Chapter 7 – Information and Education Strategy

7.0 INFORMATION AND EDUCATION STRATEGY

OBJECTIVES

- Who needs to be kept up to date with Watershed information?
- What information needs to be distributed?
- How will the information be distributed?
- Was the education strategy effective?

7.1 DRIVING FORCES, GOALS, AND OBJECTIVES

The Information and Education (I&E) strategy includes the identification of goals, target audiences, messages, delivery mechanisms, and evaluation measures. The I&E strategy has been formulated into a working document that outlines major educational opportunities and actions needed to successfully maintain and improve water quality in the Watershed. The strategy was designed to build on previous efforts and activities that were found to be successful in the Lower Grand River Watershed (LGRW). Identification of driving forces, goals, and objectives will help determine the scope of the campaign and focus efforts on a purpose.

7.1.1 Driving Forces

There are several driving forces that prompted the creation of a Watershed Management Plan (WMP) for the LGRW. Because of increasing urban development, threats of combined sewer overflows (CSOs), and both past and current water pollution, the public has felt a need to protect and restore this resource. In 2002, the Grand Valley Metropolitan Council (GVMC), the Annis Water Resources Institute (AWRI) of Grand Valley State University (GVSU), and Fishbeck, Thompson, Carr & Huber, Inc. (FTC&H) became interested in initiating a project to address Watershed concerns by creating a WMP for the LGRW. The project was supported and promoted by numerous communities who pledged to attend meetings and provide available resource information. Many of these communities had been identified by the USEPA as having urbanized areas requiring a National Pollutant Discharge Elimination System (NPDES) storm water discharge permit. These communities saw the opportunity to use the Lower Grand River WMP as a guide to understanding water quality concerns in their community and developing their Storm Water Pollution Prevention Initiative (SWPPI) in accordance with NPDES Municipal Separate Storm Sewer System (MS4) Storm Water Regulations. A WMP was approved by the MDNRE in 2004, under the Clean Michigan Initiative guidelines, and then updated in 2007 to add information about urban water quality concerns to meet the NPDES MS4 permit requirements. GVMC received additional funding in 2007 to update the WMP to meet federal guidelines, by including information specific to the pollutant loadings and reductions expected with the implementation of the recommended BMPs. LGROW took this opportunity to revisit the entire WMP and update the components to meet the current needs of the Watershed.

7.1.2 I&E Goal

The I&E goal is to increase the involvement of the community in Watershed protection and restoration activities through the steps of awareness, education, and action. To assist in meeting this goal, this I&E Strategy recommends coordinating efforts with the Public Education Plan (PEP) being implemented by LGRW communities in accordance with NPDES MS4 Storm Water Regulations. The entire PEP is included in Appendix 7.1. By meeting the I&E goal, the I&E strategy will help fulfill the vision and mission statements established for the Watershed and LGROW, as stated in Chapter 1.

7.1.4 I&E Strategy Objectives

To reach the I&E goal, four major objectives must be met. These objectives will move target audiences through three phases of outreach: awareness, education, and action. The messages and delivery mechanisms used to achieve these outcomes will vary with each target audience. Under each objective, specific tasks and products will be developed to address how the objective will be achieved. The objectives are as follows:

- *Objective 1* (Awareness): Make the target audience aware that they live in a Watershed with unique resources and that their day-to-day activities affect the quality of those resources.

- *Objective 2* (Education): Educate target audiences on the link between urban development/rural practices and water quality impacts. Highlight what actions can be taken to reduce impacts.

- *Objective 3* (Action): Motivate the audience to adopt and implement practices that will result in water quality improvements.

- *Objective 4* (Action): Incorporate Watershed protection activities into land-use planning and land management decisions.

7.2 IDENTIFYING TARGET AUDIENCES

The target audiences include individuals or groups known to impact or be impacted by the project and whose support is needed to achieve the goals of the project. The following targeted audiences were identified by reviewing existing WMPs in the Watershed and the PEP as follows:

- Agricultural Producers
- Builders and Developers
- Businesses (industrial, non-industrial, and agricultural)
- Faith-based Organizations
- Golf Courses
- Homeowner's Associations
- Local Units of Government
- Outdoor Enthusiasts
- Residents of MS4 Communities
- Rural Residents
- Riparian Landowners (stream and lake)
- Teachers (K-12)
- Students (K-12)
- College and University Faculty and Professors
- College and University Students
- Urban Residents

Characterizing each target audience is an important part of implementing an I&E strategy. Collecting demographic information will help define the socio-economic structure of each target audience. Information on existing knowledge of Watershed issues, current attitudes and beliefs, and existing communications channels will also be relevant, and should be determined before initiating an education campaign. This information will ensure that appropriate messages are reaching the designated target audiences using effective formats and distribution methods.

To better understand target audiences, the Social Profile of the LGRW was determined by the Center for Environmental Study (CES) in 2010. This information helped characterize the target audiences identified in this I&E Strategy. Results of the social profile can be found in Appendix 7.2. In addition, information on population statistics and urban vs. rural land uses of the LGRW is included in Appendix 7.2. This 1990 and 2000 U.S. Census data were provided by the Michigan Department of Natural Resources and Environment (MDNRE).

An excerpt from the social profile indicating how to use the profile as follows:

The human dimensions of the LGRW have been addressed by this Social Profile. The techniques for using this information and designing outreach programs, as reflected in the I&E Strategy is summarized below, including the use of an example “48809 Belding ZIP Code Tabulation Area (ZCTA)”. In tailoring outreach for a specific impaired stream segment, a LGRW subwatershed, or community, consider these steps:

- Identify target audiences. Collect information to understand them. Create outreach focused on the characteristics of watershed stakeholders. Cultivate a constituency of stakeholders interested in the LGRW’s health. Tailor messages to reflect their interest and motivate change.
- Identify the ZIP codes associated with the subwatershed (see “Crosswalk” table below), the stream segment, or the community. Look up the specific ZIP Code Profile (Attachment 1).
- The data found in the ZIP Code Profiles will change as more up-to-date information becomes available, such as the 2010 Census data. Review the information in the ZIP Code Profile to determine whether more current information will be useful to the effort. Utilize the “American FactFinder”, the Census Bureau’s online tool for accessing a wide variety of demographic data organized by ZIP codes and by communities, including maps of the ZCTA with water features. http://factfinder.census.gov/home/saff/main.html?_lang=en
- In compiling demographic information, compare it with other watershed ZIP Codes, the county, state, or nation. Combine different population characteristics to see if a pattern emerges or to confirm a conclusion about the data.
- Used in a variety of ways for I&E outreach efforts that have not been described here

Example ZIP Code Profile - 48809 Belding
Land area: **86.7** sq. mi. Water area: **1.7** sq. mi. Average elevation: **798** feet above sea level

Sub-watersheds	Communities	School districts, etc.
Bear Creek, Bellemy Creek Deer Creek, Direct drainage to Grand River, Flat River Prairie Creek Wabasis/Beaver Dam Creeks	Ionia County Belding, City; Otisco Township Parts of Orleans, Keene, and Grattan (Kent County) Townships	Belding Area School District (2,371 6 schools) Grattan Academy (200) Faith Community Christian School (42 students) Alvah N. Belding Memorial Library (47,987 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/ African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
11,192	**33.4**	**7.8%**	**69.5%**	**10.9%**	**96.7%**	**0.4%**	**2.7%**	**2.73**	**4,299**	**12.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median House-hold Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.6%	**68.1%**	**28.4**	**$40,275**	**9.2%**	**48.2%**	**194**	**2,074**	**31.8%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
147	**61**	**62**	**125**	**52.8%**	**2,538**	**4,011**	**7,438**	**1,604**

ZIP Code Profile Information Summary

Land and Water Area	Average Elevation
The focus of the I&E effort may be on a smaller portion of the ZIP code area or on the entire ZIP code. The size of the ZIP code area in square miles for both land and water can be compared with other watershed areas or the watershed as a whole.	The average elevation in feet above sea level of the ZIP code can indicate whether the area contains drainage headwaters and delineates how upstream a community may be relative to other watershed communities. Such information can help connect the watershed residents to the larger watershed.
Watershed range 5.9 to 171.0 square miles	**Watershed range 600 to 1,006 feet above sea level**
*The land area of the 48809 Belding ZCTA is **86.7** square miles with a water area of **1.7** square miles.*	*The average elevation of the 48809 Belding ZCTA is **798** feet above sea level perhaps suggesting that the area is balanced between being both upstream and downstream of several other LGRW communities.*

Sub-watersheds	Communities	Schools
The LGRW crosses many boundaries, sometimes making it more challenging for outreach efforts. The focus of the I&E effort may be on an impaired stream segment or a subwatershed. It can be directed at the residents, farmers, businesses or officials of a county, township, village, city, or urban neighborhood. Outreach might be aimed at educators, students, and their families found at local schools and libraries. At the same time, the resources of communities, neighborhoods, school districts, and libraries may be tapped as ways to distribute information. In addition its use in mail and other types of I&E campaigns, ZIP codes are a tool for leveraging demographic information so that outreach can be tailored to target audiences in these geographic entities. The "crosswalk" table helps identifies what LGRW subwatersheds are contained within specific ZIP code areas. *The geographic resources of the 48809 Belding ZCTA include several LGRW tributaries and subwatersheds as well as a number of LGRW communities, public and private schools, and a local library.*		

Population	Median Age
The size of the population in the ZIP code indicates the possible magnitude of outreach efforts, such as suggesting numbers for the printing of I&E materials or for the distribution of surveys. **Watershed Range 813 - 59,089 people** *The population in the 48809 Belding ZCTA for the 2000 Census was **11,192**.*	Outreach efforts can target audiences based on age. A population's median age, where half the population is older and half is younger, is influenced by the age composition of the population, e.g. the number of retirees, empty nesters, expanding families, and college students, among other factors. **Watershed Range 21.1 years to 40.4 years** *The median age of the 48809 Belding ZCTA was **33.4** years, younger than the both the state's median age of 35.5 years and U.S. median age of 35.3 years.*

Under 5 years old	Over 18 years old	Over 65 years old
Community interests and participation varies across age groups and outreach should reflect these variations. A higher percentage of children under 5 years of age suggest more families with young children. These families are busy and focused on raising children. Outreach might focus on the family rather than the individual. **Watershed Range 5.4% -10.3%** *The portion of the 48809 Belding ZCTA population under 5 years old was **7.8%** in comparison with 6.8% of the state's population, suggesting a greater presence of younger families.*	Those over 18 years of age represent the watershed's adult population, that is, the population that can vote and make other important decisions. Studies have shown that younger adults are more interested in active volunteering, informal socializing, and technology-based activities while their parents are engaged by current events, political activity, and giving while their grandparents are highly engaged in giving, church, and community affairs. **Watershed range 65.2% to 80.7%** *The portion of the population over 18 years of age in the 48809 Belding ZCTA was **69.5%.***	A higher proportion of residents over 65 years old may suggest a larger number of empty nest couples or retirees. Such age groups respond to different messages and approaches. For example, about half of this age group has indicated they could use assistance with yard work. Older adults are entering a time of life when work and family responsibilities decrease. They are looking for connection, growth, and meaning. Many will have the opportunity to keep contributing to the community in a variety of ways. **Watershed range 4.3% to 14.9%** *The portion of the 48809 Belding ZCTA population over 65 years old was **10.9%** in comparison with 12.3% of the state's population and 10% of the U.S. population.*

Race White	Race Black/African American	Origin Hispanic or Latino
The 2000 Census indicates that the racial composition of the watershed is predominantly white. However, the presence of other races or ethnic origins in the LGRW, besides the Black/African American and Hispanic proportion, will need to be assessed. Over the past twenty years, diversity in the watershed has increased.	The proportional presence of Black/African American residents in the watershed suggests how outreach efforts might need to reflect the beliefs and values represented by this population.	Successful I&E will need to connect with all segments of an area's population to solicit their interest and participation, especially where language might need to be an element of effective outreach.
Watershed range 39.6% to 98.8%	**Watershed range 0.0% to 43.0%**	**Watershed range 0.3% to 23.2%**
*Similar to most watershed ZCTA's, the racial composition of the 48809 Belding ZCTA was **96.7%** white.*	*Slightly over 14% of the state's population was Black/African American in 2000 while nationally it was 12.3 % in contrast to **0.4%** in the 48809 Belding ZCTA.*	*For comparison, the state's Latino or Hispanic population was 3.3% and the Hispanic/Latino proportion of the U.S. population was 12.5 % while it was **2.7%** in the 48809 Belding ZCTA.*

Average Household Size	Total Housing Units
Household size is the average number of persons living in a household. Household size may indicate larger families in a ZCTA. Decreasing household size and increasing population suggests greater development impact in the watershed. I&E efforts can use average household size to estimate impact of outreach efforts to households, such as all members of a household being exposed to a media campaign.	Water quality is closely related to decisions made at the housing unit level. Based on various studies, housing units can be used to estimate, for example, how many septic systems are used (28% of Michigan housing units in rural/suburban areas - and growing) and the number of users that need to become aware of water quality issues. Lawn sizes and chemical application rates, as another example, can be estimated based on housing unit numbers.
Watershed range 2.05 to 3.09 persons per household	**Watershed range 317 to 23,410 housing units**
*In the 48809 Belding ZCTA, the household size of **2.73** was larger when compared with 2.56 in Michigan and 2.59 in the U.S population.*	*The number of housing units in the 48809 Belding ZCTA was **4,299**.*

Education	Language Other than English
The levels of education attained by watershed residents, such as the percentage of the population with a bachelor's degree or above, suggest a higher degree of community engagement and possibly a greater confidence in science, among other attributes. Outreach materials will need to anticipate the information and educational needs of the population based on educational characteristics.	Certain segments of the population may feel more comfortable receiving information about the watershed in a language they are much more conversant in than English. Outreach can be designed to reflect the probability of specific language needs in certain watershed communities.
Watershed range 6.3% to 49.3% with a bachelor's degree or higher	**Watershed range 1.0% to 23.3% speak a language other than English at home**
*The population in 48809 Belding ZCTA with a bachelor's degree or higher was **12.2%** compared to 21.8% of the state's population.*	*In the 48809 Belding ZCTA **3.6%** indicated that a language other than English is spoken in their home. Details on what specific language is spoken, whether Dutch, Spanish, or Slovakian, are available from the U.S. Census. (See also Origin Hispanic/Latino)*

Labor Force	Commute Time
The labor force participation rate is the proportion of workers over 16 years employed or available for work. The differences in rates between communities might reflect the number of people enrolled full-time in school, withdrawn from the labor force after seasonal work, unable to find work, and not working for other reasons such as caring for their families. **Watershed range 43.6% to 81.8%** *In 2000, labor force participation in the 48809 Belding ZCTA was **68.1%** of the population. In Michigan, it was 64.6% and on the national level it was at 63.9%.*	Longer commute times reduce social connections, e.g. less attendance at watershed meetings or fewer evenings picking up litter from local streams. Additionally, communities experiencing a growing presence of commuters, often not committed to the area, may view watershed issues differently. **Watershed range 17.3 to 41.8 minutes** *The mean travel time in the 48809 Belding ZCTA was **28.4 minutes**, compared to state commuters with 24.1 minutes and the national mean of 25.5 minutes. (See also "Work in County of Residence".)*
Median Household Income	**Families Below Poverty Level**
The median household income is the point where half of an area's households would have income below that amount and half would have income above that amount. Median household income fairly represents a typical income level for the community. Studies have shown that as income rises, more of the population participates in community projects. Decreasing income may reflect levels of inequality, conditions of deprivation, or disinvestment and capital flight. **Watershed range $30,176 to $83,902** *The median household income in the 48809 Belding ZCTA was **$40,275** in 2000. The median household income for Michigan was $46,181 compared to the national median household income of $42,148.*	The percent of families below the poverty level represent families with income less than the poverty threshold for that family size. The percent of families who fall below the threshold is one way to represent the poverty situation for a community. Higher poverty rates indicate that there are not enough jobs paying wages sufficient to keep families above the poverty threshold. These jobs are less stable, have less predictable hours, often making it difficult for individuals to participate in community activities. **Watershed range 1.0% to 18.0% below poverty level** *In the 48809 Belding ZCTA, **9.2%** of families were estimated to be below the poverty level. The family poverty rate for Michigan was 9.7% compared to the national rate of 9.2%.*
Work in County of Residence	**Business Establishments**
When residents live and work in the same community, they have shorter commute times. Outreach can be designed to target individuals at home or at work, whichever becomes a more effective method. Determine whether the outflow of workers to worksites outside of their county of residence is a lifestyle preference or economic necessity. This daily outflow of workers to other areas can have negative impact on social resources and civic engagement. **Watershed range 18.5% to 94.6% work in county of residence** *In the 48809 Belding ZCTA, **48.2%** of the population works in the county where they live. For comparison, 70.9% of Michigan residents worked in their county of residence. (see also Commute Time)*	If I&E efforts will target businesses in a community, the number of business establishments in the ZCTA often represents employment centers in the watershed. The nature of these businesses will vary throughout the watershed, from large industrial complexes to convenience stores. These numbers provide a sense of economic activity and how outreach can target businesses and their employees. **Watershed range 7 to 1,604 business establishments** *There are **194** businesses in the 48809 Belding ZCTA.*

Employees	Employed in Manufacturing
With the participation of business establishments in a watershed, it may be possible to target employees. The number of employees in the ZCTA, who may or may not live in the ZCTA, provides an indicator of the magnitude of the outreach activities.	The distribution and type of jobs by industry are indicators of economic diversification in the watershed. The economic recession had a negative effect in the watershed with substantial declines in the goods-producing sector. Higher reliance on manufacturing suggests a vulnerable economy.
Watershed range 22 to 40,022 employees *There were **2,074** employees in the 48809 Belding ZCTA.* *See also Business Establishments.*	**Watershed range 5.0% to 38.5% of workforce employed in manufacturing** *In 2007, manufacturing employment was at **31.8%** of the workforce in the 48809 Belding ZCTA compared to 22.5% of the state's and 14.1% of the U.S. workforce.*

Farm Operations	Farm Operations with Animals	Conservation Programs
Based on the 2007 Census data, the number of farm operations was summarized by watershed ZCTA. These farm operations ranged from orchards to row crops to livestock operations. Eight watershed ZCTAs have no farm operations identified in 2007.	During the 2007 Agricultural Census, the total number of farm operations with animals was summarized by ZCTA. This data provides a sense of the number of farm operations that are managing animals in the ZCTA. The management of animals, whether livestock or poultry or another animal, can have an impact on water quality. More details on the types of animals can be found in the Census information.	Farm operations that have participated in the following governmental programs that help farmers conserve natural resources suggest possible interest in other similar programs to improve the watershed: the Conservation Reserve Program, Wetlands Reserve Program, Farmable Wetlands Program, and Conservation Reserve Enhancement Program plus other federal, state, and local programs
Watershed range 3 to 404 farm operations *There were **147** farm operations identified in the 48809 Belding ZCTA.*	**Watershed range 5 to 141 farm operations with animals** *There were **61** farm operations out of 147 that managed animals in the 48809 Belding ZCTA.*	**Watershed range 2 to 220 participating farm operations** *There were **62** farm operations that participated in various programs in the 48809 Belding ZCTA.*

Population Density	Urban Population	K-12 Student Population
The number of persons per square mile often reflects the intensity of development and often distinguishes rural from urban areas. Studies have found that higher population densities adversely affect the quantity and quality of storm water runoff, suggesting that these impacts escalate with density but decline on a per capita basis.	The urban nature of an area suggests certain population characteristics important to outreach activities. Based on these population densities, the ZIP code profiles indicate the percentage of the population that is urban. Very highly urban: 75% or more urban Highly urban: 50% to 74.9% urban Moderately urban: 25% to 49.9% urban Moderately rural: 10% to 24.9% urban Highly rural: Less than 10% urban	The size of the student population in kindergarten to 12th grade provides an indication of the level of effort that may be required in reaching out to school age children. These students may be attending public or private schools or may be home schooled. They may or may not be attending schools located in the ZIP code or in the watershed.
Watershed range 45 to 6,563 persons per square mile *The population density of the 48809 Belding ZCTA was **125** persons per square mile while it was 175 in Michigan.*	**Watershed range 0% to 100%** *In the 48809 Belding ZCTA, **52.8%** of the population was considered urban. It can also be estimated that 47.2% of the population was rural.*	**Watershed range 283 to 12,152 K-12 students** *The number of K-12 students in the 48809 Belding ZCTA was **2,538**, suggesting the magnitude of outreach efforts targeting these students.*
Households	**Vehicles**	**Dogs**
A household includes all persons who occupy a housing unit (as defined above). Knowing the quantity of households within certain areas of the watershed may help to define other relevant parameters (250-350 gallons of wastewater are generated per household per day by Michigan residents). Estimates of total watershed households can be useful in planning for the distribution of outreach materials.	Vehicle ownership is associated with various nonpoint sources of pollution, such as fueling spills, leaks of automotive fluids, and driveway vehicle washing. The number of vehicles - cars, vans, and trucks - kept at home and available for use by household members were counted in the 2000 Census. Outreach can utilize these counts to illustrate how much vehicle wash water is discharged.	Managing pet waste may be a topic for improving water quality in a subwatershed. The number of dogs in a ZCTA can be estimated based on data from the U.S. Human Society and other organizations indicating that four in ten (40%) U.S. households include at least one dog.
Watershed range 503 to 58,843 households *In the 48809 Belding ZCTA there were **4,011** households generating, for example, between 100,275 and 140,385 gallons of wastewater per day.*	**Watershed range 600 to 37,092 vehicles** *In the 48809 Belding ZCTA there were **7,438** vehicles.*	**Watershed range 201 to 23,537 dogs** *There are about **1,604** dogs in the 48809 Belding ZCTA.*

Crosswalk – ZIP Codes Associated with LGRW Subwatersheds

	BASS RIVER	BEAR CREEK	BELLEMY CREEK	BUCK CREEK	CEDAR CREEK	COLDWATER RIVER	COOPERS CLEAR BLACK	CROCKERY CREEK	DEER CREEK	DIRECT DRAINAGE	FALL CREEK	GLASS CREEK	HIGH BANK CREEK	INDIAN MILL CREEK	LAKE CREEK	LIBHART C REEK	LOWER FLAT RIVER	LOWER ROGUE RIVER	LOWER THORNAPPLE IVE	MILL CREEK	MUD CREEK	PLASTER CREEK	PRAIRIE CREEK	RUSH CREEK	SAND CREEK	SPRING LAKE/NORRIS	UPPER FLAT RIVER	UPPER ROGUE RIVER	UPPER THORNAPPLE	WABASIS/BEAVER DAM
48809 Belding		•	•							•							•						•				•			•
48813 Charlotte																													•	
48815 Clarksville						•									•		•													
48829 Edmore																											•			
48834 Fenwick																	•						•							
48837 Grand Ledge																													•	
48838 Greenville							•																				•			•
48846 Ionia			•							•					•	•	•						•							
48849 Lake Odessa						•				•					•	•					•									
48851 Lyons										•						•														
48865 Orleans			•							•							•						•							
48875 Portland						•				•						•														
48876 Potterville																													•	
48881 Saranac			•			•				•					•		•													
48884 Sheridan																							•							
48885 Sydney																											•			
48886 Six Lakes																											•			
48888 Stanton																											•			
48890 Sunfield																					•									
48897 Woodland						•													•		•									
49046 Delton					•						•	•	•						•											
49050 Dowling					•								•																	
49058 Hastings					•	•					•	•	•						•											
49073 Nashville													•						•		•								•	
49096 Vermontville																					•								•	
49301 Ada		•								•							•		•			•								
49302 Alto						•													•											
49303 Bailey								•																				•		
49306 Belmont		•								•								•												
49315 Byron Center				•																		•		•						
49316 Caledonia				•															•			•								
49318 Casnovia								•										•										•		
49319 Cedar Springs							•											•										•		•
49321 Comstock										•				•				•		•					•					
49322 Coral							•																				•			
49325 Freeport						•																								
49326 Gowen							•																				•			

Crosswalk – ZIP Codes Associated with LGRW Subwatersheds

	BASS RIVER	BEAR CREEK	BELLEMY CREEK	BUCK CREEK	CEDAR CREEK	COLDWATER RIVER	COOPERS CLEAR BLACK	CROCKERY CREEK	DEER CREEK	DIRECT DRAINAGE	FALL CREEK	GLASS CREEK	HIGH BANK CREEK	INDIAN MILL CREEK	LAKE CREEK	LIBHART C REEK	LOWER FLAT RIVER	LOWER ROGUE RIVER	LOWER THORNAPPLE IVE	MILL CREEK	MUD CREEK	PLASTER CREEK	PRAIRIE CREEK	RUSH CREEK	SAND CREEK	SPRING LAKE/NORRIS	UPPER FLAT RIVER	UPPER ROGUE RIVER	UPPER THORNAPPLE	WABASIS/BEAVER DAM
49330 Kent City								•										•										•		
49331 Lowell		•				•				•					•		•		•											
49333 Middleville						•						•							•											
49339 Pierson							•																					•		
49341 Rockford		•					•			•							•	•												•
49343 Sand Lake							•											•									•	•		
49345 Sparta								•		•								•		•								•		
49347 Trufant							•																				•			
49401 Allendale	•									•																				
49403 Conklin								•	•									•		•					•					
49404 Coopersville								•	•	•															•					
49415 Fruitport								•		•																•				
49417 Grand Haven	•							•		•																				
49418 Grandville				•						•														•						
49426 Hudsonville	•									•														•						
49428 Jenison	•									•														•						
49435 Marne									•	•															•					
49448 Nunica								•		•																•				
49451 Ravenna								•	•																	•				
49456 Spring Lake										•																•				
49503 Grand Rapids										•												•								
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49544 Grand Rapids										•				•				•		•					•					
49546 Grand Rapids										•									•			•								
49548 Grand Rapids				•																		•								

7.3 DEVELOPING MESSAGES

Each target audience must have a clear understanding of the problems being addressed by the project and how the project affects them before any behavioral changes are to take place. The known pollutants in the Watershed are pathogens and bacteria, sediment, nutrients, unstable hydrology, temperature, habitat fragmentation, and chemicals. Based on the Watershed pollutants and their sources, the following broad messages were developed, as noted in Tables 7.1A through 7.1H. Messages intended for target audiences will be based on this broad message but should be customized, using the Social Profile, to reflect the character of the audience.

- A Watershed is an area of land that drains to a common point. You live in the Lower Grand River Watershed. You impact the Watershed. Learn more about the Lower Grand River Watershed by visiting www.lowergrandriver.org.
- Human actions increase the chances of pathogen and bacterial contamination in waterbodies. Bacterial contamination from cropland, livestock, septic tanks, ducks and geese, and the sanitary sewer create unsafe water for human contact.
- Human actions increase sedimentation and adversely affect water quality. Sediment changes the flow capacity of the stream and impairs aquatic habitats.
- Human actions increase nutrients in waterbodies and adversely affect water quality. Nutrient-rich waters encourage excessive plant growth, deplete oxygen, and impair aquatic habitats.
- Changes in land use impact stream flows, creating water quality, stream stability, and flooding concerns.
- Human actions adversely impact the temperature of waterbodies. Lack of riparian vegetation and a dense drain network cause increased stream temperatures.
- Fragmented habitats result in the degradation of wildlife populations.
- Human actions increase the amount of toxic chemicals in waterbodies and adversely affect water quality. Do your part to keep you and your family safe and healthy.

7.4 SELECTING DELIVERY MECHANISMS

A mixture of activities and media formats are normally required to relay messages effectively to diverse audiences. The key is persistence. Repeating messages is the most effective way for people to remember the message.

Because the collective target audience is broad, multiple formats will be necessary to reach each audience and to reinforce messages over time. Formats should be phased in as each audience moves from awareness to education and finally to action. Initially, efforts should largely focus on media outlets and printed materials to raise awareness and educate audiences on water quality issues. Formats that focus on solutions and actions should be developed as the audiences become more aware of the existing water quality concerns. These formats could include workshops, presentations, and other events.

Formats should be distributed through a variety of delivery mechanisms (Tables 7.2A through 7.2H). One of the most effective means of distributing information is to piggyback with existing material distributions already received by the target audience. This approach helps to leverage resources, and materials are more likely to be seen by the audience since they are already familiar with the format. Some of the activities included in Tables 7.1A through 7.1H are as follows:

- Award Programs
- Banners
- Brochures
- Mailers
- Postcards
- Demonstration Projects
- Newspaper Inserts
- Newsletter Articles
- Public Meetings
- Workshops
- Professional Development Sessions
- Training Sessions
- River Cleanups
- Signage
- Social Media
- Website Updates

7.5 IMPLEMENTATION OF I&E STRATEGY

7.5.1 TASKS AND SCHEDULES

The implementation of the I&E strategy follows three steps: (1) awareness; (2) education; and (3) action.

Awareness
General information about what a Watershed is and providing examples of NPS pollution will increase awareness of target audiences about the issues. The public will be made aware that they live in a Watershed and that their day-to-day activities can affect water quality. They will learn about the impacts that land use activities have on water quality, and general approaches to minimize these impacts. Awareness will be raised, in part, through signage, postcards, and brochures.

Education
The public will have opportunities for more in-depth education through a variety of opportunities, including websites, brochures, workshops, and articles. Many of these opportunities will allow the public to comment and respond to the findings of the project. Open meetings and one-on-one contacts will provide further opportunity for the public to offer their opinions and concerns.

Action
Actions occur when audiences change behaviors and develop programs and events that influence and improve water quality. Such actions include participation in stream cleanups, implementing best management practices (BMPs) to improve water quality, and making informed decisions on land use planning. Taking ownership for the solutions of water quality concerns provides a framework for sustainability and ensures the continuation of the project's objectives.

The I&E activities will be focused first on the critical areas in the Watershed, as identified in Table 4.3 - Critical Areas for Restoration and Table 4.4 - Priority Areas for Preservation and Protection. Sustainability for the I&E efforts will be developed throughout the project since the protection of the Watershed will be a long-term endeavor. The schedule for implementation is included in Tables 7.1A through 7.1H.

7.5.2 POTENTIAL PARTNERS

Many groups and organizations are active within the Watershed and will provide support and assistance in educational efforts. The Public Awareness and Marketing (PAM) Committee was formed to implement the original I&E Strategy developed for the LGRW. Tables 7.1A through 7.1H lists the potential partners associated with the different I&E messages and objectives.

Assistance for the I&E activities includes many potential partners. A sampling of those that have been involved are listed below:

- AWRI;
- Calvin College
- Center for Environmental Study
- County Conservation Districts;
- County Drain Commissioners;
- County Health Departments;
- County Planning Commissions;
- County Road Commissions;
- Home Builders Association;
- Land Conservancies;
- MDNRE;
- Michigan State University Extension (MSUE) Office;
- MS4 permittees
- NRCS;
- Nature Conservancies.
- Outdoor Recreation Organizations;
- Parks and Recreation Departments;
- PAM Committee;
- Subwatershed Organizations;
- West Michigan Environmental Action Council;
- West Michigan Sustainable Business Forum.

7.5.3 Evaluation Measures

Evaluation of the education campaign provides a feedback mechanism for continuous improvement of the I&E Strategy. Evaluation tools are built into the strategy at the beginning to ensure that accurate feedback is generated.

In regard to specific I&E tasks, the purpose, theme, and objective (learning, behavioral, and emotional) of each delivery mechanism should be defined prior to implementation. An I&E worksheet template developed for completing such an assessment is provided on the last page of this chapter. This worksheet will help define each activity during its initial development and result in a more fine-tuned product that can be easily evaluated based on its initial purpose and objectives. Tables 7.1A through 7.1H recommends evaluation methods to assess the success of each delivery mechanism, in accordance with the I&E worksheet.

Although evaluation of specific components within the I&E Strategy will occur continuously, the I&E Strategy will be periodically reviewed and adjusted as necessary. Questions that should be considered during implementation of the I&E Strategy are listed below.

- Are the planned activities being implemented according to the schedule?
- Is additional support needed?
- Are additional activities needed?
- Do some activities need to be modified or eliminated?
- Are the resources allocated sufficient to carry out the tasks?
- Are all of the target audiences being reached?
- What feedback has been received, and how does it affect the I&E strategy program?
- How do the BMP implementation activities correspond to the I&E strategy?

7.6 COORDINATION WITH NPDES MS4 STORM WATER REQUIREMENTS

To meet the NPDES MS4 Storm Water Regulations, communities in Kent and Ottawa Counties developed a PEP to address storm water pollution between 2010 and 2014 (Appendix 7.1). The PEP was specifically designed to: (1) promote, publicize, and facilitate Watershed education for the purpose of encouraging the public to reduce the discharge of pollutants in storm water to the maximum extent practicable; and (2) encourage prevention of pollution over treatment of pollution. The PEP defines target audiences, develops specific messages, and selects delivery mechanisms to promote the goals and objectives of reducing storm water runoff. The PEP also includes mechanisms for evaluating the success or effectiveness of the plan.

The LGRW I&E strategy will be coordinated with the PEP through the PAM Committee to share resources, convey similar messages, and encourage the reduction of Watershed pollution. The LGRW I&E strategy and PEP overlap in many ways, such as addressing similar pollutants and listing activities for meeting similar objectives. This presents challenges in coordinating efforts, but also presents opportunities for innovative ideas. For example, local governments are listed as a target audience and a potential partner in several areas of the LGRW I&E Strategy. The MS4 communities can be involved in any of these identified activities, and then choose how those activities apply either directly to requirements in the PEP or propose them as an alternative approach when submitting their progress report. These activities can also be reported to the MDNRE as efforts above and beyond their existing requirements.

INFORMATION AND EDUCATION ACTIVITY WORKSHEET TEMPLATE

Activity:

Purpose of Activity:

Target Audience:

Learning Objectives (What do you want the target audience to learn from this activity?):

Behavioral Objectives (What do you want the target audience to act on after this activity?):

Emotional Objectives (What do you want the target audience to feel from this activity?):

Distribution Method (e.g. workshop, flyer):

Date of Completion:

Budget:

Project Evaluation

Quantitative Evaluation:

Qualitative Evaluation:

Level of Success (After Implementation):

Table 7.1a – Information & Education Strategy to Raise Public Awareness

Focus: Public Awareness									
WMP Goal No. 12: Educate stakeholders about the Watershed and the impacts that stakeholders have on the Watershed.									
Objectives: Increase public knowledge and broaden awareness of the Watershed. Develop partnerships among stakeholders by sharing ideas, resources, and facilitating cooperative activities that increase public awareness of watershed management and impact land use policies.									
Messages: 1) A watershed is an area of land that drains to a common point. You live in the Lower Grand River Watershed. You impact the watershed. 2) Learn more about the Lower Grand River Watershed by visiting www.lowergrandriver.org.									
Critical Areas: Entire Watershed									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Responsible for Implementation	Estimated Costs	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Urban and Rural Residents	See sections 2.0 (Who lives in the LGRW?), 5.0 (Zip code Profiles), and 6.1.3 (Survey Results - Survey Participants from Rural and Urban Zip Codes) of the Social Profile	Attend 4 festivals (e.g. Bear Creek Waterfest, Grand River Water Festival) or other public events to distribute 400 brochures about the state of the Lower Grand River Watershed.	Print second run (33,000) of existing multi-page newspaper insert with a map, watershed information, and LGROW/subwatershed organization contact information.	Hold one meeting in every subwatershed (31 locations) to report on activities to help build a sense of community within each subwatershed. Facilitate the Grand River Clean-up annually.	Center for Environmental Study, Subwatershed Organizations, Public Awareness and Marketing (PAM) Committee, West Michigan Environmental Action Council, Homeowner's Associations	LGROW	Brochure: $0.70/brochure x 400 plus 25 hours ($40/hr). Inserts: $0.03/insert x 33,000 plus 8 hours. Meetings: $300/meeting x 16 plus 95 hours. Grand River Clean-up: Cost covered through other programs. Total = $11,190	Website hits in response to brochure/inserts. Number of brochures/inserts distributed. Exit questionnaires and attendance at meetings. Number of participants in clean-ups.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey

Table 7.1a – Information & Education Strategy to Raise Public Awareness

Focus: Public Awareness									
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Messages: 1) A watershed is an area of land that drains to a common point. You live in the Lower Grand River Watershed. You impact the watershed. 2) Learn more about the Lower Grand River Watershed by visiting www.lowergrandriver.org.									
Critical Areas: Entire Watershed									
Target Audience	Social Profile*	Measurable Milestone			Potential Partners	Responsible for Implementation	Estimated Costs	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
		Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)					
		Display LGROW's pull-up banners at 4 public events, meetings, or workshops to raise awareness about the Lower Grand River Watershed and LGROW.	Publish quarterly website updates informing the public about activities, findings, and progress on the Lower Grand River Watershed projects.	Form Grand River Expedition (GRE) 2020 Committee to plan route and activities to address changes/ improvements to the Lower Grand River.	Annis Water Resources Institute, Grand Lady Riverboat Company, Public Awareness and Marketing (PAM) Committee, GRE Planning Committee, Homeowner's Associations	LGROW	Banners: 4 hours ($40/hr). Website updates: 8 hours. Committee meetings: $2,000. Total = $2,480	Exit questionnaires and attendance at meetings. Website hits. Number of participants in GRE Committee for Lower Grand River.	
Teachers and Professors	See sections 5.0 (Zip Code Profiles) and 7.4 (Schools Serving the Watershed) of the Social Profile	Facilitate 3 "Dinner and Dialogue" sessions where teachers begin developing partnerships with environmental partners in their community.	Facilitate 8 professional development training sessions for educators on environmental education related to the Grand River.	Coordinate with teachers to develop 10 proposals for school projects on place-based environmental education.	Local units of government, Blandford Nature Center, Kent ISD, Calvin College, Aquinas College, Kent Conservation District, GVSU	GVSU - College of Education, Groundswell	Funded by the Great Lakes Stewardship Initiative.	Number of partnerships formed. Attendance at sessions. Number of proposals developed and implemented.	

Table 7.1a – Information & Education Strategy to Raise Public Awareness

Focus: Public Awareness									
WMP Goal No. 12: Educate stakeholders about the Watershed and the impacts that stakeholders have on the Watershed.									
Objectives: Increase public knowledge and broaden awareness of the Watershed. Develop partnerships among stakeholders by sharing ideas, resources, and facilitating cooperative activities that increase public awareness of watershed management and impact land use policies.									
Messages: 1) A watershed is an area of land that drains to a common point. You live in the Lower Grand River Watershed. You impact the watershed. 2) Learn more about the Lower Grand River Watershed by visiting www.lowergrandriver.org.									
Critical Areas: Entire Watershed									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Responsible for Implementation	Estimated Costs	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Students	See sections 2.6 (Student Population: Kindergarten to Grade 12), 5.0 (Zip Code Profiles), and 7.4 (Schools Serving the Watershed) of the Social Profile	Purchase and/or utilize existing EnviroScape models for watershed education (KCDC and OCDC have models; 6 models for 6 remaining counties).	Coordinate with Groundswell to show the film, “Mysteries ofthe Great Lakes" to local students; film provides anintroduction to stewardship for young people (8 annual film viewings).	Write school newsletter articles to encourage students to participate in existing stream clean-ups: e.g., Coldwater River Watershed Council's Annual Clean Up and Mayor's Annual Grand River Clean Up (8 articles for 8 counties).	West Michigan Environmental Action Council, Coldwater River Watershed Council, OCDC, KCDC, GVSU - College of Education, Groundswell	LGROW	EnviroScape presentations: $250/model x 6 plus 25 hours ($40/hr). Film presentation: $23/DVD x 8 plus 16 hours. Newsletter articles: 16 hours. Total = $3,964.	Student attendance and exit questionnaire results.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey

Table 7.1a – Information & Education Strategy to Raise Public Awareness

Focus: Public Awareness									
WMP Goal No. 12: Educate stakeholders about the Watershed and the impacts that stakeholders have on the Watershed.									
Objectives: Increase public knowledge and broaden awareness of the Watershed. Develop partnerships among stakeholders by sharing ideas, resources, and facilitating cooperative activities that increase public awareness of watershed management and impact land use policies.									
Messages: 1) A watershed is an area of land that drains to a common point. You live in the Lower Grand River Watershed. You impact the watershed. 2) Learn more about the Lower Grand River Watershed by visiting www.lowergrandriver.org.									
Critical Areas: Entire Watershed									
Target Audience	Social Profile*	Measurable Milestone			Potential Partners	Responsible for Implementation	Estimated Costs	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
		Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)					
Faith-based Organizations	See section 7.7 (Watershed Congregations) of the Social Profile	Facilitate watershed education by updating and maintaining website quarterly (www.calvin.edu/admin/provost/pcw/).	Host 3 rain barrel parties and facilitate 3 stream clean-ups with church members in the Plaster Creek Watershed.	Coordinate with faith-based organization to construct 5 rain gardens in the Plaster Creek Watershed.	Calvin College, West Michigan Environmental Action Council, Christian Reformed Church in North America	Plaster Creek Working Group	Activities currently funded by existing programs.	Website hits. Attendance at stakeholder meetings/clean ups. Number of rain barrels installed. Number of rain gardens constructed.	

Table 7.1a – Information & Education Strategy to Raise Public Awareness

Focus: Public Awareness									
WMP Goal No. 12: Educate stakeholders about the Watershed and the impacts that stakeholders have on the Watershed.									
Objectives: Increase public knowledge and broaden awareness of the Watershed. Develop partnerships among stakeholders by sharing ideas, resources, and facilitating cooperative activities that increase public awareness of watershed management and impact land use policies.									
Messages: 1) A watershed is an area of land that drains to a common point. You live in the Lower Grand River Watershed. You impact the watershed. 2) Learn more about the Lower Grand River Watershed by visiting www.lowergrandriver.org.									
Critical Areas: Entire Watershed									
Target Audience	Social Profile*	Measurable Milestone			Potential Partners	Responsible for Implementation	Estimated Costs	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
		Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)					
Businesses	See sections 3.6 (Business Establishments), 3.7 (Manufacturing Employment), 3.9 (Other Aspects of the Watershed's Economy), and 5.0 (Zip code Profiles) of the Social Profile	Since the business group is under represented in LGROW, mail 75 postcard invitations to business contacts inviting them to participate in the Grand River Forums.	Continue facilitating annual Grand River Forum meetings to educate stakeholders, including new business contacts.	Meet with 5 new business contacts to encourage them to become members of LGROW.	West Michigan Sustainable Business Forum	LGROW	Postcards: $0.85/postcard x 75 plus 8 hours ($40/hr). Grand River Forum Meetings: $400/meeting plus 40 hours. Meetings: 3 hours/meeting x 5. Total = $2,984	Number of new business members joining LGROW.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey
* Gajewski, B. 2010. A Social Profile of the Lower Grand River Watershed. Center for Environmental Study, Grand Rapids, MI. 105 pp.									

Table 7.1b – Information & Education Strategy to Address Pathogens and Bacteria

Pollutant 1: Pathogens and Bacteria									
WMP Goal No. 1: Restore and maintain waterbodies for partial body contact recreational use. **WMP Goal No. 2:** Restore and maintain waterbodies for total body contact recreational use.									
Objectives: 1) Implement manure management planning and implementation, 2) Implement livestock management practices at access sites, 3) Implement vegetative buffering practices and manure management planning and implementation, 4) Encourage proper septic tank management, 5) Implement vegetative buffering practices, 6) Implement MDNRE population management practices, and 7) Implement sanitary sewer maintenance practices.									
Message: Human actions increase the chances of pathogen and bacterial contamination in waterbodies. Bacterial contamination from cropland, livestock, septic tanks, ducks and geese, and the sanitary sewer create unsafe water for human contact.									
Critical Areas: Impaired Uses: Bass River; Buck Creek; Direct Drainage to Lower Grand River; Plaster Creek; Coldwater River; Coopers, Clear, and Black Creeks; Crockery Creek, Deer Creek; Threatened Uses: Upper/Lower Rogue River; Spring Lake/Norris Creek; Sand Creek									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Rural Residents	See sections 2.0 (Who lives in the LGRW?), 4.7 (Wastewater), 5.0 (Zip Code profiles), and 6.1.3 (Survey Results - Survey Participants from Rural and Urban Zip Codes) of the Social Profile	Post online information on proper septic system maintenance using Facebook, YouTube, or watershed website. Link information to 8 county websites.	Distribute 1,600 copies of EPA's "A Homeowner's Guide to Septic Systems" brochure (200 per impaired critical area).	Complete and advertise 40 (5 per impaired critical area) septic system repairs.	Conservation Districts, MDNRE, Michigan State University Extension	Online information: 16 hours ($40/hr). Brochures: $0.50/copy x 1,600 plus 5 hours. Repair advertisements: $0.25/ad x 30 plus 16 hours; costs for repairs covered by existing programs. Total = $2,290	LGROW and Health Departments	Number of website hits. Number of phone calls/website hits in response to brochure. Number of additional septic system repairs completed.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey
Outdoor Enthusiasts	See section 6.1.3 (Survey Results - Passive and Active Recreation) of the social profile	Develop and install 16 signs (2 per impaired critical area) with "Please don't feed waterfowl" advertisement, developed by the Watershed Center.	Develop and distribute 1,600 (200 per impaired critical area) brochures at state/local parks.	Advertise 1 population management demonstration project in LGRW in coordination with the MDNRE.	Health Departments, Parks and Recreation Departments, State Parks, Outdoor Recreation Organizations, MDNRE	Signs: $150/sign x 16 plus 80 hours ($40/hr). Brochures: $0.70/brochure x 1,600 plus 30 hours. Advertisements: $0.25/ad x 8 plus 8 hours. Total = $8,242	LGROW	Observation survey to determine reduction in the number of people who feed wildlife.	

Table 7.1b – Information & Education Strategy to Address Pathogens and Bacteria

Pollutant 1: Pathogens and Bacteria									
WMP Goal No. 1: Restore and maintain waterbodies for partial body contact recreational use. **WMP Goal No. 2:** Restore and maintain waterbodies for total body contact recreational use.									
Objectives: 1) Implement manure management planning and implementation, 2) Implement livestock management practices at access sites, 3) Implement vegetative buffering practices and manure management planning and implementation, 4) Encourage proper septic tank management, 5) Implement vegetative buffering practices, 6) Implement MDNRE population management practices, and 7) Implement sanitary sewer maintenance practices.									
Message: Human actions increase the chances of pathogen and bacterial contamination in waterbodies. Bacterial contamination from cropland, livestock, septic tanks, ducks and geese, and the sanitary sewer create unsafe water for human contact.									
Critical Areas: Impaired Uses: Bass River; Buck Creek; Direct Drainage to Lower Grand River; Plaster Creek; Coldwater River; Coopers, Clear, and Black Creeks; Crockery Creek, Deer Creek; Threatened Uses: Upper/Lower Rogue River; Spring Lake/Norris Creek; Sand Creek									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Agricultural Producers	See sections 3.8 (Farm Operations), 4.3 (Agriculture in the Watershed), and 5.0 (Zip Code Profiles) of the Social Profile	Develop and distribute 1,600 mailers (200 per impaired critical area) on proper manure application, livestock access issues, and benefits of vegetative buffers.	Distribute 1,600 (200 per impaired critical area) brochures on available incentive programs.	Develop sustainable farm award program with the MDA to acknowledge and promote farms with sound environmental practices.	Natural Resources Conservation Service, MDNRE, Conservation Districts, Michigan State University Extension	Mailers: $0.10/mailer x 1,600 plus 8 hours ($40/hr). Brochure: $0.70/brochure x 1,600 plus 20 hours. Coordination with MDA: 4 hours/ meeting x 6. Total = $3,360	LGROW and Michigan Department of Agriculture (MDA)	Number of contacts made as a result of mailers/brochures. Adoption of farm award program by the MDA.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey
Local Units of Government	See attachment 1 (Zip Code Profiles) of the social profile	Develop and distribute 125 brochures (25 per targeted county) on septic system regulations and value of upgrading aging/leaking sanitary sewers.	Conduct 5 workshops on septic system regulations for Muskegon, Newaygo, Montcalm, Kent, and Ionia Counties.	Assist 5 counties with adoption of regulations or ordinances and finding needed funding for sewer upgrades.	Conservation Districts, Michigan State University Extension, MDNRE	Brochures: $0.70/copy x 125 plus 16 hours ($40/hr). $300/workshop x 5 plus 40 hours; $5,000/ordinance development x 5. Total = $28,828	LGROW and Health Departments	Number of phone calls in response to brochures. Attendance and exit questionnaires at workshops. Number of adopted regulations or ordinances. Number of upgraded sanitary sewer miles.	

* Gajewski, B. 2010. A Social Profile of the Lower Grand River Watershed. Center for Environmental Study, Grand Rapids, MI. 105 pp.

Table 7.1c – Information & Education Strategy to Address Sediment

Pollutant 2: Sediment									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Implement cropland management practices; 2) Implement vegetative buffering practices; 3) Implement watershed focused land-use planning; 4) Implement low impact development practices; 5) Implement watershed focused land-use planning; 6) Implement proper Soil Erosion and Sedimentation Control techniques; 7) Implement channel stabilization and erosion control techniques; 8) Implement livestock management practices at access sites; 9) Implement streambank stabilization, bio-engineering, and erosion control techniques; 10) Reduce and control gully erosion; 11) Implement streambank stabilization and erosion control techniques; and 12) Reduce and control lakeshore erosion.									
Message: Human actions increase sedimentation and adversely affect water quality. Sediment changes the flow capacity of the stream and impairs aquatic habitats.									
Critical Areas: Impaired Uses: Bass River; Direct Drainage to Lower Grand River (York Creek); Mill Creek (Strawberry Creek); Plaster Creek; Coldwater River; Indian Mill Creek; Mud Creek; Sand Creek; Threatened Uses: Deer Creek; Buck Creek; Upper/Lower Rogue River; Spring Lake/Norris Creek									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Agricultural Producers	See sections 3.8 (Farm Operations), 4.3 (Agriculture in the Watershed), and 5.0 (Zip Code Profiles) of the Social Profile	Develop and distribute 1,600 mailers (200 per impaired critical area) on how to reduce cropland, tile, and rill/gully erosion.	Distribute 1,600 (200 per impaired critical area) brochures on available incentive programs.	Develop sustainable farm award program with the MDA to acknowledge and promote farms with sound environmental practices.	Natural Resources Conservation Service, Michigan State University, Conservation Districts, MDNRE	Mailers: $0.10/mailer x 1,600 plus 8 hours ($40/hr). Brochure: $0.70/brochure x 1,600 plus 20 hours. Coordination with MDA: 4 hours/ meeting x 6. Total = $3,360	LGROW and Michigan Department of Agriculture	Number of contacts made as a result of mailers/brochures. Adoption of farm award program by the MDA.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey

Table 7.1c – Information & Education Strategy to Address Sediment

Pollutant 2: Sediment									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Implement cropland management practices; 2) Implement vegetative buffering practices; 3) Implement watershed focused land-use planning; 4) Implement low impact development practices; 5) Implement watershed focused land-use planning; 6) Implement proper Soil Erosion and Sedimentation Control techniques; 7) Implement channel stabilization and erosion control techniques; 8) Implement livestock management practices at access sites; 9) Implement streambank stabilization, bio-engineering, and erosion control techniques; 10) Reduce and control gully erosion; 11) Implement streambank stabilization and erosion control techniques; and 12) Reduce and control lakeshore erosion.									
Message: Human actions increase sedimentation and adversely affect water quality. Sediment changes the flow capacity of the stream and impairs aquatic habitats.									
Critical Areas: Impaired Uses: Bass River; Direct Drainage to Lower Grand River (York Creek); Mill Creek (Strawberry Creek); Plaster Creek; Coldwater River; Indian Mill Creek; Mud Creek; Sand Creek; Threatened Uses: Deer Creek; Buck Creek; Upper/Lower Rogue River; Spring Lake/Norris Creek									
Target Audience	Social Profile*	Measurable Milestone			Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
		Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)					
		Publish newsletter article in Conservation District newsletters on how to reduce cropland, tile, and rill/gully erosion (one article for 8 counties).	Conduct 3 workshops on the benefits of no till practices; workshops to be held on local farms currently implementing practices.	Meet with 24 local agricultural producers (3 per impaired critical area) using door to door talks to discuss no till practices and funding opportunities.	Michigan Department of Agriculture, Michigan State University Extension, Conservation Districts, MDNRE	Articles: 12 hours ($40/hr). Workshops: $300/workshop x 3 plus 30 hours. Meetings: $150 for materials plus 25 hours. Total = $3,730	LGROW and Natural Resources Conservation Service	Website hits in response to articles. Exit questionnaires at workshops and following meetings. Number of practices implemented.	

Table 7.1c – Information & Education Strategy to Address Sediment

Pollutant 2: Sediment									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Implement cropland management practices; 2) Implement vegetative buffering practices; 3) Implement watershed focused land-use planning; 4) Implement low impact development practices; 5) Implement watershed focused land-use planning; 6) Implement proper Soil Erosion and Sedimentation Control techniques; 7) Implement channel stabilization and erosion control techniques; 8) Implement livestock management practices at access sites; 9) Implement streambank stabilization, bio-engineering, and erosion control techniques; 10) Reduce and control gully erosion; 11) Implement streambank stabilization and erosion control techniques; and 12) Reduce and control lakeshore erosion.									
Message: Human actions increase sedimentation and adversely affect water quality. Sediment changes the flow capacity of the stream and impairs aquatic habitats.									
Critical Areas: Impaired Uses: Bass River; Direct Drainage to Lower Grand River (York Creek); Mill Creek (Strawberry Creek); Plaster Creek; Coldwater River; Indian Mill Creek; Mud Creek; Sand Creek; Threatened Uses: Deer Creek; Buck Creek; Upper/Lower Rogue River; Spring Lake/Norris Creek									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Riparian Landowners	Social profile to be determined	Develop and advertise a program for riparian tree/vegetation planting in local newspapers and conservation districts' tree sale notices (800 notices per 8 impaired critical areas).	Conduct 2 workshops about importance of riparian habitats and tree sales in coordination with Arbor Day.	Assist 10 riparian landowners with planting trees and riparian vegetation for runoff filtration.	County Planning Commissions, County Drain Commissioners, Conservation Districts, Natural Resources Conservation Service	Riparian planting program: $3,000 to develop program, $0.10/notice x 800 plus 16 hours ($40/hr). Workshops: $300/workshop plus 18 hours. Riparian plantings: $1,000/buffer x 10 plus 40 hours. Total = $16,730	LGROW	Number of contacts resulting from notices. Results of exit questionnaires following workshops. Number of feet of vegetation planted in the riparian zone.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey

Table 7.1c – Information & Education Strategy to Address Sediment

Pollutant 2: Sediment									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Implement cropland management practices; 2) Implement vegetative buffering practices; 3) Implement watershed focused land-use planning; 4) Implement low impact development practices; 5) Implement watershed focused land-use planning; 6) Implement proper Soil Erosion and Sedimentation Control techniques; 7) Implement channel stabilization and erosion control techniques; 8) Implement livestock management practices at access sites; 9) Implement streambank stabilization, bio-engineering, and erosion control techniques; 10) Reduce and control gully erosion; 11) Implement streambank stabilization and erosion control techniques; and 12) Reduce and control lakeshore erosion.									
Message: Human actions increase sedimentation and adversely affect water quality. Sediment changes the flow capacity of the stream and impairs aquatic habitats.									
Critical Areas: Impaired Uses: Bass River; Direct Drainage to Lower Grand River (York Creek); Mill Creek (Strawberry Creek); Plaster Creek; Coldwater River; Indian Mill Creek; Mud Creek; Sand Creek; Threatened Uses: Deer Creek; Buck Creek; Upper/Lower Rogue River; Spring Lake/Norris Creek									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Local Units of Government, Builders and Developers, Homeowner's Associations	See attachment 1 (Zip Code Profiles) of the social profile	Develop and distribute 1,600 (200 per impaired critical area) posters on good housekeeping practices to reduce sediment transport from impervious surfaces, drainage networks, and construction sites.	Distribute 1,600 (200 per impaired critical area) brochures.	Facilitate 8 training sessions for government staff on good housekeeping practices to reduce sediment transport from impervious surfaces, drainage networks, and construction sites.	SESC Enforcing Agents, Road Commissions, MDNRE	Posters: $1.25/poster x 1,600 plus 16 hours ($40/hr). Brochure: $0.70/brochure x 1,600 plus 20 hours. Training Sessions: $75/ meeting x 8 plus 50 hours. Total = $7,160	LGROW	Number of contacts made as a result of posters/brochures. Exit questionnaire following training sessions.	

* Gajewski, B. 2010. A Social Profile of the Lower Grand River Watershed. Center for Environmental Study, Grand Rapids, MI. 105 pp.

Table 7.1d – Information & Education Strategy to Address Nutrients

Pollutant 3: Nutrients									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Implement manure management planning and implementation, 2) Implement livestock management practices at access sites, 3) Implement vegetative buffering practices and manure management planning and implementation, 4) Encourage proper septic tank management, 5) Implement proper fertilizer application practices, 6) Implement vegetative buffering practices, 7) Implement MDNRE population management practices, and 8) Implement sanitary sewer maintenance practices.									
Message: Human actions increase nutrients in waterbodies and adversely affect water quality. Nutrient rich waters encourage excessive plant growth, deplete oxygen, and impair aquatic habitats.									
Critical Areas: Impaired Uses: Lake Creek; Deer Creek; Upper Thornapple River (Low DO); Threatened Uses: Bass River; Buck Creek; Coldwater River; Plaster Creek; Upper/Lower Rogue River; Spring Lake/Norris Creek; Sand Creek									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Urban and Rural Residents, Golf Courses	See sections 2.0 (Who lives in the LGRW?), 5.0 (Zip code Profiles), and 6.1.3 (Survey Results - Survey Participants from Rural and Urban Zip Codes) of the Social Profile	Post online information on proper use and application of non-phosphorus fertilizers using Facebook, YouTube, or watershed websites. Link information to 8 county websites. Use information from the "Healthy Beaches" series, developed by the Watershed Center.	Distribute 1,600 brochures on the proper use and application of non-phosphorus fertilizers (160 per critical area).	Assist 3 golf courses in switching to non-phosphorus fertilizers. Develop and distribute flyer at golf course to advertise demonstration projects to encourage residents to use non-phosphorus fertilizers.	Michigan State University Extension, Conservation Districts	Online information: 16 hours ($40/hr). Brochures: $0.70/copy x 1,600 plus 5 hours. Golf course assistance: 40 hours. Brochure: $0.70/brochure x 300 plus 30 hours. Total = $4,970	LGROW	Number of website hits. Number of phone calls/website hits in response to brochures. Number of golf courses changing fertilizer practices.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey

Table 7.1d – Information & Education Strategy to Address Nutrients

Pollutant 3: Nutrients									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Implement manure management planning and implementation, 2) Implement livestock management practices at access sites, 3) Implement vegetative buffering practices and manure management planning and implementation, 4) Encourage proper septic tank management, 5) Implement proper fertilizer application practices, 6) Implement vegetative buffering practices, 7) Implement MDNRE population management practices, and 8) Implement sanitary sewer maintenance practices.									
Message: Human actions increase nutrients in waterbodies and adversely affect water quality. Nutrient rich waters encourage excessive plant growth, deplete oxygen, and impair aquatic habitats.									
Critical Areas: Impaired Uses: Lake Creek; Deer Creek; Upper Thornapple River (Low DO); Threatened Uses: Bass River; Buck Creek; Coldwater River; Plaster Creek; Upper/Lower Rogue River; Spring Lake/Norris Creek; Sand Creek									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Agricultural Producers	See sections 3.8 (Farm Operations), 4.3 (Agriculture in the Watershed), and 5.0 (Zip Code Profiles) of the Social Profile	Mail postcards on proper use and application of fertilizers; information compiled by Michigan State University Extension (400 notices for 8 counties).	Write articles for conservation district/county newsletters about proper use and application of fertilizers (8 articles for 8 counties).	Assist 5 farms in developing Comprehensive Nutrient Management Plans (CNMP).	Michigan Department of Agriculture, Groundwater Stewardship Program, Conservation Districts	Postcards: $0.85/postcard x 400 plus 20 hours. Articles: 16 hours ($40/hr). CNMP assistance: 40 hours. Total = $3,380	LGROW and Michigan State University Extension	Number of contacts resulting from mailers and articles. Number of farms with completed CNMPs.	
		Develop and distribute 1,600 mailers (160 per critical area) on proper manure application, livestock access issues, and benefits of vegetative buffers.	Distribute 1,600 (160 per critical area) brochures on available incentive programs.	Develop sustainable farm award program with the MDA to acknowledge and promote farms with sound environmental practices.	Natural Resources Conservation Service, Conservation Districts, Michigan State University Extension, MDNRE	Mailers: $0.10/mailer x 1,600 plus 8 hours ($40/hr). Brochure: $0.70/brochure x 1,600 plus 20 hours. Coordination with MDA: 4 hours/ meeting x 6. Total = $3,360	LGROW and Michigan Department of Agriculture	Number of contacts made as a result of mailers/brochures. Adoption of farm award program by the MDA.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey

Table 7.1d – Information & Education Strategy to Address Nutrients

Pollutant 3: Nutrients									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Implement manure management planning and implementation, 2) Implement livestock management practices at access sites, 3) Implement vegetative buffering practices and manure management planning and implementation, 4) Encourage proper septic tank management, 5) Implement proper fertilizer application practices, 6) Implement vegetative buffering practices, 7) Implement MDNRE population management practices, and 8) Implement sanitary sewer maintenance practices.									
Message: Human actions increase nutrients in waterbodies and adversely affect water quality. Nutrient rich waters encourage excessive plant growth, deplete oxygen, and impair aquatic habitats.									
Critical Areas: Impaired Uses: Lake Creek; Deer Creek; Upper Thornapple River (Low DO); Threatened Uses: Bass River; Buck Creek; Coldwater River; Plaster Creek; Upper/Lower Rogue River; Spring Lake/Norris Creek; Sand Creek									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Riparian Landowners	Social profile to be determined	Develop and advertise a program for riparian tree/vegetn planting in local newspapers & conservation districts' tree sale notices (300 notices for 3 impaired critical areas).	Conduct 2 workshops about importance of riparian habitats and tree sales in coordination with Arbor Day.	Assist 10 riparian landowners with planting trees and riparian vegetation for runoff filtration.	County Planning Commissions, County Drain Comsners, Conservation Districts, Natural Resources Conservation Service, Homeowner's Associations	Riparian planting program: $3,000 to dvlp. program, $0.10/notice x 300 plus 16 hrs ($40/hr). Workshops: $300/workshop plus 18 hrs. Riparian plantings: $1,000/buffer x 10 plus 40 hrs. Total = $16,680	LGROW	Number of contacts resulting from notices. Results of exit questionnaires following workshops. Number of feet of vegetation planted in the riparian zone.	
Rural Residents	See sections 2.0 (Who lives in the LGRW?), 4.7 (WW), 5.0 (Zip Code profiles), and 6.1.3 (Survey Results - Survey Participants from Rural and Urban Zip Codes) of the Social Profile	Post online info. on proper septic system maintenance using Facebook, YouTube, or watershed websites. Link information to 8 county websites.	Distribute 1,600 copies of EPA's "A Homeowner's Guide to Septic Systems" brochure (160 per critical area).	Complete and advertise 40 (4 per critical area) septic system repairs.	MDNRE, Michigan State University Extension Conservation Districts	Online info.: 16 hours ($40/hr). Brochures: $0.50/copy x 1,600 plus 5 hrs. Repair advrtsmnts: $0.25/ad x 30 plus 16 hrs; costs for repairs covered by existing programs. Total = $2,290	LGROW and Health Departments	Number of website hits. Number of phone calls/website hits in response to brochure. Number of additional septic system repairs completed.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey

Table 7.1d – Information & Education Strategy to Address Nutrients

Pollutant 3: Nutrients									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Implement manure management planning and implementation, 2) Implement livestock management practices at access sites, 3) Implement vegetative buffering practices and manure management planning and implementation, 4) Encourage proper septic tank management, 5) Implement proper fertilizer application practices, 6) Implement vegetative buffering practices, 7) Implement MDNRE population management practices, and 8) Implement sanitary sewer maintenance practices.									
Message: Human actions increase nutrients in waterbodies and adversely affect water quality. Nutrient rich waters encourage excessive plant growth, deplete oxygen, and impair aquatic habitats.									
Critical Areas: Impaired Uses: Lake Creek; Deer Creek; Upper Thornapple River (Low DO); Threatened Uses: Bass River; Buck Creek; Coldwater River; Plaster Creek; Upper/Lower Rogue River; Spring Lake/Norris Creek; Sand Creek									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Outdoor Enthusiasts	See section 6.1.3 (Survey Results - Passive and Active Recreation) of the social profile	Develop and install 16 signs (1-2 per critical area) with "Please don't feed waterfowl" advertisement, developed by the Watershed Center.	Develop and distribute 1,600 (160 per critical area) brochures at state/local parks.	Advertise 1 population management demonstration project in LGRW in coordination with the MDNRE.	Health Departments, Parks and Recreation Departments, State Parks, Outdoor Recreation Organizations, MDNRE	Signs: $150/sign x 16 plus 80 hours ($40/hr). Brochures: $0.70/brochure x 1,600 plus 30 hours. Advertisements: $0.25/ad x 8 plus 8 hours. Total = $8,242	LGROW	Observation survey to determine reduction in the number of people who feed wildlife.	
Local Units of Government	See attachment 1 (Zip Code Profiles) of the social profile	Develop and distribute 125 brochures (25 per targeted county) on septic system regulations and value of upgrading aging/leaking sanitary sewers.	Conduct 5 workshops on septic system regulations for Muskegon, Newaygo, Montcalm, Kent, and Ionia Counties.	Assist counties with adoption of regulations or ordinances and finding needed funding for sewer upgrades.	Health Departments, Conservation Districts, Michigan State University Extension, MDNRE	Brochures: $0.70/copy x 125 plus 16 hours ($40/hr). $300/workshop x 5 plus 40 hours; $5,000/ordinance development x 5. Total = $28,828	LGROW and Health Departments	Number of phone calls in response to brochures. Attendance and exit questionnaires at workshops. Number of adopted regulations or ordinances. Number of upgraded sanitary sewer miles.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey

Table 7.1e – Information & Education Strategy to Address Unstable Hydrology

Pollutant 4: Unstable Hydrology									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Restore and protect wetlands, 2) Minimize the impact of tiles and drainage networks on hydrology, 3) Restore and protect floodplains, and 4) Use alternative techniques and stream restoration practices (e.g. two-stage channel design, in-stream structures) when drain maintenance is necessary.									
Message: Changes in land use impact stream flows, creating water quality, stream stability, and flooding concerns.									
Critical Areas: Threatened Uses: Coldwater River; Crockery Creek; Direct Drainage to Lower Grand River; Lower/Upper Thornapple River; Plaster Creek; Upper/Lower Rogue River; Rush Creek; Sand Creek									
Target Audience	Social Profile*	Measurable Milestone			Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
		Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)					
Agricultural producers	See sections 3.8 (Farm Operations), 4.3 (Agriculture in the Watershed), and 5.0 (Zip Code Profiles) of the Social Profile	Publish newsletter article in Conservation District newsletters on the value of wetland/floodplain restoration, the impacts of tiles and channelization, and available incentive programs (one article for 8 counties).	Distribute 1,600 brochures (200 per impaired critical area) on available incentive programs to address the sources/causes of unstable hydrology issues.	Develop sustainable farm award program with the MDA to acknowledge and promote farms with sound environmental practices.	Natural Resources Conservation Service, Michigan State University, Conservation Districts, MDNRE	Articles: 12 hours ($40/hr). Brochure: $0.70/brochure x 1,600 plus 20 hours. Coordination with MDA: 4 hours/ meeting x 6. Total = $3,360	LGROW and Michigan Department of Agriculture	Number of contacts made as a result of articles/brochures. Adoption of farm award program by the MDA.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey
Builders and Developers	See section 3.6 (Business Establishments) and Attachment 1 of the social profile	Post online information on watershed focused land use planning to reduce wetland, floodplain, and stream impacts using Facebook, YouTube, or watershed website. Email web links to contacts.	Facilitate 3 workshops on the use and value of the Landscape-Level Wetland Functional Assessment Tool.	Involve builders and developers in organizing 3 initiatives similar to the "Rein in the Runoff" campaign implemented in Spring Lake.	West Michigan Sustainable Business Forum, MDNRE, SEMCOG, Spring Lake, Annis Water Resources Institute, Home Builders Association	Online information: 16 hours ($40/hr). Workshops: $300/workshop plus 20 hours. Campaign initiative: $25,000. Total = $26,740	LGROW	Number of website hits. Exit questionnaires following workshops/ campaign meetings. Success at meeting campaign goals.	

Table 7.1e – Information & Education Strategy to Address Unstable Hydrology

Pollutant 4: Unstable Hydrology									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Restore and protect wetlands, 2) Minimize the impact of tiles and drainage networks on hydrology, 3) Restore and protect floodplains, and 4) Use alternative techniques and stream restoration practices (e.g. two-stage channel design, in-stream structures) when drain maintenance is necessary.									
Message: Changes in land use impact stream flows, creating water quality, stream stability, and flooding concerns.									
Critical Areas: Threatened Uses: Coldwater River; Crockery Creek; Direct Drainage to Lower Grand River; Lower/Upper Thornapple River; Plaster Creek; Upper/Lower Rogue River; Rush Creek; Sand Creek									
Target Audience	Social Profile*	Measurable Milestone			Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
		Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)					
Local Units of Government	See attachment 1 (Zip Code Profiles) of the social profile	Post online information on 1) watershed focused land use planning to reduce wetland, floodplain, and stream impacts, and 2) alternative techniques to drain maintenance using Facebook, YouTube, or watershed website. Link information to 8 county websites.	Facilitate 3 workshops on the use and value of the Landscape-Level Wetland Functional Assessment Tool.	Develop 3 initiatives similar to the "Rein in the Runoff" campaign implemented in Spring Lake.	SEMCOG, MDNRE, Spring Lake, Annis Water Resources Institute	Online information: 16 hours ($40/hr). Workshops: $300/workshop plus 20 hours. Campaign initiative: $25,000. Total = $26,740	LGROW	Number of website hits. Exit questionnaires following workshops/ campaign meetings. Success at meeting campaign goals.	

* Gajewski, B. 2010. A Social Profile of the Lower Grand River Watershed. Center for Environmental Study, Grand Rapids, MI. 105 pp.

Table 7.1f – Information & Education Strategy to Address High Temperature

Pollutant 5: High Temperature									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objective: 1) Restore and protect the stream buffer and canopy.									
Message: Human actions adversely impact the temperature of waterbodies. Lack of riparian vegetation and a dense drain network cause increased stream temperatures.									
Critical Areas: Threatened Uses: Coldwater River; Plaster Creek; Sand Creek, Upper/Lower Rogue River									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Riparian Landowners	Social profile to be determined	Develop and advertise a program for riparian tree planting in local newspapers and conservation districts' tree sale notices (400 notices for 4 threatened critical areas).	Conduct 2 workshops about importance of riparian habitats and tree sales in coordination with Arbor Day.	Assist 10 riparian landowners with planting trees.	County Planning Commissions, County Drain Commissioners, Conservation Districts, Natural Resources Conservation Service	Tree planting program: $3,000 to develop program, $0.10/notice x 400 plus 16 hours ($40/hr). Workshops: $300/workshop plus 18 hours. Tree plantings: $1,000/buffer x 10 plus 40 hours. Total = $16,690	LGROW	Number of contacts resulting from notices. Results of exit questionnaires following workshops. Number of trees planted in the riparian zone.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey
Local Units of Government	See attachment 1 (Zip Code Profiles) of the social profile	Develop and distribute fact sheet on Low Impact Development (LID) practices to reduce impervious surfaces (125 copies for 5 counties).	Conduct one workshop for each of the 5 counties that need LID storm water criteria (Kent, Ottawa, and Montcalm Counties are adopting LID criteria).	Adopt LID ordinance in the 5 counties that need LID storm water criteria.	County and Local Planning Commissions, County Drain Commissioners, Conservation Districts, Economic Development Committees	Fact Sheet: $0.25/fact sheet x 125 plus 12 hours ($40/hr). Workshop: $300/workshop x 5 plus 25 hours. Ordinance: $5,000/ordinance assistance x 5. Total = $28,010	LGROW	Website hits in response to fact sheets. Exit questionnaires following workshops. Number of LID ordinances adopted.	

* Gajewski, B. 2010. A Social Profile of the Lower Grand River Watershed. Center for Environmental Study, Grand Rapids, MI. 105 pp.

Table 7.1g – Information & Education Strategy to Address Habitat Fragmentation

Pollutant 6: Habitat Fragmentation									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objective: 1) Implement watershed focused land use planning.									
Message: Fragmented habitats result in the degradation of wildlife populations.									
Critical Areas: Impaired Uses: Direct Drainage to Lower Grand River (York Creek); Threatened Uses: Entire Watershed									
		Measurable Milestone							
Target Audience	Social Profile*	Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)	Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
Local Units of Government	See section 4.4 (Parks, Recreation and Tourism) and Attachment 1 (Zip Code Profiles) of the Social Profile	Develop and distribute 200 mailers on the benefits of green corridors/natural connections (200 for 8 counties).	Develop and distribute 200 booklets on the green corridor/natural connections plan for the LGRW (200 for 8 counties).	Provide 4 presentations for county governments on land use planning methods to preserve/restore green corridors/natural connections.	Parks and Recreation Departments, Land Conservancies, Nature Conservancies	Mailers: $0.10/copy x 200 plus 8 hours ($40/hr). Booklets: $1.00/copy x 200 plus 40 hours. Presentations: $300/presentation x 4 plus 25 hours. Total = $ 4,340	LGROW and Annis Water Resources Institute	Number of phone calls/website hits in response to mailers/booklets. Attendance at presentations. Implementation status of green corridor/natural connections plan.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey

* Gajewski, B. 2010. A Social Profile of the Lower Grand River Watershed. Center for Environmental Study, Grand Rapids, MI. 105 pp.

Table 7.1h – Information & Education Strategy to Address Chemicals

Pollutant 7: Chemicals									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Implement turf management practices, 2) implement turf management practices, 3) restore and protect the stream buffer and canopy, and 4) implement watershed focused land-use planning.									
Message: Human actions increase the amount of toxic chemicals in waterbodies and adversely affect water quality. Do your part to keep you and your family safe and healthy.									
Critical Areas: Entire Watershed									
Target Audience	Social Profile*	Measurable Milestone			Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
		Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)					
Agricultural Producers	See sections 3.8 (Farm Operations), 4.3 (Agriculture in the Watershed), 4.5 (Solid Waste Management and Recycling), and 5.0 (Zip Code Profiles), of the Social Profile	Mail postcards on 1) the availability of Integrated Pest Management (IPM) Resources, developed by Michigan State University Extension, and 2) EQIP funding opportunities (400 for 8 counties).	Write articles for conservation district/county newsletters about proper IPM resources and EQIP funding opportunities (8 articles for 8 counties).	Assist 5 farms in applying for incentive payments through EQIP to implement IPM practices.	Michigan Department of Agriculture, Groundwater Stewardship Program, Conservation Districts, MDNRE	Postcards: $0.85/postcard x 400 plus 20 hours. Articles: 16 hours ($40/hr). EQIP assistance: 40 hours. Total = $3,380	LGROW and Michigan State University Extension	Number of contacts resulting from notices and articles. Number of farms enrolled in EQIP program.	Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey

Table 7.1h – Information & Education Strategy to Address Chemicals

Pollutant 7: Chemicals									
WMP Goal No. 3: Restore and maintain waterbodies for other indigenous aquatic life and wildlife use. **WMP Goal No. 4:** Restore and maintain waterbodies for cold water fishery use. **WMP Goal No. 5:** Restore and maintain waterbodies for warmwater fishery use.									
Objectives: 1) Implement turf management practices, 2) implement turf management practices, 3) restore and protect the stream buffer and canopy, and 4) implement watershed focused land-use planning.									
Message: Human actions increase the amount of toxic chemicals in waterbodies and adversely affect water quality. Do your part to keep you and your family safe and healthy.									
Critical Areas: Entire Watershed									
Target Audience	Social Profile*	Measurable Milestone			Potential Partners	Estimated Costs	Responsible for Implementation	Activity Specific Evaluation Method	Watershed-wide Evaluation Method
		Awareness (within 1 year)	Education (within 3 years)	Action (within 5 years)					
Riparian Landowners	See section 4.5 (Solid Waste Management and Recycling) of the social profile	Develop and advertise a program for riparian tree/vegetation planting in local newspapers and conservation districts' tree sale notices.	Conduct 2 workshops about importance of riparian habitats and tree sales in coordination with Arbor Day.	Assist 10 riparian landowners/golf courses with planting trees and riparian vegetation for runoff filtration.	County Planning Commissions, County Drain Commissioners, Conservation Districts, Natural Resources Conservation Service, Homeowner's Associations	Riparian planting program: $3,000 to develop program, $0.10/notice x 100 plus 16 hours ($40/hr). Workshops: $300/workshop plus 18 hours. Riparian plantings: $1,000/buffer x 10 plus 40 hours. Total = $16,660	LGROW	Number of contacts resulting from notices. Results of exit questionnaires following workshops. Number of feet of vegetation planted in the riparian zone.	

Annual Website or Paper Questionnaire, Focus Group, and/or Telephone Survey