly on a lake?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	1.3	1.4	1.4
	No	278	90.3	98.6	100.0
	Total	282	91.6	100.0	
Missing	Refusal	12	3.9		
	Don't Know	2	.6		
	System	12	3.9		
	Total	26	8.4		
Total		308	100.0		

111. Is your residence located directly on a wetland?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	4.2	4.6	4.6
	No	269	87.3	95.4	100.0
	Total	282	91.6	100.0	
Missing	Refusal	12	3.9		
	Don't Know	2	.6		
	System	12	3.9		
	Total	26	8.4		
Total		308	100.0		

112. Is your residence located directly on a swamp?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	11	3.6	3.9	3.9
	No	270	87.7	96.1	100.0
	Total	281	91.2	100.0	
Missing	Refusal	12	3.9		
	Don't Know	3	1.0		
	System	12	3.9		
	Total	27	8.8		
Total		308	100.0		

113. Is your residence located directly on a marsh?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	1.3	1.4	1.4
	No	275	89.3	98.6	100.0
	Total	279	90.6	100.0	
Missing	Refusal	12	3.9		
	Don't Know	5	1.6		
	System	12	3.9		
	Total	29	9.4		
Total		308	100.0		

114. Is your residence located directly on a river?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	2.3	2.5	2.5
	No	275	89.3	97.5	100.0
	Total	282	91.6	100.0	
Missing	Refusal	12	3.9		
	Don't Know	2	.6		
	System	12	3.9		
	Total	26	8.4		
Total		308	100.0		

115. Is your residence located directly on a stream?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	4.5	5.0	5.0
	No	266	86.4	95.0	100.0
	Total	280	90.9	100.0	
Missing	Refusal	12	3.9		
	Don't Know	4	1.3		
	System	12	3.9		
	Total	28	9.1		
Total		308	100.0		

116. Is your residence located directly on a roadside ditch?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	76	24.7	27.0	27.0
	No	205	66.6	73.0	100.0
	Total	281	91.2	100.0	
Missing	Refusal	12	3.9		
	Don't Know	3	1.0		
	System	12	3.9		
	Total	27	8.8		
Total		308	100.0		

117. How many people live in your household?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	49	15.9	17.4	17.4
	2	89	28.9	31.7	49.1
	3	57	18.5	20.3	69.4
	4	41	13.3	14.6	84.0
	5	24	7.8	8.5	92.5
	6	12	3.9	4.3	96.8
	7	6	1.9	2.1	98.9
	8	1	.3	.4	99.3
	9	1	.3	.4	99.6
	11	1	.3	.4	100.0
	Total	281	91.2	100.0	
Missing	Refusal	12	3.9		
	Don't Know	3	1.0		
	System	12	3.9		
	Total	27	8.8		
Total		308	100.0		

118. Are there any children under the age of 18 living in your household?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	127	41.2	45.2	45.2
	No	154	50.0	54.8	100.0
	Total	281	91.2	100.0	
Missing	Refusal	12	3.9		
	Don't Know	3	1.0		
	System	12	3.9		
	Total	27	8.8		
Total		308	100.0		

120. What is the highest level of education you have completed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than high school	6	1.9	2.2	2.2
	High School	84	27.3	30.1	32.3
	Some college	100	32.5	35.8	68.1
	Undergraduate degree	61	19.8	21.9	90.0
	Some Graduate courses	6	1.9	2.2	92.1
	Graduate degree	22	7.1	7.9	100.0
	Total	279	90.6	100.0	
Missing	Refusal	14	4.5		
	Don't Know	3	1.0		
	System	12	3.9		
	Total	29	9.4		
Total		308	100.0		

121. Do you own or rent your home?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	own	209	67.9	74.6	74.6
	rent	71	23.1	25.4	100.0
	Total	280	90.9	100.0	
Missing	Refusal	13	4.2		
	Don't Know	3	1.0		
	System	12	3.9		
	Total	28	9.1		
Total		308	100.0		

122. Do you live in a single family residence or a multiple family dwelling (e.g. an apartment building)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single family	245	79.5	87.5	87.5
	Multiple family	35	11.4	12.5	100.0
	Total	280	90.9	100.0	
Missing	Refusal	13	4.2		
	Don't Know	3	1.0		
	System	12	3.9		
	Total	28	9.1		
Total		308	100.0		

RESPONSES TO OPEN ENDED QUESTIONS

In your opinion, whose job is it to maintain the quality of the water in your community? (Question 1)

- the city (8)
- Jeff Wright at the Drain Commission (7)
- the county (4)
- local government (3)
- the citizens (3)
- the water department (3)
- treatment plant
- drain commissioner
- City of Burton
- myself
- the water service
- residents business
- governing body
- the landlord
- the community that you live in
- Department of Public Works
- where ever it comes from and the homeowner
- up to me because I have a well
- everybody is responsible and there should be monitoring by officials
- whoever is pumping it in
- water plant
- the Health Department

RESPONSES TO OPEN ENDED QUESTIONS

What is the proper method of disposal for unused pesticides? (Question 33)

- recycle (4)
- once a year central collection point
- take to a waste disposal
- take to center for that purpose
- take to a waste collection place
- hazardous waste center
- place where you take that stuff and you have to pay
- take to hazardous waste drop off site
- place to drop them off at
- city pick up twice a year
- recycling center
- hazardous waste site
- go and ask the city were a place is to dispose of them
- where ever the proper place is
- put in bag by themselves
- call the 800 number and ask them
- take to dump
- a son that works for a disposal company
- in a special container
- put it in red buckets
- dump with batteries and paint where you take that stuff
- hazardous dump site
- collection center
- take to drop off for collection
- take to school once a year
- put into a container and take to waste site
- a collection place
- call for environmental company to come for it for disposal
- mix with kitty litter and put out for regular trash pick up
- put in plastic bag and put in regular garbage
- hazardous waste pickup
- put them on the lawn
- take to a environmental place
- environmentalist

RESPONSES TO OPEN ENDED QUESTIONS

What is the proper method of disposal for unused garden fertilizers?

(Question 34)

- recycle (3)
- use it up (3)
- collection center (2)
- dump out back in your yard
- take to waste disposal
- waste collection place
- put it in the trash
- garbage
- take to hazardous waste drop off site
- place to drop them off at
- save it and use it next year
- put in close container in garage
- just use it all up
- put in garbage container
- disposal center
- store it in a metal can
- put on the ground
- same place
- use everything up
- a collection place
- have a company dispose of it
- package in plastic and put in garbage
- take to recycling place for toxic waste
- throw them in the garbage
- save until next year

RESPONSES TO OPEN ENDED QUESTIONS

What is the proper method of disposal for antifreeze? (Question 35)

- recycle (7)
- take to disposal site (3)
- collection centers (2)
- turn into the city or county
- take to waste disposal
- dispose of according to regulations
- take to licensed company to dispose of it
- reclamation center
- take to a garage and they dispose of it
- never had used antifreeze
- car maintenance place
- change at service center
- gas station
- take to car dealership
- take to a oil change place
- hazardous waste place
- take to city dump
- call 800 number that is on the container
- take to environmental site for disposal
- take to specified area
- put it in metal containment and someone will take it away
- collection center
- put into container like oil and take to a place that takes that stuff
- knows should not dump, but does not know proper method for disposal
- pour into kitty litter and bag and put out for regular trash pick up

RESPONSES TO OPEN ENDED QUESTIONS

What is the proper method of disposal for used engine oil? (Question 36)

- recycling center (3)
- take to disposal site (2)
- car maintenance place (2)
- take to a oil change place (2)
- collection center (2)
- take to recycling to place (2)
- take to car dealership (2)
- change at service center
- disposal place
- hazardous waste place
- take to waste disposal
- dispose of it at a approved depot place where they dispose of used oil
- recycle it
- reclamation center
- take to a garage and they dispose of it
- store in old jar in garage
- keeps it in a garage in a sealed container
- put in spill proof container and put in dumpster
- call oil change place and ask them
- the oil garage takes care of it
- put in empty container
- put into container and take to a dump
- take it to someplace maybe a station
- put into a container and disposE of it
- take to licensed place for them to dispose of it
- take to automotive stores for recycling

RESPONSES TO OPEN ENDED QUESTIONS

What is the proper method of disposal for animal manure? (Question 37)

- garbage (8)
- bury it (7)
- compost pile (4)
- used to fertilize garden (2)
- throw out in the back or bury it
- throw it garden
- depends on animal, in your garden
- wrap it up and place it in the garbage
- just throw in the fields because we are in the country
- plastic garbage bag and put in the trash
- throw away
- trash plastic bag
- disposal center
- put it in the field on a farm
- it goes to the field if you live on a farm
- set it on the lawn
- does not deal with it
- leave it where it is
- responsibility of animal owner
- do not think there is a proper way

RESPONSES TO OPEN ENDED QUESTIONS

What is the proper method of disposal for latex paint? (Question 38)

- take to disposal site (4)
- use it up (3)
- collection center (2)
- open can and put sand in it to make it solid and put out
- recycling center
- garbage
- picked up at the road
- throw in garbage as long as it is dry
- call the city to find a certain place
- take it back to paint company
- take them to Lowe's or Home Depot
- see if 800 number or call the company and ask them what to do it
- in Burton we take it to county garage and they take to environmental site
- put in trash and to curb
- city pick up
- throw away
- put it at the road with cat litter in it to dry it up
- place that takes that stuff
- recycle
- harden it up and put on the street
- hazardous waste center
- down the drain
- dispose of in a proper place
- put the lid on tight and put out for the regular trash
- collection centers
- take to special place don't just dump it
- put into kitty litter and put out for regular trash pick up
- recycling station
- take to hazardous recycling place
- open can to dry and trash it
- hazardous pickup
- rinse the can out then put them in the junk
- OSHA

RESPONSES TO OPEN ENDED QUESTIONS

What is the proper method of disposal for oil based paint? (Question 39)

- take it back to paint company
- call the city
- take to county garage and they take it to the environmental site
- city pick up
- call 800 number
- collection center (4)
- dispose of properly at a disposal place
- take to facility for that purpose
- recycling center (2)
- take to disposal site (3)
- place that takes that stuff
- recycle (3)
- dispose of in a proper place
- take to hazardous waste center (2)
- take to special place don't just dump it
- local drop off site
- use it all up
- put the lid on tight and put out for the regular trash
- put into kitty litter and put out for trash
- put sand in it and set it out on the street
- spill proof container and put in dumpster
- garbage
- throw in garbage as long as it is dry
- throw away
- rinse the can out and put them in the junk
- OSHA

RESPONSES TO OPEN ENDED QUESTIONS

What is the proper method of disposal for household cleaning products?

(Question 40)

- throw in the garbage (5)
- use them all up (4)
- dump down the drain (4)
- dump down the toilet (4)
- throw away (2)
- take to qualified place for disposal (2)
- rinse out and throw out in recycling bin (2)
- take to county garage and they take to Young's Environmental Service
- most people would use it completely
- never have any left over
- use them up, don't know other way to dispose of
- recycle
- collection center
- use them up and put empty containers into the recycle bin
- take to disposal site
- if it said hazard on it would have husband take it to the hazardous materials place
- usually use them all up and throw empty containers away
- not going to use them don't buy them
- call 800 number
- garbage bags in trash
- OSHA

RESPONSES TO OPEN ENDED QUESTIONS

Who would you contact to find out a recommended method of disposal for a product? (Question 51)

- Health Department (8)
- township office (7)
- fire department (5)
- the city of Burton (3)
- county extension (3)
- city hall (2)
- City Hall or Government Building
- the city office
- fire marshal
- Township Supervisor
- Councilman
- University of Michigan
- Michigan OSHA
- Poison Control Center
- call Disposal Control
- my father in law
- my brother
- ask around
- husband (environmental engineer)
- call my friend who works for environmental clean up
- call 800 number
- blue pages in phone book
- phone book for information
- maker of product

RESPONSES TO OPEN ENDED QUESTIONS

How do you determine things like what needs to be applied, when the products should be applied and how much to apply to your yard? (Question 65)

- read the label (6)
- reading and calling the county agent
- read bags
- looking around
- when and what from a class

RESPONSES TO OPEN ENDED QUESTIONS

What two bodies of water are located closest to your home? (Question 67)

- Kearsley Creek, Mott Lake (2)
- Kearsley Creek and Flint River
- Kearsley Creek and Kelly Lake
- Kearsley Creek and Flint River
- Kearsley Lake and Mott Lake
- Kearsley Creek and Flint River
- Flint River and Buell Lake (2)
- Flint River, Thread Lake (2)
- Flint River, and Kelly Lake
- Flint River
- Flint River and Kelly's Park Pond
- Flint River and Mott Lake
- Flint River and the Cass River
- Flint River and do not know any other
- Mott Lake and the Flint River (2)
- Mott Lake and Holloway Reservoir
- Mott Lake and Buell Lake
- Thread Creek and Thread Lake
- Thread Lake
- Kelly Lake and Kearsley Creek
- Kelly Lake, do not know of any other
- Buell Lake and Clio Creek
- Buell Lake and do not know
- stream in Clio City Park and Mott Lake
- Clio Creek
- Clio Creek, Flint River
- Clio Creek and Buell Lake (2)
- Flint River and the Saginaw Bay
- Lake Huron and Lake Michigan
- pond in backyard, Buell Lake
- part of Gilkey Creek drain
- small creek, no
- fish pond on property and holding pond 1/2 mile away
- nothing close
- lake and a river
- creek and storm sewer

RESPONSES TO OPEN ENDED QUESTIONS

If your residence is in a watershed, which one? (Question 82)

- Flint River (3)
- Flint River Watershed

How do you know your residence is in a watershed? (Question 83)

- river runs through our town
- all the water goes into the Flint River from where I live
- I know topography water runs down hill
- follows the creeks to river

RESPONSES TO OPEN ENDED QUESTIONS

If hazardous chemicals are dumped into the street, where does that material ultimately end up? (Question 84)

- sewer (5)
- water treatment plant (3)
- ultimately in drinking water (3)
- ground water (2)
- in the drains (2)
- in the water (2)
- storm sewers
- storm system and not sure of final resting place
- drain system or my water because I have a well
- downstream
- in a drain or ground
- in the watershed
- wasted away by rain
- in the Flint river and eventually into the Great Lakes
- my well water
- in the sewer, then to a treatment plant, then she is not sure how much would get through
- in the sewer and the water system
- storm sewers to rivers to lakes
- ditch
- in the water system
- into the water supply
- in our water system from the drain into the ground
- storm sewers, into creek
- runs down into the sewer or into the ground and into the water table
- in the drain ditch then to Flint River
- the water table
- in the lake and the ground
- ditch creeks and water supply
- in the creek
- storm drains to river
- in the city sewer system and cleaned and ran back through

RESPONSES TO OPEN ENDED QUESTIONS

Can you think of any other places hazardous material may end up when they are dumped in the street? (Question 85)

- sewer (3)
- in the air (2)
- in a river or a creek
- other people's water
- ocean
- on the ground
- cars and on grass
- Atherton Road
- sewer treatment plant
- leeches out along the way anywhere
- in the soil and in my well water
- the ground
- ditches
- water treatment plant
- kids
- sewer system
- in the lawns
- wells
- reservoir or holding area and then back into the ground
- to the rivers
- lakes and rivers
- in the rivers, lakes, and our homes
- in water wells and lakes and rivers
- into the Cass River
- city drinking water
- in the drinking water
- Saginaw Bay
- the lakes
- dirt and ground and then to river
- contaminate the soil
- lakes and streams and rivers
- in my pond

RESPONSES TO OPEN ENDED QUESTIONS

Which body of water have you spent time on in the past 12 months? (Question 99)

- Mott Lake, Saginaw Bay, Sage Lake, Flint River, Long Lake
- Flint River
- Holloway Reservoir
- Lake Fenton
- Lake Fenton, Mott Lake and Holloway Reservoir
- Bluebell Beach
- Holloway and Kearsley Creek
- Kearsley Dam and between Genesee and Lapeer county
- Kelly Lake
- Mott Lake
- Buell Lake and Clio Creek
- my pond, Buell Lake, Mott Lake

RESPONSES TO OPEN ENDED QUESTIONS

Where does storm water (rainwater) go after it enters a storm drain or roadside ditch in your community? (Question 107)

- to the creek (4)
- into the ground (2)
- sewer system (3)
- ends up in the Flint River (3)
- to the water treatment plant (3)
- flash floods ditches
- drainage ditch that runs through this area
- some goes to Kearsley Creek and some to Flint River and eventually the Great Lakes
- some river or underground
- in a bigger river
- in to the river
- down to the rivers and streams
- rivers and great lakes
- Shiawassee River
- sewers
- to the sewer and the water system plant
- to the sewer plants through pipes
- assuming to a treatment plant
- storm water treatment
- local water system
- storm water heaven