



Genesee County Phase II Municipalities Annual Report

November 1, 2008 – October 31, 2009

Submitted to:

***the State of Michigan Department of Environmental Quality,
Surface Water Quality Division***

by the Genesee County Drain Commissioner

on behalf of Genesee County and contracted Communities



TABLE OF CONTENTS

LIST OF TABLES	ii
LIST OF FIGURES	iii
LIST OF ACRONYMS	iv
1. NPDES PERMIT REQUIREMENTS AND ADMINISTRATION	1-1
2. PUBLIC EDUCATION AND PARTICIPATION SUB-COMMITTEE ACTIVITIES	2-1
3. CONSTRUCTION STANDARDS AND PRACTICES SUB-COMMITTEE ACTIVITIES	3-1
4. MONITORING AND MAPPING SUB-COMMITTEE ACTIVITIES	4-1
5. ROAD-STREAM CROSSING SURVEY	5-1
6. 319 NONPOINT SOURCE GRANT PROJECTS	6-1
7. GENESEE GREEN	7-1
8. MACROINVERTEBRATE STUDY	8-1
9. ILLICIT DISCHARGE ELIMINATION PLAN (IDEP)	9-1
10. NEW STORM WATER POINT SOURCE DISCHARGES (PSD)	10-1
APPENDIX A:	
NESTING JURISDICTION LETTERS	
PUBLIC EDUCATION MATERIAL	
PROJECT GREEN PROGRAM	
BENTHIC MONITORING PROGRAM	

LIST OF TABLES

Table

Table 1-1: Contract Communities.....	1-3
Table 1-2: School Districts Interested in Nested Jurisdiction.....	1-3
Table 1-3: Watershed Management Plans Submittals	1-6
Table 5-1: Road-Stream Crossing Action Methodology	5-3
Table 5-2: Results of the Road Stream Crossing Assessments.....	5-5
Table 6-1: Designated Use Attainment/Threats Below Ray Road	6-2
Table 6-2: Pollutant, Source, and Cause of Nonpoint Source Pollutants	6-3
Table 7-1: Water Quality Index Calculation Chart.....	7-2
Table 7-2: Project Green Results	7-3
Table 8-1: Macroinvertebrate Study Results	8-1
Table 9-1 Illicit Connections - Lower Flint River Watershed	9-4
Table 9-2 Confirmed Illicit Connections in Middle Flint River Watershed -	9-8
Table 9-3 Illicit Connections in Middle Flint River Watershed -	9-9
Table 9-4 Illicit Connections in Upper Flint River Watershed	9-12
Table 9-5 Illicit Connections in Shiawassee River Watershed	9-14

LIST OF FIGURES

Figure 1-1: Genesee County Watershed Boundaries	1-2
Figure 1-2 Watershed Planning Decision Making Flowchart.....	1-5
Figure 2-1: River Crossing Signs Placed as of October 2008	2-9
Figure 7-1: Project Green Results for the Lower Flint River Watershed	7-4
Figure 7-2: Project Green Results for the Middle Flint River Watershed	7-5
Figure 7-3: Project Green Results for the Upper Flint River Watershed.....	7-6
Figure 7-4: Project Green Results for the Shiawassee River Watershed.....	7-7
Figure 8-1: Macroinvertebrate Study Results for the Lower Flint River Watershed	8-2
Figure 8-2: Macroinvertebrate Study Results for the Middle Flint River Watershed	8-3
Figure 8-3: Macroinvertebrate Study Results for the Upper Flint River Watershed.....	8-4
Figure 9-1: Illicit Discharge Notification System Process	9-2
Figure 9-2: Lower Flint River Watershed – IDEP Program Status	9-3
Figure 9-3 Middle Flint River Watershed – IDEP Program Status	9-7
Figure 9-4 Upper Flint River Watershed – IDEP Program Status.....	9-11
Figure 9-5 Shiawassee River Watershed – IDEP Program Status.....	9-13

LIST OF ACRONYMS

E342C	Contract for services between Communities and Drain Office
Ad hoc	The Ad hoc Committees are formed to work on specific objectives until complete
BMP	Best Management Practice
CAER	University of Michigan – Flint, Center for Applied Environmental Research
CMI	Clean Michigan Initiative
CSO	Combined Sewer Overflow
EPA	Environmental Protection Agency
FRWC	Flint River Watershed Council
GCCD	Genesee County Conservation District
GCDC	Genesee County Drain Commissioner
GCHD	Genesee County Health Department
GCRC	Genesee County Road Commission
GISD	Genesee Intermediate School District
GREEN	Global Rivers Environmental Education Network
HHW	Household Hazardous Waste
IDEP	Illicit Discharge Elimination Plan
M&M	Monitoring and Mapping
MDEQ	Michigan Department of Environmental Quality
MS4	Municipal Separate Storm Sewer System
N/A	Not applicable
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
PEP	Public Education Plan
PPP	Public Participation Plan
PSD	Point Source Discharge
QAPP	Quality Assurance Project Plan
SEMCOG	Southeast Michigan Council of Governments
SESC	Soil Erosion and Sedimentation Control
SSO	Sanitary Sewer Overflow
SWAC	Storm Water Advisory Committee
SWSC	Storm Water Structural Controls
SWM	Surface Water Management
SWPPI	Storm Water Pollution Prevention Initiative
TBD	To be determined
WMP	Watershed Management Plan
WWS	Water and Waste Services
WQI	Water Quality Index

1. NPDES PERMIT REQUIREMENTS AND ADMINISTRATION

This annual report was prepared by Genesee County's engineering consultant, Tetra Tech, for the Michigan Department of Environmental Quality (MDEQ).

PERMIT REQUIREMENTS

This annual report summarizes activities completed for the period from November 1, 2008 to October 31, 2009 by Genesee County Phase II Municipalities to meet the requirements of their National Pollutant Discharge Elimination System (NPDES) permit, including:

- Watershed management
- Public education and participation
- New construction standards
- Monitoring and mapping
- Storm Water Pollution Prevention Initiative (SWPPI)

WATERSHED MANAGEMENT ADMINISTRATION

Storm Water System Service District

To implement the permit requirements and perform watershed management planning, Genesee County established a Storm Water System Service District for the entire County under the authority of the Michigan Public Act 342 of 1939. In addition, each of the communities in the County have executed a contract to use the County 342 Storm Water System Service District as the lead agency to provide Phase II permitting services, including watershed management planning.

Watershed Delineation

Five major watersheds were delineated in the permit application, including:

- Lower Flint River Watershed
- Middle Flint River Watershed
- Upper Flint River Watershed
- Shiawassee River Watershed
- Cass River Watershed (deferred)

Figure 1-1 shows the watershed boundaries. The Shiawassee River Watershed boundary was adjusted in 2005 to minimize overlap with effort proceeding in Livingston County. Also after discussions with MDEQ the Upper Flint and Lower Flint watershed lines were changed. The five major watersheds listed above were divided into 20 sub-watershed planning areas.

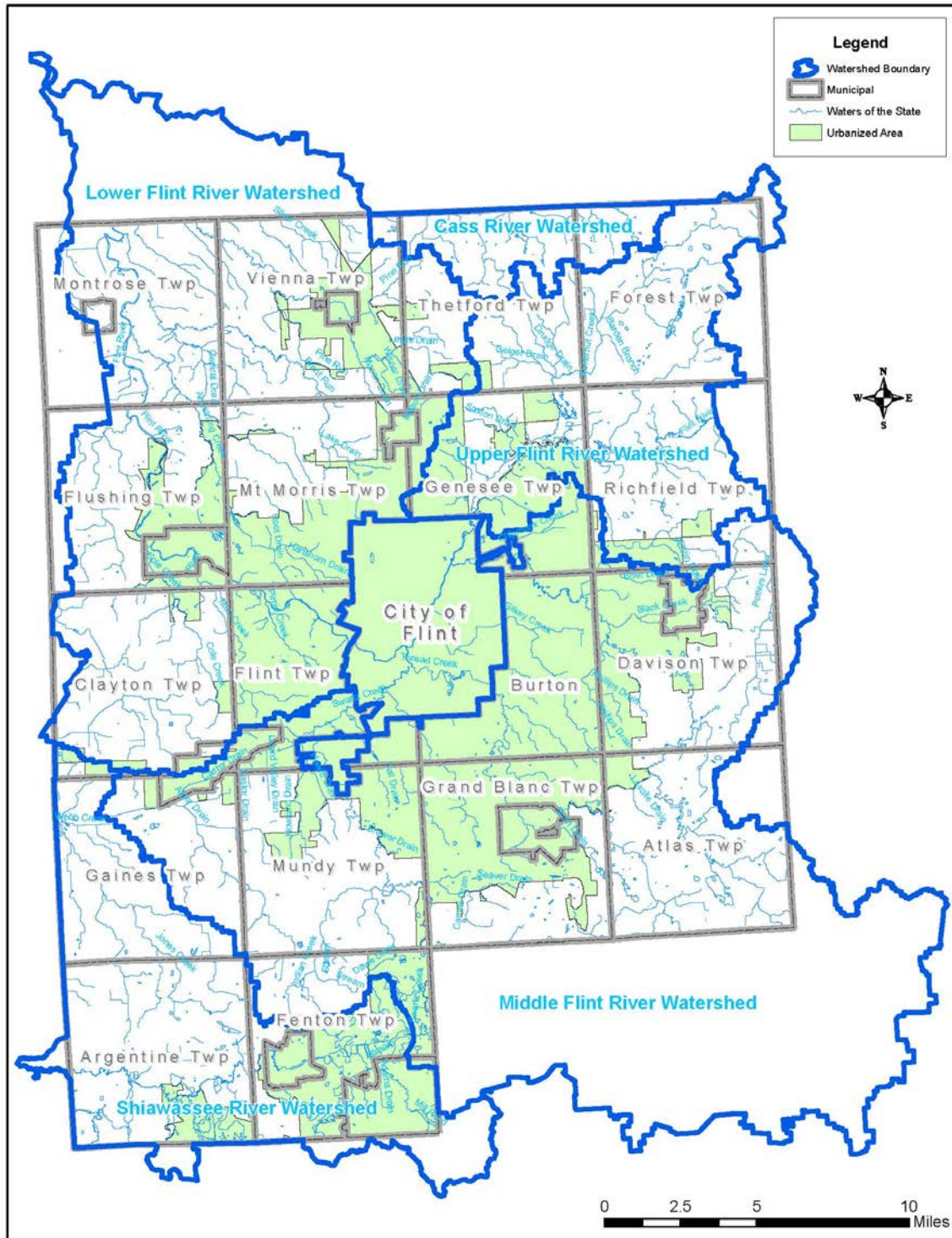


Figure 1-1: Genesee County Watershed Boundaries

Contract Communities

Table 1-1 lists the Genesee County watershed-planning communities that have a 342 contract. Note that not all communities within Genesee County have NPDES permits and that Phase II status was realigned during the 2007-2008 reporting period. For the 2008–2013 cycle, many of the non-Phase II municipalities chose not to re-sign the 342 contract. Of the Phase II communities, Grand Blanc Township is the only phase II community that chose not to re-sign the 342 contract and to provide all their own requirements for the new permit cycle. The Advisory board has been approached by The City of Flint to participate in education activities. At this time no contract has been signed with the City of Flint for services.

Table 1-1: Contract Communities

City of Burton	Flint Township	City of Mount Morris
City of Clio	City of Flushing	Mount Morris Township
City of Davison	Flushing Township	Mundy Township
Davison Township	Genesee Township	City of Swartz Creek
City of Fenton	City of Grand Blanc	Vienna Township
Fenton Township	City of Linden	Genesee County

Nested Drainage System Agreements

The County has met with the schools and the MDEQ to come to an agreement that would allow the County to continue nesting the schools. The lawyers have approved the contract and all the schools have signed it and are now nested again.

Table 1-2: School Districts Interested in Nested Jurisdiction

School District	Within an urbanized area
Atherton	Y
Beecher	Y
Bendle	Y
Bentley	Y
Carman-Ainsworth	Y
Clio	Y
Davison	Y
Fenton	Y
City of Flint	Y
Flushing	Y
Genesee Intermediate School District (GISD)	Y
Genesee	Y
Goodrich	No
Grand Blanc	Y
Kearsley	Y
Lake Fenton	Y
Lake Ville	No
Linden	Y
Montrose	No
Mt. Morris	Y
Swartz Creek	Y
Westwood Heights	Y

Due to a difference in our understanding on what it means to nest the schools, they were notified in January 2008 that the County would be unable to continue nesting the schools. Since then Genesee County Drain Commisisoner's Office has been working with the schools to develop a contract that will address all the legal concerns with nesting the schools. At this time the draft of that contract has been written and is being reviewed by the school's lawyer. Within the next fiscal year, the schools will either be nested or applying for their own NPDES Phase II permit. See Appendix A for letters on this matter.

The nested school districts have requested that the Genesee Intermediate School District (GISD) be their representative in this program. The GISD has been attending meetings and disseminating information to the individual school districts. They have met with transportation and operations staff members as well as superintendents and curriculum planners to discuss requirements and wish to start providing training to meet the requirements of the permit. The GISD participates in the county-wide education effort, including the development of grade-level appropriate watershed education curriculum. See chapter 2 for more details of GISD's involvement.

Private Schools and Charter Schools are not required to have permits and are not nested. These schools of choice do not need to sign an agreement because they do not own property: they rent it from a corporation they formed as a group. Private Schools are not considered Governmental entities and are not subject to the NPDES Ph II permit.

Bishop Airport: The airport has approached Genesee County to nest their storm water activities. A contract has been drafted in 2009 and it is expected to be signed shortly in the next reporting cycle.

Genesee County Storm Water Advisory Committee

The Genesee County Storm Water Advisory Committee (SWAC) includes Genesee County and its communities with a signed 342 contract. Most, but not all, are Phase II communities with a Certificate of Coverage. In addition, many of the Genesee County communities without a signed 342 contract continue to participate in SWAC activities. The only notable exceptions are the City of Flint, which is a Phase I community, and, Grand Blanc Township which chose not to resign the 342 contract. Neither participates on the SWAC.

SWAC is guiding implementation of the entire Phase II Program and has three main sub-committees:

- Public Education (PE) and Participation Sub-Committee
- New Construction Standards and Practices (CSP) Sub-Committee
- Monitoring and Mapping (M&M) Sub-Committee

These sub-committees meet regularly (as-needed) along with stakeholders and/or individuals with specific specialized knowledge to implement the watershed plan, education plan and Illicit Discharge Elimination Plan (IDEP). A brief description of sub-committee duties is presented below Figure 1-2.

Figure 1-2 shows the watershed planning decision-making process and sub-committee relationships. Work conducted by the Watershed Planning Committee(s) is used in development of the Lower Flint, Middle Flint, Upper Flint and Shiawassee River Watershed Management Plans (WMPs). The Watershed Planning Committee(s) are made up of those communities that are located within a specific watershed. Each community serves on at least one sub-committee.

SWAC meetings during this reporting period were held on:

- October 15, 2008
- November 19, 2008
- December 17, 2008
- January 21, 2009
- February 18, 2009
- March 18, 2009

- April 15, 2009
- June 17, 2009
- September 23, 2009
- October 21, 2009

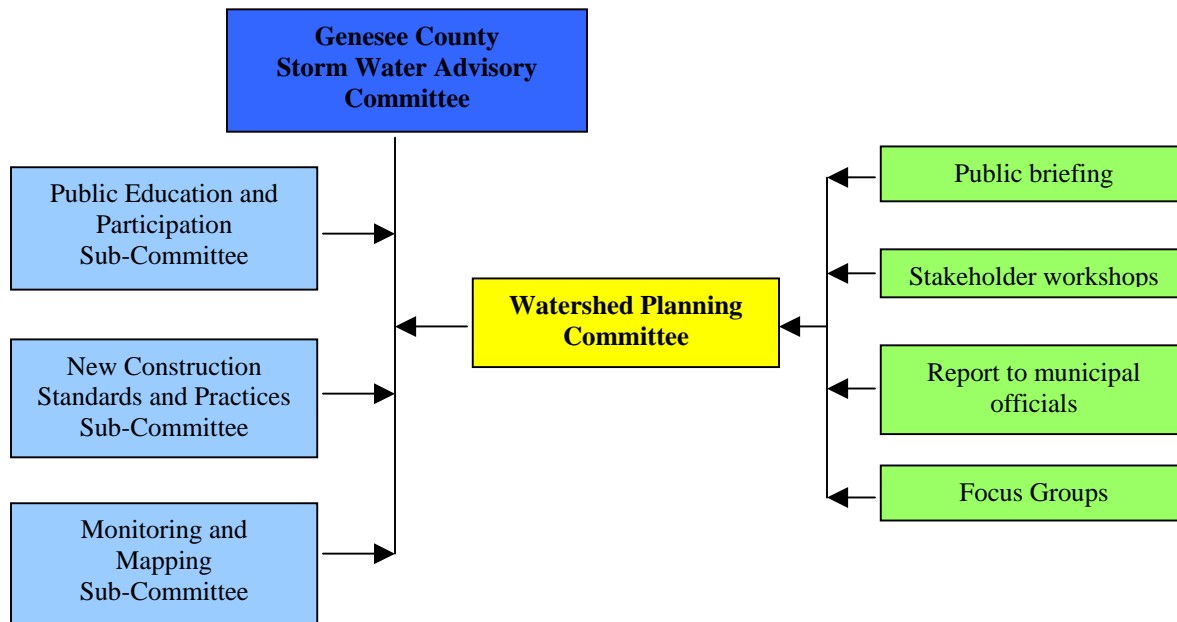


Figure 1-2 Watershed Planning Decision Making Flowchart

Public Education (PE) and Participation Sub-Committee

The PE Sub-Committee guides the overall public education and participation process for the watershed management planning effort. PE activities are summarized in Section 2.

New Construction Standards and Practices (CSP) Sub-Committee

The CSP Sub-Committee oversees new construction standards and post-construction practices for Genesee County. This sub-committee is also updating ordinances to ensure compliance with Environmental Protection Agency (EPA) requirements. CSP activities are summarized in Section 3

Monitoring and Mapping (M&M) Sub-Committee

The M&M Sub-Committee oversees organization and implementation of watershed monitoring, field-sampling protocols, and mapping guidelines. In addition to several monitoring programs, they oversee the Illicit Discharge Elimination Plan (IDEP) Program. Local government leaders share their insights and views of the watershed throughout the project at workshops and meetings, as well as at other formal and informal exchanges. M&M activities are summarized in Section 4.

Watershed Management Plans and Storm Water Pollution Prevention Initiatives

Since 2004, GCDC and Tetra Tech have developed a Public Participation Process that was implemented by working with the Watershed Planning Committee(s), stakeholders, and the public to develop WMPs and SWPPIs for each watershed. Beginning in May 2006, the permittees found out that the WMPs were not “Approvable” by the MDEQ. At that time Tetra Tech and the Drain Commissioner’s Office met with the MDEQ to discuss necessary changes and extending the time line.

During the last reporting period, the WMPs were found acceptable. Since the Cass River WMP was deferred, the other four plans were updated and submitted to the State, see Table 1-3. We were able to proceed with writing a SWPPI template based on the acceptable WMPs. After several revisions and meetings with both the communities and the State, the SWPPIs were submitted in spring 2008. Approval letters for the SWPPI's were received in the summer of 2008.

The new applications for permit cycle 2008-2013 were due and submitted by Aug 1, 2008. They were all prepared and sent to the Phase II communities that will continue with the 342 contract. Each community was to review the application, sign it and send it in. After minor changes the Applications were accepted and new certificates of Coverage were sent to the Phase II communities including the County.

Table 1-3: Watershed Management Plans Submittals

Middle Flint River Watershed Management Plan	Feb 28, 2008
Lower Flint River Watershed Management Plan	Feb 29, 2008
Upper Flint River Watershed Management Plan	Feb 27, 2008
Shiawassee River Watershed Management Plan	Feb 22, 2008
Cass River Watershed Management Plan	Deferred

2. PUBLIC EDUCATION AND PARTICIPATION SUB-COMMITTEE ACTIVITIES

The Public Education (PE) and Participation Sub-Committee held three meetings during this reporting period:

- November 25, 2008
- April 21, 2009
- August 17, 2009

PE Membership included:

- **City of Burton – Charles Smiley**
- **City of Clio – William Kovi**
- **City of Davison – Brian Klaasen**
- City of Flint – Brad Hill
- Clayton Township – Denis Milem
- **Flint Township – Karyn Miller**
- Forest Township – Valerie Pace
- **Mundy Township – Dave Guigear**
- Thetford Township – Julie Parson
- **Vienna Township – Bob Palmer**
- Village of Otisville – David Tatro
- **Genesee County Road Commission – Mike Mansfield**
- **Genesee Intermediate School district- Michael Moorman**

Bolded Members are Phase II Communities

9 of the 18 Supervisors were replaced during the Nov 2008 election, so part of the public education effort was to educate the new sub-committee members what the NPDES Phase II program is.

Their purpose included implementation of the Public Education Plan (PEP) and assigned objectives in the draft action plan (section 8 of the Watershed Management Plan).

PUBLIC EDUCATION PLAN

Permit Requirements

The watershed plan and implementation of public education is based on EPA-required elements, including:

1. Encourage public reporting of the presence of illicit discharges or improper disposal of materials into applicant's separate storm water drainage system.
2. Educate public on the availability, location, and requirements of facilities for disposal or drop-off of household hazardous wastes, travel trailer sanitary wastes, chemicals, grass clippings, leaf litter, animal wastes, and motor vehicle fluids.
3. Educate public regarding acceptable application and disposal of pesticides and fertilizers.
4. Educate public concerning preferred cleaning materials and procedures for residential car washing.
5. Educate public concerning the ultimate discharge point and potential impacts from the separate storm water drainage system serving their place of residence.
6. Educate public about their responsibility and stewardship in their watershed.
7. Educate public concerning management of riparian lands to protect water quality.

Partnerships

Center for Applied Environmental Research: The PE Sub-Committee has been working with the University of Michigan-Flint Center for Applied Environmental Research (CAER) to coordinate, develop, and implement several elements of the PEP. Work during this permit cycle included:

- Conducted research and provide riparian landowner workshop materials
- Coordinated and implemented a riparian landowner workshop reaching 14 waterfront property owners
- Program implementation with drain office
- Discussed the potential for a K-12 curriculum guide and in-service teacher training
- Redesigned the “Our Water” website and transferred the website account to the drain office. Attended meetings at the drain office
- Recruited volunteers and booth materials for the Genesee County Fair
- Staffed information booth at community events
- Planned, wrote, and designed newsletter with drain office
- Researched, wrote, and designed septic system maintenance outreach materials
- Coordinated and maintained public education tools (watershed models, etc.)

Genesee Conservation District: GCDC contracted with the Genesee County Conservation District (GCCD) to provide stormwater education services to school-aged children on behalf of the Phase II permittees. During this permit cycle, GCCD reached over 1600 participants in the Phase II communities through educational activities correlated to the Michigan Department of Education Standards and Benchmarks and the Phase II Storm Water Education Elements. GCCD also began developing Certificates of Appreciation to award to participating Phase II communities. This effort will continue into the next reporting period.

Flint River Watershed Coalition: On behalf of the of the Phase II permittees, the Flint River Watershed Coalition (FRWC) was contracted by the GCDC to provide several public education services, including:

- PowerPoint presentations on storm water education for adult audiences such as municipal officials, rotary clubs, neighborhood associations, lake associations, etc. They spoke to 20 groups (583 people) throughout the year:

10/15/08	Fenton Church	32 Attendees
10/22/08	Bentley Environmental Group	28 Attendees
10/27/08	Carter block Club	12 Attendees
11/3/08	Boy Scout Troop #31	12 Attendees
11/10/08	St John Vianni- classrooms	48 Attendees
11/11/08	Durant Murri Mott Teacher Meeting	40 Attendees
1/22/09	Yard and Garden Club of Flint	15 Attendees
3/3/09	U of M students	22 Attendees
3/20/09	Beecher Community Dev	35 Attendees
3/27/09	Flint Rotary	90 Attendees
4/13/09	Flint Retirees	92 Attendees
4/15/09	Sierra Club Hikers	8 Attendees
4/22/09	Sierra Club Hikers	12 Attendees
7/23/09	Applewood Gilkey Restoration –morn	10 Attendees
7/23/09	Applewood Gilkey Restoration-1pm	18 Attendees
7/23/09	Applewood Gilkey Restoration-3pm	24 Attendees
7/31/09	Wild Ones	10 Attendees
8/20/09	MSU- Master Gardeners	43 Attendees
8/26/09	East Side Business Assoc	18 Attendees
9/9/09	Nepessing Group- Sierra Club	14 Attendees

- Hosting 7 river walks on the Flint River, Shiawassee River, or tributaries (New Program):

5/27/09	Flint River, Flushing River Walk	3 Attendees
6/18/09	Barber Mem Park- Montrose	10 Attendees
6/24/09	Formar Nature Center- Burton	10 Attendees
7/15/09	George Atkins Jr. Trail- Clio	12 Attendees
7/22/09	Gen Co. Hogback Park-Genesee	11 Attendees
8/12/09	Gen Co. Park- Richfield	13 Attendees
9/9/09	Gilkey Creek Restoration Walk	? Attendees
- Hosting canoe trips on the Flint River. There were four events with 10-15% overlap among the trips (New Program). Additional events were scheduled and promoted but had to be canceled due to weather:

8/26/09	Flushing Nature Park- Montrose	24 Attendees
9/13/09	Mitson Landing to Flushing Riverview Pk	47 Attendees
9/20/09	Mitson Landing to Flushing Riverview Pk	10 Attendees
9/27/09	Flushing Nature Park- Montrose	3 Attendees



- FRWC Organized and trained volunteers on how to perform storm drain stenciling. Including painting the stencils and putting up door hangers on houses explaining why the drains have been painted and how they are connected to Our rivers and streams.
 - In the fall of 2009 FRWC was able to make 9 presentations to 50 volunteers that went out and stenciled drains and hung more that 600 door hangers.
- During this reporting period, FRWC published its newsletter, *The Watershed Reporter*, in January, April, and July 2009, which contained articles and promotion of the above and other water quality programs.

Activities Update

“Our Water” Campaign Webpage: The development of an easy-to-use webpage with information about the seven storm water elements was identified as critical to the successful implementation of the “Our Water” Campaign. CAER worked with the Public Education and Participation Sub-Committee to develop, host and update the www.ClearGeneseeWater.org webpage. The “Our Water” webpage was posted in July 2006.

Updates to the webpage began in October 2008 and include a new masthead, additional informational tabs and links on the homepage, easy-to-follow navigation, and an events calendar. Updates are scheduled for review in Fall 2008. Additional content updates were made by CAER every other month though May 2009.

Beginning in 2008, web site hosting was taken over by the Drain Commissioner’s Office and we were able to begin tracking visits to our site after May 14, 2008. Here are the findings for this reporting period:

Date	visits
May 15,2008 through Sept 30, 2010	1360 hits from unique IPP addresses

The Genesee County Drain Commissioner's Office also has a portion of their own website that is dedicated to provide information for the communities. http://www.gcdcswm.com/PhaseII/npdes_phase_ii_main.htm This is linked to the Our Water website. Each phase II community with a website has been contacted by GCDC staff and has confirmed that they have a link on their municipal website to the Our Water website.

"Our Water" Newsletter: The Drain Commissioner's Office with the help of CAER produced the "Our Water" NPDES Phase II newsletters for the Drain Commissioner's Office. The newsletters were produced for January 09 and July 09. The newsletter is posted on the www.ClearGeneseeWater.org website, the gcdcswm.com website and distributed to those involved with Genesee County's Phase II Program. The main purpose of the newsletter was to summarize work accomplished in 2008 and to introduce concepts such as Low Impact Development (LID). Copies of the newsletters are included in Appendix A.

Materials and Presentation for Riparian Land Owners: The Drain Commissioner's Office with the help of CAER developed an informational brochure about concerns unique to riparian land owners. It was printed and mailed to riparian landowners along the Kearsley Creek in May 2009. The brochure contained information on basic stream bank stabilization techniques and also advertised a free riverbank/waterfront stabilization workshop to be held for landowners in the Kearsley Creek Watershed on May 21, 2009. The mailing was sent to over 1,000 waterfront landowners identified using the County's Geographic Information System. 14 property owners attended the workshop to discuss problems on their properties as it related to the Kearsley Creek. Most the problems involved Bank erosion and beavers/ swamp rats burrowing into the banks and building dams.

This free workshop was the first of many similar workshops that will be hosted in Genesee County throughout the coming years as part of the *Our Water Campaign*. In addition to serving as a mail invite to future workshops, the brochure will also be made available to municipal representatives for additional educational purposes. For an example of the brochure mailer and the event agenda, see Appendix A.

The workshop provided property owners with a range of low-cost and ecologically-sensitive practices for protecting waterfront property, reducing stream bank and shoreline erosion, and effectively managing stormwater. Participants learned about the range of opportunities available to improve land management practices and save money. Participants also walked away with the resources and contacts needed to assist them in protecting their waterfront property and restoring water quality.

Presenters at the workshop included Sue Kubic, Drain Engineer, Genesee County Drain Commissioner's Office; Christina Nickola, District Conservationist, Natural Resources Conservation District, USDA; and Rebecca Fedewa, Executive Director, Flint River Watershed Coalition.

Fourteen waterfront property owners attended the workshop. Of those that attended, 9 (or 64%) completed the evaluation form. On average, attendees rated the overall usefulness of the event at 3.5, on a scale of 1-4 with 1 being not satisfied and 4 being completely satisfied.

The next workshop was scheduled for late 2009 but has been postponed to explore grant opportunities to have a landscape architect or designer to work with individual riparian landowners on environmentally friendly landscaping improvements.

Speaker Materials and Presentations: An educational PowerPoint presentation was developed by CAER and the PE committee during the last permit cycle. The presentation contains appropriate branding for the "Our Water" Campaign. The presentation contains several modules that address various target audiences, including governmental and non-governmental entities. The modules of the presentation can easily be combined to customize a presentation for time or content within the required elements.

GCDC continued its contract with the FRWC to use this modular presentation to educate groups such as municipal officials, rotary clubs, neighborhood associations and lake associations. The above FRWC section lists the presentations that were made by the FRWC. GCDC Staff also made an additional 3 presentations throughout the year to high school children.

Brochures: In the last permit cycle, an educational brochure was developed to provide information about EPA’s seven mandated elements of stormwater education. 5,000 brochures were printed in November 2006 and distributed to the public through a variety of public education events and the efforts of the communities. The information was reviewed to make sure it was current and an additional 10,000 were printed during this permit cycle for distribution.

Newsletter Articles and Tip Cards: Several of the communities in Genesee County requested that the PE Sub-Committee develop and distribute prepared articles to be used in community and non-profit organization newsletters. CAER worked with SEMCOG in the last permit cycle to adapt several newsletter articles for the Flint River Watershed. Informational packets with compiled information, such as CDs with articles on them and tip cards, etc., were mailed to municipalities for use on their website, in their newsletter, etc. FRWC adopted articles from our website and placed them in their newsletters this year.

Time of Sale Packets: Information to help educate new septic system owners on proper maintenance and practices has been compiled into a brochure with the help of the Drain office and the Health Department. The brochure is at the Health Department to be reviewed for mistakes/ matches their requirements and will be ready to print and distribute in the next fiscal year.

Promotional Giveaways: GCDC purchased additional promotional giveaways (premiums) in 2008 to further stormwater awareness. Premiums purchased included water bottles, tote bags, and piggy banks for the kids that had the Our Water logo and message; a coloring book was also printed in-house to reach out to children. Premiums are given to the public at the information booth (see below). A person can win a premium if they answer a stormwater-related question. This allows the booth staff/volunteers to engage the public in conversation and give them an educational brochure.

Information Booth: A display booth was developed in 2006 by CAER and the PE committee. The booth includes a table and a free-standing banner outlining the seven simple steps to clean water. Educational activities were also developed to help engage people at public events.

The booth is staffed by volunteer municipal officials and staff or by CAER staff when necessary. Volunteers are trained to conduct the educational activities, which include giving premiums to each person who tries to answer a question on water quality. This approach serves several purposes:

- To educate the elected official / municipal employee
- To allow the communities themselves to teach the public about storm water issues
- To actively involve participants in the learning process

During this reporting period, the booth was used at the events listed below.

1) Earth Day Event: UM-Flint (Flint, MI) April 15, 2009	
Attendees	49
Visitors from Genesee County	45
2) Annual Earth Day and Garden Celebration (Mott Comm. College) April 18, 2009	
Attendees	212
Visitors from Genesee County	194
3) Swartz Creek Hometown Days (Swartz Creek, MI) May 30, 2009	
Attendees	62
Visitors from Genesee County	45

- 4) Grand Blanc Farmer's Market (Grand Blanc, MI) June 21, 2009
Attendees 37
Visitors from Genesee County 26
- 5) Back to the Bricks (Flint, MI) July 18, 2009
Attendees 15
Visitors from Genesee County 13
- 6) Genesee County Fair (Mt. Morris, MI) August 15-22, 2009
See Numbers Below 1173

At the 2009 County Fair, eight committee volunteers interacted with 264 more individuals than last year (1173 vs. 909). Each of these individuals received a copy of the information brochure and a premium for participating in the event. As in 2008, we asked individuals what community they live in and if they would fill out a short survey. Out of the 1173 people we spoke to, 16 filled out the survey. The results are summarized below. An original copy of the updated survey for 2009 is included at the end of this section.

Community Name and Number of Attendees at the 2009 County Fair

Argentine Township	1	Flushing Township	56	City of Mount Morris	36
Atlas Township	11	Forest Township	15	Mount Morris Township	58
City of Burton	63	Gaines Township	2	Mundy Township	18
Clayton Township	2	Village of Gaines	0	Village of Otisville	26
City of Clio	86	Genesee Township	84	Richfield Township	26
City of Davison	0	Village of Goodrich	8	City of Swartz Creek	55
Davison Township	87	City of Grand Blanc	0	Thetford Township	13
City of Fenton	0	Grand Blanc Township	55	Vienna Township	18
Fenton Township	15	Village of Lennon	0	Other Counties	163
City of Flint	142	City of Linden	0	TOTAL ATTENDEES (264 more than in 2008)	1173
Flint Township	104	City of Montrose	0		
City of Flushing	16	Montrose Township	13		

Phase II Communities shown in bold

2009 County Fair Water Quality Survey Results (see full survey at the end of this section)

Question	YES	NO			
Have you been to the Genesee County Fair before?	16	0			
Have you seen our booth at the Fair in past years?	7	9			
Have you seen the creek crossing signs along side the road?	10	6			
Did you fill out this survey last year?	2	14			
Have you seen catch basin stencils on the street?	4	9			
Have you ever gone to our website www.ClearGeneseeWater.org ?	0	16			
Has your household ever participated in the Household Hazardous Waste collection day?	7	9			
Have you or someone you know ever participated in the Spring River Cleanups?	5	11			
Have you spent leisure time on a water body in Genesee County in the past 12 months?	6	6			
Do you canoe or kayak in Genesee County?	2	12			
Do you fish in Genesee County?	7	8			
Do you boat, water ski, or use personal watercraft in Genesee County?	8	8			
Do you hike along shorelines or stream banks in Genesee County?	9	7			
Do you swim in Genesee County lakes or streams?	7	8			
Is your residence located directly on a lake?	2	-			
Is your residence located directly on a wetland?	1	-			
Is your residence located directly on a swamp?	-	-			
Is your residence located directly on a marsh?	-	-			
Is your residence located directly on a river?	-	-			
Is your residence located directly on a stream?	1	-			
Is your residence located directly on a road ditch?	4	-			
Which of the following is the best approach to keep you informed of water quality issues?					
<i>Public Meetings/Workshops</i>	1	<i>Newspaper Articles</i>	11	<i>Cable TV</i>	7
<i>Web Page</i>	2	<i>Direct Mailings</i>	7	<i>Community Newsletters</i>	2
<i>Other (radio, e-mail)</i>	3				
How confident are you that you understand the concept of a "watershed"?					
<i>Very Confident (1)</i>	3	<i>Pretty Confident (2)</i>	3	<i>Confident (3)</i>	5
<i>Somewhat Confident (4)</i>	3	<i>Not Confident At All (5)</i>	2		
Is your residence located in a watershed?					
<i>Yes</i>	8	<i>No</i>	5	<i>Don't Know</i>	3
				<i>No Answer</i>	0
Of the 8 "Yes" answers, 5 named their watershed (Kearsley, Saginaw, Swartz Creek, Silver, Flint River)					

Enviroscapes: GCDC has four "Enviroscape" interactive models that demonstrate how pollutants can reach bodies of water. The Conservation District keeps one of the Enviroscapes on permanent for their own education program (see next section.)



The other three models are available for use by teachers in their classrooms, but we would like to increase their use. In the last reporting period, we began meeting with the Genesee Intermediate School District (GISD) about a program to train teachers on the model to build enthusiasm. Discussions continue to go well and we hope to see greater use of the model in years to come.

During this reporting period, over 8500 people viewed the model. Enviroscape Model presentations by FRWC and the Conservation District were performed to groups throughout the year.

Genesee County Conservation District Education Program: The PE Sub-Committee has a contract with the Conservation District to provide education to the school-aged public as required by the NPDES Phase II Permit. The GCCD has modified an existing program to meet some of the EPA-required elements and the three-hour program also meets Michigan Educational Assessment Program (MEAP) standards.

This year, the program reached almost 8,000 school-aged children in Genesee County, over twice as many as last year. The program can be taught at any site, but the Conservation District's primary instructor has also set up a unique classroom in the garage of his Gaines Township property that features a restored wetland. Here, he welcomes classes, scout troops, and other groups to take the program as a field trip.

The Enviroscape model is the primary focus of the Conservation District's education program. Because of the large request for presentations from kindergarten through second grade, a less technical alternative was also needed. In 2008, the Conservation District developed a program called the Water Cycle Game. It is played by individual water droplets, the students, who travel through the water cycle. The water droplet's journey is marked with different colored beads at each station that kids pick up to put on their water cycle bracelet. In the end, they take home their bracelet and some information for their parents.

The breakdown of educational program participants is in appendix A:

Watershed Signs: In cooperation with the Genesee County Road Commission (GCRC), the PE committee began installing 24X30 watershed signs throughout the Shiawassee and Flint River Watersheds in late 2006. Stream/river crossing identification signs have also been placed to increase public awareness. No new signs were added during this reporting period. Existing signs were maintained. Sixty percent of the people who were asked if they have seen the signs answered yes during the survey taken at the County Fair in August 2009.



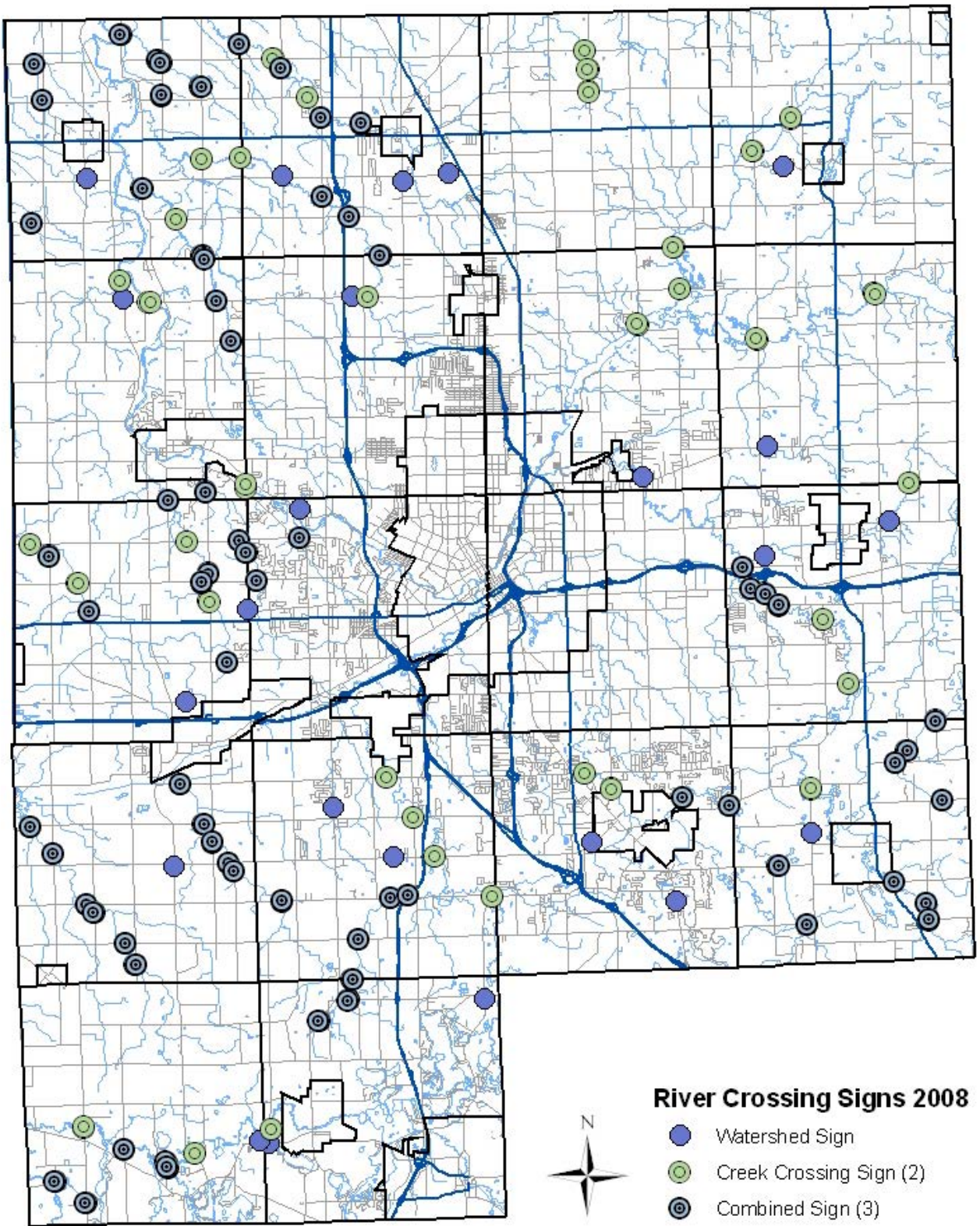
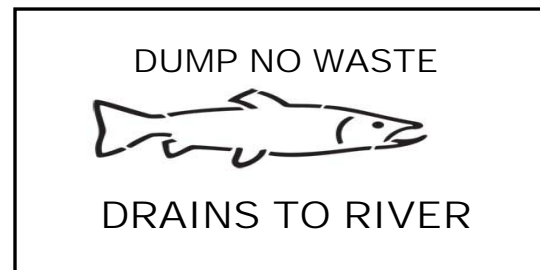


Figure 2-1: River Crossing Signs Placed as of October 2008

Catch Basin Stenciling Program: The GCDC has a catch basin stenciling program. The stencils say “No Dumping - Flows to River”. Since November 1, 2006 volunteers and County staff are able to paint approximately 500 stencils per year on Genesee County Roads. This work is being done by county employees doing drain maintenance as well as volunteers. Doorknob hangers are distributed by volunteers to educate residents adjacent to the stenciling locations. The City of Linden has purchased 200 metal storm drain tags to be permanently affixed to the pavement near the catch basins as part of their 10-streets road paving project.

- As part of preventive maintenance within the subdivisions, the Genesee County Drain Commissioner’s Surface Water Maintenance crew has a goal to place several hundred stencils throughout the county each year.
- FRWC took over the volunteer program in the last permit cycle and is building support. They had 14 volunteer groups in 2009.
- During this reporting period, there have been more than 600 stencils placed near catch basins in public roads.
- Flushing Schools received a grant for 5th and 6th grade students to perform storm drain stenciling in Flushing City and Township. The GCDC supplied the paint and stencils.



Local Watershed Maps: The PE Sub-Committee has been working with the GISD since 2008 to develop and distribute educational material to science teachers within the nested school districts. These materials are intended to meet the new curriculum requirements for grades K-12. The Team continues to work out the best way to align programs and materials with these new requirements and to ensure their delivery to the appropriate teachers. The PE Sub-Committee already developed watershed maps and CAER circulated a mock-up of the classroom map last winter for comment. CAER did not receive feedback from the Conservation District or the GISD, so they are planning to conduct a series of focus groups with teachers in the 2009-2010 school year to ensure the classroom maps meet the needs of the teachers. Upon approval, the map will be made available on the website and printed and distributed to the GISD, teachers, and other Phase II partners.

Global Rivers Environmental Education Network (GREEN): Project GREEN is a curriculum based, mentored program that seeks to engage young people as active citizens to improve conditions in their watersheds now and in the future. This project has been in existence for fifteen years in Genesee County under the direction of the GISD. In 2003, the FRWC was asked to be the coordinator of the GREEN in the Flint River Watershed. As part of this program, students receive classroom education on water quality and testing procedures and are trained to obtain samples at various sites within the watershed. Each year, schools participate in a summit, where the students are able to present their results. Section 7 provides additional detail on Project GREEN.

Macroinvertebrate Monitoring Program: Since 1999, the FRWC has executed a bi-annual Benthic-Monitoring Program that has been performed to meet MDEQ requirements. This program has expanded from 18 sites to 30 since its inception. This program is possible due to volunteers who live in the watershed who give up two days twice a year to be trained to collect and log samples. The data is used to categorize sites as “poor”, “fair”, “good” or “excellent” and provide a good assessment of water quality. Section 8 provides additional detail on Benthic-Monitoring Program and summarizes findings for each watershed.

Public Education Plan Evaluation: An evaluation plan for the PEP is being developed. The evaluation plan will focus on monitoring outputs and outcomes of the education program. Currently, CAER and the GCDC staff are working to maintain records of outputs of the education program (number of people addressed at

public events, number of presentations conducted, etc.) CAER, Tetra Tech and the PE Sub-Committee are working on a robust evaluation plan to monitor outcomes (changes in behavior, changes in knowledge, etc.) in addition to outputs currently being monitored. Initial areas of success and areas needing improvement are summarized as follows.

Areas of success:

- Program is up and running
- Many of the materials are available
- Stenciling program delivered
- Brochure delivered
- Booth (for outside events) delivered

Areas that need improvement:

- Structural lack of administrative support
- CAER and Tetra Tech assigned specific deliverables
- Administration needs to be more flexible regarding areas that pop up between contracts

PUBLIC PARTICIPATION PLAN

The PPP was implemented under previous years' annual reports. No PPP meetings were held within this reporting period. They are done on an as-needed basis.

Report to Municipal Officials: Local appointed and elected officials are critical players in adopting the WMPs and allocating resources toward their implementation. Obtaining buy-in and providing education to this group helps to ensure the success of implementing the WMP. Local appointed and elected officials acknowledge their accountability to their constituents and embrace their role in shaping the future vision of the WMPs. As public officials, local government leaders value the advice, concerns, and issues that community residents see in terms of the watershed condition past, present and future.

Municipal officials are given newsletters which provide updates on the status of storm water and watershed planning efforts. Each municipality is given 25-50 newsletters to be passed out to elected officials and planning boards. Municipalities are also given brochures and information packets to dispense to the public.

3. CONSTRUCTION STANDARDS AND PRACTICES SUB-COMMITTEE ACTIVITIES

The Construction Standards and Practices (CSP) Sub-Committee oversees new construction standards and post construction management practices for Genesee County, including storm water Best Management Practices (BMPs). This Sub-Committee also updates ordinances to ensure compliance with Environmental Protection Agency (EPA) requirements. In this reporting period, the CSP Sub-Committee held meetings on the following dates:

- February 3, 2009
- April 28, 2009
- August 25, 2009
- As well as “committee of the whole” meetings to support the new design standards.

CSP Membership included:

- **City of Flushing – Dennis Bow**
- **City of Grand Blanc – Randy Byrne**
- **City of Linden – Jim Letts**
- Atlas Township – Paul Amman
- **Fenton Township – Bonnie Mathis**
- **Genesee Township – Scott Streeter**
- **Grand Blanc Township – Jeff Zittel**
- Montrose Township – Mark Emmendorfer
- Richfield Township – James Jacques
- Village of Goodrich – Jakki Sidge

Bolded Members are Phase II Communities

The focus in these meetings was on finishing the draft Storm Water Ordinance, and continuing work on the BMP Manual.

STORM WATER ORDINANCE

The CSP Sub-Committee has been working to establish an approach for developing a Storm Water Ordinance for communities to adopt within Genesee County. After reviewing State requirements and sample ordinances from other Counties, Kent County’s ordinance was selected as a model. The CSP Sub-Committee reviewed and tailored the ordinance, and has been submitted to the state of their approval. All communities were encouraged to provide input to the draft ordinance.

Changes from the 2003 permit to the 2008 permit has changed the ordinance / BMP manual requirements needed. Resolving these issues have caused our timeline to be extended, since the subcommittee does not want to adopt any ordinance that will not be accepted by the State.

The CSP Sub-Committee is setting the minimum standards for communities to adopt. The standards are a combination of state requirements and GCDC flood control requirements. The local governments may elect to adopt stricter standards, but must use the Sub-Committee’s Storm Water Ordinance at a minimum. They may also choose to modify it, although the ordinance was written to be simple to administer, easily understood, and focused on improving water quality. Each community will have to adopt an ordinance, whether they choose the Sub-Committee’s or a more stringent version.

Currently, the only enforcement powers the County has are those given to them from the State (SESC, the Drain Code or Septic rules). Individual communities will have their own police power to enforce the

ordinance. They also have the right to extend those powers to another entity to enforce the ordinance on their behalf.

When the ordinances are adopted, there will be a fundamental change in how development occurs. Currently, the Genesee County Drain Commissioner (GCDC) Surface Water Management (SWM) reviews approximately 70 percent of the site plans either because a county drain is directly involved and must be reviewed or the local Community has required a review done by the Drain Office and it is done as a courtesy to the Community. GCDC-SWM will review to their standards any plans submitted to their office. With the implementation of a water quality ordinance, all site plans within a community that has a storm water ordinance will be reviewed to those standards either by the Community or their representative. As always any site plans submitted to the GCDC-SWM will be reviewed to that office's standards.

The goals of the storm water ordinance, currently in draft form, are:

- Statutory authority and title
- General provisions
- Storm water permits and permit review procedure
- Storm water system
- Drainage plan
- Construction site runoff controls
- Floodplain and other standards
- Post construction soil erosion
- Applicability and exemptions
- Prohibited discharges (oil and other pollutants from parking lots, etc.)
- Inspection, monitoring, reporting, and record keeping
- Enforcement
- Storm water easements and maintenance agreements (including long-term maintenance)
- Performance and design standards
- Storm water map
- Financial guarantee
- Terms and conditions of permits

It should be noted that the standards currently in place deal with water quantity. The new standards will also deal with water quality, and will expand both the community's and GCDC's authority as well as specify development requirements. The Storm Water Ordinance references a BMP Manual (see text below). By keeping the BMP Manual separate, and not including design guidance in the ordinance, changes can be made to the BMP Manual without revising the whole ordinance.

BMP MANUAL

Currently, Genesee County Water & Waste as the County agent (City of Burton and Grand Blanc Township are the Municipal Agents in their communities) on behalf of Part 91 of Public Act 451 has construction BMPs for Soil Erosion and Sedimentation Control (SESC). Individual communities may or may not have ordinances that regulate construction and post construction. The CSP Sub-Committee is developing a BMP Manual, which will represent minimum standards for post construction BMPs for water quantity and quality. These BMPs will not be limited to SESC.

Communities will be able to either adopt the CSP Sub-Committee's BMP Manual or create their own. The Sub-Committee is also working to address long-term BMP operation, maintenance, and schedule issues. The BMP Manual is slated for completion in the winter of 2009, although it will have to go through a review process

4. MONITORING AND MAPPING SUB-COMMITTEE ACTIVITIES

The Monitoring and Mapping (M&M) Sub-Committee did not meet during this reporting period:

M&M Membership included:

- **City of Fenton – Leslie Bland**
- City of Montrose – Frank Crosby
- **City of Mt. Morris – Jake LaFurgey**
- **City of Swartz Creek – Tom Svrcek**
- Argentine Township – Bob Cole
- **Davison Township – Kurt Soper**
- **Flushing Township – Andrew Trogot**
- Gaines Township – Paul Fortino
- **Mt. Morris Township – Paul Long**
- Village of Gaines – Diane Nowak
- Village of Lennon – Barbara Baker-Omerod

Bolded Members are Phase II Communities

The M&M Sub-Committee oversees organization and implementation of watershed monitoring, field-sampling protocols, and mapping guidelines. As part of their responsibilities, the M&M Work Group oversees several water quality monitoring programs as well as the Illicit Discharge Elimination Plan (IDEP) Program. In addition, they oversee the Hot-spot Water Quality Monitoring Program, which goes beyond IDEP by focusing on known problem areas, such as Blue Bell Beach that is frequently closed due to high E-coli counts.

The following sections of this report provide results for programs the M&M Sub-Committee oversees:

- Section 6 319 Nonpoint Source Grant Projects
- Section 7 Project GREEN (and its educational aspects discussed in Section 2)
- Section 8 Macroinvertebrate Study
- Section 9 IDEP Program
- Section 10 New Storm Water Point Source Discharges

5. ROAD-STREAM CROSSING SURVEY

During June, July and August of 2007 and August of 2008, a team of consultants from Tetra Tech and Wade Trim conducted a visual assessment of road stream crossings in the Lower and Middle Flint River and Shiawassee River Watershed. The crews investigated 184 road-stream crossings along the rivers. Survey locations are presented in Figure 1-1. The river assessment identified the bottom substrate, type of bank vegetation, and surrounding land use. Water quality monitoring was not conducted during the road-stream crossing surveys.

Figure 1-2, during investigations field crew were recording physical habitat of each road stream crossing which included:

- Background information
- Percentage of substrate
- River morphology was present or abundant
- Physical appearance identifying if aquatic plants, floating algae, filamentous algae, bacterial sheen/slimes, turbidity, oil sheen, foam and trash.
- Instream Cover
- Stream Corridor
- Adjacent land use
- Road Crossing Information
- Potential Sources (crop related sources, grazing related sources, intensive animal feeding operations, highway/road/bridge maintenance and runoff, channelization, dredging, removal of riparian vegetation, bank and shoreline erosion/modification/destruction, flow regulation/modification (Hydrology), Upstream Impoundment, Construction, Urban runoff, land disposal, on-site wastewater systems, silviculture, resource extraction, recreational/tourism activities, debris in water, industrial point source, and natural sources).



Each crew attended a half day training session to familiarize them with the methodology. The methodology was developed by the MDNRE and is presented in an April 2000 document titled “Stream Crossing Watershed Survey Procedure.”



Jones Creek & Reid Rd. Downstream



Webb Creek & Reid Rd

Data Analysis

The data is summarized by actions that would be required to improve the watershed condition. For the purposes of this analysis all road stream crossing data as entered into the database was assumed to be accurate. Further investigation of the sites will be required prior to the implementation of the corrective action to identify the nature and extents of the problem.

The actions include:

1. Improving Canoeing and Recreation
2. Streambank Stabilization
3. Stabilize Disturbed Ground
4. Decrease Embeddedness
5. Increase Shade Cover
6. Establish 30 Foot Riparian Buffer
7. Establish 100 Foot Riparian Buffer
8. Trash Clean Up
9. IDEP Investigations

The methods for summarizing the data and a list of preliminary tasks are provided in Table 5-1 for each of the actions.



Atherton Drain & Cook Rd.



Harding Drain & VanVleet Rd.

Table 5-1: Road-Stream Crossing Action Methodology

Action	Criteria	Follow-Up Tasks
1. Improve Canoeing and Recreation	If a stream channel was observed to be wider than 25 feet, deeper than 3 feet, and woody debris and logs were present, the site was identified as a problem.	Remove logs and debris in a habitat sensitive manner.
2. Streambank Stabilization	Streambank erosion identified at a site as either moderate or heavy was identified as a problem.	Have a professional revisit the site and determine the extent and cause of the erosion. Stabilize the bank using soil bioengineering techniques.
3. Stabilize Disturbed Ground	If disturbed ground was identified during the survey on either the right or left bank then the site was identified for additional work.	Have a professional revisit the site and verify the existence of a problem. Stabilize the disturbed ground
4. Decrease Embeddedness	Channels observed as having a substrate composed of greater than 80 percent silt or sand were identified as having a potential embeddedness problem.	Determine the cause of embeddedness problems. Stabilize the problem areas.
5. Increase Shade Cover	The site was determined to be impacted if the volunteers noted these three observations: Lack of aquatic plant cover Lack of overhanging vegetation Stream canopy cover was less than 25 percent or was not noted.	Professional observation indicated that sites most likely exist and will fall under the tasks for increasing riparian buffers.
6. Establish 30-ft Riparian Buffer	Areas where a buffer was identified as being 30 feet or less were identified as a problem.	Establish a 30 foot wide buffer.
7. Establish 100-ft Riparian Buffer	Areas where a buffer was identified as being between 30 and 100 feet in width were identified.	Establish a 100 foot wide buffer.
8. Trash Clean Up	Volunteers were able to identify whether trash was not present, present, or abundant. Reaches requiring cleaning were assumed to include any reaches with trash present or in abundance.	Visit the site and clean up the trash. For long term purposes, coordinate with existing river clean up programs to extend the program to these areas.
9. Illicit Discharges Investigations	Illicit discharges investigations are additional investigations of pollutant sources to the water body. These may include nutrients, sewage, animal wastes, sediment, oil, or any discharges from point sources. The observations collected from the road/stream crossing survey were reviewed for the following parameters and conditions: Abundant aquatic plants Abundant floating algae Abundant filamentous algae Abundant bacteriological slime Abundant turbidity Present or abundant oil sheens Present or abundant foam Septic tanks ruled as a moderate or high priority pollutant source Industrial point sources identified as a moderate or high priority pollutant source Municipal point sources identified as a moderate or high priority pollutant source	Have a professional revisit the site and verify the existence and nature of the problem. Stop the illicit discharge or remove the illicit connection.

Results

Summarized in Table 5-2 are the results of the road stream crossing assessments. The “X” in the table signifies that the collected data for the site met the criteria indicated in Table 5-1. The results are then extrapolated to the rest of the watershed as a means of estimating the magnitude of problems throughout the watershed. Road-stream assessments were completed at approximately 38 percent (116 out of 299) in the Lower Flint River Watershed, 36 percent (106 out of 291) in the Middle Flint River Watershed and 43 percent (40 out of 92) Shiawassee River Watershed of the crossings in the watershed. Each assessment considered upstream and downstream conditions independently and therefore there are an assumed 598 (299*2) in Lower Flint River Watershed, 582 (291*2) in Middle Flint River Watershed and 184 (92*2) in Shiawassee River has possible sites within the watershed for statistical purposes.



Jones Creek & Cook Rd. Upstream



Harding Drain & Van Vleet Rd.



Moore Drain & Corunna, M-13

Table 5-2 Results of the Road Stream Crossing Assessments

LOCATION INFORMATION				RESULTS										
Sta #	Direction	Date	Waterbody Name	Location	Watershed	1. Improve Canoeing and Recreation	2. Streambank Stabilization	3. Stabilize Disturbed Ground	4. Decrease Embeddedness	5. Increase Shade Cover	6. Establish 30-ft Buffer	7. Establish 100-ft Buffer	8. Trash Clean Up	9. Illicit Discharge Investigations
PORTER-1	U/S	8/13/08	Porter Drain	Baldwin Morrish-Seymour	Shiawassee River	-	-	-	X	-	X	-	-	-
PORTER-1	D/S	8/13/08	Porter Drain	Baldwin Morrish-Seymour	Shiawassee River	-	-	-	X	-	X	-	-	-
PORTER-3	U/S	8/13/08	Porter Drain	Porter & Seymour Rd	Shiawassee River	-	-	-	X	-	X	-	-	X
PORTER-3	D/S	8/13/08	Porter Drain	Porter & Seymour Rd	Shiawassee River	-	-	-	X	-	X	-	-	X
PORTER-5	U/S	8/13/08	Porter Drain	Van Vleet Cook & Baldwin	Shiawassee River	-	-	-	X	-	X	-	-	-
PORTER-5	D/S	8/13/08	Porter Drain	Van Vleet Cook & Baldwin	Shiawassee River	-	-	-	X	-	X	-	-	-
JONES-1	U/S	8/13/08	Jones Creek	Nichols Cook-Baldwin	Shiawassee River	-	-	-	X	X	-	-	-	X
JONES-1	D/S	8/13/08	Jones Creek	Nichols Cook-Baldwin	Shiawassee River	-	-	-	X	-	X	-	-	X
JONES-3	U/S	8/13/08	Jones Creek	Jones Creek-Cross Cook Rd	Shiawassee River	-	-	-	X	-	X	-	-	-
JONES-3	D/S	8/13/08	Jones Creek	Jones Creek-Cross Cook Rd	Shiawassee River	-	-	-	X	X	-	-	-	-
ATHERTON-1	U/S	8/13/08	Atherton Creek	Duff & Nichols Cook Rd	Shiawassee River	-	-	-	X	-	X	-	-	-
ATHERTON-1	D/S	8/13/08	Atherton Creek	Duff & Nichols Cook Rd	Shiawassee River	-	-	-	X	-	X	-	X	-
CORRIGALL-1	U/S	8/13/08	Corrigan	Corrigan & Cook Rd Cross	Shiawassee River	-	-	-	X	-	X	-	-	-
CORRIGALL-1	D/S	8/13/08	Corrigan	Corrigan & Cook Rd Cross	Shiawassee River	-	-	-	X	-	X	-	-	-
CORRIGALL-3	U/S	8/13/08	Corrigan	Corrigan & Grand Blanc Rd	Shiawassee River	-	-	-	X	-	X	-	-	-
CORRIGALL-3	D/S	8/13/08	Corrigan	Corrigan & Grand Blanc Rd	Shiawassee River	-	-	-	X	-	X	-	-	X
JONES-5	U/S	8/13/08	Jones Creek	Jones & Duffield Rd	Shiawassee River	-	X	-	X	-	-	X	-	-
JONES-5	D/S	8/13/08	Jones Creek	Jones & Duffield Rd	Shiawassee River	-	-	-	X	-	X	-	-	-
JONES-7	U/S	8/13/08	Jones Creek	Duff & Nichols	Shiawassee River	-	-	-	X	-	-	-	-	-
JONES-7	D/S	8/13/08	Jones Creek	Duff & Nichols	Shiawassee River	-	-	-	X	-	-	X	-	-
TERRY-1	U/S	8/13/08	Terry Drain	Terry Drain @ Grand Blanc Rd	Shiawassee River	-	-	-	X	-	-	-	-	X
TERRY-1	D/S	8/13/08	Terry Drain	Terry Drain @ Grand Blanc Rd	Shiawassee River	-	-	-	X	-	X	-	-	X
TERRY-3	U/S	8/13/08	Terry Drain	Nichols Ried@Grand Blanc Rd	Shiawassee River	-	-	-	X	-	-	-	-	-
TERRY-3	D/S	8/13/08	Terry Drain	Nichols Ried@Grand Blanc Rd	Shiawassee River	-	-	-	X	-	-	-	-	-
WEBB-1	U/S	8/13/08	Webb Creek	Webb Creek-cross Nichols Rd	Shiawassee River	-	-	-	X	-	-	-	-	X
WEBB-1	D/S	8/13/08	Webb Creek	Webb Creek-cross Nichols Rd	Shiawassee River	-	-	-	X	-	-	-	-	X
WEBB-3	U/S	8/13/08	Webb Creek	Duffield-Nichols	Shiawassee River	-	-	-	X	X	-	-	-	-
WEBB-3	D/S	8/13/08	Webb Creek	Duffield-Nichols	Shiawassee River	-	-	-	X	-	-	-	-	-
JONES-9	U/S	8/13/08	Jones Creek	Duffield-Nichols	Shiawassee River	-	-	-	X	-	-	X	-	-
JONES-9	D/S	8/13/08	Jones Creek	Duffield-Nichols	Shiawassee River	-	-	-	X	-	-	-	-	-
WEBB-5	U/S	8/13/08	Webb Creek	Webb Drain & Duffield Rd	Shiawassee River	-	-	-	X	-	X	-	-	X
WEBB-5	D/S	8/13/08	Webb Creek	Webb Drain & Duffield Rd	Shiawassee River	-	-	-	-	-	X	-	-	X

Table 5-2 Results of the Road Stream Crossing Assessments

Sta #	Direction	LOCATION INFORMATION				RESULTS							
		Date	Waterbody Name	Location	Watershed	1. Improve Canoeing and Recreation	2. Streambank Stabilization	3. Stabilize Disturbed Ground	4. Decrease Embeddedness	5. Increase Shade Cover	6. Establish 30-ft Buffer	7. Establish 100-ft Buffer	8. Trash Clean Up
PORTER-1	U/S	8/13/08	Porter Drain	Baldwin Morrish-Seymour	Shiawassee River	-	-	-	X	X	-	-	-
PORTER-1	D/S	8/13/08	Porter Drain	Baldwin Morrish-Seymour	Shiawassee River	-	-	-	X	-	-	-	-
PORTER-3	U/S	8/13/08	Porter Drain	Porter & Seymour Rd	Shiawassee River	-	-	-	X	X	-	-	X
PORTER-3	D/S	8/13/08	Porter Drain	Porter & Seymour Rd	Shiawassee River	-	-	-	X	-	-	-	X
PORTER-5	U/S	8/13/08	Porter Drain	Van Vleet Cook & Baldwin	Shiawassee River	-	-	-	X	-	-	-	-
PORTER-5	D/S	8/13/08	Porter Drain	Van Vleet Cook & Baldwin	Shiawassee River	-	-	-	X	-	-	-	-
JONES-1	U/S	8/13/08	Jones Creek	Nichols Cook-Baldwin	Shiawassee River	-	-	-	X	X	-	-	X
JONES-1	D/S	8/13/08	Jones Creek	Nichols Cook-Baldwin	Shiawassee River	-	-	-	X	-	-	-	X
JONES-3	U/S	8/13/08	Jones Creek	Jones Creek-Cross Cook Rd	Shiawassee River	-	-	-	X	X	-	-	-
JONES-3	D/S	8/13/08	Jones Creek	Jones Creek-Cross Cook Rd	Shiawassee River	-	-	-	X	-	-	-	-
ATHERTON-1	U/S	8/13/08	Atherton Creek	Duff & Nichols Cook Rd.	Shiawassee River	-	-	-	X	-	-	-	-
ATHERTON-1	D/S	8/13/08	Atherton Creek	Duff & Nichols Cook Rd.	Shiawassee River	-	-	-	X	-	X	X	-
CORRIGALL-1	U/S	8/13/08	Corrigan	Corrigan & Cook Rd Cross	Shiawassee River	-	-	-	X	-	-	-	-
CORRIGALL-1	D/S	8/13/08	Corrigan	Corrigan & Cook Rd Cross	Shiawassee River	-	-	-	X	X	X	-	-
CORRIGALL-3	U/S	8/13/08	Corrigan	Corrigan & Grand Blanc Rd	Shiawassee River	-	-	-	X	-	-	-	-
CORRIGALL-3	D/S	8/13/08	Corrigan	Corrigan & Grand Blanc Rd	Shiawassee River	-	-	-	X	-	X	-	X
JONES-5	U/S	8/13/08	Jones Creek	Jones & Duffield Rd	Shiawassee River	-	-	-	X	-	X	-	-
JONES-5	D/S	8/13/08	Jones Creek	Jones & Duffield Rd	Shiawassee River	-	-	-	X	-	X	-	-
JONES-7	U/S	8/13/08	Jones Creek	Duff & Nichols	Shiawassee River	-	-	-	X	-	-	-	-
TERRY-1	U/S	8/13/08	Terry Drain	Terry Drain @ Grand Blanc Rd	Shiawassee River	-	-	-	X	-	X	-	X
TERRY-1	D/S	8/13/08	Terry Drain	Terry Drain @ Grand Blanc Rd	Shiawassee River	-	-	-	X	-	X	-	X
TERRY-3	U/S	8/13/08	Terry Drain	Nichols Ried@Grand Blanc Rd	Shiawassee River	-	-	-	X	-	-	-	-
TERRY-3	D/S	8/13/08	Terry Drain	Nichols Ried@Grand Blanc Rd	Shiawassee River	-	-	-	X	-	-	-	-
WEBB-1	U/S	8/13/08	Webb Creek	Webb Creek-cross Nichols Rd	Shiawassee River	-	-	-	X	-	-	-	X
WEBB-1	D/S	8/13/08	Webb Creek	Webb Creek-cross Nichols Rd	Shiawassee River	-	-	-	X	-	-	-	X
WEBB-3	U/S	8/13/08	Webb Creek	Duffield-Nichols	Shiawassee River	-	-	-	X	-	-	-	-
WEBB-3	D/S	8/13/08	Webb Creek	Duffield-Nichols	Shiawassee River	-	-	-	X	X	-	-	-
JONES-9	U/S	8/13/08	Jones Creek	Duffield-Nichols	Shiawassee River	-	-	-	X	-	X	-	-
JONES-9	D/S	8/13/08	Jones Creek	Duffield-Nichols	Shiawassee River	-	-	-	X	-	-	-	-
WEBB-5	U/S	8/13/08	Webb Creek	Webb Drain & Duffield Rd	Shiawassee River	-	-	-	X	-	-	-	X
WEBB-5	D/S	8/13/08	Webb Creek	Webb Drain & Duffield Rd	Shiawassee River	-	-	-	X	X	-	-	X

Table 5-2 Results of the Road Stream Crossing Assessments

Sta #	Direction	Date	Waterbody Name	Location	Watershed	RESULTS										
						1. Improve Canoeing and Recreation	2. Streambank Stabilization	3. Stabilize Disturbed Ground	4. Decrease Embeddedness	5. Increase Shade Cover	6. Establish 30-ft Buffer	7. Establish 100-ft Buffer	8. Trash Clean Up	9. Illicit Discharge Investigations		
TERRY-5	U/S	8/13/08	Terry Drain	Terry Drain @ Reid Rd Crossing	Shiawassee River	-	-	-	X	-	X	-	-	-	-	-
TERRY-5	D/S	8/13/08	Terry Drain	Terry Drain @ Reid Rd Crossing	Shiawassee River	-	-	-	X	-	X	-	-	-	-	-
DAV-1	U/S	8/12/08	Davidson Drain	Davidson Drain @ Hill Rd	Shiawassee River	-	-	-	X	-	-	-	-	-	X	-
DAV-1	D/S	8/12/08	Davidson Drain	Davidson Drain @ Hill Rd	Shiawassee River	-	-	-	X	-	X	-	-	-	X	-
DAV-3	U/S	8/12/08	Davidson Drain	Duffield Rd. S. of Miller, N of Hill	Shiawassee River	-	-	-	X	-	-	X	-	-	X	-
DAV-3	D/S	8/12/08	Davidson Drain	Duffield Rd. S. of Miller, N of Hill	Shiawassee River	-	-	-	X	-	-	X	-	-	-	-
DAV-5	U/S	8/12/08	Davidson Drain	Miller Rd. Duffield=Nichols	Shiawassee River	-	-	-	X	-	-	-	-	-	-	X
DAV-5	D/S	8/12/08	Davidson Drain	Miller Rd. Duffield=Nichols	Shiawassee River	-	-	-	X	-	-	-	-	-	-	X
Number of occurrences						0	1	0	38	3	22	8	1	16		
Percentage of occurrences						0.0%	2.6%	0.0%	97.4%	7.7%	56.4%	20.5%	2.6%	41.0%		
Extrapolate to (93*2): 182 sites throughout the watershed						0	5	0	181	14	105	38	5	76		
PEN-1	U/S	8/13/08	Penoyer Drain	Duffield-Beecher & Porter	Lower Flint River	-	-	-	X	-	X	-	-	-	-	-
PEN-1	D/S	8/13/08	Penoyer Drain	Duffield-Beecher & Porter	Lower Flint River	-	-	-	X	-	X	-	-	-	-	-
MIST-1	U/S	8/13/08	Mistiguay Creek	M-13 from Beecher/Porter	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-
MIST-1	D/S	8/13/08	Mistiguay Creek	M-13 from Beecher/Porter	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-
MIST-3	U/S	8/13/08	Mistiguay Creek	Beecher between M-13/Duffield	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-
MIST-3	D/S	8/13/08	Mistiguay Creek	Beecher between M-13/Duffield	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-
MIST-5	U/S	8/13/08	Mistiguay Creek	Duffield between Beecher & Calkins	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-
MIST-5	D/S	8/13/08	Mistiguay Creek	Duffield between Beecher & Calkins	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-
MIST-7	U/S	8/13/08	Mistiguay Creek	Calkins between Duffield, Nichols	Lower Flint River	-	-	-	X	-	X	-	-	-	-	-
MIST-7	D/S	8/13/08	Mistiguay Creek	Calkins between Duffield, Nichols	Lower Flint River	-	-	-	X	-	X	-	-	-	-	-
HARD-1	U/S	8/13/08	Branch of Harding Drain	Calkins, Van Viet/Nichols	Lower Flint River	-	-	-	X	-	X	-	-	-	-	-
HARD-1	D/S	8/13/08	Branch of Harding Drain	Calkins, Van Viet/Nichols	Lower Flint River	-	-	-	X	-	X	-	-	-	-	-
HARD-3	U/S	8/13/08	Branch of Harding Drain	Van Vleet -Calkin/Corunna	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-
HARD-3	D/S	8/13/08	Branch of Harding Drain	Van Vleet -Calkin/Corunna	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-
OTTA-1	U/S	8/13/08	Ottaway Drain	Van Vleet between Calkin/Corunna	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-
OTTA-1	D/S	8/13/08	Ottaway Drain	Van Vleet between Calkin/Corunna	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-
MIST-9	U/S	8/13/08	Mistiguay Creek	Corunna Rd Between Nichols/Van Vleet	Lower Flint River	-	-	-	-	-	X	-	-	-	-	-
MIST-9	D/S	8/13/08	Mistiguay Creek	Corunna Rd Between Nichols/Van Vleet	Lower Flint River	-	-	-	X	-	-	-	-	-	-	-
MIST-11	U/S	8/13/08	Mistiguay Creek	Nichols between Calkins/Corunna	Lower Flint River	-	-	-	X	X	X	-	-	-	-	-

Table 5-2 Results of the Road Stream Crossing Assessments

LOCATION INFORMATION				RESULTS										
Sta #	Direction	Date	Waterbody Name	Location	Watershed	1. Improve Canoeing and Recreation	2. Streambank Stabilization	3. Stabilize Disturbed Ground	4. Decrease Embeddedness	5. Increase Shade Cover	6. Establish 30-ft Buffer	7. Establish 100-ft Buffer	8. Trash Clean Up	9. Illicit Discharge Investigations
MIST-11	D/S	8/13/08	Misteguay Creek	Nichols between Calkins/Corunna	Lower Flint River	-	-	-	X	X	X	-	-	-
HARD-5	U/S	8/13/08	Harding Drain	Nichols, Between Calkins/Corunna	Lower Flint River	-	-	-	X	-	X	-	-	-
HARD-5	D/S	8/13/08	Harding Drain	Nichols, Between Calkins/Corunna	Lower Flint River	-	-	-	X	-	X	-	-	-
CUTIN-1	U/S	8/13/08	Cutin Drain	Corunna Rd between Nichols/Duffield	Lower Flint River	-	-	-	-	-	X	-	-	-
CUTIN-1	D/S	8/13/08	Cutin Drain	Corunna Rd between Nichols/Duffield	Lower Flint River	-	-	-	X	-	-	X	-	-
MOORE-1	U/S	8/13/08	Moore Drain	Duffield, Calkin/Corunna	Lower Flint River	-	-	-	X	-	X	-	-	-
MOORE-1	D/S	8/13/08	Moore Drain	Duffield, Calkin/Corunna	Lower Flint River	-	-	-	X	X	X	-	-	-
MOORE-3	U/S	8/13/08	Moore Drain	Corunna, M-13/Duffield	Lower Flint River	-	-	-	X	-	X	-	-	X
MOORE-3	D/S	8/13/08	Moore Drain	Corunna, M-13/Duffield	Lower Flint River	-	-	-	X	-	X	-	-	X
BOW 1	U/S	5/22/07	Bowman Drain	Across from 7526 Coldwater Rd	Lower Flint River	-	-	X	X	-	X	-	-	X
BOW 1	D/S	5/22/07	Bowman Drain	Across from 7526 Coldwater Rd	Lower Flint River	-	-	-	X	-	X	-	-	-
BOW 2	U/S	5/22/07	Bowman Drain	Carpenter Rd.	Lower Flint River	-	-	-	X	-	X	-	-	-
BOW 2	D/S	5/22/07	Bowman Drain	Carpenter Rd.	Lower Flint River	-	-	-	X	-	X	-	-	-
CAT 1	D/S	5/23/07	Cattail Drain	Carpenter E. of Linden	Lower Flint River	-	-	-	X	-	X	-	X	X
CAT 1	U/S	5/23/07	Cattail Drain	Carpenter E. of Linden	Lower Flint River	-	-	-	X	-	X	-	X	X
CAT2	U/S	5/23/07	Cattail Drain	Cattail Swamp & Linden	Lower Flint River	-	X	-	X	-	X	-	X	-
CAT2	D/S	5/23/07	Cattail Drain	Cattail Swamp & Linden	Lower Flint River	-	-	-	X	-	X	-	-	-
BOW 3	D/S	5/23/07	Bowman Drain	Sunnyside Drive	Lower Flint River	-	-	-	X	X	X	-	X	X
BOW 3	U/S	5/23/07	Bowman Drain	Sunnyside Drive	Lower Flint River	-	-	-	-	X	-	-	-	-
BOW 4	U/S	5/24/07	Bowman Drain	Bowman Dr at Johnson Rd	Lower Flint River	-	-	-	X	-	X	-	-	-
BOW 4	D/S	5/24/07	Bowman Drain	Bowman Dr at Johnson Rd	Lower Flint River	-	-	-	X	-	X	-	-	-
BOW 5	U/S	5/24/07	Bowman Drain	Bowman Dr at Stanley Rd	Lower Flint River	-	-	-	X	-	X	-	-	-
BOW 5	D/S	5/24/07	Bowman Drain	Bowman Dr at Stanley Rd	Lower Flint River	-	-	-	X	X	X	-	-	-
ARM 101	U/S	5/24/07	Armstrong Drain	Armstrong Drain at Stanley Rd.	Lower Flint River	-	-	-	X	-	X	X	-	X
ARM 101	D/S	5/24/07	Armstrong Drain	Armstrong Drain at Stanley Rd.	Lower Flint River	-	-	-	X	-	X	-	-	X
CAT 2	U/S	5/31/07	Cattail Drain	Cattail Drain and Carpenter Rd	Lower Flint River	-	-	-	X	-	X	-	-	-
CAT 2	D/S	5/31/07	Cattail Drain	Cattail Drain and Carpenter Rd	Lower Flint River	-	-	-	X	-	X	-	-	-
CAT 3	U/S	5/31/07	Cattail Drain	Cattail Drain at Webster Rd	Lower Flint River	-	-	-	X	-	X	-	-	-
CAT 3	D/S	5/31/07	Cattail Drain	Cattail Drain at Webster Rd	Lower Flint River	-	X	-	X	-	X	-	-	-
CAT 4	U/S	6/11/07	Cattail Drain	Cattail Drain at Mt. Morris Rd	Lower Flint River	-	-	-	X	-	X	-	-	-
CAT 4	D/S	6/11/07	Cattail Drain	Cattail Drain at Mt. Morris Rd	Lower Flint River	-	-	-	X	-	X	-	-	-
CEN 103	U/S	6/12/07	Central Drain	Frances Rd east of Morrish	Lower Flint River	-	X	-	-	-	X	-	X	-

Table 5-2 Results of the Road Stream Crossing Assessments

Sta #	Direction	LOCATION INFORMATION				RESULTS								
		Date	Waterbody Name	Location	Watershed	1. Improve Canoeing and Recreation	2. Streambank Stabilization	3. Stabilize Disturbed Ground	4. Decrease Embeddedness	5. Increase Shade Cover	6. Establish 30-ft Buffer	7. Establish 100-ft Buffer	8. Trash Clean Up	9. Illicit Discharge Investigations
CEN 103	D/S	6/12/07	Central Drain	Frances Rd east of Morrish	Lower Flint River	-	X	-	X	-	-	-	-	-
CEN 101	U/S	6/12/07	Central Drain Trib	Elms intersection	Lower Flint River	-	-	-	X	-	-	-	-	-
CEN 101	D/S	6/12/07	Central Drain Trib	Elms intersection	Lower Flint River	-	-	-	X	-	-	-	-	-
ROOT 1	D/S	6/18/07	Root Drain	Oleksyn Intersection	Lower Flint River	-	-	-	X	-	-	-	-	X
ROOT 309	U/S	6/18/07	Root Drain	Kelley/root intersection	Lower Flint River	-	-	-	X	X	-	-	-	X
ROOT 309	D/S	6/18/07	Root Drain	Kelley/Root intersection	Lower Flint River	-	-	-	X	X	-	-	-	X
ROOT 2	U/S	6/18/07	Root Drain	Kelley/Root intersection	Lower Flint River	-	-	-	X	-	-	-	-	-
ROOT 2	D/S	6/18/07	Root Drain	Kelley/Root intersection	Lower Flint River	-	-	-	X	-	-	-	-	-
ROOT 3	U/S	6/18/07	Root Drain	Carpenter Rd/Root Drain	Lower Flint River	-	-	-	X	-	-	X	-	-
ROOT 3	D/S	6/18/07	Root Drain	Carpenter Rd/Root Drain	Lower Flint River	-	-	-	X	-	-	X	-	-
MON 101	U/S	6/21/07	Monroe Drain	Webster Rd. 1/4 mile N of Carpenter	Lower Flint River	-	-	-	X	-	X	-	-	X
MON 101	D/S	6/21/07	Monroe Drain	Webster Rd. 1/4 mile N of Carpenter	Lower Flint River	-	-	-	X	-	X	-	-	X
ROO 105	U/S	6/21/07	Root Drain	Coldwater RD. JUST e OF Elms Rd.	Lower Flint River	-	-	-	X	-	X	-	-	X
ROO 105	D/S	6/21/07	Root Drain	Coldwater RD. JUST e OF Elms Rd.	Lower Flint River	-	-	-	X	-	X	-	-	X
STA 107	U/S	6/21/07	Stadler Drain	Coldwater Rd. just W of I-75	Lower Flint River	-	-	-	X	-	-	-	-	X
STA 107	D/S	6/21/07	Stadler Drain	Coldwater Rd. just W of I-75	Lower Flint River	-	-	-	X	-	-	-	-	X
CAT 103	U/S	6/21/07	Cattail Drain	Central drain and Webster Rd. crossing	Lower Flint River	-	-	-	X	X	-	-	-	-
CAT 103	D/S	6/21/07	Cattail Drain	Central drain and Webster Rd. crossing	Lower Flint River	-	-	-	X	X	-	-	-	-
STA 101	U/S	6/21/07	Stadler Drain	Webster Rd. 1/2 mile N of Coldwater	Lower Flint River	-	-	-	X	-	X	-	-	-
STA 101	D/S	6/21/07	Stadler Drain	Webster Rd. 1/2 mile N of Coldwater	Lower Flint River	-	-	-	X	-	X	-	-	-
CEN 107	U/S	6/21/07	Central Drain	Mt. Morris Rd. W of Webster	Lower Flint River	-	-	-	X	-	-	-	-	-
CEN 107	D/S	6/21/07	Central Drain	Mt. Morris Rd. W of Webster	Lower Flint River	-	-	-	X	-	-	-	-	-
CEN 105	U/S	6/21/07	Central Drain	Mt. Morris Rd. E of Elms Rd.	Lower Flint River	-	-	-	X	-	X	-	-	X
CEN 105	D/S	6/21/07	Central Drain	Mt. Morris Rd. E of Elms Rd.	Lower Flint River	-	-	-	X	-	X	-	-	-
CEN 103	U/S	6/21/07	Central Drain	Elms Rd. N of Mt. Morris	Lower Flint River	-	-	-	X	-	-	-	-	-
CEN 103	D/S	6/21/07	Central Drain	Elms Rd. N of Mt. Morris	Lower Flint River	-	-	-	X	-	-	-	-	-
CEN 101	U/S	6/21/07	Central Drain	Elms S of Frances Rd.	Lower Flint River	-	-	-	X	-	X	-	-	-
CEN 101	D/S	6/21/07	Central Drain	Elms S of Frances Rd.	Lower Flint River	-	-	-	X	X	-	-	-	-
CEN 109	U/S	6/21/07	Central Drain	Mt. Morris between Webster and Linden	Lower Flint River	-	-	-	X	-	-	-	-	X
CEN 109	D/S	6/21/07	Central Drain	Mt. Morris between Webster and Linden	Lower Flint River	-	-	-	X	-	-	-	-	-
COT 101	U/S	6/21/07	Cottell Drain	Coldwater W of Elms	Lower Flint River	-	-	-	X	-	X	-	-	X
COT 101	D/S	6/21/07	Cottell Drain	Coldwater W of Elms	Lower Flint River	-	-	-	X	-	X	-	-	X

Table 5-2 Results of the Road Stream Crossing Assessments

Sta #	Direction	Date	Waterbody Name	Location	Watershed	RESULTS								
						1. Improve Canoeing and Recreation	2. Streambank Stabilization	3. Stabilize Disturbed Ground	4. Decrease Embeddedness	5. Increase Shade Cover	6. Establish 30-ft Buffer	7. Establish 100-ft Buffer	8. Trash Clean Up	9. Illicit Discharge Investigations
BRE 101	D/S	7/13/07	Brent Run	Mt. Morris	Lower Flint River	-	-	-	X	-	-	X	-	-
BRE 101	U/S	7/13/07	Brent Run	Mt. Morris	Lower Flint River	-	-	-	X	-	-	X	-	-
CRA 101	U/S	7/13/07	Craven-Benson	S of Mt. Morris @ Clio	Lower Flint River	-	-	-	X	-	-	-	-	-
CRA 101	D/S	7/13/07	Craven-Benson	S of Mt. Morris @ Clio	Lower Flint River	-	-	-	X	-	-	X	-	X
HUG 101	U/S	7/13/07	Hughes Drain	Clio Rd N of Stanley	Lower Flint River	-	-	-	X	-	-	-	-	-
HUG 101	D/S	7/13/07	Hughes Drain	Clio Rd N of Stanley	Lower Flint River	-	-	-	X	-	-	-	X	-
HUG 103	U/S	7/13/07	Hughes Drain	Stanley E of Clio	Lower Flint River	-	X	-	X	-	-	X	-	-
HUG 103	D/S	7/13/07	Hughes Drain	Stanley E of Clio	Lower Flint River	-	X	-	X	-	-	X	-	-
FLI 101	U/S	7/13/07	Flint River	Mt. Morris	Lower Flint River	-	-	-	X	-	-	X	-	X
FLI 101	D/S	7/13/07	Flint River	Mt. Morris	Lower Flint River	-	-	-	X	-	-	-	-	X
CEN 201	U/S	7/13/07	Central Drain	Webster N of Mt. Morris	Lower Flint River	-	X	-	X	-	-	-	-	-
CEN 201	D/S	7/13/07	Central Drain	Webster N of Mt. Morris	Lower Flint River	-	-	-	X	-	-	-	-	-
FLI 103	U/S	7/13/07	Flint River	Main St in Flushing	Lower Flint River	-	-	-	X	-	-	-	-	X
FLI 103	D/S	7/13/07	Flint River	Main St in Flushing	Lower Flint River	-	-	-	X	-	-	-	-	X
BRE 103	U/S	7/13/07	Brent Run	Between Jennings and Flushing	Lower Flint River	-	-	-	X	-	-	X	-	X
BRE 103	D/S	7/13/07	Brent Run	Between Jennings and Flushing	Lower Flint River	-	-	-	X	-	-	-	-	-
HAR 101	U/S	7/18/07	Hartshorn	Jennings near Pasadena	Lower Flint River	-	-	-	X	-	-	X	-	-
HAR 101	D/S	7/18/07	Hartshorn	Jennings near Pasadena	Lower Flint River	-	-	-	X	-	-	-	-	-
HAR 103	U/S	7/18/07	Hartshorn	Pasadena West of Linden	Lower Flint River	-	X	-	X	-	-	X	-	-
HAR 103	D/S	7/18/07	Hartshorn	Pasadena West of Linden	Lower Flint River	-	-	-	X	-	-	-	-	-
HAR 105	U/S	7/18/07	Hartshorn	Linden South of Pasadena	Lower Flint River	-	-	-	X	-	-	-	-	-
HAR 105	D/S	7/18/07	Hartshorn	Linden South of Pasadena	Lower Flint River	-	-	-	X	-	-	-	-	-
HUG 105	U/S	7/18/07	Hughes Drain	Stanley E of Clio	Lower Flint River	-	-	-	X	-	-	-	-	X
HUG 105	D/S	7/18/07	Hughes Drain	Stanley E of Clio	Lower Flint River	-	-	-	X	-	-	-	-	X
DEL 101	U/S	7/18/07	Delaney Drain	Stanley E of Jennings	Lower Flint River	-	-	-	X	-	-	-	-	X
DEL 101	D/S	7/18/07	Delaney Drain	Stanley E of Jennings	Lower Flint River	-	-	-	X	-	-	X	-	X
CEN 301	U/S	7/18/07	Central Drain	Stanley next to I-75	Lower Flint River	-	-	-	X	-	-	-	-	X
CEN 301	D/S	7/18/07	Central Drain	Stanley next to I-75	Lower Flint River	-	-	-	X	-	-	-	-	-
LAK 101	U/S	7/18/07	Lake Drain	Coldwater between Clio and Ballard	Lower Flint River	-	X	-	X	-	-	-	-	-
LAK 101	D/S	7/18/07	Lake Drain	Coldwater between Clio and Ballard	Lower Flint River	-	X	-	X	-	-	-	-	-
CEN 303	U/S	7/18/07	Central Drain	Linden S of Mt. Morris	Lower Flint River	-	-	-	X	-	-	-	-	-
CEN 303	D/S	7/18/07	Central Drain	Linden S of Mt. Morris	Lower Flint River	-	-	-	X	-	-	X	-	X

Table 5-2 Results of the Road Stream Crossing Assessments

LOCATION INFORMATION				RESULTS										
Sta #	Direction	Date	Waterbody Name	Location	Watershed	1. Improve Canoeing and Recreation	2. Streambank Stabilization	3. Stabilize Disturbed Ground	4. Decrease Embeddedness	5. Increase Shade Cover	6. Establish 30-ft Buffer	7. Establish 100-ft Buffer	8. Trash Clean Up	9. Illicit Discharge Investigations
Number of occurrences						0	10	1	110	23	93	23	15	34
Percentage of occurrences						0.0%	8.8%	0.9%	96.5%	20.2%	81.6%	20.2%	13.2%	29.8%
Extrapolate to (299*2) 598 sites throughout the watershed						0	52	5	577	121	488	121	79	178
Total Number of occurrences						0	11	1	148	26	115	31	16	50
Total Percentage of occurrences						0.0%	7.2%	0.7%	96.7%	17.0%	75.2%	20.3%	10.5%	32.7%

6. 319 NONPOINT SOURCE GRANT PROJECTS

In 1987, Congress amended the Clean Water Act to establish the Section 319 Nonpoint Source Management Program because it recognized the need for greater federal leadership to help focus State and local nonpoint source efforts. Under Section 319, State, Territories, and Indian Tribes receive grant money which support a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of specific nonpoint source implementation projects.

There are three 319-grant projects within Genesee County. All are within the Middle Flint Watershed; the Swartz Creek Watershed Project; Gilkey Creek Watershed Projects and the Kearsley Creek Watershed Project. CAER and FRWC developed the Swartz Creek and Gilkey Creek WMPs and GCDC developed the Kearsley Creek WMP to control nonpoint sources of pollution. Projects may include implementing structural BMPs, non-physical BMPs, and information and education activities to eliminate nonpoint source pollution.

Swartz Creek Watershed Project

The Swartz Creek Watershed Plan has been granted 319 status by the MDEQ. Key activities for the Swartz Creek Watershed Project include physical inventory, public involvement, and public education.

Physical Inventory

In summary, the water quality of the Swartz Creek Watershed is negatively impacted by the affects of non-point source pollutants. The impact of these pollutants becomes progressively worse as one moves downstream within the watershed. It also appears that water quality within the watershed is likely to continue to degrade if a coordinated and watershed wide plan is not implemented.

Historically, development has taken place in the lower reaches of the watershed and has caused severe degradation to the system in only the lowest portions of the watershed. However, as increased growth continues in the relatively healthy portion of the watershed (i.e. the headwaters), it is likely we will see larger reductions in water quality then we have experienced in the past.

The Swartz Creek Watershed has two designated uses that are impaired; total body contact and warm water fisheries. The partial body contact, aquatic wildlife, and agricultural designated uses appear to be threatened. The industrial water supply and public water supply are not current uses but are included as threatened because of the likelihood that these would not be supported if they were needed. Table 6-1 details the status of each of the designated uses and the known and suspected pollutants affecting each use. The table excludes several areas upstream of Ray Road in Section 1 of Fenton Township. Upstream of this crossing the watershed appears to currently be meeting all designated uses. This area will be addressed in the critical areas discussion as a priority for preservation of water quality.

In order to protect water quality from the pollutants identified above, specific source areas and causes of the pollutants were identified. Table 6-2 outlines the linkages between pollutants, sources and causes in the Swartz Creek Watershed. Each of the pollutants are discussed further in the WMP, where specific critical areas for each pollutant are described and identified.

Table 6-1: Designated Use Attainment/Threats Below Ray Road

Designated use	Status	Pollutants
Agricultural	Threatened (S)	Hydrology (K)
Navigation	Threatened (S)	Hydrology (K)
*Industrial Water Supply	Threatened (S)	Hydrology(K)
*Public Water Supply at point of water intake	Threatened (S)	Hydrology (K)
Warm Water Fisheries	Impaired (K)	Hydrology (K) Sediment (K) Nutrients(K) Pesticides (S) Thermal (S)
Other indigenous aquatic life and wildlife	Threatened (S)	Hydrology (K) Sediment (K) Nutrients (K) Pesticides(S) Thermal (S)
Partial Body Contact	Impaired (S)	Bacteria\pathogens (K) Toxins (K)
Total Body Contact	Impaired (k)	Hydrology (K) Bacteria (K) Toxins (K)

K= Known
S = Suspect

Public Education

A Public Education Plan (PEP) for the Swartz Creek Project is included in the WMP. The goals and objectives of the plan are intended to focus on the specific pollutant identified in the planning process. The PEP is divided into three phases including awareness, education, and action phases. Target audiences, specific messages and tools have been identified to be used in the implementation of the PEP for the 319 WMP area. A large portion of the early phases of the PEP implementation focuses on assisting Phase II communities take advantage of recommendations set forth in the plan.

Table 6-2: Pollutant, Source, and Cause of Nonpoint Source Pollutants

Pollutant	Source	Cause
Hydrology (K)	1. Urban Storm water (K)	Directly Connected Impervious Surfaces (K) Insufficient storm water management practices (K)
	2. Channel Alterations (K)	Removal of flood plain (localized) (K)
	3. Loss of Wetlands (K)	Loss of wetlands for agricultural use (K)
	4. In stream structure (K)	Western Branch dam (K)
Sediment (K)	Stream banks (K)	Erratic flows / High Runoff (K) Insufficient Riparian Buffers (K)
	Road Stream Crossings (K)	Erosive road or shoulder surfaces (K) Undersized crossing (K)
	Developed and developing areas (K)	Insufficient Riparian Buffers (K) Inadequate soil erosion practices (S)
	Roads, parking lots (K)	Inadequate storm water mgt in commercial and industrial parking lots (K)
Toxins (K)	Agricultural Lands (K)	Insufficient riparian vegetation buffers (K)
	Parking lots (K)	Inadequate storm water mgt techniques (K)
Nutrients (S)	Roadways (K)	Road drains directly to stream (K)
	Residential Lawns (K)	Over application of Fertilizer (S)
	Residential Septic Systems (S)	Failing septic systems (S)
Bacteria (S)	Agricultural application (S)	Insufficient Riparian management
	Human Waste (S)	Illicit connections to storm sewers (S)
Thermal (S)	Animal Waste	Direct Connection in urban areas (S)
	Roads & Parking Lots (K)	Insufficient storm water mgt. practices (K)
	Direct solar radiation (K)	Removal of overhanging vegetation (K)

K= Known
S = Suspect

Kearsley Creek Watershed Project

The Kearsley Creek Watershed Plan has been granted 319 status by the MDNRE.

Based on a baseline study and physical inventory, stream bank erosion and sediment input are the primary pollutants for the Kearsley Creek Watershed. Hydrologic and hydraulic analyses were conducted to determine changes to the watershed that would result at full build-out based on current Master Plans. The hydraulic capacities at bridge and culvert structures for the full build-out scenario were also verified.

Staff prioritized restoration work efforts based on a field inventory of 29 stream segments within Kearsley Creek from the county line to the Flint River. A rating system was developed based on the severity of erosion within that segment. Six of the segments inventoried were rated as “high” indicating substantial erosion. Seventeen segments were rated as “moderate”. For-Mar Nature Center had the highest erosion rating. Potential BMPs may consist of cross vanes, vanes, j-hooks and gabion baskets at the For-Mar Nature Center where the bluff is over steepened and there is a potential for building failure.

A review of ordinances from the eleven governmental entities within the watershed showed that few ordinances are adopted to protect the Kearsley Creek corridor from development and runoff. None of the ordinances provide the same review criteria for decision making.

The Water Quality Improvement Plan includes a Long-Term Monitoring Plan and Information and Education Plan to inform the public of the major issues within the Kearsley Creek watershed, and preliminary findings of the WMP.

Gilkey Creek

The Gilkey Creek Watershed Plan has been granted 319 status by the MDNRE. It outlines designated and desired uses for the watershed, historic and present conditions, watershed goals, best management practices recommendations, and an education and evaluation plan.

Designated uses are water quality goals set by the MDNRE. Gilkey Creek is managed by the state in the City of Flint, and managed by the Genesee County Drain Commission in the City of Burton. This presents a management problem for attaining designated uses in the City of Flint when upstream portions in Burton are solely managed by the state for flood control. This plan hopes to address this issue by setting goals for the *entire* watershed to meet state designated uses and to achieve desired uses for the Gilkey Creek set by stakeholders. Desired uses were those set by stakeholders that do not tie directly to the state’s designated uses or water quality standards.

Designated and Desired Uses

Uses that are considered impaired are not currently meeting water quality standards established for that particular use. Uses that are currently being met but are at risk of impairment from human activity are defined as threatened. Assessment of use **impairment** in the Gilkey Creek Watershed was completed using several sources of information including: MDNRE fisheries reports, MDNRE water quality assessments, physical inventory road stream crossing surveys, and observation of use by stakeholders.

In addition to the eight State designated uses, many communities establish desired uses. These uses are not based upon water quality criteria but rather reflect some qualitative goal established in the watershed planning process.

The Gilkey Creek Watershed (GCW) is attaining uses for Wildlife, Agricultural and Industrial water supply, and has *two designated uses that are impaired: Aquatic Life, and Warm Water Fishery. The uses requiring Total Body Contact and Partial Body Contact are threatened.* The uses of navigation and public water supply are not applicable to the Gilkey Creek. The Gilkey Creek has never been utilized for agricultural water supply, public water supply, navigation, or industrial supply. *Desired uses for the Gilkey include: (1) use of the creek as an educational tool, (2) increased recreational use, and (3) increased aesthetics.*

Once stakeholders determined what designated uses the watershed was not meeting, a common vision and goals were set for the GCW.

Watershed Goals and Recommendations

Watershed goals were determined and ranked by the Center for Applied Environmental Research (CAER) and stakeholders of the GCW. Objectives and action items were developed for each goal. Recommendations to meet each goal are summarized below:

1. Improve wildlife habitat and other aquatic life habitat: **Reduce impacts from drain maintenance**, Increase the riparian corridor and create/incorporate a green infrastructure network.
2. Improve warm-water fishery: Reduce sediment inputs, decrease impact from storm events, and re-vegetate along the stream corridor.
3. Increase creek aesthetics, educational opportunities and recreational use (for partial and total body contact): **Assessment of E.coli levels**, Increase visibility and aesthetic quality, promote current recreational opportunities, and identify potential recreational opportunities.
4. Reduce flooding and improve navigation: Improve storm water management practices, source control, improve existing infrastructure (bridges, culverts, storm drains), and increase riparian vegetation and wetland areas.
5. Improve creek for public health and drinking water: Reduce **threat** of bacteria and nutrient levels, create a wellhead protection program, reduce impacts from roadways, and prioritize brownfield sites that pose a **potential** threat to **surface water contamination**.

Education

Successful implementation of the watershed management plan and the BMPs *is based on the assumption that stakeholders understand the problems and solutions* for the watershed. An education plan was developed to correspond with BMP recommendations that details target audiences, estimated costs, and delivery mechanisms for success.

CAER found that the challenges to successful implementation in the GCW are driven by two factors, primarily the high amounts of residential properties (47% of total land), which will require a large-scale intensive education effort. Preservation and restoration of the watershed are largely dependent on the collective action of the residents of the GCW. Another challenge is the policy in the GCW. Successful timing of implementation depends on coordination between the cities of Burton and Flint, and the Genesee County Drain Commission.

Evaluation

Watershed planning is an iterative process that will need to change based on results from the program's evaluation. Furthermore, as education efforts are carried out and BMPs are installed, the plan will have to be revised to address new issues.

7. PROJECT GREEN

The Global Rivers Environmental Education Network (GREEN) is a curriculum-based, mentored program that seeks to engage young people as active citizens to improve conditions in their watersheds now and in the future. GREEN empowers young people to learn more about the watersheds they live in and use their findings to create lasting solutions to pressing water quality issues. GREEN has been in existence for fifteen years in Genesee County under the direction of the Genesee County Intermediate School District (GISD).

In 2003, the Flint River Watershed Coalition (FRWC) was approached by Earth Force Green and General Motors to be the coordinator of GREEN in the Flint River Watershed. FRWC was identified as the primary organization that could help improve program participation and effectiveness because of its focus on water quality monitoring and environmental education. The FRWC Board of Directors has endorsed this vision and is providing administrative control.

As part of the program, students from local schools learn about water quality and testing procedures by visiting various sites to take water samples and by analyzing the data. During the last reporting period, participation included:

15	School Districts
22	Classrooms
1,100+	Students
30	Mentors
21	Presenters

Schools are also encouraged to participate in a summit, where students are able to present their findings. On May 15, 2009, a symposium was held at Mott Community College and students presented collected data. A copy of the symposium brochure, a summary table, and news article are included at the end of this section.



Each site visited is categorized as excellent, good, fair (medium), poor (bad), or very poor (very bad) based on the National Sanitation Foundation (NSF) Water Quality Index (WQI). To determine the WQI, nine tests are performed. Parameters tested include dissolved oxygen, fecal coliform, pH, biochemical oxygen demand (5-day), temperature, total phosphate, nitrates, turbidity, and total solids. After

completing the nine tests, results are recorded and transferred to a weighting curve chart where a numerical value is obtained as shown in Table 7-1. For each test, the numerical value or Q-value between 0 and 10 is multiplied by a "weighting factor." For example, dissolved oxygen has a relatively high weighting factor (0.17) and therefore is more significant in determining water quality than the other tests. The nine resulting values are then added together to arrive at an overall water quality index (WQI). If all nine water quality tests are not available then multiply the total of those samples available by the inverse their total weighting factors.

Table 7-1: Water Quality Index Calculation Chart

Test Parameter	Q-Value	Weighting Factor	Total
1. Dissolved oxygen	Q_{DO}	0.17	$0.17 \times Q_{DO}$
2. Fecal coliform	Q_{FC}	0.16	$0.16 \times Q_{FC}$
3. pH	Q_{pH}	0.11	$0.11 \times Q_{pH}$
4. Biochemical oxygen demand	Q_{BOD}	0.11	$0.11 \times Q_{BOD}$
5. Temperature	Q_T	0.11	$0.11 \times Q_T$
6. Total phosphate	Q_P	0.10	$0.10 \times Q_P$
7. Nitrates	Q_N	0.10	$0.10 \times Q_N$
8. Turbidity	Q_{Turb}	0.08	$0.08 \times Q_{Turb}$
9. Total solids	Q_{TS}	0.07	$0.07 \times Q_{TS}$
Overall WQI			Sum (Q_x)

The WQI ranges are categorized as follows: 90-100 Excellent; 70- 90 Good; 50- 70 Fair (medium); 25- 50 Poor (bad); 0- 25 Very Poor

It should be noted that there was no discernable correlation between the Project Green Results and the Benthic Monitoring Results. Since the benthic monitoring results reflect the macroinvertebrates' long term exposure to their environment the results are assumed to be more reflective of the overall health of the water body compared to the one-time sampling associated with Project Green.

[Reference: *Mitchell, Mark K. and William B. Sharp, 2000. Field manual for Water Quality Monitoring: An environmental education program for schools, (twelfth edition), Kendall/Hunt Publishing Company, Dubuque, Iowa*]

Table 7-2 and Figures 7-1 to 7-4 summarize project GREEN results for the Lower, Middle, and Upper Flint River and Shiawassee River Watersheds. Sites categorized as "poor" are identified in the table with red font. Three sites out of the 38 sites visited were categorized as either poor or very poor.

Table 7-2: Project Green Results

ID_No	Location	Sampled Years	Water Quality Index (WQI)
<i>Lower Flint River Watershed</i>			
1L	Armstrong Creek at Dodge Road	2006-07	Good
2L	Craven and Benson Drain off Mt Morris Road	2007	Fair
3L	Mill Street Bridge	1993, 1998-2007	Fair
4L	North corner of Flushing and Linden Roads	1991, 1994, 1998-2004, 2007	Fair
5L	Pirnie Creek at Beecher Road	2006	Poor
6L	Southeast corner of M-57 and Seymour Road	2001-07	Good
7L	Clio Bike Path at Jennings Road	2007	Good
8L	Flushing Park at Pavilion #2	2001-02, 2005	Good
9L	Mott Golf Course Bridge at hole #6	1993, 1998-2000	Good
10L	Pine Run at Clio Park	2006	Good
11L	North of Flushing at Mt. Morris Bridge	1998	Good
<i>Middle Flint River Watershed</i>			
1M	Swartz Creek at Hill Road Bridge	2005-06	Fair
2M	Behind McDonalds at Dort and Stewart	2003	Fair
3M	Bridge between UM-Flint and Autoworld	1993-94, 1998, 2001	Fair
4M	Crampton Drain at Kearsley Armstrong	2006	Fair
5M	Downstream from For-Mar Nature Center	2005	Fair
6M	Gilkey Creek behind Central High School	1991-92, 1994, 2002	Good
7M	Immediately west of the Farmer's Market	2004-06	Good
8M	Pierson Drain at Atherton HS	2007	Good
9M	Swartz Creek at Happy Hollow	1993-94, 2002, 2004	Fair
10M	Swartz Creek at Swartz Creek M.S.	2005-06	Fair
11M	Swartz Creek at Van Slyke Road	2002	Fair
12M	Swartz Creek Golf Course	2001-02	Good
13M	Thread Creek at McCandlish Road	2007	Fair
14M	Thread Creek at Rust Park in Grand Blanc	2005-06	Good
15M	Timberwolf Turnout off Irish Road	2005	Fair
16M	Kearsley Creek at Goodrich Commons	2004	Good
17M	Kearsley Creek near Goodrich High School	2004-05	Good
18M	Flint River West of Johnson AAA School	2006-07	Fair
<i>Upper Flint River Watershed</i>			
1U	Bear Swamp at Genesee Road	2007	Poor
2U	Oak Road North of Stanley	2001	Good
3U	Bluegill Boat Ramp on Mott Lake	2002, 2005	Good
4U	M-15 north of Stanley Road	1997-98, 2002	Good
5U	Holloway Reservoir at Mt. Morris Bridge	1997, 2001, 2003-05	Good
6U	Mott Farm between house and barn	1993-94, 1998, 2001, 2004	Very poor
7U	Richfield Park	2001, 2003-07	Good
<i>Shiawassee River Watershed</i>			
1S	Platform south of Main Street Bridge in Fenton	1992, 1996, 1998-99, 2001-02, 2004	Fair
2S	Linden Mill Pond (Shiawassee River)	2007	Excellent

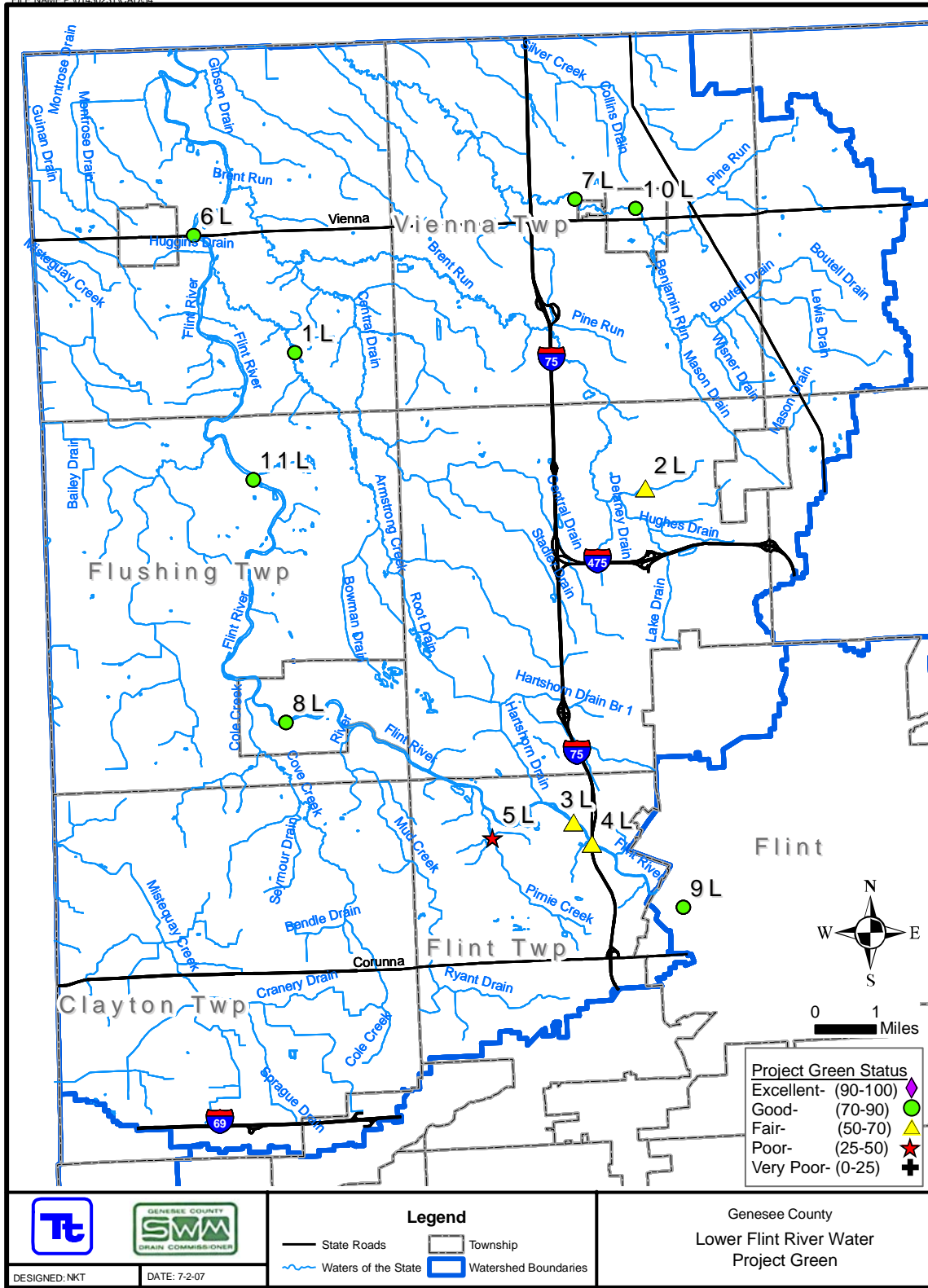


Figure 7-1: Project Green Results for the Lower Flint River Watershed

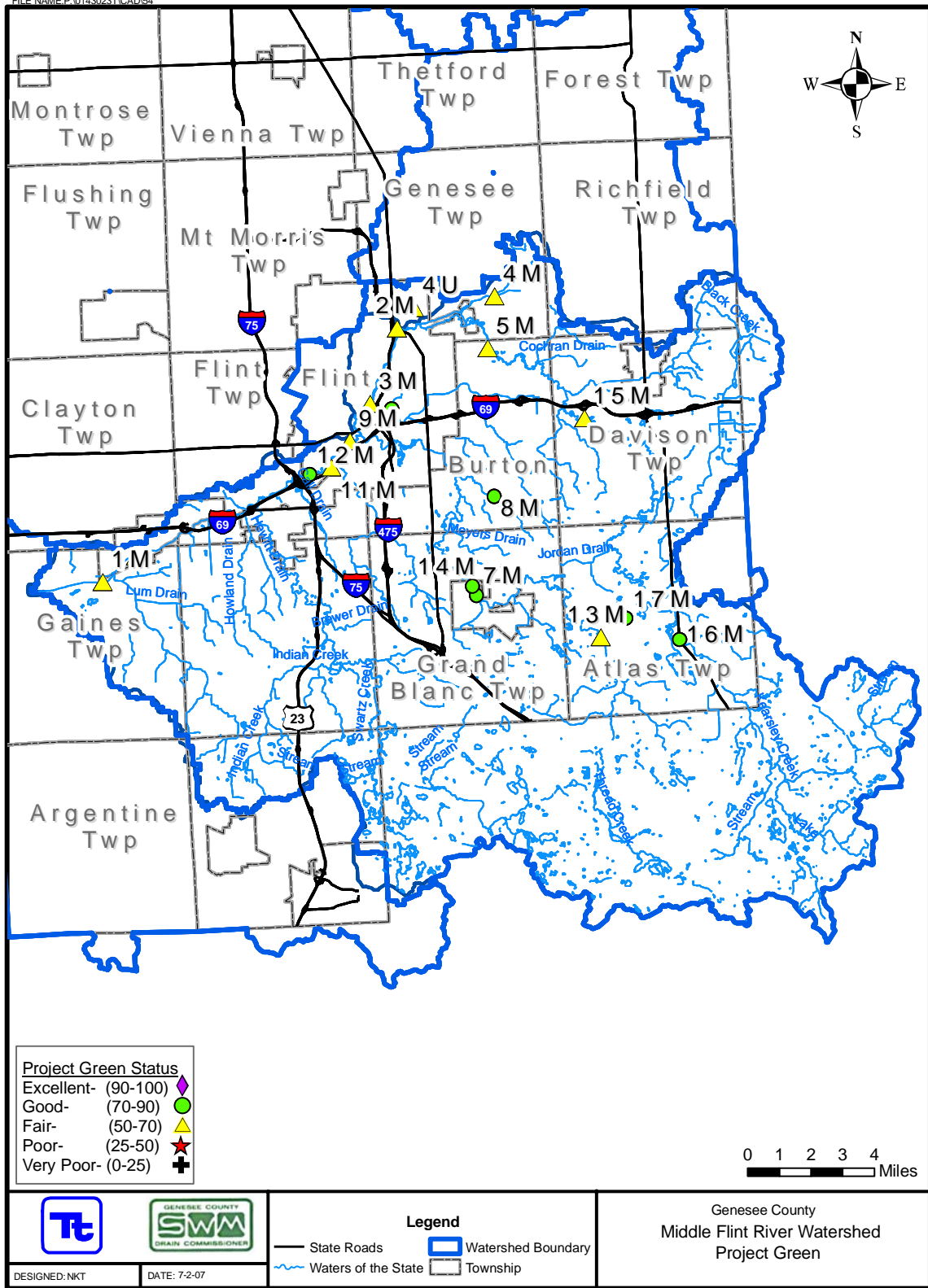


Figure 7-2: Project Green Results for the Middle Flint River Watershed

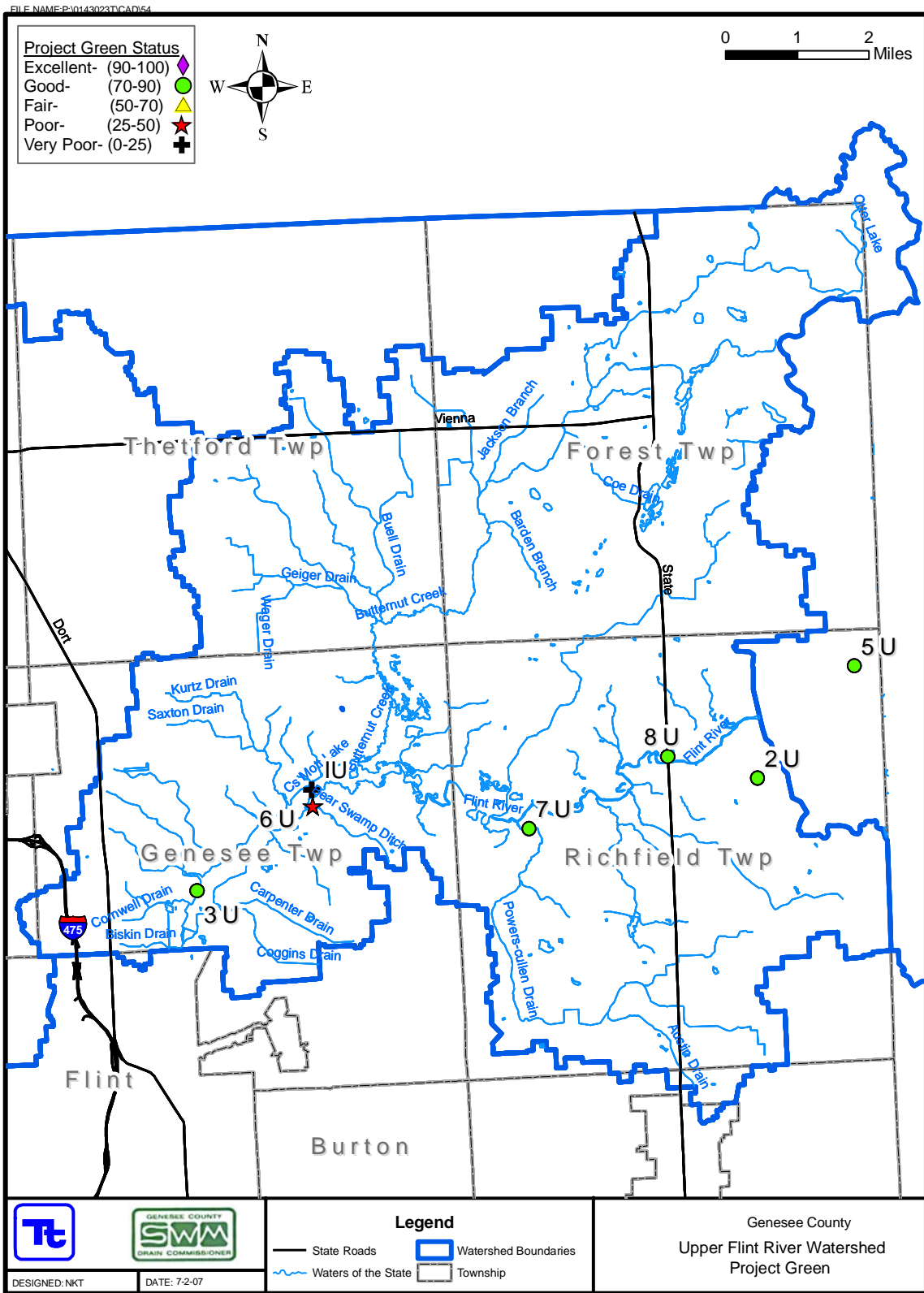


Figure 7-3: Project Green Results for the Upper Flint River Watershed

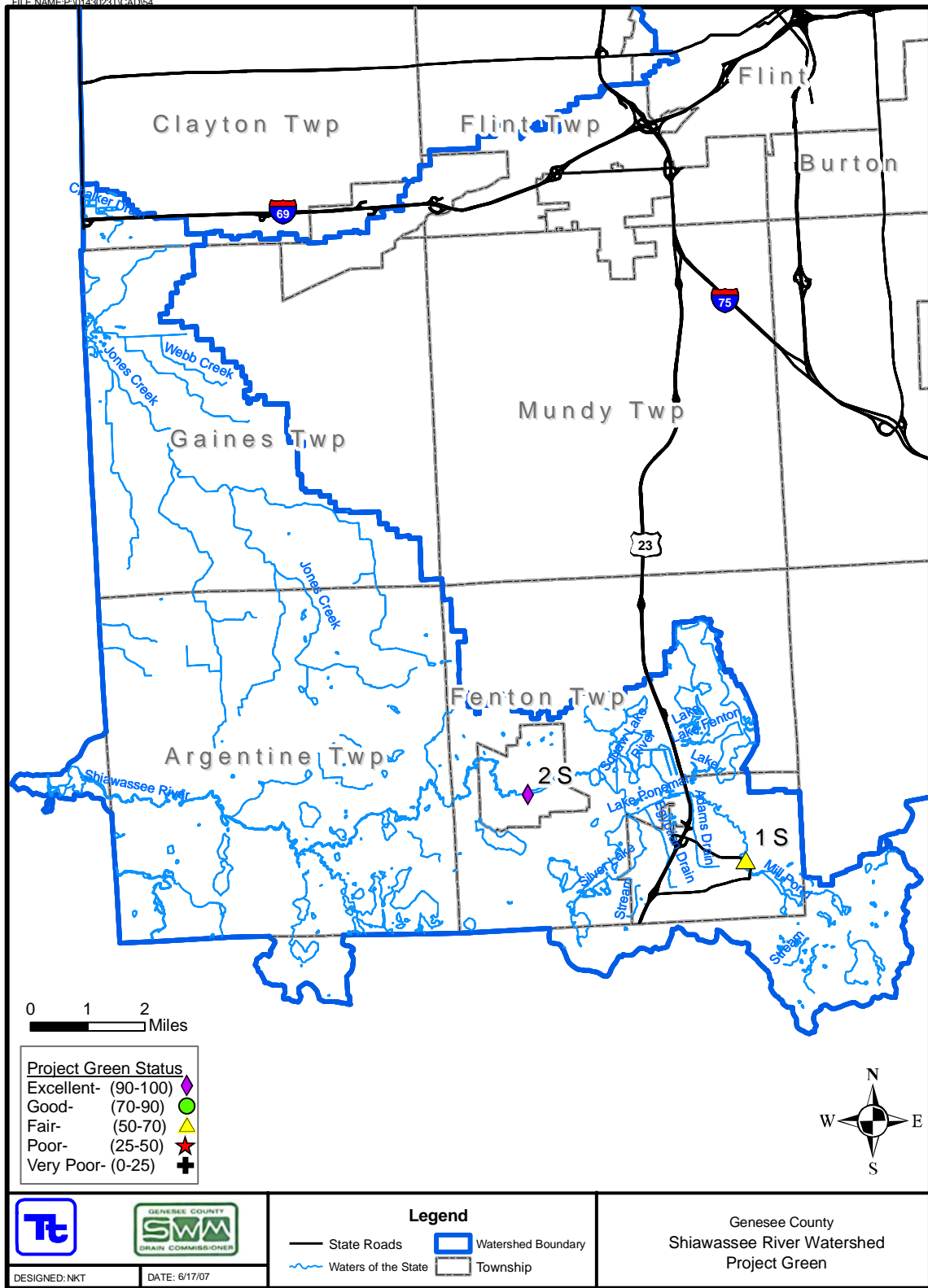


Figure 7-4: Project Green Results for the Shiawassee River Watershed



Flint River GREEN

(Global Rivers Environmental Education Network)

The Flint River Watershed Coalition, with our partners, coordinates an applied curriculum for middle and high school students that have a positive impact on the environment, now and into the future.

Using scientific methods, students conduct various tests to assess the health of a local river or stream. Students then work to identify any environmental problems, research the causes of the problem, and develop solutions to improve the health of their stream. Beyond merely identifying the environmental issue, the class works to make positive changes in practices or policies that allowed the problem to emerge in the first place.

Professional mentors from agencies across the watershed contribute to student learning and awareness. Prior mentors have come from General Motors, the Genesee County Drain Commissioner's office, City of Flint, the Center for Applied Environmental Research at UM-Flint, TetraTech, Flint River Watershed Coalition, Sierra Club, and Delphi.

In Genesee, Lapeer, and Oakland counties, the work done in Flint River GREEN compliments the on-going monitoring project that the Watershed Coalition has conducted for several years. It also provides information for use by the Genesee County Drain Commissioner in fulfilling responsibilities relative to storm water runoff concerns and abatement.

The Watershed Coalition currently has over 30 classrooms in a number of Genesee County school districts involved in Flint River GREEN. In 2009, FRWC started expanding this program beyond the Genesee County boarder starting with Brandon Middle School in Oakland County. This program has been expanded to include North Branch and Lapeer Community schools for the 2010 season.

The Flint River Watershed Coalition partners with Earthforce and the Genesee and Lapeer Intermediate School Districts to run Flint River GREEN. The Genesee County Community Water Quality Consortium's *Our Water* campaign, General Motors, the Royal Bank of Canada, and the Raymond C. & Anne T. Johnson Family Foundation generously support this program.

For additional information, contact Suzanne Lossing, Education & Outreach Coordinator for the Flint River Watershed Coalition at (810) 767-9491 slossing@FlintRiver.org; or visit one of the following websites: Flintriver.org Earthforce.org

8. MACROINVERTEBRATE STUDY

Since 1999, the Flint River Watershed Coalition (FRWC) has executed a bi-annual Benthic Monitoring Program that has been performed to meet Michigan Department of Environmental Quality (MDEQ) requirements. This program has expanded from 18 to 30 sites since its inception.

This program is possible due to volunteers who live in the watershed who give up two days twice a year to be trained to collect and log samples. The scores for each site visit were averaged over the sample years and categorized as either Excellent (>48), Good (34 – 48), Fair (19 – 33.9), and Poor (<19). These scores not only provide an indication of macroinvertebrate community health but also act as a good Water Quality Index. Table 8-1 and Figures 8-1 to 8-3 summarize macroinvertebrate sampling results for the Lower, Middle, and Upper Flint River Watersheds. Sites categorized as “poor” are identified in the table with red font. Only one site out of the 14 visited, the Brent Run Headwaters, was categorized as “poor”.

Table 8-1: Macroinvertebrate Study Results

ID_No	Location	Sampled Years	Water Quality Index (WQI)
<i>Lower Flint River Watershed</i>			
A-L	Pine Run Headwaters	1999-2000, 2003-06	Fair
B-L	Misteguay Creek Headwaters	1999-2000, 2004-06	Fair
C-L	Flint River, Flushing	1999-2006	Fair
D-L	Brent Run	1999-2003, 2005-06	Good
E-L	Brent Run Headwaters	1999-2000, 2004-06	Poor
<i>Middle Flint River Watershed</i>			
A-M	Swartz Creek	1999-2006	Fair
B-M	Thread Creek	1999-2006	Fair
C-M	Thread Creek Headwaters	1999-2006	Good
D-M	Kearsley Creek	1999, 2001-06	Good
E-M	Kearsley Creek Headwaters	1999-2003, 2005	Fair
F-M	Gilkey Creek	1999-2006	Good
G-M	Gilkey Creek Headwaters	2002-06	Good
<i>Upper Flint River Watershed</i>			
A-U	Butternut Creek Headwaters	2000-06	Good
B-U	Flint River, Richfield	2000-05	Fair

It should be noted that there was no discernable correlation between the Project GREEN Results and the Benthic Monitoring results. Since the Benthic Monitoring results reflect the macroinvertebrates’ long-term exposure to their environment, the results are assumed to be more reflective of the overall health of the water body compared to the one-time sampling associated with Project GREEN (which is more geared toward inspiring youth).

Data set from October 2009 has not been compiled at this time. It will be reflected in future reports.

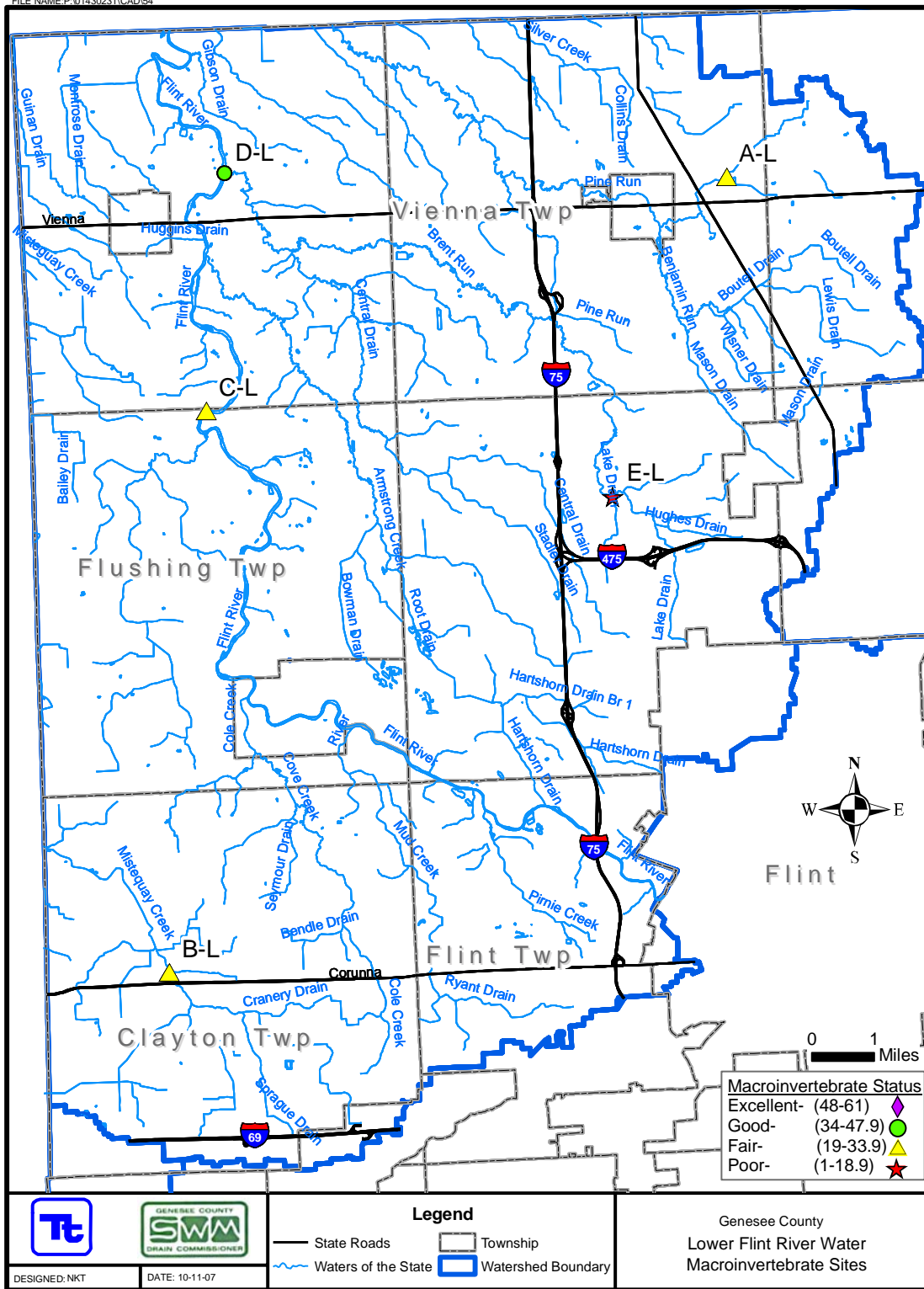


Figure 8-1: Macroinvertebrate Study Results for the Lower Flint River Watershed

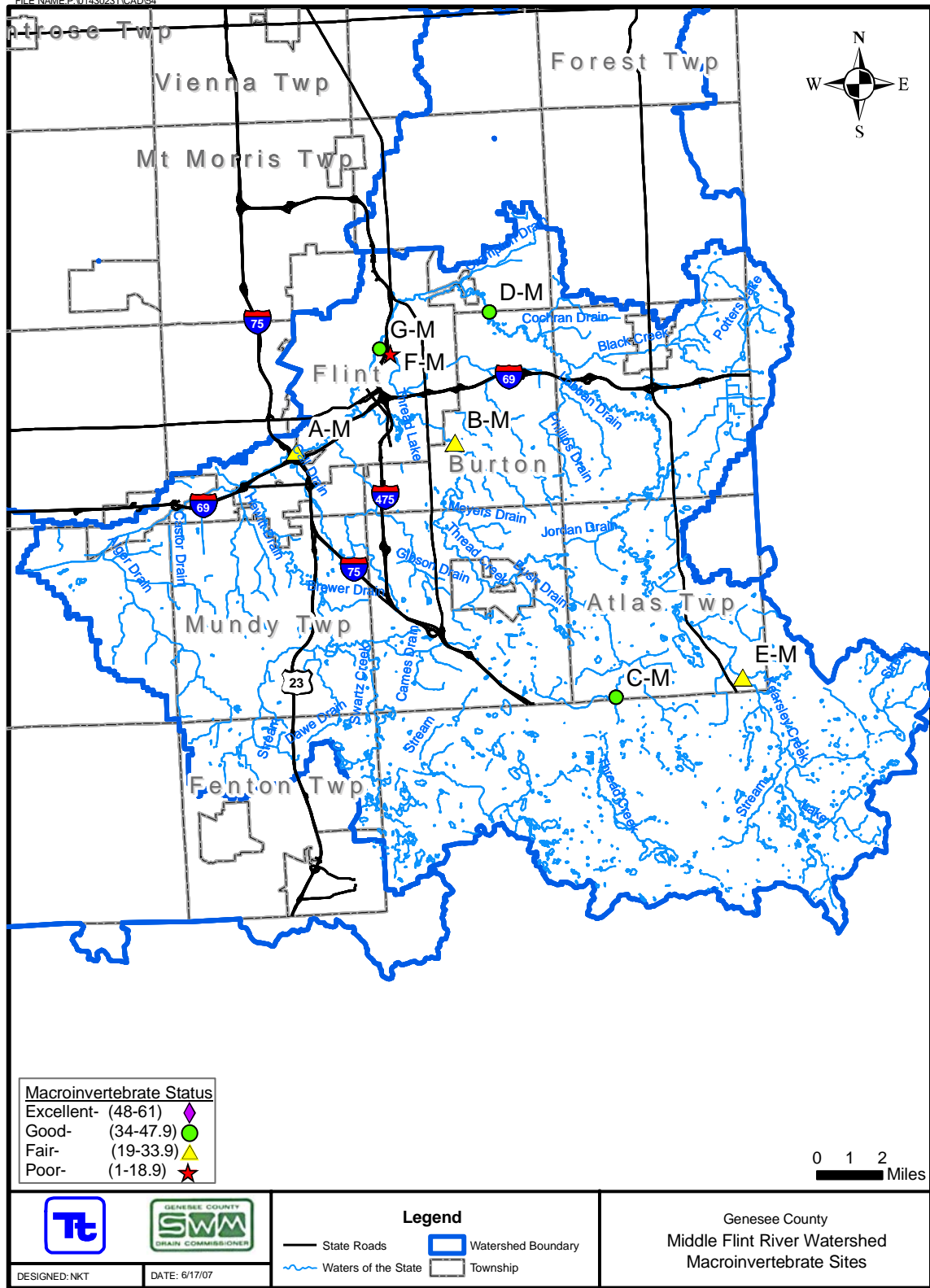


Figure 8-2: Macroinvertebrate Study Results for the Middle Flint River Watershed

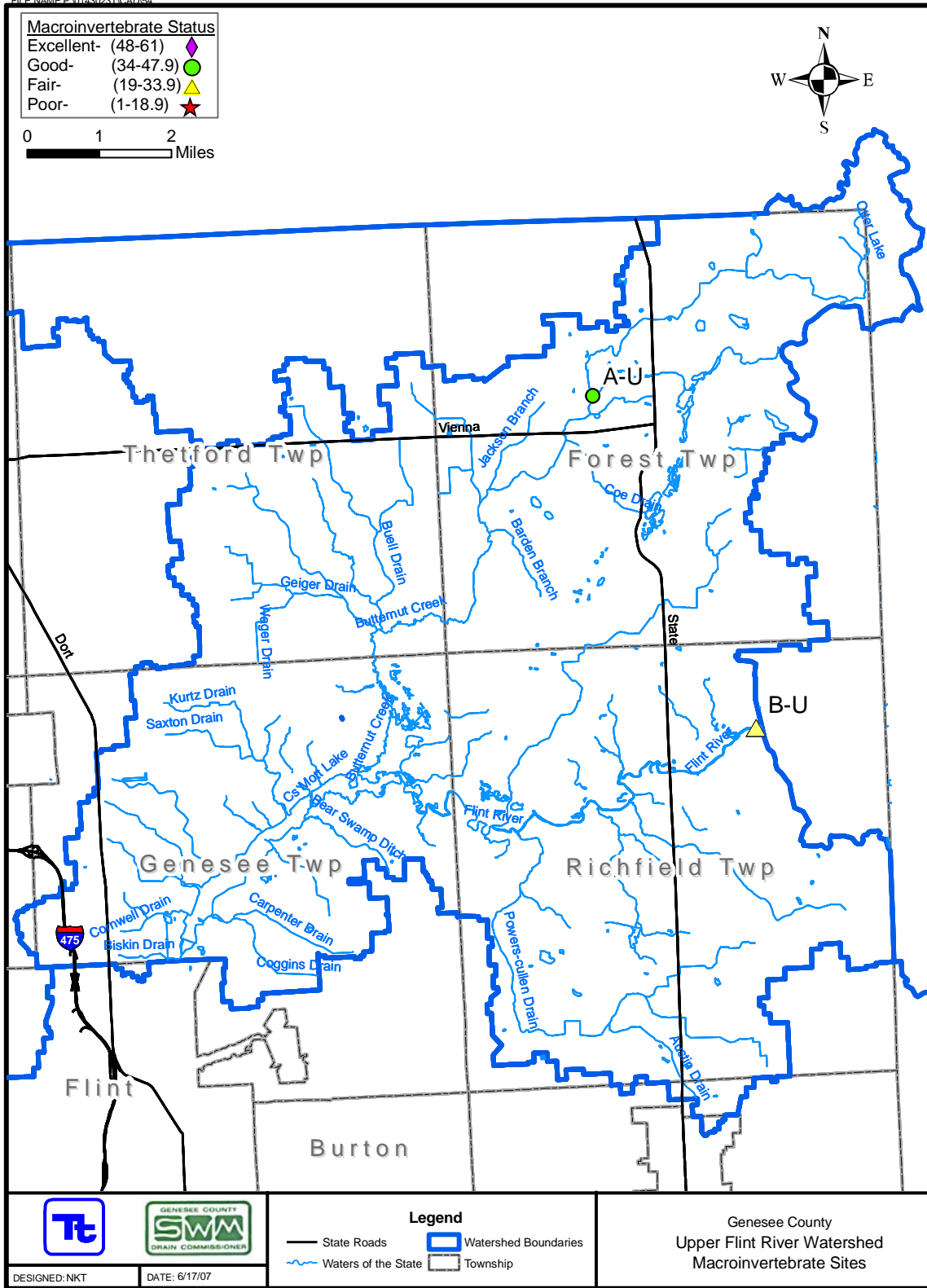


Figure 8-3: Macroinvertebrate Study Results for the Upper Flint River Watershed

9. ILLICIT DISCHARGE ELIMINATION PLAN (IDEP)

The purpose of the Illicit Discharge Elimination Plan (IDEP) is to establish a program that is designed to prohibit and eliminate illicit discharges and connections, including the discharge of sanitary wastewater, to the Genesee County's separate storm water drainage system that includes both open and enclosed drainage systems. The County is required to conduct dry weather screening of all municipal separate storm sewer system (MS4) outfalls, also referred to as point source discharges (PSDs), to comply with their National Pollutant Discharge Elimination System (NPDES) permit. This Section summarizes the IDEP activities and illicit connections identified within each watershed. Section 10 provides a list of 2009 PSDs identified during 2009 IDEP field investigation. Also section 10 includes Phase II Permit application maps and table arranged by municipal.

Figure 9-1 shows the illicit discharge notification system process. During field investigations, crews of two people investigate MS4 outfalls and private drains, either by walking within the County drainage system or by kayaking the waters of the state. Each outfall is mapped and investigated at least once every five years. When outfalls are submerged, field crews conduct additional upstream investigations. If dry weather flow is present at an outfall during investigations, the flow is sampled and analyzed to ensure no illicit connections are present. If a possible illicit connection is identified, the pollutant source is isolated and businesses, property owners, and governmental units are contacted in an effort to eliminate these problems.

The status of IDEP work for each of the following five major watersheds is described:

- Lower Flint River
- Middle Flint River
- Upper Flint River
- Shiawassee River
- Cass River

To date, Genesee County has focused on completing Dry Weather Flow investigations within Phase II community's urbanized areas, (excluding the City of Flint) and some laterals, especially along I-75 and I-69. A total of 59 hot spots have been found. GCDC and Tetra Tech conducted follow up investigations. All of the IDEP information has been entered into a web base database and PSD points are plotted on a GIS map. When the mapping is complete for the entire County, it will be available. In addition, the County has added an illicit discharge reporting page on their web-site. The page will give general information about illicit discharges and phone numbers to call when someone finds an illicit discharge.

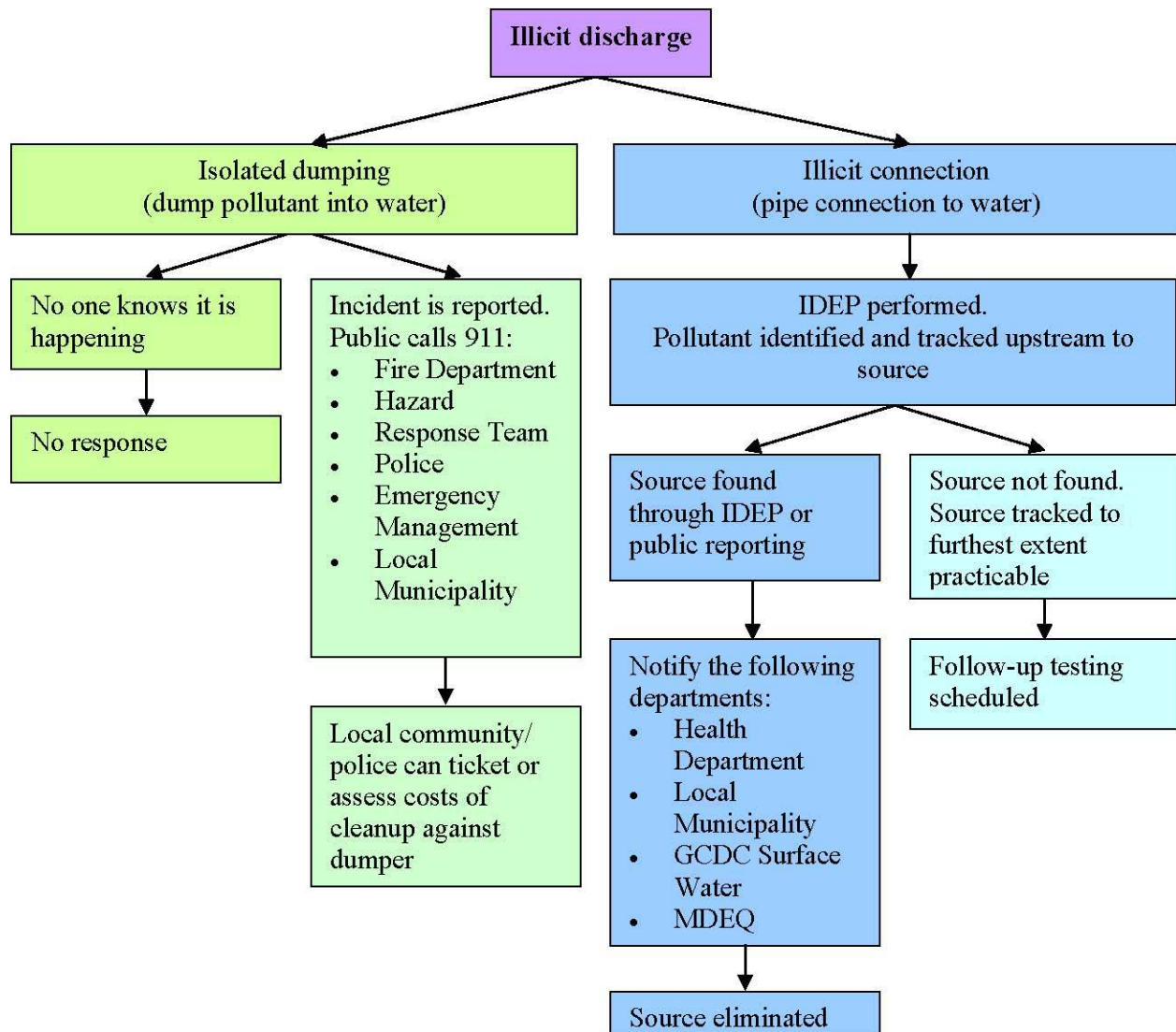


Figure 9-1: Illicit Discharge Notification System Process

LOWER FLINT RIVER WATERSHED

In 2008, IDEP investigations were conducted in the Lower Flint River Watershed. As shown in Figure 9-2, in 2008 190 miles, 2007 78 miles and 2006 2 miles of drain and river were walked or kayaked 270 miles. Figure 9-3, showing the 20 possible illicit connections that were found. Table 9-1 provides a description of the illicit connections, corrective actions taken, and current status. 10 illicit connections were removed, 2 confirmed and 8 still pending further investigation. The County will dye test suspected properties to confirm and coordinate disconnection. Once an illicit connection is confirmed, Genesee County will notify MDEQ in accordance with its NPDES storm water permit and will proceed to remove the connection. Field crews will continue follow-up investigations of the pending PSD within the Lower Flint River Watershed through end of 2008. Additional illicit connections found will be included in the next permit cycle.

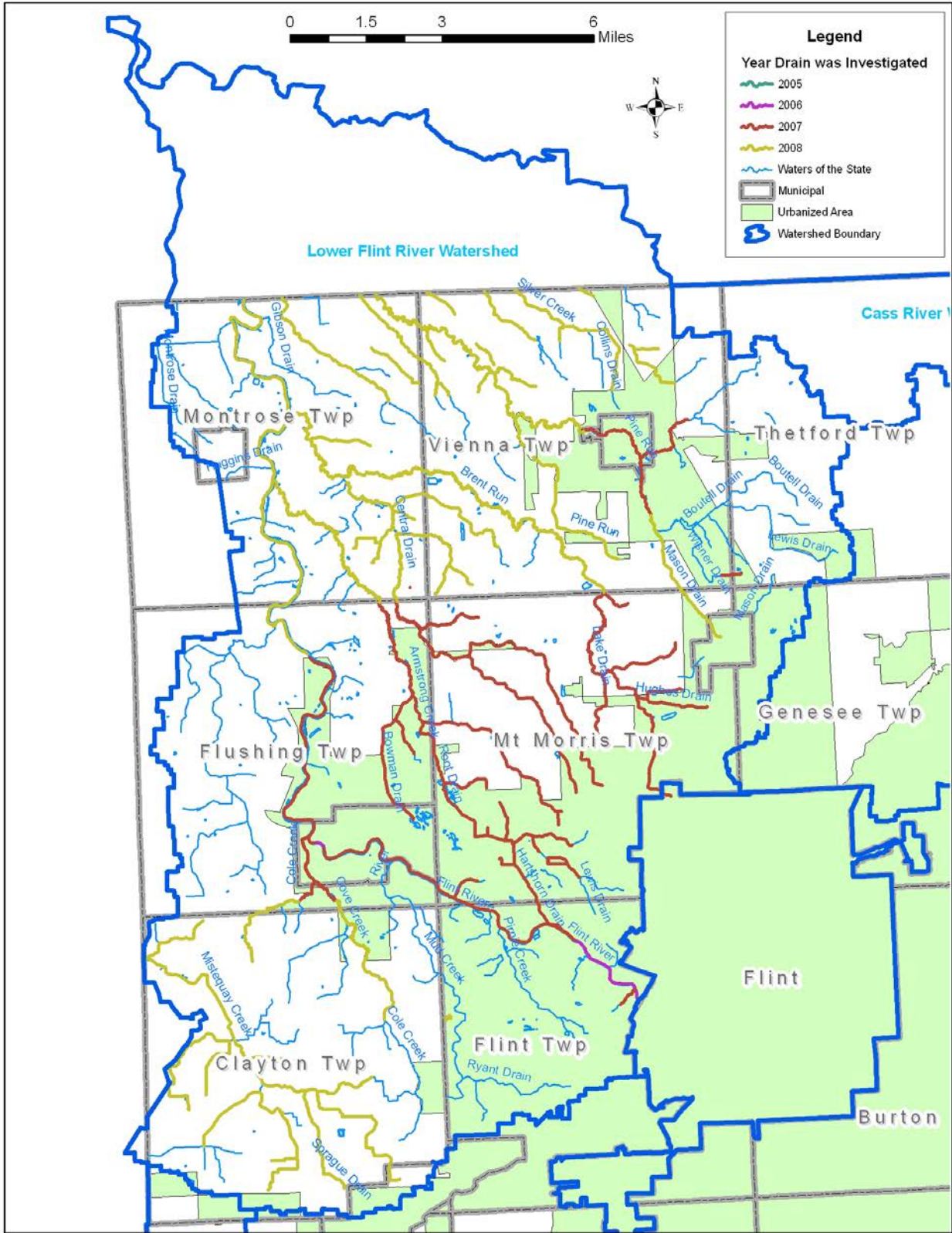


Figure 9-2: Lower Flint River Watershed – IDEP Program Status

Table 9-1 Illicit Connections - Lower Flint River Watershed

Outfall Number	Confirmed Illicit Connection	Corrective Actions	Status
7508010	Dry weather flow, odor, ammonia, <i>E. coli</i> and color consistent with sanitary discharge were observed in pipe behind 11375 Beecher rd.	Recommend GCDC set up dye test at 11375 Beecher Rd.	Pending Dye Test
7513251	(ICE 1)--County notified Tetra Tech on 4-29-08 about a possible illicit discharge.	Investigated upstream, found source of contamination, notified county	Illicit Removed
7603499	On August 06, 2008 investigators conducted a visual inspection of a laundry connection at 3104 W. Dartmouth Road Flint, MI 48504. This illicit connection was located by the GCDC.	Visual inspection confirmed that the laundry connection has been re-routed to the sanitary system.	Illicit Removed
7605761	Field crews' investigation outfall 7605761 found ammonia levels of 3.0mg/L. The source of the dry weather flow was found to be the City of Flint Wastewater Treatment Plant. Plant operators indicated the pipe had been abandoned and plugged, but it appears the abandonment was incomplete.	It is recommended that the GCDC determine if the outlet pipe is within the jurisdiction of the Flint City Wastewater Treatment Plant and work with them to correct the problem.	Pending Jurisdictional Determination
8512502	Investigators made contact with the property owner at 7266 Stanley Road Flushing, MI 48433 regarding an illicit discharge to the County's storm drain. The original investigation in 2007 identified an <i>E. coli</i> source from numerous domestic waterfowl living on the property and having access to the drain.	Homeowner removed domestic waterfowl.	Illicit Removed
8513005	Dry weather flow, <i>E. coli</i> , detergents, ammonia and visual observations of sewage odor, soapsuds and grease/oil at levels above actions limits indicate an illicit connection at 6448 Johnson Rd.	Inspection confirmed new septic system at 6448 Johnson Rd. and removal of illicit connection	Illicit Removed
8513247	Dry weather flow, <i>E. coli</i> , and visual observations of black staining in pipe and sewage odor at levels above actions limits indicate an illicit connection at 6268 Johnson Rd.	No dye observed at outfall. Homeowner suggested that illicit connection was coming from septic system of 6268 Johnson Rd. Dye test confirmed illicit connection at 6268 Johnson Rd.	Illicit Connection Confirmed Removal Pending
8513503	No dry weather flow present, visual observation of lint and hair indicate an illicit connection at 7526 Coldwater, Flushing inspected.	Inspection confirmed illicit laundry connection removed from 7526 Coldwater.	Illicit Removed
8526756	Dyed water test of apartments at 726 E. Main St., Flushing found no illicit connection from buildings. Visual tracking of sanitary pipe led to surcharging City of Flushing sanitary manhole discharging sanitary flow overland to the Flint River.	GCDC notified City of Flushing who removed obstruction from sewer line.	Illicit Removed
8527254	Dry weather flow <i>E.coli</i> , at levels above actions limits indicate an illicit connection	GCDC dyed test for 4463 and 4444 N. Seymour Road and no illicit connection found. Need to dye test another house.	Pending Investigate Further
8527698	High levels of <i>E. coli</i> , surfactant, and ammonia indicate sanitary connection upstream of outfall.	GCDC to set up dye tests for upstream buildings along Seymour Rd.	Illicit Removed

8527862	Dry weather flow, <i>E. coli</i> , at levels above actions limits indicate an illicit connection at 213 Main St, Flushing.	Dye test confirmed removal of illicit connection.	Illicit Removed
Outfall Number	Confirmed Illicit Connection	Corrective Actions	Status
8609747	The presence of <i>E. coli</i> and surfactant at elevated levels at the outfall into the Central Drain indicate an illicit discharge.	Recommend that GCDC schedule a dye test at 4384 E. Stanley Rd.	Pending Dye Test
8614249	In an attempt to verify an illicit sanitary connection, investigators dye tested a multi-family apartment complex on Vanderbilt Drive in Beecher.. Not all possible apartment units were tested.	Investigate further and complete dye testing	Pending investigate further and dye test
8616245	Sewage odor, black staining, high levels of <i>E. coli</i> , surfactant and ammonia at the outfall indicate an illicit sewage discharge.	Recommend GCDC schedule dye test at 6496 N. Linden Rd.	Pending Dye Test
8619101	Dry weather flow, detergents, and visual observations soapsuds at levels above actions limits indicate an illicit connection at 6467 Chicago Rd.	Removal of illicit connection confirmed.	Illicit Removed
8619237	No dry flow present, visual observations of toilet paper indicate an illicit connection at 5518 N. Elms Rd.	No dye observed at outfall, however dye was observed leaching into drain downstream of pipe in question. Recommend GCDC look into leaky drain field behind 5518 N. Elms.	Illicit Connection Confirmed Removal Pending
8619240	Illicit discharge found while investigating upstream pipe (8619237)	GCDC to notify resident of failing septic field and oversee repair/replacement.	Illicit Connection Confirmed Removal Pending
8620753	Dry weather flow detergents, ammonia at levels above actions limits indicate an illicit connection at 5244 Linden Road Flint, MI 48504.	Confirmed new septic field installed.	Illicit Removed
8623747	Dry weather flow, <i>E. coli</i> , detergents, and visual observations of soapsuds at levels above actions limits indicate an illicit connection at Randy Wise Chevrolet, 5100 N. Clio Rd.	Dye test confirmed removal of illicit connection.	Illicit Removed
8623991	Dry weather flow and <i>E. coli</i> at levels above actions limits indicate an illicit connection.	Recommend GCDC to contact the City of Flint and inform them of illicit connection	Pending Jurisdictional Determination
8632011	Dry weather flow and detergents at levels above actions limits indicate an illicit connection.	Send a letter to Mattis Auto Wash to inform them of illicit discharge and recommend changes in their drainage system to eliminate discharge	Send letter responsible party.
8633020	Located at Meijer store located at G4333 Pierson Rd, evidence of overland flow was observed coming from the grease containment area and flowing into a catch basin.	Recommended GCDC follow up with a letter to the store manager regarding the illicit discharge.	Send letter responsible party
9503237	Dry weather flow, <i>E. coli</i> , detergents, ammonia and visual observations of soapsuds at levels above actions limits indicate an illicit connection at 9347 Willard R.	Recommend GCDC set up dye test for 9347 Willard Rd.	Pending Dye Test
9628507	Investigators conducted a follow up investigation and made contact with the resident at 10220 N. Linden Rd. The resident stated that his laundry drained to a private	Recommend the GCDC to dye test residence 10220 N. Linden Rd, Clio. To confirm that the	Illicit Connection Confirmed

	catch basin on his property near the Brent Run. and that the outlet pipe from the catch basin to the Brent Run had been plugged.	laundry connection has been removed.	Removal Pending
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MIDDLE FLINT RIVER WATERSHED

Figure 9-3 shows the status of the IDEP Program for the Middle Flint River Watershed, including the:

- Gibson and Sherwood Drains (Clean Michigan Initiative Grant, CMI)
- Thread Creek and tributaries (Funded by community taxes)
- Swartz Creek and tributaries (Funded by community taxes)
- Kearsley Creek and tributaries (Funded by community taxes)

A total of 229 drain miles have been walked from 2006-2008. The status of IDEP work for each of these project areas is described as follows.

Gibson and Sherwood Drains

GCDC was awarded a CMI grant to conduct investigations for the Gibson Drain. The Quality Assurance Project Plan (QAPP) was submitted to MDEQ in December, 2004 and was approved in January, 2005. A consultant was hired to conduct the IDEP investigations. The final project report, fact sheet, and release of claims were submitted to MDEQ in August, 2006.

In 2005, field crews walked the main branch of the Gibson Drain and its tributary branches, including the Sherwood Drain. A total of 15 miles of drain were walked and no additional field work is need for this drain, other than follow-up illicit connection investigations.

Table 9-2 provides a list of eight illicit connections in the Middle Flint watershed in the Gibson and Sherwood Drains and summarizes corrective actions taken to date and current status. Six illicit connections have been removed which included two sanitary system connections from residential area, sanitary connection from a car dealership, concrete wash off from construction, a commercial car wash facility, and wash water from stone cutting operations at Genesee Cut Stone Company. Also included in the table are two sites where no further actions required at this time. One pipe was unable to be located and the other was re-sampled and lab results were within limits. In the Gibson Drain all illicit connections have been removed or there is no need for further investigations at this time.

Thread Creek and Tributaries

In 2006, the GCDC acquired funds from local communities to conduct IDEP investigations in the Middle Flint River Watershed. Field crews walked the Thread Creek and its tributary branches in the spring and summer of 2006. A total of about 37 miles of drain were walked. Table 9-3, provides a description one pending illicit connection. Once an illicit connection is confirmed, the County will notify MDEQ in accordance with its NPDES storm water permit and begin action to remove the connection.

Swartz Creek and Tributaries

In 2006, the GCDC acquired funds from local communities to conduct IDEP investigations in the Middle Flint River Watershed. Field crews walked 67 miles of the Swartz Creek and its tributary branches in the spring and summer of 2006. The Swartz Creek drainage area has two illicit connections removed and three potential illicit connections pending investigation. Table 9-3 provides a description of the illicit connections and summarizes corrective actions taken to date and current status. The County will dye test the suspected properties to confirm and coordinate disconnection. Once an illicit connection is confirmed, the County will notify MDEQ in accordance with its NPDES storm water permit and begin action to remove the connection.

Kearsley Creek and Tributaries

The GCDC acquired funds from local communities to conduct IDEP investigations in the Middle Flint River Watershed. Field crews walked 60 miles in 2007 and 50 miles in 2008 of the Kearsley Creek as well as its tributary branches in the spring and summer. Table 9-3, one identified illicit connections is being generated and will be forwarded to the MDEQ when it is ready.

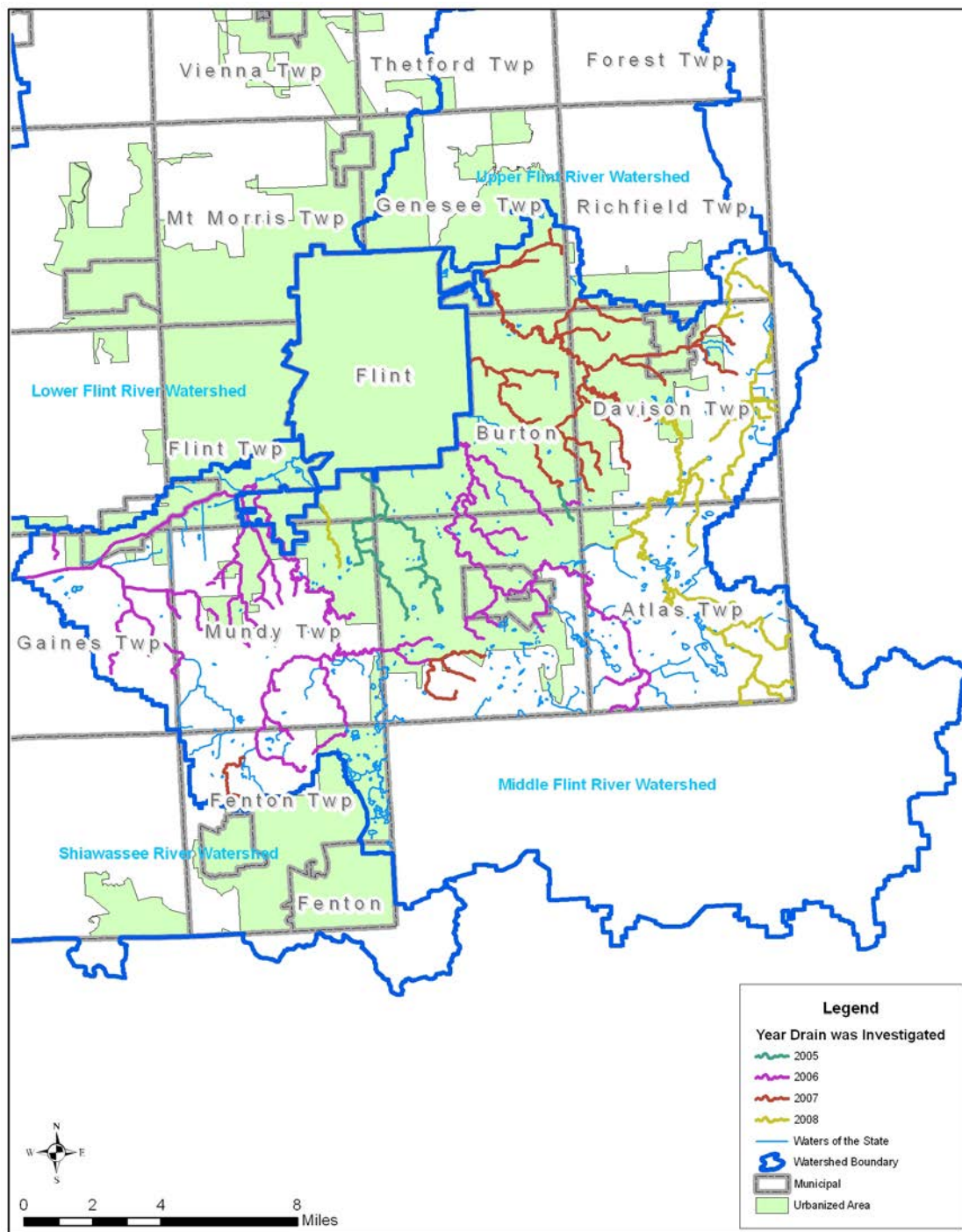


Figure 9-3 Middle Flint River Watershed – IDEP Program Status

Table 9-2 Confirmed Illicit Connections in Middle Flint River Watershed -
Gibson and Sherwood Drains

Outfall Number	Confirmed Illicit Connection	Corrective Actions	Status
6705007	Turbid dry weather flow was found discharging from the property of Genesee Cut Stone.	MDEQ conducted a site inspection of the facility and identified the discharge water was in violation of Part 31 of the NREPA. On November 15, 2005, MDEQ notified Genesee Cut Stone Co. that they are required to obtain an NPDES storm water permit.	Illicit Removed
6705505	(previously 6705007)-- Field crews re-investigated Gibson Drain behind McGrath Elementary School, at the end of Leroy Street.	Lab samples taken at the outfall on 10-30-07 indicated no illicit connection.	No Action Required
6705508	(previously 6705511)-- Dry weather flow, <i>E. coli</i> , detergents, at levels above actions limits indicate an illicit connection on Fern and Rollin Streets.	Samples taken from the GCDC storm sewer on 9-22-08 confirmed that the illicit connection on Fern and Rollin has been removed.	Illicit Removed
6705016	Dry weather flow, <i>E. coli</i> , detergents, and visual observations of black particulates at levels above actions limits indicate an illicit connection at 5050 S. Saginaw Rd.	A dyed water test conducted on September 3, 2008 confirmed an illicit connection at 5050 S. Saginaw Rd. (Victor George Jeep/Chrysler).	Illicit Removed
6706257	Investigators found wastewater being discharged into the Gibson Drain from a pipe located directly behind 1362 Maple Rd.	Further investigation by GCDC and Tetra Tech found the house abandoned and the basement flooded. No further action is possible. Report results to MDEQ.	No Action Required
7625751	Dry weather flow, <i>E. coli</i> , and visual observations of sewage at levels above actions limits indicate an illicit connection at the end of Lynton Ave.	GCDC worked with homeowner to remove illicit connection. Removal was confirmed by dye testing.	Illicit Removed
7625759	Concrete wash off coming from Baker College parking lot.	No construction going on when re-investigated. No further action necessary.	Illicit Removed
7731005	Scrub-A-Dub car wash has over land flow form car wash.	County needs to work with carwash to control over land flow. Letter sent to owner about BMPs.	Illicit Removed

Table 9-3 Illicit Connections in Middle Flint River Watershed -
Thread Creek, Swartz Creek and Kearsley Creek

Outfall Number	Confirmed Illicit Connection	Corrective Actions	Status
6502454	Dry weather flow, <i>E. coli</i> , detergents, and visual observations of soapsuds, excessive algae and black staining at levels above actions limits indicate an illicit connection discharging into Swartz Creek. Upstream investigation led to several houses on Fairchild St. in Swartz Creek.	Recommended GCDC schedule dye testing for the following addresses in the City of Swartz Creek: 5025, 5027, 5037 & 5045 Fairchild St, Swartz Creek	Pending Dye Test
6512503	Dry weather flow <i>E. coli</i> , detergents, ammonia and visual observations of excessive algae, black staining and sanitary odor at levels above actions limits indicate an illicit connection. Property owner denied access to dye test.	Recommended that GCDC continue working with Gains Twp supervisor to correct problem	Pending Work with local authorities
6512508	Dry weather flow was present coming from Geraldine Dr. Field crew identified that it was a relief pipe from a temporary septic system for new subdivision.	Lab samples confirm that the subdivision is now connected to township sanitary and no illicit connection has been removed	Illicit Removed
6516534	Dry weather flow <i>E. coli</i> , surfactant and ammonia all above actions limits indicating an illicit connection.	Recommended that GCDC dye test 10364 & 10356 Grand Blanc Rd., Gaines.	Pending Dye Test
6532753	Dry weather flow <i>E. coli</i> , ammonia and observation of strong sewage odor and excessive algae. A series of PVC cleanouts in line with the outfall and leading toward a kennel facility attached to the residence at 11160 Ray Rd.	Recommended that GCDC dye test the kennel facility at 11160 Ray Rd.	Pending Dye Test
6607507	Dry weather flow <i>E. coli</i> , detergents, ammonia and visual observations of green scum, soap suds and sanitary odor at levels above actions limits indicate an illicit connection.	Resident removed laundry connection. No further action required at 6474 Reid Rd.	Illicit Removed
6601007	Dry weather flow, <i>E. coli</i> , detergents and ammonia above action level and visual observation of soap suds indicate an illicit connection.	Recommended GCDC dye test 1245 Anzio Lane and confirm removal of laundry connection at 1186 Anzio Lane	Pending Dye Test
6709001	Dry weather flow, <i>E. coli</i> , detergents, ammonia at levels above actions limits indicate an illicit connection. Upstream investigation found connection from the outfall to a CB in the parking lot of Al Serra Auto Plaza. Samples taken from the CB also indicated an illicit connection to the GCDC storm drain system.	Dye test was conducted and illicit connection was confirmed.	Pending Illicit Removal
6715004	Dry weather flow and <i>E. coli</i> levels above actions limits indicate an illicit discharge into Thread Creek at Woodbridge St.	Recommended GCDC inform the City of Grand Blanc of possible illicit connection.	Pending Contact Municipality
6715516	Field crews observed dry weather flow, and sanitary debris coming from pipe emanating from Sunset Plaza apartments. <i>E. coli</i> , detergents, and ammonia, levels tested above the actions limits. Probable illicit connection	Recommended GCDC to inform the City of Grand Blanc of the illicit connection.	Pending Contact Municipality
6829760	Visual and odor observation indicate an illicit connection.	Recommended the GCDC dye test at 9451 Brookway Rd.	Pending Dye Test
7726507	Sanitary sewer overflow at 5069 E. Bristol Rd, Burton forming a channel from the manhole structure to the	Recommended GCDC inspect structure for leaks and cause of	Pending Further

	Pierson Drain. The manhole was bolted down and not accessible.	overflow and make necessary repairs.	Investigation by GCDC
7810021	Field crews investigated the City of Davison's storm sewer along South Main St. after testing indicated high levels of <i>E. coli</i> at the outfall into Black Creek. Upstream investigation indicated recent separation work along Main St. and Clark St.. The outfall was re-sampled in October, 2009 and <i>E. coli</i> levels were still above actions limits.	Recommended the GCDC to contacting the City of Davison and obtain information regarding sanitary cross connection to the storm sewer along South Main St.	Contact Local Municipality
7826753	Field crews investigating the Big Swamp Drain found evidence of an illicit connection in a pipe behind 11269 E. Bristol. Laboratory results indicate a sanitary connection.	It is recommended that the GCDC schedule a dye test at 11269 E. Bristol Road Davison, MI 49423.	Pending Dye Test
7828257	Dry weather flow, <i>E. coli</i> , and visual observations of sanitary odor at levels above actions limits indicate an illicit connection. Dye testing of homes upstream of the outfall found a sanitary connection at 3260 Creekview Dr.	GCDC is working with homeowner to remove the illicit connection.	Pending Removal
6054 Fenton Rd Unit 2	Overland flow from sanitary cleanout running into county storm drain system.	At request of GCDC, sanitary line cleaned out and cleanout cap replaced.	Illicit Removed

UPPER FLINT RIVER WATERSHED

In 2006, IDEP investigations were conducted in the Upper Flint River Watershed. As shown in Figure 9-4, field crews walked or kayaked Mott Lake and Butternut Creek and tributary branches. A total of about 93 miles of drain were walked. Table 9-4 provides a description of the illicit connections and summarizes corrective actions taken to date and current status. Six illicit connections were identified. Of the six, five has been removed, and one was confirmed by dye testing. Once an illicit connection is confirmed, the County will notify MDEQ in accordance with its NPDES storm water permit and begin action to remove the connection.

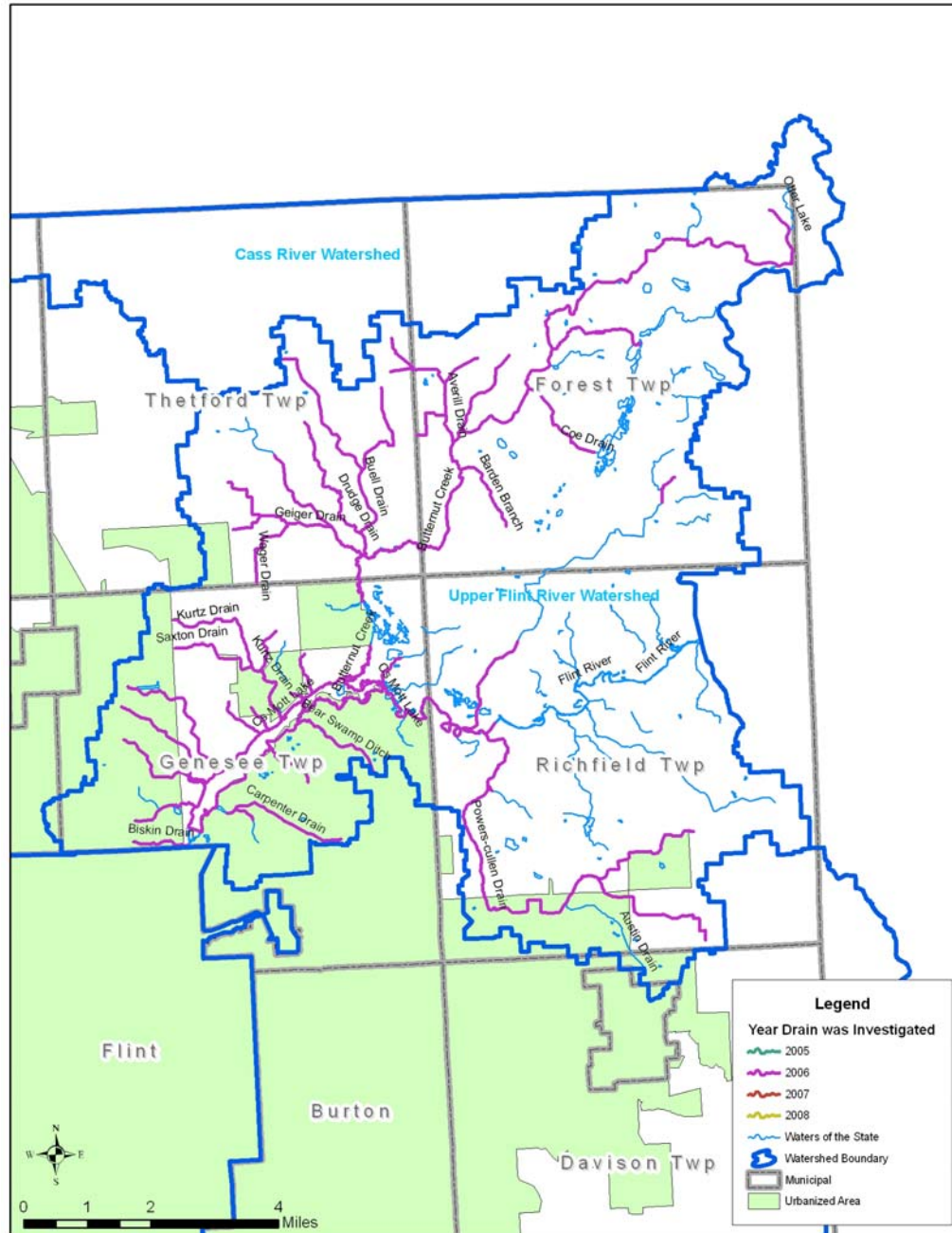


Figure 9-4 Upper Flint River Watershed – IDEP Program Status

Table 9-4 Illicit Connections in Upper Flint River Watershed

Outfall Number	Confirmed Illicit Connection	Corrective Actions	Status
8703501	Dry weather flow <i>E.coli</i> , detergents, ammonia and visual observations of sanitary odor at levels above actions limits indicate an illicit connection at 8296 Center Rd.	Confirmed new septic field and confirmed outlet pipe was dry.	Illicit Removed
8709260	Intermittent flow and visual observation consisting of soapy residue and subs consistent with laundry connection.	Recommend GCDC set up dry test at 7577 N. Center St., Mt. Morris to confirm laundry connection.	Pending Dye Test
8717751	Discharge from pipe originating adjacent to property at 2369 Coldwater Rd. St indicated illicit sewage connection.	GCDC dye test confirmed sanitary connection at 2385 Coldwater Rd.	Illicit connection confirmed removal pending
8717752	Dry weather flow <i>E.coli</i> , at levels above actions limits indicate an illicit connection at 2369 Coldwater.	GCDC dye test confirmed sanitary connection at 2369 Coldwater Rd.	Illicit connection confirmed removal pending
8717753	Dry weather flow, <i>E.coli</i> , and visual observations of sanitary odor and soap suds at levels above actions limits indicate an illicit connection.	Illicit sanitary and failed septic at 2385 Coldwater Rd.	Illicit connection confirmed removal pending.
9734501	No dry weather flow present, visual observation indicate an illicit connection at 4173 Francis, Mt. Morris	Confirmed new septic field and confirmed outlet pipe was dry.	Illicit Removed
9734502	Dry weather flow <i>E.coli</i> , and visual observations of sanitary odor and debris at levels above actions limits indicate an illicit connection at 4191 Francis, Mt. Morris	Confirmed new septic field and confirmed outlet pipe was dry.	Illicit Removed
9735251	Dry weather flow <i>E.coli</i> , detergents, ammonia and visual observations of soap suds at levels above actions limits indicate an illicit connection 5402 Dodge Rd.	Recent construction of a drain field indicates that the illicit connection to the County's drain has been removed and all pipes have been removed draining to the county drain.	Illicit Removed
9735753	Dry weather flow <i>E.coli</i> , ammonia and visual observations of sanitary odor and debris at levels above actions limits indicate an illicit connection at 5467 Francis, Mt Morris	Confirmed new septic field and confirmed outlet pipe was dry.	Illicit Removed

SHIAWASSEE RIVER WATERSHED

The GCDC acquired funds from local communities to conduct IDEP investigations in the Shiawassee River Watershed. Field crews walked its tributary branches and kayaked the Shiawassee River in the summers of 2006, 2007 and 2008. As shown in Figure 9-5, 70 miles drain and river were walked and kayaked. Table 9-5, one possible illicit connection was found, pending dye test of residence. Once an illicit connection is confirmed the County will notify MDEQ in accordance with its NPDES storm water permit and has begin action to remove the connection.

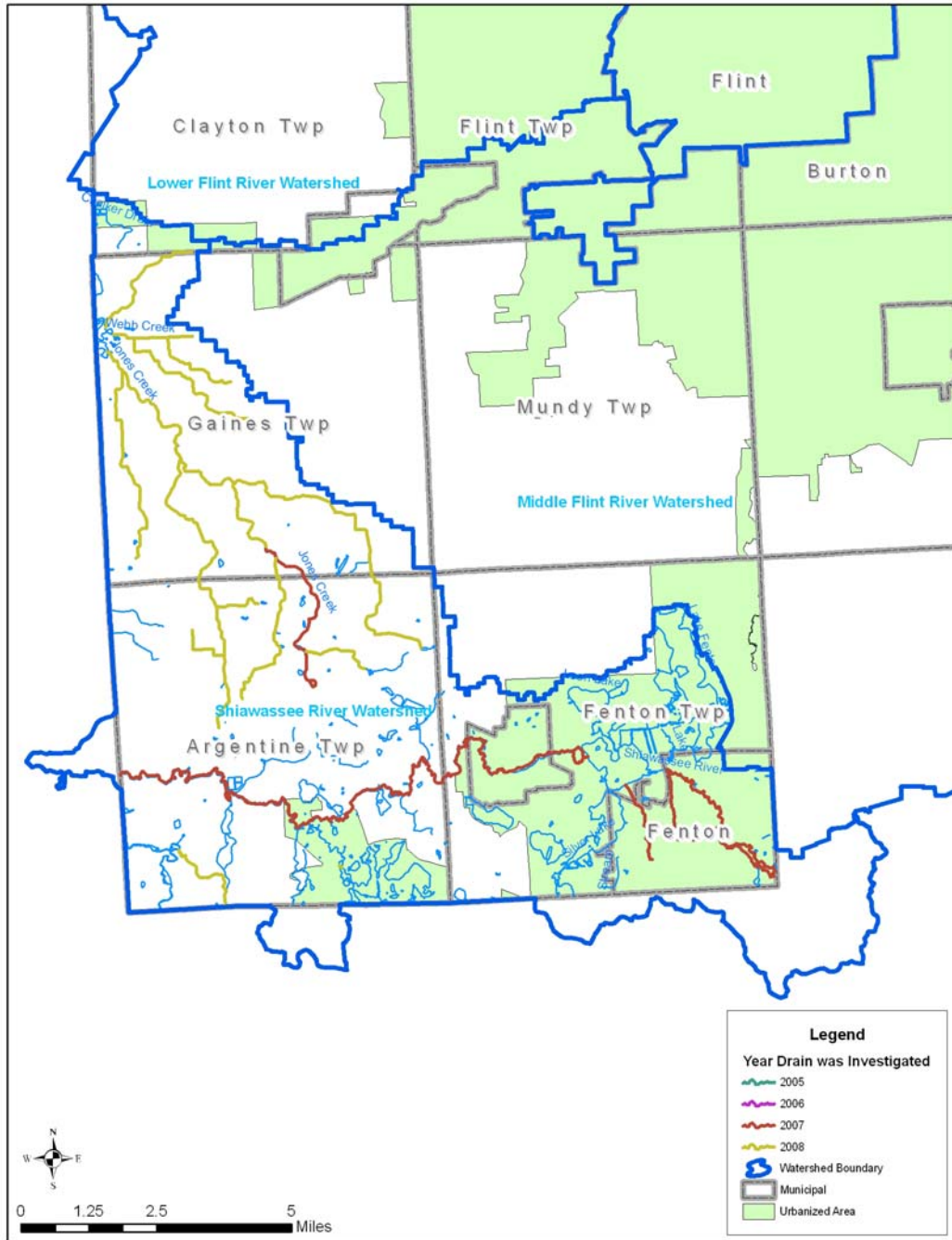


Figure 9-5 Shiawassee River Watershed – IDEP Program Status

Table 9-5 Illicit Connections in Shiawassee River Watershed

Outfall Number	Confirmed Illicit Connection	Corrective Actions	Status
5625507	Dry weather flow <i>E.coli</i> , at levels above actions limits indicate an illicit connection. Upstream investigations led to a pipe coming from 106 Fifth St discharging into a storm manhole in the parking lot of Dewey's Auto Repair at 608 N. Leroy St. A preliminary dye test indicated an illicit connection coming from 106 Fifth St.	New sanitary service lead was constructed. No further action required.	Illicit Removed

CASS RIVER WATERSHED

No IDEP work has been conducted and no IDEP work is currently planned for the Cass River Watershed at this time.

10. NEW STORM WATER POINT SOURCE DISCHARGES (PSD)

In the 2008 annual report, PSD points were identified on the permit application map by municipality. These maps have been updated in the 2010 report to reflect the change in management of the MS4 areas in the second permit cycle. In the past, PSD's were tracked by watershed. In 2009, municipal ownership (city, township, etc.) of PSD's was determined by maps supplied by the municipalities and assigned by GCDC. Municipalities that were designated by GCDC as containing MS4 outfalls include:

- Argentine Township
- City of Burton
- City of Clio
- City of Davison
- City of Fenton
- City of Flushing
- City of Grand Blanc
- City of Linden
- City of Mt. Morris
- City of Swartz Creek
- Davison Township
- Fenton Township
- Flint Charter Township
- Flushing Charter Township
- Genesee Charter Township
- Mt. Morris Charter Township
- Mundy Charter Township
- Vienna Township

Note: Argentine Township and City of Burton MS4 map and table is still being prepared during 2009 year and will be added in 2010 Annual Report. Grand Blanc Township has not signed a 342 contract therefore no mapping of their outfalls was done.

In 2009, field crews investigated possible illicit discharges within the Lower Flint River, Middle Flint River, and Shiawassee River watersheds and within the City of Grand Blanc (see City of Grand Blanc MS4 map and table).

11. STORM WATER POLLUTION PREVENTION INITIATIVE (SWPPI) ACTION PLAN

Storm Water Pollution Prevention Initiatives (SWPPIs) for communities within Genesee County to comply with the Phase II Storm Water NPDES general permit requirements are being led by GCDC's Office of Surface Water Management (SWM). Table 11-1 provides a draft of the SWPPI goals, objectives, and actions for each watershed. Terms used in the table are defined below.

SWPPIs were approved during the last reporting cycle, and information on the activities of individual permittees was compiled in the last year. Table 11-1 demonstrates where the County is making progress.

In addition to the SWPPI actions listed in Table 11-1, there have been ongoing maintenance activities within the county drains and river cleanup events were held at various sites tributary to the Flint River. Details are provided below.

Schedule Definition of Terms

C	Complete
L	Long Term
N/A	Not applicable
O	Ongoing
S	Short Term
W	Wish List

Other Definitions

E342C	Contract for Services between Communities and Drain Office
Ad hoc	The Ad hoc Committees are formed to work on a specific objective until complete
BMP	Best Management Practice
FRWC	Flint River Watershed Coalition
HHW	Household Hazardous Waste
M&M	Monitoring and Mapping
NRCS	Natural Resources Conservation Services
PEP	Public Education Plan
PPP	Public Participation Plan
SWM	Surface Water Management
TBD	To be determined
WWS	Water and Waste Services

COUNTY DRAIN MAINTENANCE ACTIVITIES

Maintenance done to county drains by GCDC during this reporting period include:

- 99 washouts were repaired where the storm pipe had failed
- 48 log jams/culvert plugs were removed
- 40,870 feet of storm line was jetted and vacuumed to remove debris
- 47 catch basin repaired
- 797 catch basins/manholes were vacuumed to remove debris (238 of those were stenciled)
- 78,889 linear feet of open ditch cleaning was performed
- 8 beaver dams removed

RIVER CLEANUP

The GCDC Office participated by having provided in kind services and staff that co-chair and help organize multiple cleanups within the Flint River Watershed.

Most of the locations that are cleaned are municipal and county park lands. Those communities such as City of Flushing and the County Parks have provided trash pickup and staff as in kind service to assist this program.

Municipalities were contacted for cleanup and support. Flyers were mailed to township and municipal offices in the watershed, including cities and counties, and schools. Promotion letters were mailed to civic groups, recreational businesses, fishing businesses, marinas, etc. The two events were advertised on the FRWC website and promoted in the FRWC newsletter. A press release also appeared in the Flint Journal.



On May 12th, 2007, a total of 164 volunteers came out to 5 sites, including:

- U of M campus – Flint 35
- Vietnam Veterans Park – Flint 30
- Holloway Reservoir – Richfield Township 12
- M-15 at the Flint River – Richfield Township 6
- Riverside Park – Flushing 81
- *Total number of volunteers* 164

The volunteers cleaned up approximately 10 river miles and removed 845 ft³ of garbage from the river and its banks.

HOUSEHOLD HAZARDOUS WASTE REMOVAL

The County chairs the twice a year (spring and fall) HHW pickup. The County and several Communities help fund this program. The City of Flint has a permanent site and the other location is hosted around the County by a municipality or school.

Appendix A



GENESEE COUNTY DRAIN COMMISSIONER'S OFFICE

-DIVISION OF
SURFACE WATER MANAGEMENT

JEFFREY WRIGHT
COMMISSIONER

G-4608 BEECHER ROAD, FLINT, MI 48532
PHONE (810) 732-1590 FAX (810) 732-1474

5 March 2008

Reference: NPDES Nested Jurisdiction with schools
Correspondence From: Susanne Kubic

Michael Moorman
Deputy Superintendent
Human Resources and Operations
GISD
2413 West Maple Avenue
Flint MI 48507

Dear Mr. Moorman,

On February 29th, 2008, Representative Ted Hammond scheduled a meeting between himself, Drain Commissioner: Jeffrey Wright and GISD staff comprised of Tom Svitkovich, yourself and Ralph Coaster of Fenton Schools.

January 30, 2008, our office had sent the Schools a letter that the County was unable to continue nesting the school districts under their state NPDES ph II permit. Although the reasons for not nesting the schools remain, the County through the Drain Office will continue to nest the schools under our current agreement until on of the following things happen:

- The new permit has been approved by the MDEQ and the applications accepted.
- A meeting is set up between all the schools, the MDEQ and our office to discuss what is necessary to satisfy the regulatory requirements of the MDEQ permit.

The existing MDEQ permit expires on April 1, 2008. At this time the new permit has not been finalized by the MDEQ and an application cannot be made for the new permit before the existing expires. The existing agreement between the Drain office and the Schools is set to expire May 1, 2008 to correspond with the MDEQ Permit cycle.

If you have questions or comments please feel free to contact our office. Thank you.

Sincerely,

Susanne Kubic, P.E.
Drain Engineer

CC: Stephanie Barney: MDEQ
Representative Ted Hammond



GENESEE INTERMEDIATE SCHOOL DISTRICT
Office of the Superintendent
2413 West Maple Avenue
Flint, Michigan 48507-3493
(810) 591-4403

To: Drain Commissioner Jeffrey Wright

From: Tomiko Fisher *tomiko*

Date: January 14, 2009

Re: Phase II Storm Water Agreement for
Genesee County Public School Districts

Enclosed is the signed First Amendment to Agreement Re: Implementation of Phase II Storm Water Regulations between Genesee County and the public school districts within Genesee County. The superintendents of Genesee County's public school districts have signed this agreement. Should you have any questions, please contact Deputy Superintendent Michael Moorman at (810) 591-4432 or me.

tf

Enclosure

c: Michael Moorman

FIRST AMENDMENT TO AGREEMENT RE IMPLEMENTATION OF
PHASE II STORM WATER REGULATIONS

THIS FIRST AMENDMENT TO A COOPERATIVE INTERGOVERNMENTAL SERVICES AGREEMENT, made and entered into as of the 1st day of _____, 2008, between the COUNTY OF GENESEE, a Michigan county corporation (hereinafter referred to as the "County"), by and through its Drain Commissioner, as County Agency, and the participating School Districts within Genesee County (hereinafter referred to individually as a "School District" and collectively as the "School Districts") listed as signatories herein.

WITNESSETH:

WHEREAS, the County and certain municipalities within the County (the "Municipalities") are subject to the requirements of the Phase II Storm Water Regulations (the "Phase II Regulations") published by the United States Environmental Protection Agency ("EPA") in the Federal Register on December 8, 1999; and

WHEREAS, Phase I Regulations of the existing National Pollutant Discharge Elimination System (NPDES) storm water program were published in the Federal Register on November 16, 1990, and the Phase II Regulations expand the existing program to address storm water discharges from small municipal separate storm sewer systems and construction sites that disturb one to five acres; and

WHEREAS, the Phase II Regulations impose certain requirements on the County and the Municipalities that must be satisfied on or before March 10, 2003 in order to permit the County and the Municipalities each to apply on or before such date for an NPDES permit for storm water discharges; and

WHEREAS, the Board of Commissioners of the County of Genesee has established the Genesee County Storm Water Management System (the "System") to provide, among other things, storm water management services to the Municipalities pursuant to the provisions of Act 342, Public Acts of Michigan, 1939, as amended ("Act 342"), to enable the County and the Municipalities to comply with the requirements of the Phase II Regulations and to engage in other watershed management activities related thereto; and

WHEREAS, the County Drain Commissioner (hereinafter referred to as the "County Agency") has been designated as the agency of the County in connection with the establishment, management and operation of the System; and

WHEREAS, the County and certain of the Municipalities have entered into a contract pursuant to which the County agreed to provide such intergovernmental cooperative services as are necessary to assist the County and such Municipalities in complying with the requirements of the Phase II Regulations and in other watershed management activities, including, but not limited to, applying for NPDES permit coverage and planning for and implementing storm water discharge management controls (known as "best management practices") with respect to the following minimum control measures: (a) public education and outreach on storm water impacts; (b) public participation/involvement; (c) illicit discharge detection and elimination; (d) construction site storm water runoff control; (e) post-construction storm water runoff control; and (f) pollution prevention/good housekeeping for municipal operations; and

WHEREAS, the County has applied for NPDES permit coverage as required by the Phase II Regulations and has begun implementation of the required best management practices; and

WHEREAS, the County and each School District signing this agreement previously entered into a separate Agreement re Implementation of Phase II Storm Water Regulations (the "Agreement") providing for the County to treat the School District as a "nested jurisdiction" within the meaning of the Phase II Regulations so long as the School District is willing to participate in the implementation of the public education program being undertaken by the County and the Municipalities in accordance with the Phase II Regulations (hereinafter referred to as the "Public Education Program"); and

WHEREAS, the Agreement expired on May 1, 2008 and the School Districts have each requested that the County continue to treat them as a "nested jurisdiction;" and

WHEREAS, the County is willing to continue to treat each School District as a "nested jurisdiction" under the conditions hereinafter set forth and it is therefore necessary for the County and each School District to enter into this agreement; and

WHEREAS, each School District will directly benefit from the intergovernmental cooperative services provided by the County under this agreement, and is provided the ability to participate by its execution of the agreement herein.

NOW, THEREFORE, in consideration of the premises and the covenants of each other, the County and each School District hereto agree as follows:

1. The County agrees that, subject to continuing compliance by the School District with its obligations set forth in paragraph 2 below, the School District shall be treated as a "nested jurisdiction" of the County for purposes of the Phase II Regulations.

2. The School District agrees that it shall comply with the requirements of the NPDES Permit issued to the County to the extent such requirements pertain to the School District and the property of the School District as a result of the School District's status as a "nested jurisdiction." The School District acknowledges receipt of a copy of such Permit, and further agrees that:

(a) Recognizing that the Superintendent of Public Instruction has sole and exclusive jurisdiction over the review and approval of plans and specifications and site plans for school buildings pursuant to MCLA § 380.1263, the School District nevertheless agrees that it shall require that its architects, engineers and contractors comply with the best management practices approved by the County for design and construction of all construction projects undertaken by the School District and further agrees that it shall not proceed with any construction project until the proposed project has been submitted to and approved by the County as being in compliance with such best management practices. In addition, the School District shall participate with the County in the development of best management practices for the operation of its facilities and agrees to comply with all such best management practices.

(b) The School District shall provide the County with the name of the School District's contact who shall be responsible for responding under the County's illicit discharge elimination program as it relates to School District facilities. In the event that such contact fails to act or is unavailable to act in the case of an illicit discharge relating to School District facilities, the School District acknowledges and agrees that the County is authorized to act on behalf of the School District to respond to such matter and further, that the School District will be responsible for reimbursing the County for any moneys expended on behalf of the School District in connection with such response activities.

(c) The County shall perform all required monitoring activities for each Municipal Separate Storm Sewer System (“MS4”) that is owned by the School District. The School District will be obligated to pay the County for the actual cost of all laboratory tests if the County’s monitoring activities results in the determination that testing is required. The School District will have no financial obligation to pay for any of the County’s monitoring activities and dry weather screening tests of any MS4 owned by the School District.

(d) The School District agrees to participate in the Public Education Program and to undertake activities in connection therewith. On or before October 1 of each year, the School District shall submit a written report to the County setting forth in reasonable detail all such activities undertaken by the School District in the twelve month period preceding the date of such report. The School District shall not be required to pay any funds to the County in connection with the foregoing activities, and the parties agree that all assistance provided by the School District to the County and the Municipalities in connection with the Public Education Program shall be in kind only. Notwithstanding the foregoing, the School District shall be responsible to the County for the costs and expenses set forth in subparagraphs (a), (b), (c) and (e).

(e) The County and the School District expressly agree that the County and the County Agency shall not be liable and the School District shall pay, indemnify and save the County and the County Agency harmless of, from and against all liability of any nature whatever regardless of the nature in which such liability may arise, for any and all claims, actions, demands, expenses, damages and losses of every conceivable kind whatsoever (including, but not limited to, liability for injuries to or death of persons and damages to or loss of property) asserted by or on behalf of any person, firm, corporation or governmental authority arising out of, resulting from, or in any way connected with the failure by the School District or any of its officers, employees, agents or contractors to comply with the terms and conditions of the

County's NPDES permit as it pertains to the School District and the property of the School District as a result of the School District's status as a "nested jurisdiction." It is the intent of the County and the School District that the County and the County Agency be held harmless by the School District from liability for such claims, actions, demands, expenses, damages and losses, however caused or however arising, including, but not limited to, to fines or costs imposed against the County by any State of Michigan or federal authority as a result of the School District's failure to comply with the NPDES permit as it pertains to the School District and the property of the School District. In any action or proceeding brought about by reason of any such claim or demand, the School District shall also pay, indemnify and save the County and the County Agency harmless from and against all costs, reasonable attorneys' fees and disbursements of any kind or nature incidental to or incurred in said defense. Upon the entry of any final judgment or a final award by an arbitration panel against the County or the Board on any claim, action, demand, expense, damage or loss contemplated by this paragraph and notwithstanding that the County or the County Agency has not paid the same, the School District shall be obligated to pay to the County or the County Agency, as the case may be, upon written demand therefor, the amount thereof not more than sixty (60) days after such demand is made. In the event that any action or proceeding is brought against the County or the County Agency by reason of any such claims or demands, whether such claims or demands are groundless or not, the School District shall, upon written notice and demand from the County or the County Agency, resist and defend such action or proceeding in behalf of the County or the County Agency, as the case may be, but will not settle any such action or proceeding without the consent of the County or the County Agency, as the case may be.

3. The County and each School District acknowledge and agree that this agreement does not create any liability between individual School Districts; and that further, while each School District may execute this agreement's signature page for administrative convenience, this

agreement shall be considered a separate agreement between each School District and the County.

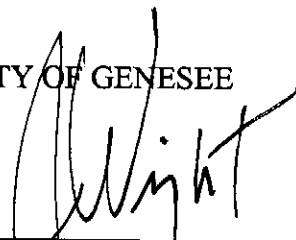
4. In the event that any one or more of the provisions of this agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions hereof, but this agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

5. This agreement shall become effective after approval by the Board of Commissioners of the County and, as to each School District, by the Board of Education of the School District and execution by the authorized officials of the County and each School District. Any School District signing this agreement shall have the right, on an annual basis, to opt-out of this agreement for the remaining term of this agreement by providing advance written notice of its election to do so at least thirty (30) days prior to October 1 of each year to the County Agency and the Michigan Department of Environmental Quality. This agreement shall terminate on October 1, 2013 unless extended by the County and each School District willing to do so. This agreement may be executed in several counterparts; and shall be binding upon and inure to the benefit of the County and each School District signing this agreement and their respective successors and assigns.

IN WITNESS WHEREOF, the County and each School District to be bound by this agreement have caused this agreement to be executed and delivered, by their respective duly authorized officers, all as of the day and year first above written.

COUNTY OF GENESEE

By:



Deain Commissioner, as County Agency

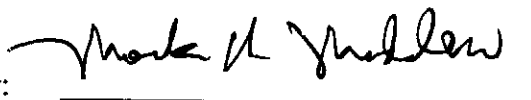
GENESEE INTERMEDIATE SCHOOL DISTRICT

By:



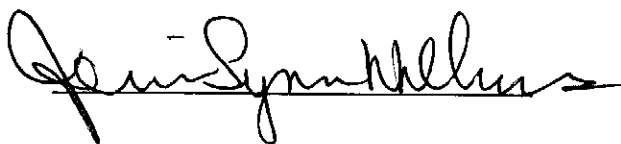
ATHERTON COMMUNITY SCHOOL DISTRICT

By:



BEECHER COMMUNITY SCHOOL DISTRICT

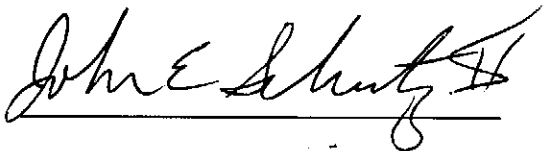
By:



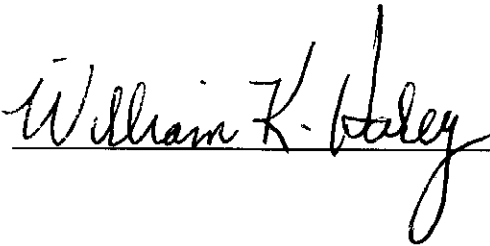
BENDLE PUBLIC SCHOOLS

By:  _____

BENTLEY COMMUNITY SCHOOL DISTRICT

By:  _____

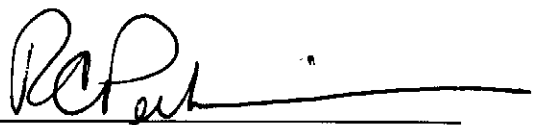
CARMAN-AINSWORTH COMMUNITY SCHOOLS

By:  _____

CLIO AREA SCHOOLS

By:  _____

DAVISON COMMUNITY SCHOOLS

By:  _____

FENTON AREA PUBLIC SCHOOLS

By: Peggy J. Yates

SCHOOL DISTRICT OF FLINT

By: Linda C. Thompson

FLUSHING COMMUNITY SCHOOLS

By: Barbara A. Goebel

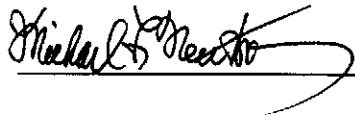
GENESEE SCHOOL DISTRICT

By: Jeff

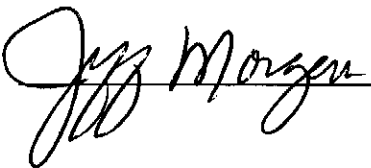
GOODRICH AREA SCHOOLS

By: S. J. All

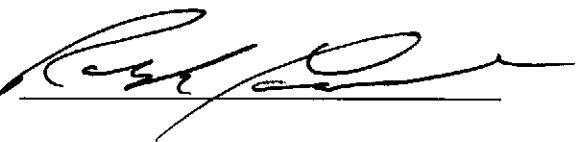
GRAND BLANC COMMUNITY
SCHOOLS

By: 


KEARSLEY COMMUNITY SCHOOLS

By: 

LAKE FENTON COMMUNITY
SCHOOLS

By: 

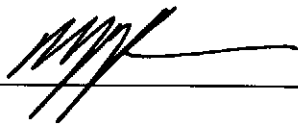
LAKEVILLE COMMUNITY SCHOOL
DISTRICT

By: 

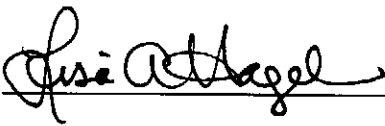
LINDEN COMMUNITY SCHOOL
DISTRICT

By: 

MONTROSE COMMUNITY SCHOOL
DISTRICT

By:  _____

MT. MORRIS CONSOLIDATED
SCHOOLS

By:  _____

SWARTZ CREEK COMMUNITY
SCHOOLS

By:  _____

WESTWOOD HEIGHTS SCHOOLS

By:  _____

What is NPDES and why are you involved?

The Federal Clean Water Act of 1972 requires municipalities to obtain stormwater permits under the National Pollution Discharge Elimination System (NPDES) permit program. By 1990, it became apparent that non-point source pollution was contributing to the decreased water quality in our streams and rivers. Non-point source pollution is pollution that comes from diffuse sources. As rain water and snowmelt travel overland, they pick up man-made and natural pollutants, like spilled motor oil and phosphorus, and deposit them into our local water bodies.

In an effort to reduce non-point source pollution, Phase I of the NPDES program was established. It required permit coverage for municipalities with populations of 100,000 or more. In 1999, Phase II of the NPDES program was created. Phase II permits are necessary for certain small municipal separate storm sewer systems (MS4s) and small construction sites. In addition to drain permitting, there are other NPDES elements. These include public education and participation; watershed management; new construction standards; monitoring and mapping; and the Storm Water Pollution Prevention Initiative (SWPPI). In Michigan, the Michigan Department of Environmental Quality (MDEQ) administers the NPDES program under the supervision of the U.S. Environmental Protection Agency (EPA). When communities in Genesee County were faced with meeting the NPDES Phase II mandate, they requested that the County take the lead. The Genesee County Drain Commissioner's Office coordinates and implements these programs under the County Public Improvement Agreement (P.A. 342). They help local units of government and public organizations collaborate to protect our local natural resources and provide the most effective program for Genesee County using the least resources possible.



Our Water booth reaches about 4000 people in 2008

The Genesee County Water Quality Consortium has an active public education campaign. We go to popular events with our education booth to teach people about the watershed, and how to care for it. A watershed is the area of land that drains to a stream or river. Our challenge is to find interesting ways to teach people about it.

Throughout 2008, we took the booth

on water quality.

This year, booth staffers kept track of where visitors live, to help us target educational needs. Maps of Genesee County were used to help visitors identify where they live in the watershed. Visitors also took a short survey to determine their knowledge of the watershed and their awareness of the *Our Water* Campaign. Of the 909 visitors, 99 (10.9%) completed the survey. For a full report on this survey, see the "Phase II Annual Report for 2008, Appendix F" on the Genesee County Drain Commissioner's Office Surface Water Management website: <http://www.gcdcswm.com/PhaseII/AnnualReport/AnnualReport.htm>.



Our Water promotional bags, water bottles and piggy banks were used to draw visitors to the information booth at the 2008 Genesee County Fair.

to nine events, reaching more than 4,000 with the *Our Water* Campaign's educational messages.

Our largest event was the Genesee County Fair in August. The booth was located in the Farm Bureau tent. Municipal volunteers, drain office staff and staff with the University of Michigan-Flint Center for Applied Environmental Research worked seven days at the booth. We interacted with nearly twice as many people this year as last year -- 909 vs. 532!

Booth staffers drew visitors to the tent with tote bags and coloring books. These items, and educational brochures, were given to any visitor who tried to answer a question



The Our Water information booth and the dedicated volunteers and staff that educated 909 visitors at this year's County Fair.

A special thank you to all the volunteers who helped make this event a success!



Why you received this newsletter

You are receiving a copy of this newsletter because of your involvement with Genesee County's NPDES Phase II Program. Through this newsletter we will keep you informed of the status of the public education campaign, the best management practices committee and the illicit discharge elimination program and help you stay up-to-date on statewide changes relevant to NPDES permitting. New editions of this newsletter will be sent out periodically.

The University of Michigan – Flint Center for Applied Environmental Research (CAER) has partnered with the Genesee County Drain Commissioner's Office to provide assistance with the coordination, implementation and evaluation of the Phase II public education campaign. As part of this collaboration, CAER designs and writes this newsletter on behalf of the Genesee County Drain Commissioner's Office.

CAER's primary contact for the NPDES Phase II Program is Danielle Gartner. If you are interested in contributing an article for publication in future editions of the newsletter, you can contact Danielle by email at danyg@umflint.edu or by phone at (810) 424-5456.

Who's involved in Genesee County's Phase II program?

The following communities have partnered for Phase II permitting services: Argentine Township, Burton, Clio, Davison, Davison Township, Fenton, Fenton Township, Flint Township, Flushing, Flushing Township, Genesee Township, Grand Blanc, Linden, Mt. Morris, Mount Morris Township, Mundy Township, Swartz Creek, Vienna Township, Genesee County Drain Commissioner, and the Genesee County Road Commission.

Other education and coordination partners include the Genesee County Conservation District, the Flint River Watershed Coalition, the University of Michigan-Flint's Center for Applied Environmental Research, and the Genesee Intermediate School District.

Discussions with the City of Flint are underway for partnering on future education programs.

The NPDES Phase II's decision-making structure

The Genesee County Storm Water Advisory Committee (SWAC) guides the implementation of the entire Phase II Program. Many communities in Genesee County are member to the SWAC, including those that are part of the NPDES Phase II Program and/or members to the Genesee County Storm Water System Service District under P.A. 342.

The SWAC has three sub-committees. Each community serving on the SWAC also serves on at least one of these sub-committees. For a list of sub-committees

and their duties, see "Sub-committees oversee construction, monitoring and public education" on page 3. Sub-committees meet regularly along with stakeholders and/or individuals with specialized knowledge to implement the Public Education Plan and the Illicit Discharge Elimination Plan (IDEP) and to oversee other NPDES Phase II Program activities.

Members of SWAC also serve on the Watershed Planning Committees for the watershed in which their community is located. Work conducted by the Watershed Planning Committees is used to develop the Lower Flint, Middle Flint, and Shiawassee River Watershed Management Plans (WMPs).

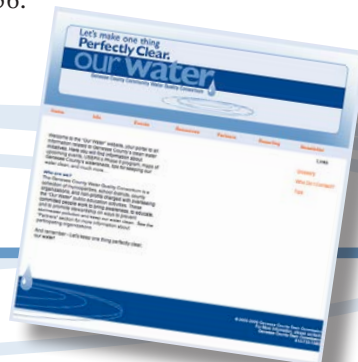
Check out our perfectly clear website!

www.cleargeneseeewater.org

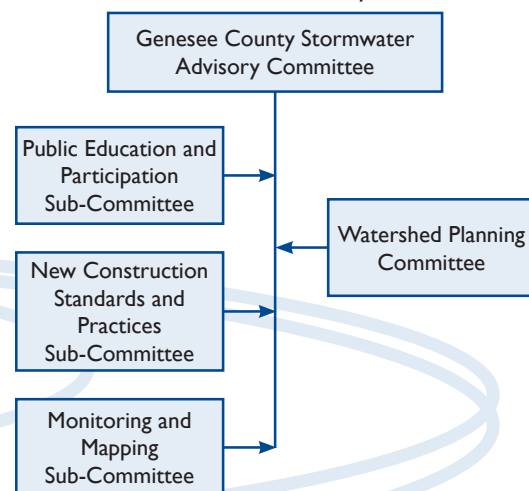
Have you been to the *Our Water* Campaign website lately?

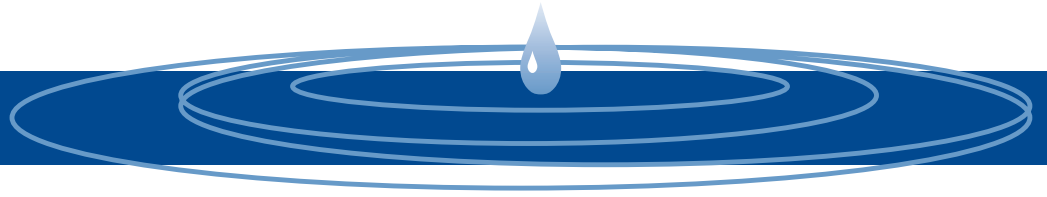
The site is continually updated, so keep checking back. Many of the updates are organizational in nature. Modifications include a new masthead and layout, additional informational tabs and links at the homepage, and easy-to-follow navigation tools. If you come across any information relevant to the *Our Water* Campaign that you feel should be on the website, send

your thoughts to Danielle Gartner at UM-Flint's Center for Applied Environmental Research. Danielle can be reached by email at danyg@umflint.edu or by phone at (810) 424-5456.



NPDES Decision-Making Relationships in Genesee County





Sub-Committees oversee construction, monitoring and public education

Construction Standards and Practices (CSP) Sub-Committee:

This sub-committee oversees new construction standards, post construction practices and updating ordinances to ensure compliance with the U.S. Environmental Protection Agency (EPA) requirements. Throughout the last reporting cycle, the CSP sub-committee has been working with communities to establish a Storm Water Ordinance for communities within Genesee County. The ordinance is currently in draft form and is ready for legal review. The CSP sub-committee is developing a Best Management Practices (BMP) manual as a companion piece to the ordinance. The manual will deal with minimum standards for construction and post construction BMPs. The manual is slated for completion in the summer of 2009.

Monitoring and Mapping (M&M) Sub-Committee:

This sub-committee oversees organization and implementation of watershed monitoring, field sampling protocols, and mapping guidelines. The M&M sub-committee manages several water quality monitoring programs such as the Road-Stream Crossing Survey, 319 Nonpoint Source Grant Projects, Project GREEN, and the Benthic Macroinvertebrate Study. They also monitor the Illicit Discharge Elimination Plan (IDEP) Program and oversee the Hot-spot Water Quality Monitoring Program. In 2008, field crews found less than 40 illicit connections in the Lower Flint River, the Middle Flint River, and the Shiawassee River Watersheds.

Public Education and Participation (PEP) Sub-Committee

This sub-committee oversees the implementation of the Public Education Plan. In the last reporting cycle, the PEP sub-committee and partners presented actions for cleaner water to 14 community groups; developed an educational brochure; purchased and gave away promotional premiums; set up the *Our Water* informational booth at nine community events; gave EnviroScope watershed model demonstrations to 11,000 individuals and students; added 210 river/stream crossing and/or watershed signs; and continued the catch basin stenciling program. Look forward to the continuation of these programs and the creation of informational guides, classroom maps, and evaluation plans in 2009.

How the Flint River Watershed Coalition partners with us

In this and subsequent editions of the Newsletter, we will highlight the valuable work of one of the partners in the Phase II Program.

The Flint River Watershed Coalition (FRWC) is a non-profit organization formed in 1997. The FRWC engages residents of Genesee County in watershed and stormwater education and activities. Some programs offered by the FRWC in conjunction with the *Our Water* Campaign include:

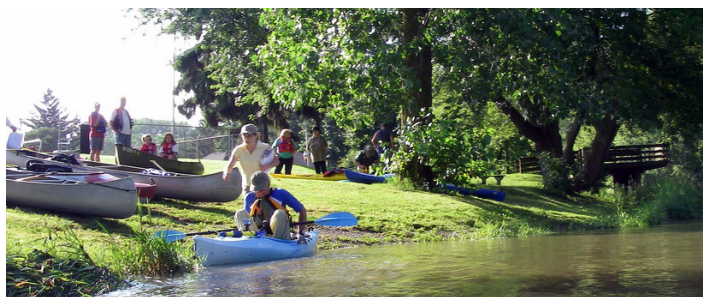
Storm Drain Stenciling:

The FRWC works with community and neighborhood groups to stencil catch basins to help keep pollution out of storm drains. The FRWC organizes and provides the training and supplies.

River Walks: The FRWC hosts walks that focus on the value of the Flint River watershed, simple steps to protect our

local water resources, and recreational opportunities available. The walks are free open to the public; six walks were held in 2008.

Canoe Trips: In 2008, the FRWC hosted



Water enthusiasts learn about our local rivers by taking their canoes and kayaks out on the water with the FRWC.

two canoe trips to encourage people to become familiar with local rivers.

Public Education Presentations: Through their Speakers Bureau program, the FRWC gives presentations on your local watershed and steps that can be taken to protect and improve it. In 2008, the FRWC spoke to 11

organizations, reaching 219 individuals.

Water Quality Monitoring: The FRWC also conducts the Project Global Rivers Environment Network (Project GREEN), reaching more than 1,100 area students, and benthic macroinvertebrate monitoring with the Phase II Monitoring and Mapping sub-committee.

Contact the FRWC at www.flintriver.org or (810) 767-6490 to participate in these programs.



Two volunteers investigate the insects and other invertebrates living at the bottom of the stream.



Low Impact Development has high impact on cost savings

As a municipal leader, you are asked to save money on infrastructure and find ways to make your community more marketable. You are expected to learn about and comply with federal regulations for water quality and storm water management. Fortunately, you don't have to do this alone.

A cutting-edge strategy called Low Impact Development (LID) can help you meet your community's obligations and objectives.

LID is a set of ecologically friendly practices for site development and storm water management. LID minimizes impact on the environment with design and planning techniques that conserve water. Many U.S. cities have successfully used Low Impact Development in municipal development codes and storm water management plans.

There are many benefits to municipalities that implement Low Impact Development. For instance:

- ◆ Site water quality is protected by reducing sediment and nutrient-loading.
- ◆ Costs to maintain infrastructure and utilities are reduced.
- ◆ Local plants and animals are protected.
- ◆ Environmental protection and growth

are kept in balance.

- ◆ Public and private collaborations are increased.
- ◆ Your community's marketability is enhanced.

Interested in learning more? Feel free to attend the next Construction Standards and Practices Sub-Committee meeting on February 3, 2009. The next NPDES Phase II Newsletter will explore how other communities successfully use LID practices to meet Phase II mandates and save money.

Additionally, a LID manual specific to the State of Michigan was just released. A PDF version of the document can be found at www.semcog.org.

Information for this article was gathered from the US EPA's "Low Impact Development (LID): A Literature Review," published in October 2000. A PDF of the document is available at the following website: http://www.lowimpactdevelopment.org/pubs/LID_litreview.pdf

Common LID practices include, but are not limited to:

- ◆ Creating bioretention areas
- ◆ Building grass swales
- ◆ Installing vegetated roof covers (i.e. green roofs)
- ◆ Reducing impervious surfaces
- ◆ Redirecting rooftop runoff



This driveway with permeable/porous covering helps reduce polluted runoff by allowing stormwater to soak into the ground.

Stenciling connects storm drains to stream health

The Genesee County Drain Commissioner's Office has a catch basin

stenciling program to help keep pollution out of storm drains. Since November 1, 2006, more than 900 stencils have been painted on roads within Genesee County. Many of these were

done by the Drain Commissioner's staff as they cleaned out the catch basins. About 400 of these were painted since October 2007. Stencil volunteers place doorknob

hangers on residential homes adjacent to the stenciling locations. These door hangers

educate residents about the connection between storm drains and our lakes and streams. Recently, the Flint River Watershed Coalition began coordinating the volunteer stenciling program. Although building support

for the program has been challenging, the FRWC already has at least 14 volunteer groups organized for next year's storm drain stenciling.

NO DUMPING



DRAINS TO RIVER

Upcoming Events

Look forward to the next edition of the NPDES Phase II Newsletter featuring articles on:

- ◆ Stormwater Pollution Prevention Initiative (SWPPI) requirements
- ◆ Low Impact Development case studies
- ◆ Illicit discharge elimination
- ◆ Household Hazardous Waste disposal
- ◆ New updates and partner highlights

What is NPDES and why are you involved?

The Federal Clean Water Act of 1972 requires municipalities to obtain stormwater permits under the National Pollution Discharge Elimination System (NPDES) permit program. The NPDES works to reduce water pollution, including non-point source pollution. Non-point source pollution is pollution that comes from diffuse sources. As rain water and snowmelt travel overland, they pick up man-made and natural pollutants, like spilled motor oil and phosphorus used on agricultural fields, and deposit them into our local water bodies.

There are two phases to the NPDES permitting program: phase I applies to large cities, like Flint, and phase II to smaller communities. The NPDES program also entails elements beyond drainage permits including, public education and participation; watershed management; new construction standards; monitoring and mapping; illicit discharge detection and elimination; and Storm Water Pollution Prevention Initiatives (SWPPI).

In Michigan, the Michigan Department of Environmental Quality (MDEQ) administers the NPDES program under the supervision of the U.S. Environmental Protection Agency (EPA). The Genesee County Drain Commissioner's Office coordinates and implements these programs under the County Public Improvement Agreement (P.A. 342). They help local units of government and public organizations collaborate to protect our local natural resources.



The 2003-2008 Genesee County Phase II Illicit Discharge Elimination Plan (IDEP) was a success - only 134 illicit discharges found between 2003 and 2008!

The Michigan Department of Environmental Quality (MDEQ) requires Phase II permittees to submit Illicit Discharge Elimination Plans (IDEP) for continued permit coverage. The IDEP are designed to prohibit and eliminate illicit discharges and connections, including the discharge of sanitary wastewater, to Genesee County's separate storm sewer system.



Of the 5,510 outfalls investigated, only 134 instances of illicit discharge were found between 2003 and 2008.

To comply with the NPDES permit, the County is required to conduct screenings of all Municipal Separate Storm Sewer System (MS4s) outfalls.

To investigate outfalls throughout the 2003 to 2008 permitting cycle, field crews walked over 645 miles of the County drainage system and/or kayaked the waters of the State. During this time, over 5,510 outfalls were found. An outfall is a point where storm water from one area flows to another area. Examples of outfalls include connections from one pipe to another,

the area where a pipe empties to a ditch, or a connection between two ditches. Outfalls can be owned by a private entity or, alternatively, be part of an MS4. Once identified, each outfall is mapped to allow for further investigation at least once every five years.

If conditions are allowable, the flow of the outfall is sampled and analyzed. The County may also conduct dye tests on suspected properties to confirm and coordinate potential disconnections. When an illicit connection is identified, the pollutant source is isolated and the property owners are contacted in an effort to eliminate the discharges. Field crews found only 134 illicit discharges during the 2003-2008 permitting cycle! Of these, 75 have been removed to date. Follow-up investigations and removals of all illicit discharges are currently underway.

Useful Definitions

Illicit Discharge: Any discharge or seepage to the separate storm water drainage system that is not composed entirely of storm water or uncontaminated groundwater.

Illicit Connection: A connection to the separate storm water drainage system that allows illicit discharges into the system and/or is not authorized or permitted by the Genesee County Drain Commissioner's Office.

Municipal Separate Storm Sewer System (MS4): Public agency owned or operated ditches, curbs, gutters, and/or storm sewers that collect runoff and do not connect with a wastewater collection system or treatment plant.



Why you received this newsletter

You are receiving a copy of this newsletter because of your involvement with Genesee County's NPDES Phase II Program. Through this newsletter we will keep you informed of the status of the public education campaign, the best management practices committee and the illicit discharge elimination program and help you stay up-to-date on statewide changes relevant to NPDES permitting. New editions of this newsletter will be sent out periodically.

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NPDES 101: A quick guide to understanding basic storm water permitting in your community

Under the National Pollution Discharge Elimination System (NPDES), all facilities that discharge pollutants into surface waters (i.e. lakes, rivers, streams, drains) of the United States are required to obtain a permit to do so. In Michigan, the Michigan Department of Environmental Quality (MDEQ) administers the NPDES program. Through the development of strict requirements, the MDEQ regulates a variety of factors to maintain satisfactory water quality including bacteria, biochemical oxygen demand, dissolved oxygen, pH, phosphorus, temperature, and total suspended solids. There are three types of permits issued by the MDEQ to monitor release of the above mentioned factors: general, individual, and "permit by rule". The MDEQ determines the appropriate type of permit for each discharge site and consequently determined your community gain coverage through a general permit.

MS4s, or municipal separate storm sewer systems, are public agency owned or operated ditches, curbs, gutters, and/or storm sewers that collect runoff and do not connect with a wastewater collection system or treatment plant. Only operators

of MS4s in "urbanized areas" (delineated and defined by the U.S. Census Bureau) are required to gain a stormwater permit under Phase II regulations. Two general NPDES permits are available to smaller MS4s, like your community: a general jurisdictional permit and a general watershed-based permit. Phase II communities in Genesee County have a general watershed-based



In addition to making sure discharges are regulated, NPDES permits also include storm water education components to ensure that people don't let chemicals wash into storm drains.

permit. The general watershed-based permit addresses the same basic requirements as the traditional jurisdictional permit except that it provides greater flexibility in selecting and implementing stormwater controls.

To attain coverage, the Genesee County Drain Commissioner's Office prepares an application that outlines a proposal for compliance with the permit requirements. The MDEQ reviews the application, and if deemed satisfactory, issues a Certificate of Coverage (CoC). The CoC gives Genesee County Phase II communities the authority to discharge storm water. All NPDES permits are subject to a 30-day public notice period and if approved, are valid for a maximum of five years.

Upcoming Events

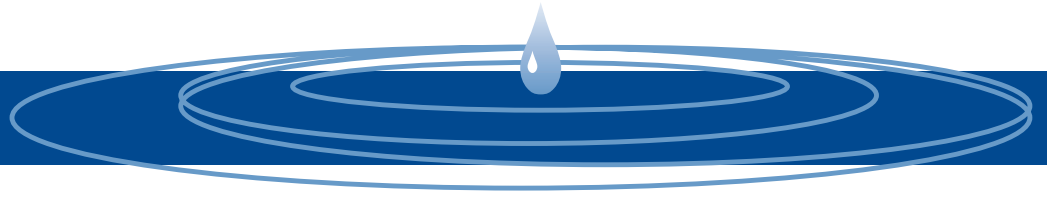
Flint River Watershed Coalition Walks

- ◆ Wednesday, July 15th, 10:00 a.m. - Clio River Walk Trail
- ◆ Wednesday, July 22nd, 10:00 a.m. - Hogback Water Trail

Genesee County Fair ◆ August 17-23.

Mark your calendars for the upcoming Paddling Events in the Flint River Watershed.

- ◆ Saturday, August 8th, Fresh Water Forever Rally, Downtown Flushing to Flushing Township Nature Park, FTNP to Montrose
- ◆ Sunday, August 23rd, Holloway Dam to Richfield Park, Richfield Park to Mott Lake
- ◆ Wednesday, August 26, Flushing Township Nature Park to Montrose
- ◆ Sunday, September 13th, Misten Landing to Flushing



Sub-Committees oversee construction, monitoring and public education

Construction Standards and Practices (CSP) Sub-Committee:

This sub-committee oversees new construction standards, post construction practices and updates ordinances to ensure compliance with the U.S. Environmental Protection Agency (EPA) requirements. The CSP sub-committee has been working with communities to establish a Storm Water Ordinance for communities within Genesee County. The ordinance is currently in draft form and is ready for legal review. The CSP sub-committee has recently been dedicating time to understand low impact development practices and their application in the State of Michigan.

Monitoring and Mapping (M&M) Sub-Committee:

This sub-committee oversees organization and implementation of watershed monitoring, field sampling protocols, and mapping guidelines. The M&M sub-committee manages several water quality monitoring programs such as the Road-Stream Crossing Survey, 319 Nonpoint Source Grant Projects, Project GREEN, and the Benthic Macroinvertebrate Study. They also monitor the Illicit Discharge Elimination Plan (IDEP) and oversee the Hot-spot Water Quality Monitoring Program. The M&M sub-committee has recently been working to schedule trainings for 'good housekeeping' practices related to SWPPI.

Public Education and Participation (PEP) Sub-Committee

This sub-committee oversees the implementation of the Public Education Plan. The PEP sub-committee recently approved a new budget for the 2008-09 year. Education programs from the previous reporting cycle, conducted by PEP partners, are continuing into the reporting new cycle. Recently, a television public service announcement was identified to be used as part of the *Our Water* Campaign. Additionally, four area school teachers were created to inform them on ways to engage students in stormwater education projects.

How the Genesee County Conservation District partners with us

In this and subsequent editions of the Newsletter, we will highlight the valuable work of one of the partners in the Phase II Program.

If you hunt, fish, boat, hike, garden, farm, or do anything else involving natural resources in Genesee County, then you benefit from the Genesee County Conservation District (GCCD). The GCCD is a unique local unit of the State of Michigan's Government that works to solve today's conservation problems.

The GCCD plays an integral role in the Genesee County Phase II program through their provision of storm water education

services to school-aged children. During the 2007-08 reporting cycle, the seven Phase II education elements reached over 8,000 students in Phase II communities! The GCCD uses the EnviroScope Watershed

Model as an interactive tool to teach students about the sources of water pollution and ways to prevent it. Children are fascinated by the realism of the model and enjoy

the opportunity to participate in the demonstrations. The presentation meets Michigan Department of Education Standards and Benchmarks.

Additionally, the GCCD publishes newsletters that support the public

education mission of the Phase II program and have worked to develop Certificates of Appreciation to award to Phase II communities.

Contact the Genesee County Conservation District at www.geneseeconservation.org or (810) 230-8766 ext. 3 for more information.



The EnviroScope Watershed Model provides an interactive way to engage students in learning about water pollution and prevention.



The Genesee County Conservation District works to solve today's conservation problems so that we can enjoy Genesee County's great natural resources.



City of Bangor, Van Buren County, successfully uses LID techniques for the Lion's Park restoration project

Clean and clear water resources in Genesee County and Michigan are necessary for future economic prosperity. Stormwater management is an important component of water quality protection in our communities. Low Impact Development (LID) provides

an opportunity for you to learn how other municipal representatives are successfully implementing LID techniques around Michigan.

Lion's Park is located in the City of Bangor, Van Buren County, Michigan. The Black River winds through the City of Bangor, with the city owning significant river frontage within Lion's Park. Funded through a MDEQ 319 Nonpoint Source Management Grant, a Michigan Natural Resources Trust Fund Grant, and the City of Bangor, the city undertook a restoration project to remediate stream bank erosion and reduce stormwater runoff into the Black River. Erosion of the Black River's stream



Erosion on the banks of this stream is prevented through plantings of vegetative buffers.

a unique way to protect water resources through stormwater management and enable economic growth.

The following case study provides an

What is LID?

LID is a set of ecologically friendly practices for site development and storm water management. LID minimizes impacts on the environment with design and planning techniques that conserve water.

banks was reduced by re-grading the banks and stabilizing them with native plantings. Additionally, the city's stormwater, which previously flowed directly into the Black River, is now filtered by the Lion's Park rain garden. This project not only improves water quality, but also provides opportunities for public education due to its location within the city. In this case study, the City of Bangor played a critical role in working with state-level governmental employees, local planners, and community members to implement this LID project.

Specific LID techniques undertaken in this project include, protecting sensitive features, protecting riparian areas, re-planting disturbed areas with native plant species, bioretention, vegetated filter strips, and porous pavement.

Field crews conduct road stream crossing studies to determine appropriate actions for improving stream quality

During the summers of 2007 and 2008, a team of consultants from Tetra Tech and Wade Trim conducted a visual assessment of road stream crossings in the Lower and Middle Flint River and Shiawassee River Watersheds. The crew investigated a total of 183 road-stream crossings over the two summers. The assessment identified background information about the crossings, the bottom substrate, type of bank vegetation, surrounding land use, and the physical habitat of each road stream crossing. Similar data will be collected every one to three years and compared to

this baseline data to show if conditions are improving, worsening, or staying the same.

The collected data was compiled and categorized by actions that could be taken to improve watershed conditions. Identified actions to improve stream quality include, improving canoeing and recreation access, stabilizing stream banks, stabilizing disturbed ground, increasing shade cover, establishing 30 or 100 foot riparian buffers, cleaning trash, and investigating and improving Illicit Discharge Elimination Plans (IDEP).



Some road stream crossings are delineated by interpretive signage to educate commuters on the geographic location of local water bodies.

71
Genesee Conservation District
1525 North Elms Road
Flint, MI 48532
Phone: 810-230-8766 ext. 3
Fax: 810-230-2404

Project Name: Phase II Stormwater Program-School Children Education Program

Project Manager: Genesee Conservation District (Genesee CD), Steve Montle

Objective: To provide Stormwater education to school children, parents and community groups in the Genesee County Phase II communities

Deliverables Achieved for the 3rd quarter of the 2008-2009 School Year:

- In the month of April, the Education Program reached 101 kids and 50 adults. The major events for April included several programs at the Flint Children's Museum.
- In the month of May, the Education Program reached 245 kids and 124 adults. The major events for May included the Green Summit at Mott Community College and the Michigan Envirothon at Michigan State University.
- In the month of June, the Education Program reached 484 kids and 84 adults. The major events for June included several programs at the Flint Children's Museum.
- During this 3rd quarter the Education Program reached 830 kids and 258 adults for a yearly grand total of 6291 participants.

Submitted for your review by,



Sarah Kilgore
Educational Director
Genesee Conservation District

Genesee Conservation District
1525 North Elms Road
Flint, MI 48532
Phone: 810-230-8766 ext. 3
Fax: 810-230-2404

Project Name: Phase II Stormwater Program-School Children Education Program

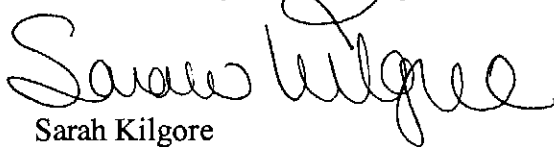
Project Manager: Genesee Conservation District (Genesee CD), acting Sarah Kilgore

Objective: To provide Stormwater education to school children, parents and community groups in the Genesee County Phase II communities

Deliverables Achieved for the 4th quarter of the 2008-2009 School Year:

- In the month of July, the Education Program was presented to various Boy Scout Groups at a local day camp. A total of 124 kids and 38 adults were reached at the day camp. The Education Program was also presented to H.O.M.E. (a local home school group) for a total of 35 kids and 13 adults.
- In the month of August, the Education Program was presented at the Genesee County Fair for a total of 1400 visitors for the week long event. The Education Program was also presented to several church youth groups in Flint for a total of 98 kids and 49 adults.
- During this 4th quarter the Education Program reached 1757 people for a yearly grand total of 8048 participants.

Submitted for your review by,



Sarah Kilgore
Educational Director
Genesee Conservation District

Taking care of your waterfront land will **save you money** because...

- ◆ Healthy waterfront land serves many functions including water filtration, storage of stormwater, flood control, protection of water quality, nutrient cycling, and protection of shorelines and stream banks. When these areas are compromised, expensive engineering solutions may be required, costing you more money in the future.
- ◆ Waterfront properties that are well-planned and are well-maintained or well-managed may sell for more than average market value.



Let's make one thing
Perfectly Clear.
our water
Genesee County Community Water Quality Consortium

G-4608 Beecher Rd.
Flint, MI 48532

Let's make one thing
Perfectly Clear.
our water
Genesee County Community Water Quality Consortium

The Water's Edge

How to protect your waterfront property and its value



Brought to you by the communities of Genesee County

We all know how important water is to us. It's just as important that the water banks are protected as well.

Follow the simple actions described in this brochure to avoid costly maintenance repairs in the future.

During a recent study, members of our field crew were approached by many landowners with questions about how to protect their waterfront property. This brochure was developed to address some of the questions you and your neighbors may have about soil or bank erosion.

Whether you have property next to a lake, river, or stream, you reap benefits from your waterfront land almost daily. Not only is your property value enhanced, but issues important to everybody including water quality, wildlife and fish habitat, and recreation use depend on your healthy, maintained waterfront land.

This brochure was written for the Genesee County *Our Water* Campaign, the public education effort of the Genesee County Water Quality Consortium. The Genesee County Water Quality Consortium is a collection of municipalities. These dedicated people work to bring awareness, to educate and to promote stewardship on ways to prevent stormwater pollution and keep our water clean. Funding for this newsletter was provided by the Genesee County Water Quality Consortium.

Stabilize stream banks and shorelines.

The continued wearing away of soil and sediment from a stream bank or shoreline is called erosion. This process can be accelerated or slowed by the actions we take. Altering land to create open areas along rivers, lakes, and streams can quickly result in erosion of property along the banks. Not only is property lost every time it rains, but when too much soil or sediment enters the nearby lake, river, or stream, it can be considered a pollutant.

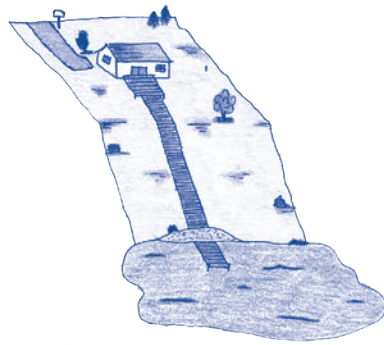
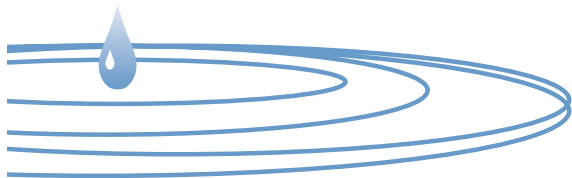
To prevent erosion on your property and save yourself time and money, try these techniques to create a naturalized stream bank or shoreline...

Build plant buffers.

Before your property was developed, your nearby lake, river, or stream was surrounded by native plants, trees, and shrubs that acted as natural water filters and held soil in place. Rooted plants such as wildflowers, shrubs, and trees can stabilize eroding or sensitive slopes.

A good buffer strip is wide (30 feet), continuous, and dense with shorter plants nearer the water and taller plants and trees planted further away. Engineered structures like seawalls can reduce animal and plant habitat and are only recommended in erosion-prone locations.

To save yourself time and money, avoid mowing your lawn up to the edge of the water. Letting the lawn closer to the edge of the water grow tall with grasses and shrubs can help stabilize your stream bank or shoreline. Minimize disturbance at the edge of water.



The banks of this property will erode over time because there is little vegetation to keep the stream bank held together.



The banks of this property will not erode over time because there are plant buffers and deep roots to keep the stream bank held together.

What is a plant buffer?

A plant buffer is a strip of trees, shrubs, and other plants along lakes, rivers, and streams that traps runoff before it flows into nearby water bodies. As water seeps through a plant buffer, the plants hold soil, filter out pollutants, regulate water flow, and moderate water temperatures.

Not sure building a buffer is a good choice for your property? Consider these material costs:

- ◆ Maintaining an existing plant buffer = \$0
- ◆ Building a plant buffer = \$10 per foot
- ◆ Installing "riprap" (concrete blocks or large rocks along the edge of water) = \$30-40 per foot
- ◆ Installing a sea wall = \$65-100 per foot

The listed prices are simply cost estimates. Actual costs will depend on many factors including, location, availability of materials, permits, grading, labor, and maintenance.

Keep it legal! Make sure to obtain the proper permits before working along the water's edge. Check with the Michigan Department of Environmental Quality (1-800-662-9278) and your local township office to see if you need one.

Minimize disturbance at the edge of water.

- ◆ If you have swimming area, try to make it as small as possible.
- ◆ Avoid pulling out aquatic plants. This will save you both time and effort! Plus, aquatic plants provide habitat for local organisms.
- ◆ Also consider mowing only a small trail from your property to your streambank or shoreline.

Mow better and mulch clippings.

- ◆ Keep your grass cut high – set your lawnmower cutting height to 3" to hide clippings, help the grass develop deeper root systems, and defend against weeds and drought.
- ◆ Leave grass clippings on your lawn – they make great natural fertilizer. Leaving them will also save you bagging time!
- ◆ Don't guess, soil test. A soil test will tell you what, if any, fertilizer is needed in your yard. Contact your Michigan State University Extension county office for more information.

Cover bare spots on your lawn.

- ◆ Establish vegetation on all bare areas.
- ◆ Temporarily stabilize these areas with mulch to minimize erosion.

Create porous walkways.

- ◆ Design paths that follow natural contours to reduce risk and create a more visually interesting landscape.
- ◆ Use porous paving material such as wood decking, bricks, or interlocking stones instead of asphalt or concrete.

Reduce Runoff.

- ◆ Collect and reuse water in rain barrels to water trees, shrubs, and lawn, and save money.
- ◆ Install rain gardens in low areas where water collects.

Remove invasive plants and go native.

- ◆ Use native, low maintenance plants like grasses, wildflowers, shrubs, and trees on your property. Native plants are better able to tolerate Michigan's climate, require less fertilizer and water, are more disease resistant, and will attract wildlife.
- ◆ Invasive plants should be removed and replaced with native vegetation. But first, make sure to know about the invasive plants you pull out – you might actually make the problem worse if you don't remove invasive plants properly.

5 Common Southeast Michigan Invasive Plants:

- ◆ Purple Loosestrife (*Lythrum salicaria*)
- ◆ Common Reed or Phragmites (*Phragmites australis*)
- ◆ Frogbit (*Hydrocharis morsusranae*)
- ◆ Eurasian Watermilfoil (*Myriophyllum spicatum*)
- ◆ Curly Leaf Pondweed (*Potamogeton crispus*)

Color images of these five common invasive plants can be found at the *Our Water* Campaign website:

www.ClearGeneseeWater.org/invasiveplants

Information for this riparian landowner's brochure was gathered from the following resources and was adapted for the needs of the Genesee County *Our Water* Campaign.

- ◆ Huron River Watershed Council, Get Buff! Shorelines need muscle to keep our water clean. Informational Handout.
- ◆ Lake County Stormwater Management Commission, Riparian Area Management: A Citizen's Guide. Informational Booklet, 2002.
- ◆ Michigan State University Extension, Home*A*Syst: Managing Shoreline Property to Protect Water Quality. Informational Booklet WQ-52, May1999.
- ◆ Oakland County Drain Commission, Waterfront Wisdom: Healthy Habits for Clean Water. Informational Booklet.
- ◆ Oakland County Planning & Economic Development Services, Discovering your Community's Natural Asset. Informational Poster.
- ◆ University of Minnesota Extension Service, Protecting our Waters: Understanding Shoreline BMPs. Factsheets.
- ◆ Genesee County Water Quality Consortium, Seven Simple Steps to Clean Water. Informational Brochure, 2008.

The Water's Edge

How to protect your waterfront property and its value

A **FREE** workshop offered to waterfront landowners in the
Kearsley Creek Watershed,

brought to you by the communities of Genesee County.

May 21, 2009 🌧️ 6:30-8:00pm

Davison Country Club, Terrace Room
9512 Lippincott Blvd
Davison, MI 48423

Overview:

Genesee County and the communities of Kearsley Creek are fortunate to have an abundance of lakes, rivers, streams, and creeks. Your waterfront land management practices, both good and poor, impact the value of your land and the health of our water. Simple actions taken today can protect your property and our water into the future.

The communities of Genesee County, in partnership with the Genesee County Drain Commissioner's Office, will be holding an educational workshop on May 21, 2009, for waterfront landowners in the Kearsley Creek Watershed. This workshop will provide waterfront property owners with a range of low-cost and ecologically-sensitive practices for protecting waterfront property, reducing streambank and shoreline erosion, and effectively managing stormwater. By attending this workshop, participants will learn about a range of opportunities available to improve land management practices and save money. Participants will also walk away with the resources and contacts needed to assist them in protecting their waterfront property and restoring water quality. *Light refreshments will be served.*

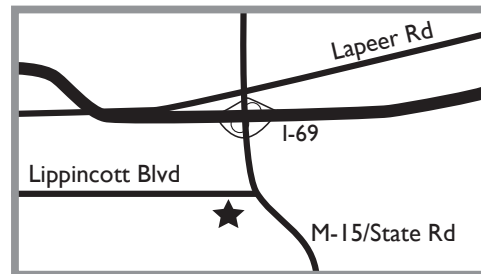
Registration Information:

Contact Danielle Gartner at (810) 424-5456 or danyg@umflint.edu to register for this event.

Please RSVP by 5pm on May 15th – limited space is available.

Workshop Outline:

- 🌧️ Establishing plant buffers
- 🌧️ Best management practices for waterfront property owners
- 🌧️ Septic system maintenance



Davison Country Club is located in Davison, Michigan, on the corner of Lippincott Blvd. and M-15, 1/4 mile south of I-69.



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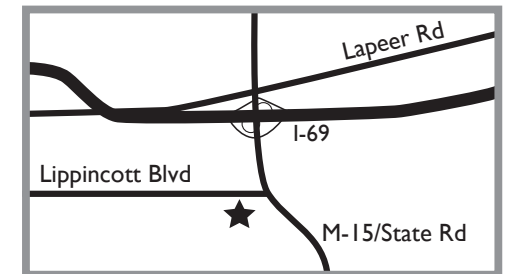
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How protected is your stream bank or shoreline?

Take this short quiz to see how it measures up.

Check off the practices that are already done on your property.

Do you...

- Establish vegetation on all bare areas of your property
- Develop a beach site with minimal shoreline alteration or have no beach site
- Plant native trees and shrubs
- Retain a natural area of grass, trees, and shrubs next to your streambank or shoreline
- Learn about invasive plants before removing them
- Plant deep rooted plants, shrubs, and trees
- Reduce paved or covered areas; use gravel instead of paving driveways/walkways
- Install rain gardens in low areas where water collects
- Collect and use rainwater to water trees, shrubs, and lawn
- Use mulch around trees and plants
- Consider existing natural characteristics of property before designing shoreland development
- Use a variety of native species in new plantings

How protected is your stream bank or shoreline?

If you checked off...	Your stream banks are...
More than 10	Fantastic
Between 7-9	Great
Between 4-6	Showing signs of wear
3 or less	Eroding quickly

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Check off the practices that are already done on your property.

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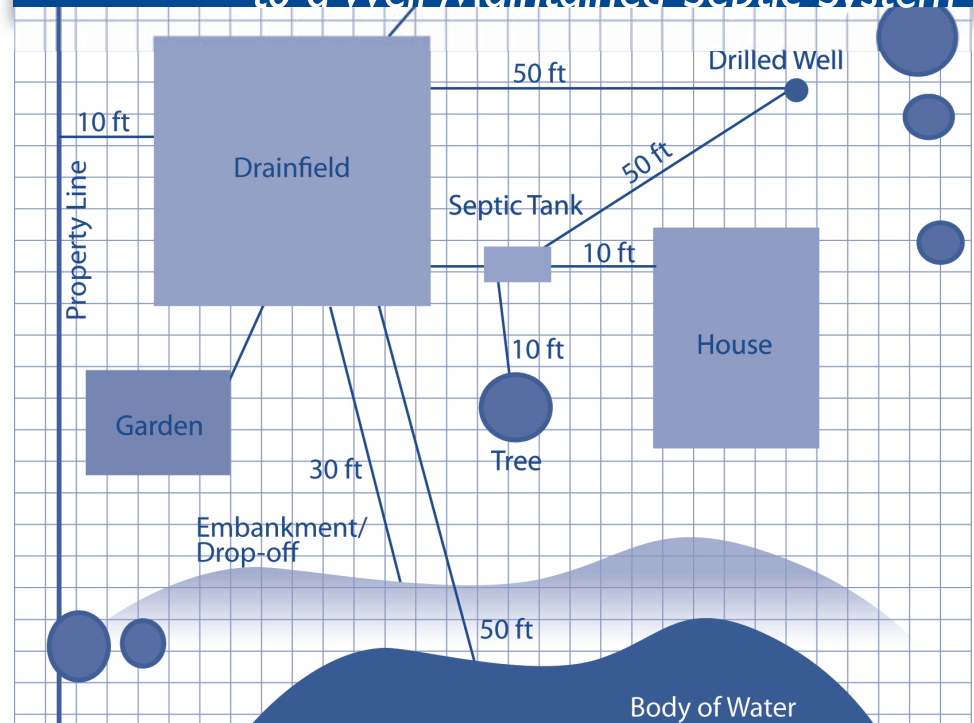
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3 or less	Eroding quickly



A Genesee County Homeowner's Guide to a Well-Maintained Septic System



Not sure if you have a septic system? Here are some questions to help you find out:

- 💧 Do your neighbors have septic systems? If so, it is likely that you also have a septic system.
- 💧 Do you get a bill from your town or city agency charging for sewer services? If so, it is likely that you DO NOT have a septic system.

Genesee County Health Department
 Floyd J. McCree Courts and
 Human Services Center
 630 S. Saginaw St. • Flint, MI 48502

Phone: 810-257-3603
 Fax: 810-257-3147



Congratulations on purchasing your new home!

The information in this booklet is designed to assist you, a septic system owner. Because your residence is connected to a septic system instead of a public sanitary system, you have the opportunity and responsibility to operate and maintain your own septic system. A properly maintained septic system positively influences the quality of our local water resources. By taking the useful, simple actions described in the following pages, small efforts at your residence can save you money and have large, lasting impacts on our lakes, rivers, and streams.

This guide will help you keep your septic system in working order. It will help you better understand how your septic system works and the steps that can be taken to keep a septic system functioning properly. Additionally, this guide provides you with the tools and resources to identify and fix a malfunctioning septic system.

Top 4 actions to ensure a septic system is properly maintained:

1. Inspect (every 3 years) and pump (every 3 to 5 years) your septic system.
2. Use water efficiently.
3. Refrain from dumping solids or hazardous household wastes down drains or into toilets.
4. Care for drainfields.

This booklet was written for the Genesee County Our Water Campaign, the public education effort of the Genesee County Water Quality Consortium. The Genesee County Water Quality Consortium is a collection of municipalities. These dedicated people work to bring awareness, to educate and to promote stewardship on ways to prevent stormwater pollution and keep our water clean. Funding for this newsletter was provided by the Genesee County Water Quality Consortium and the Genesee County Drain Commission.

Information for this septic system guide was gathered from the following resources and was adapted for the needs of the Genesee County *Our Water* Campaign.

- ◆ University of Minnesota Extension Service, Protecting our Waters: Understanding Shoreline BMPs. Factsheets.
- ◆ U.S. Environmental Protection Agency, A Homeowner's Guide to Septic Systems. Informational Guide, EPA-832-B-02-005, Dec 2002.
- ◆ Rouge River National Wet Weather Demonstration Project, DEMO Info: Septic Systems. Informational Handout.

Why care about septic systems?

As a homeowner, you are responsible for maintaining your septic system. If your septic system is properly designed, built, and maintained, it can effectively treat your household wastewater, save you money, and keep our local water clean for many years. If a septic system is not properly maintained, a lot of costly damage could be done.

A malfunctioning septic system can...

- ◆ Cost thousands of dollars to replace or repair
- ◆ Make selling your home very difficult
- ◆ Lower your property value or pose legal liability
- ◆ Spread infection and disease
- ◆ Contaminate groundwater that might be a source of drinking water
- ◆ Pollute nearby lakes, rivers, and streams

Remember, a septic system is not the same as a municipal sewer system. Septic systems have a limited life expectancy that can be shortened by not monitoring and properly maintaining it.

Helpful Resources

What to do if your system fails

Check with a septic system professional or the Environmental Health Division of the Genesee County Health Department if you suspect your septic system is failing. Remember to have your septic system inspected by a professional at least every 3 years!

Contact Information for the Genesee County Health Department:

Floyd J. McCree Courts and Human Services Center
630 S. Saginaw Street
Flint, MI 48502-1540
Phone: (810) 257-3603
Fax: (810) 257-3147

Consult your local telephone directory for a listing of professional septic pumpers, installers, inspectors, and tank manufacturers.

Reporting

- ◆ Report illegal dumping of hazardous materials into storm drains, local water bodies, or drainage ditches to 911 or the local police.
- ◆ If you would like to report a flooding ditch not caused by a roadway, contact the Genesee County Drain Commission, Office of Surface Water Management at (810) 732-1590.
- ◆ If you would like to report flooding caused by a culvert under a road or flooding on a road, contact the Genesee County Road Commission at (810) 767-4920.

Household Hazardous Wastes

If you have household hazardous wastes that need to be properly disposed, look for one of the household hazardous waste collection days organized by the Genesee County Metropolitan Planning Commission.

General Information

- ◆ Genesee County Drain Commissioner's Office: <http://www.gcdcwws.com>
- ◆ Genesee County Health Department: <http://www.gchd.us>
- ◆ Genesee County Our Water Campaign: <http://www.ClearGeneseeWater.org>

How septic systems work.

Generally, septic systems have four main components:

Septic systems are also called:

- ◆ On-lot system
- ◆ Onsite system
- ◆ Individual sewage disposal system
- ◆ Onsite sewage disposal system
- ◆ Onsite wastewater treatment system

1. A pipe from your home

All the wastewater produced in your home exits through a pipe that leads to the septic tank.

2. A septic tank

Your septic tank may be a watertight container that is buried somewhere on your property. Usually they are made of concrete, fiberglass, or polyethylene and hold your wastewater long enough to allow the different materials in your wastewater to settle or float to the top. Solids will settle to the bottom of the tank, while fats and oils will form a layer towards the top of

the tank. Between these two layers is the wastewater. T-shaped outlets, holding compartments, and screens keep sludge, solids, and oils from leaving the tank and traveling to the drain field.

3. A drainfield

When wastewater exits the septic tank, it goes into your drainfield for further treatment by the soil. The partially treated water from your septic tank gets pushed farther into your drainfield with the addition of new wastewater into your septic tank.

If your drainfield gets overloaded with too much liquid, from either overuse or a break in the system, it can flood, causing sewage to flow into groundwater. This creates backups in your plumbing fixtures and prevents treatment of wastewater.

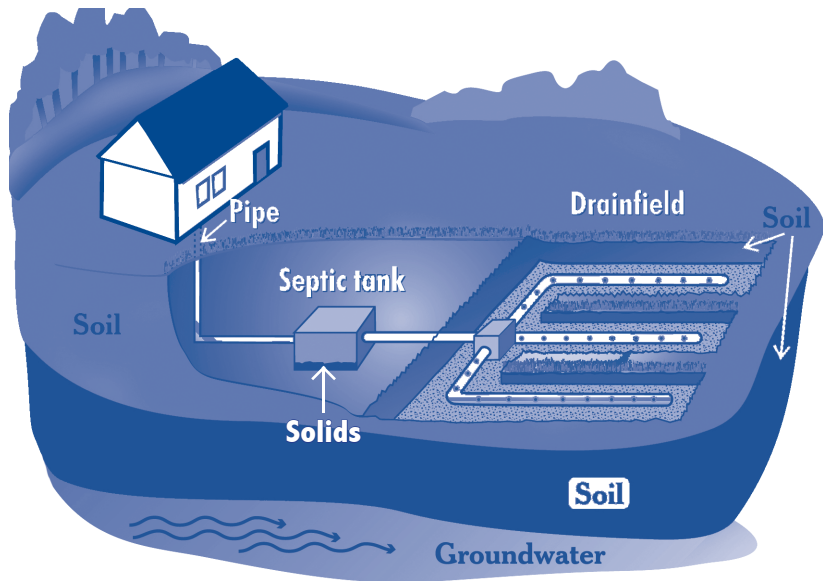
4. Soil with digesting microbes

When septic tank wastewater flows into your drainfield, it percolates into the soil. High quality soil has many useful micro-organisms in it that digest harmful bacteria, viruses, and nutrients commonly found in wastewater. This process is very similar, although on a smaller scale, to the one that occurs at a municipal waste water treatment plant.



Do you know where your septic system is located?

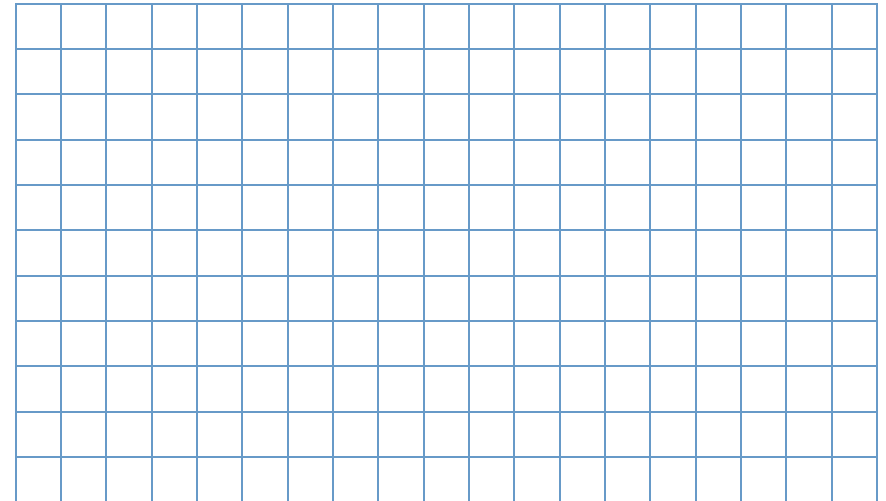
You may want to consult with an inspector or septic pumper to help you find the location of your septic system..



In some situations, effluent from a septic tank will not be dispersed to a traditional drainfield. Alternative systems in use today include sand filters, mounds, wetlands, gravel-less drainfields, pressure dosing, and aerobic units. Servicing requirements for these systems vary and should be obtained from your local sanitarian or septic system contractor.

For your records: septic system layout and preventative maintenance table

Use this grid to map your septic system, showing the relative location of your septic tank and drainfield in relation to your house and water well.



Use this table to keep track of your system repairs and tank pumping. Remember to have your tank pumped every three years.

Date	Work Done	Firm Doing Work	Phone Number	Costs	Notes
03/2009	Inspection	Joe Plumber	555-5555	\$75	Good job.



How to tell if a septic system does not work.

Thankfully, it is fairly easy to tell if a septic system is not working properly.

Signs of system failure include:

- ◆ Odors, surfacing sewage, wet spots, or lush vegetation on or near the drainfield
- ◆ Plumbing or septic tank backups
- ◆ Slow-draining fixtures and toilets
- ◆ Gurgling sounds in the plumbing system
- ◆ Buildup of aquatic weeds or algae in lakes or ponds adjacent to your home
- ◆ Pooling water or muddy soil around a septic system or in the basement
- ◆ Presence of nitrates or bacteria in a drinking-water well
- ◆ Septic systems also fail when partially treated wastewater comes in contact with groundwater. This type of failure can be difficult to detect and can result in pollution of nearby wells, streams, or other water bodies.

Common causes of system failure:

- ◆ Household hazardous wastes such as oil paints, solvents, and chemical cleaners dumped down drains
- ◆ Excessive use of household cleaners
- ◆ Draining a hot tub or pool into a septic tank or onto a drainfield
- ◆ Water purification systems that unnecessarily pump excess water into a septic system
- ◆ Frequent use of garbage disposals
- ◆ Improper design or installation
- ◆ Excessive use of water
- ◆ Improper or excessive cover or vegetation

Expected costs for repairs and maintenance of your septic system:

- ◆ Inspecting a tank: less than \$80-300
- ◆ Pumping: \$185-\$375
- ◆ Uncover the tank: \$75-\$200
- ◆ Pumping out a chamber: \$10-\$250
- ◆ Replacing a drainfield: \$3,000-\$25,000
- ◆ Engineering a drainfield: \$10,000 and up

If septic systems are not properly maintained, the entire system may have to be replaced, costing lots of money.

How to keep your septic system functioning properly.

You can keep your septic system functioning at its peak performance by following the four actions listed here.

I. Inspect and pump septic systems

Keeping up-to-date on a system's inspection and pumping schedule can help keep the system functioning longer and better.

Inspect regularly.

- ◆ Have a septic system inspected by a professional every three years. Systems with electrical float switches, pumps, and mechanical parts need to be inspected more frequently. Remember to keep track of system repairs and tank pumping with maintenance records (see page 9 of this guide).

Pump often.

- ◆ Pump septic tanks regularly, usually once every three to five years. If a pumper suggests repairs, do so as soon as possible but first check with the local health department to see if you need a permit.

Four factors influence the frequency that tanks should be pumped: number of people in a household, amount of wastewater produced, volume of solids in the wastewater (using a garbage disposal increases the amount of solids), and septic tank size.

Go natural.

- ◆ Stay away from additives and "starters". It is unclear if they actually help and some may harm your system and contaminate groundwater. Periodic pumping is a much better way to ensure a system functions properly.

*** Items recommended for an inspection:**

- ◆ Locating the system
- ◆ Uncovering access holes
- ◆ Flushing the toilets
- ◆ Checking for signs of backup
- ◆ Measuring scum and sludge layers
- ◆ Identifying any leaks
- ◆ Inspecting mechanical components
- ◆ Pumping the tank, if necessary

** There isn't a standard protocol for septic inspections. Check with your inspector to see what is included in their quote.*



2. Use water efficiently.

Excessive water use is one of the most common causes of septic system failure, so reducing water used for bathing, laundry, and flushing the toilet can greatly reduce the chances of system failure.

Go low flow.

- ◆ Install low-volume toilets and low-flow shower heads.
- ◆ Replace old dishwashers, toilets, and clothes washers with high-efficiency versions.
- ◆ Only run the dishwasher and clothes machine when there is a full load.
- ◆ Avoid peak surges. Running water in your sink, shower, and toilet at the same time can cause a peak flow, overwhelming your septic system.

Maintain plumbing.

- ◆ Identify and repair leaking pipes and dripping faucets to reduce water waste.
- ◆ Check to make sure the toilet's reservoir isn't leaking into the bowl. Quickly check this by adding a few drops of food coloring to the reservoir before going to bed. Check to see if there is any trace of the food coloring in the bowl the next day.

3. Refrain from dumping household wastes down drains or into toilets.

The materials that go down drains or into toilets have a big impact on how well a septic system functions.

Avoid dumping.

- ◆ Keep from flushing non-biodegradable materials like facial tissue, diapers, tampons, plastic, cooking fats, or oils down drains or toilets. They do not decompose easily, or at all, and may cause unwanted build-up in a septic tank.
- ◆ Never dispose chemicals by dumping them down drains. Chemicals will harm the micro-organisms in the soil of a drainfield.
- ◆ Keep the use of household chemicals and cleaners to a minimum. Consider using low cost, natural cleaning products. The products can be purchased at local grocery stores or made at home by combining one part water with one part vinegar.
- ◆ Dispose of hazardous household wastes properly. The county holds two hazardous household waste collection days—one in the fall and one in the spring.

Bypass the disposal.

- ◆ Stay away from using the garbage disposal unit. Excessive use of garbage disposals can increase the volume of solids in a septic tank, requiring more frequent pumping.
- ◆ Throw away or make compost out of vegetable wastes, coffee grounds, eggshells, and other compostable kitchen wastes.

Examples of Hazardous Household Wastes

- | | |
|-------------------------|------------------------------|
| ◆ Batteries | ◆ Paint thinner |
| ◆ Pesticides/Herbicides | ◆ Aerosol cans |
| ◆ Motor oil | ◆ Mercury |
| ◆ Solvents | ◆ Old prescription medicines |
| ◆ Oil-based paint | |

4. Care for the drainfield.

The drainfield is an important part of a septic system and its proper maintenance is critical for effective treatment of wastewater.

Discharge into the tank.

- ◆ Discharge all sewage waste from the house into the septic tank. Never allow solids or scum to leave the septic tank and enter the drainfield.
- ◆ Keep roof drains, sump pumps, rainwater, and other surface water drainage systems away from the drainfield. Flooding of the drainfield can slow down or stop treatment processes.

Plant grass and shallow roots.

- ◆ Landscape over the drainage field with dense grass cover and other shallow-rooted plants. Keep trees away from the drainage field. Deep roots will tear field pipes apart overtime.
- ◆ Avoid impermeable or compacted surfaces over the drainfield such as concrete, asphalt, plastic, or compacted soil. Compacted soil can damage pipes, the tank, or other components of a septic system and may also keep the system from obtaining the necessary oxygen needed to complete the waste water treatment cycle.
- ◆ Keep the surface of the drainfield properly drained by slightly mounding soil over the drainfield and not stockpiling snow.

The Watershed Reporter

From the Executive Director

Rebecca Fedewa

Happy New Year! It's been an exciting year for the Flint River Watershed Coalition. And as we begin our 12th year, I wanted to take a moment to say thank you



Rebecca Fedewa

to all of our partners who have helped the FRWC become the organization it is today. We couldn't have done it without you!! While we do not have the space in this newsletter to note each and every one of

our very valuable partners, I would like to take a moment to highlight a few who have had an enormous impact on the success of the FRWC.

University of Michigan — Flint. The long time home of the Flint River Watershed Coalition, the UM-Flint not only provides us with shelter but also works hand in hand with the FRWC to implement a number of our education, stewardship, and other programs focused on improving the Flint River Watershed. Together, we have worked on our common mission of education and action on environmental issues. Staff at the UM-Flint / Center for Applied Environmental Research (CAER) have written watershed plans on which we have assisted with implementation; and we have worked cooperatively on some where CAER is the primary implementer. Students have regularly participated in our river clean-ups; and faculty have been involved in several of our programs from time to time. Support from the UM - Flint has been vital to our growth.

Genesee County Drain Commissioner. Working with the Drain Office and the Genesee County Community Water Quality Consortium, the FRWC delivers a wide variety of education and outreach programs, including canoe trips, river walks, Genesee GREEN, and our

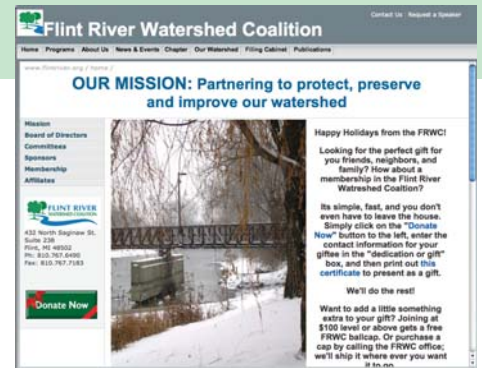
benthic monitoring program. Perhaps even more importantly, Sue Kubic from the Drain Office sits on the FRWC board and does a bang up job organizing our yearly spring clean up. Drain Office staff also donate their time as volunteer in many of the FRWC programs.

General Motors. GM has been a long time financial supporter of our Genesee GREEN program, helping us reach middle and high school students to teach them about stewardship of our watershed. In addition to their generous financial support, GM encourages its employees to volunteer with our organization, with several dedicated individuals serving on our board, helping to run GREEN, and participating in the program as mentors to area students.

Ruth Mott Foundation. Ruth Mott took a chance on us three years ago, and infused significant resources into the FRWC, allowing us to take an important leap forward in our growth as an organization. The level and duration of their support has been invaluable in building the sustainable organization we have today.

C. S. Mott Foundation. Our growth continued when the C. S. Mott Foundation extended their support to the FRWC. With very generous general support funds, we have hired additional staff and broadened the scope of our activities.

Members and Volunteers (like You!!). Of course, we wouldn't be a Coalition if weren't for the amazing base of members and volunteers who give their time and support to our programs and other activities. All that we have accomplished in the last 11 years has been done in partnership with the residents and business owners of the Flint River Watershed (and some generous friends outside the watershed) who recognize how important it is to protect, preserve, and improve this valuable resource. I look forward to continuing all these partnerships over the *next* 11 years! Thanks so much for all you do.



New Website

The FRWC has a new website. Check us out at www.FlintRiver.org. We've added new features to help you better get to know your watershed. On the "Programs" tab, check out our new interactive monitoring map. Click on a site, and you can view data for that site from the last four years, a link to photos of the site, and driving directions. You can also access the complete set of data for every site and download an application to use with Google Earth. We also have a detailed calendar of events under the "News and Events" tab, as well as access to our newsletters, annual reports, and other documents under the "Publications" tab. Take a look, and let us know what you think!



What if the FRWC had a penny for every time you searched the Internet?

Here's a new easy way to raise money for the Flint River Watershed Coalition. Just start using GoodSearch.com as your search engine and online shopping mall. Every time you search the Internet or make an online purchase at one of their partner merchants, GoodSearch makes a donation to the FRWC and it's powered by Yahoo! so you get great search results!



432 N. Saginaw St. Ste. 238
 Flint MI 48502
 810-767-6490
 www.Flintriver.org

The Watershed Reporter is published quarterly by the Flint River Watershed Coalition. The Coalition is dedicated to promoting the importance of protecting our natural resources. It works closely with the public and with private agencies and citizens' groups in carrying out its mission.

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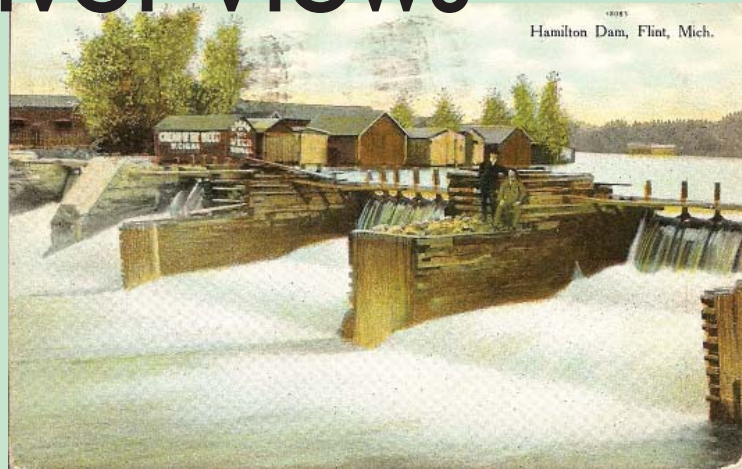
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River Views



--- The Hamilton Dam, as it appeared to Theo in 1909. "This is a beautiful little place."

On July 27, 1909, from Flint, Michigan, Theo sent a postcard to Mrs. Dreyer in Detroit. He made this comment regarding the Hamilton Dam: "This is a beautiful little place."

Watch the dam over the next few months as this area undergoes significant improvement and update. Constructed in 1920, it also once served as a pedestrian bridge, but is now in severe disrepair. Because of its dilapidation, The Michigan Department of Environmental Quality ordered that steps be taken by 2008 to correct the problems. These steps are underway, and will result in some vast improvements and changes from what you see here. Please watch as we provide you with future updates on this familiar site.

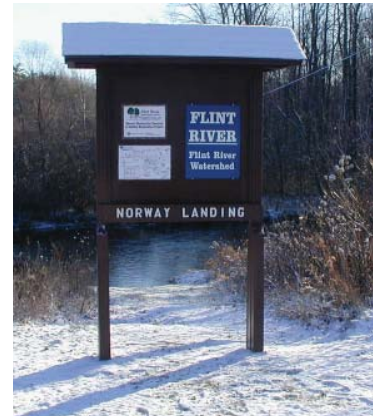
Board Changes

Since it was first initiated, Dennis Zicha has been instrumental in our Spring and Fall benthic water monitoring program. He has given countless hours to site selection and mapping, volunteer recruitment, maintaining the equipment, entering the data — and supervising the entire operation. Dennis has decided to 'hang it up' this year — and has resigned his Board position and the chairmanship of the Monitoring Committee. The Board accepted his resignation, with gratitude and appreciation for his contributions over several years. He will certainly be missed.

Bentley High Supports FRWC



Bentley High School Teacher Cheryl Hobson's Environmental Science students participated in this fall's Storm Drain Stenciling program, sponsored by the Genesee County Community Water Quality Consortium. They are seen here presenting a banner they created to commemorate their work to FRWC Outreach and Education Coordinator Sue Lossing.



Norway Landing Kiosk

Kiosks installed on South Branch Flint River

Two new kiosks, funded by the FRWC, have been installed on the South Branch Flint River in Lapeer County. The kiosks, built by FRWC member Carl Haas of Columbiaville, will provide information on the Flint River watershed and its recreational opportunities.

The "Norway Landing" kiosk is located at the Norway Lake Road Access Site just east of Columbiaville. A second kiosk was installed upstream at the Oxbow Campground in the Lapeer State Game Area.

South Branch Flint River Canoe Route



This summer, FRWC volunteers teamed up with MDNR, Fisheries and the Lapeer Rotary Club for a total of 254 hours on 16 days to maintain a navigable canoe path on the South Branch Flint River. The Stream Obstruction Removal and Habitat Restoration Project began in 2003 and continues each year to assure canoe paddlers safe passage from Lapeer to Holloway Reservoir. Numerous trees were cleared or re-positioned in the stream channel where they will continue to serve for aquatic habitat. Late Flooding in September assures more work will be required in 2009. If you are interested in volunteering and would like your name added to an email distribution list please contact Joe Leonardi at leonardi@michigan.gov or phone 810-245-1250.

photo, left: FRWC member, Carl Haas, and MDNR Fisheries Technician, Ryan Histed, winch a tree into position and clear a pathway for canoes.

CALENDAR OF EVENTS

MONTH	DATE/DAY	TIME	EVENT
JAN	20 TUESDAY	7:00pm	Lapeer Chapter Meeting
	28 WEDNESDAY	6pm-9pm	FRWC Annual Meeting & Dinner
FEB	17 TUESDAY	7:00pm	Lapeer Chapter Meeting
	20 FRIDAY	8:30am	FRWC Board Meeting
MAR	17 TUESDAY	7:00pm	Lapeer Chapter Meeting
	20 FRIDAY	8:30am	FRWC Board Meeting
APR	15 WEDNESDAY	10:00am	(Tentative) FIINT RIVER TRAIL South Walk.
	17 FRIDAY	8:30am	FRWC Board Meeting
	18 SATURDAY	9am-3pm	Annual Earth Day & Garden Celebration
	21 TUESDAY	7:00pm	Lapeer Chapter Meeting
	22 WEDNESDAY	10:00am	(Tentative) FIINT RIVER TRAIL North Walk.
	25 SATURDAY	TBA	Flint River Trail Annual Clean Up / FFRT
	25 SATURDAY	TBA	Wild Lapeer, annual fest downtown Lapeer
TBA SATURDAY	TBA	Benthic Monitoring	
MAY	9 SATURDAY	9:00am	FRWC & Community River Clean Up
	15 FRIDAY	8:30am	FRWC Board Meeting (at Genesee GREEN Summit).
	15 FRIDAY	9:00am	Genesee GREEN Summit
	16 SATURDAY	10am-2pm	(Tentative) Household Hazardous Waste Collection Day
	27 WEDNESDAY	10:00am	(Tentative) Flushing River Trail Walk.
TBA TBA	TBA	Benthic Monitoring	

The Watershed Reporter

From The Executive Director

Rebecca Fedewa

It's hard to believe that spring is here once again. The crocuses are blooming, the tulips are starting to show some real promise, and the river is starting to wake up. This time of year always brings about thoughts of change, along with promise for what the



year may hold — will the fishing be as good, maybe better? - which trails will we ride or hike? - how many cool bugs will we find during our sampling session?

This season of renewal also brings

some fresh faces to the Flint River Watershed Coalition board of directors. I would like to welcome Irene Bashore, Duane Elling, and Jim Ananich. Our new members bring a wealth of knowledge and skill to the board and we are very excited to get them to work! You can read more about these three and all our board members on the FRWC website (www.FlintRiver.org), but allow me to give you a brief introduction here.

- Irene is active volunteer with GREEN and other FRWC programs, and comes to us from General Motors where she works as an environmental engineer.
- Duane is a communications officer with the C. S. Mott Foundation, and initially got involved in the FRWC through his participation in our Benthic Monitoring program.
- Jim is the current president of the Flint City Council,

and has been a long time supporter of the FRWC and its programs. We also feature Jim in our "10 Questions with..." column on page 3 this month.

The strength of our organization lies with our members and with our board of directors, and I couldn't be more pleased that Irene, Duane, and Jim have agreed to join us in our efforts to protect, preserve, and improve the Flint River Watershed.

At the same time, we bid a fond farewell to two long serving board members who stepped down at the end of their terms, after contributing in so many ways to the growth and development of our organization.

- Sue Kubic joined our board in March 2002 as a representative from the Genesee County Drain Commissioner's office. Sue provided invaluable leadership on our annual river clean up, and we are happy to report that her involvement in that program will continue.
- Amanda Kurzman served on the FRWC board since June 2005. Amanda brought a unique and valuable insight to many board discussions, and helped spearhead the redevelopment of our website (www.FlintRiver.org). While Amanda won't be active with us in the future, we don't take it personally; her move to Poland makes that a little difficult!

Please join me in welcoming our newest members to the FRWC board, and say adieu to our exiting members. These individuals make an enormous commitment to the FRWC and I am so pleased to have the opportunity to work with them all.

A Blog by Any Other Name...

As one of the hottest trends ever to hit the internet, and one that's not likely to die out any time soon, I'm almost certain that you've probably heard at least one of your friends or relatives mention blogs or blogging. You may even be an avid blogger yourself. Millions of people around the globe have joined the blogging community as a way to talk about their interests, vent their frustrations, or share their joys with the virtual world. Even huge multi-national corporations have begun to incorporate these "virtual diaries" into their online marketing campaigns as an easy and effective way to increase branding and to get out information on new products and services. So, like many others, the FRWC has hopped on the band wagon and joined ranks.

Why blog when we already have a presence at MySpace and Facebook, as well as a newly redesigned website and e-newsletter? Well, the reasons are many. A blog not only provides us with yet another avenue to reach a wider audience, but also allows us to do things such as guest interviews and other items that we could not normally include in the e-newsletter due to space limitations. And it gives us an information hub that we can continually add to without crowding everyone's inbox.

With new content being added to it on a weekly basis, it's sure to provide a lively read. The main focus will, of course, remain events and happenings that directly affect the watershed, but other things of interest will also be on the virtual menu, such as tips on living green and more.

Article contributions, ideas and interview ideas are more than welcome, and we sincerely hope you'll stop by our latest cyber-acquisition at <http://frwc.livejournal.com> to show your support. We look forward to seeing you there!



Flint River Watershed Coalition

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432 N. Saginaw St. Ste. 238
Flint MI 48502
810-767-6490
www.Flintriver.org

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design & layout by Jon Wood

Jean Gumper: The Nature of The Artist

Born in Hawaii, Jean Gumper moved to Michigan at an early age, where she grew into one of the finest woodcut artists in the U.S. As a young child, Jean was very curious and inventive, and by the time she entered college, her creative side was well developed. Jean attended the University of Michigan and later the University of Wisconsin. Interestingly enough, art was not her first choice in majors, moving from Asian Studies to pre-med before finally deciding that printmaking was her true calling.

While Jean left Flint in 1978, she still holds the area close to her heart. "It

has been wonderful to see the transformation of the Flint River since my childhood." Jean still comes back to visit family.

"When I visit, my mother and I take very opportunity to walk on the river walk in Flushing and I'm working on a

couple of new pieces about views I experienced there last fall." Jean's work is a process of pressing inked blocks of birch wood onto absorbent paper. She does this in steps, applying one layer of color at a time. The resulting works tend to be very emotional and eloquent, and the style with which she captures the

beauty of nature is stunning. Jean has stated that she likes to use the landscape as a way to communicate emotion and experience, and many of her works pay homage to Asian art. Her impressive style has won her much note, including a commendation by the Colorado Council on the Arts in 2000, where she was granted the Artist Fellowship Award. A collection of Jean's



Woodland Meditations

work titled "Woodland Meditations" also was featured this past fall in the Ford Graphics Gallery at the Flint Institute of Arts

Jean now lives in Colorado, where she resides with her husband and son and teaches at Colorado College.

Annual Community and River Clean Up

Along with April showers and May flowers, spring brings us a full winters worth of garbage and refuse no longer hidden under the snow. Each year, the FRWC helps coordinate a "River Clean Up" to spruce up our River and get us all ready for a season of activities in our watershed.

Over 250 volunteers in last year's event helped us pull an equivalent of 246 bags of garbage from the watershed in Lapeer and Genesee counties. This equaled about 1,700 cubic feet of trash and included TVs, tires, shopping carts, bikes, a freezer and other rusted metal items. Just think what we will do with your assistance and support!

Help us continue in our efforts to protect, preserve, and improve our watershed. We would like to incorporate more clean up sites into our annual event, both along the river and in our neighborhoods. Contact the FRWC if you would like to suggest a location for a new site, or if you are interested in joining us at any of our established sites. We'll provide the supplies, t-shirts (in Genesee County) and munchies. See you May 9th from 9:00am to 12noon!

Springtime Opportunities

Chairman's Update: *Jack Minore*



Jack Minore

The next few weeks are the busiest of the year for the FRWC — and they present the best opportunity for volunteers. It's a great time to get your hands wet and/or dirty and learn just what it is when we talk about our many programs. You can be involved in any number of ways, and you can read in some detail about most of the programs elsewhere in this newsletter. But just for your convenience, let me list some key programs here perfect for your volunteer help or just for you to take part in. Not yet scheduled, but we MAY have a great boat ride later in the year to celebrate our work on all of these projects and enjoy the sunset on Mott Lake.

•Benthic Monitoring: You can help us determine the health of a stream by finding and identifying the number and varieties of "creek critters" in it. Its great fun to wade a stream and net the 'critters' which are then identified in a lab. The training itself is fun — whether or not you can volunteer for the testing. Training is 3:30 on Apr. 13th — and test days are Apr. 25 and 30.

•Clean-ups: The great news is that we are finding less and less each year to clean up — and are covering more sites. The Flint River Trail clean-up is April 25th and the annual Community and River clean-up is May 9th. Volunteers will enjoy the work, the results, and the hot dogs!

•Earth Day(s): There are at least three Earth Day related celebrations this year — April 15th at UM-Flint (get those tax returns filed earlier!); April 18th at Mott Community College; and April 25th — the annual Wild Lapeer Day in downtown Lapeer. Each has an interesting program for your enjoyment and enlightenment.

•River Walks: Over the course of the summer, a number of educational and recreational 'gentle' walks will be scheduled on various paths along various points of the river and/or some of its tributaries. Currently, walks are set for April 22, May 27 and June 18th. Watch for more details as to time and location — in the newsletter and on our website.

Finally, if you just can't find the time to participate in these and the other programs of the Watershed Coalition — but want to support them — contributions and sponsorships are always welcome. Some of the dollars to support the programs come from grants, but those usually don't cover all of the costs, staff time, printing and equipment. We welcome contributions at any level — and sponsorships at the \$100 and up level. OR, sell a family member, neighbor or friend on the idea of joining us — and supporting the FRWC through their membership.

And take a moment this spring to 'take a hike' near the water — whether on one of 'our trails' or on other walkways in your County Parks. Both Lapeer and Genesee County have great places to walk — the linear pathway in Lapeer or For-Mar for just two examples. Finally: got an idea for an event that we haven't offered? Let our staff or me know — and we'll see what we can do to accommodate your interests.

10 questions with...



Jim Ananich

1) Why are you a member of/work for /volunteer for the FRWC?

I became aware of the organization about 4 years ago and was asked to volunteer sometime for a clean up and decided that the watershed was too important to not get involved with it's protection.

2) What FRWC programs do you participate in?

I have been active in the yearly clean up and have had speakers come into my class to speak to my students, but plan to participate more this year.

3) When did you first get involved in the FRWC?

About 4 years ago.

4) What's your favorite part of the watershed?

Not really sure.

5) What is the most interesting thing you have seen in the watershed (wildlife, garbage, someone doing something unexpected, etc.)

I was playing golf at the Mott Golf Course and a guy on an inner tube floated by.

6) What's your favorite river (any river) memory?

Tubing with friends on the Au Sable river.

7) What worries you most about the watershed?

The fact that so many people think that it is beyond repair.

8) What gives you the most hope?

The volunteers that care enough every year to help clean it up.

9) If you could change one thing to help improve the watershed, what would it be?

Hamilton Dam would be a natural dam that is attractive and allows for fish to pass.

10) Who is your river/watershed/environmental/conservation hero?

Robert F. Kennedy, Jr.

What if the FRWC had a penny for every time you searched the Internet?

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Ready to Ride!

(After the Trail Clean-up, that is)

I hope that by the time you read this, you will be thinking of spring hikes, bike rides, outdoors jogging and the like. As I write it, the weather has yet to inspire me! But the time to 'hit the trail' is upon us. As usual, the Friends of the Flint River Trail will start their regular Sunday rides on the first Sunday in May — May 3rd this year — at 2:00 PM. The rides continue every Sunday through October with the Flint Farmers' Market as the starting point. We will regularly ride about 13 miles total -- from the Market to either Stepping Stone Falls or Blue Bell Beach and back. But, for families with young children or for the folks just getting 'back on the bike' we will have shorter rides to accommodate your needs — from about 3 to 6 mile rides depending on the group. Starting? Same time, same place: Farmers' Market at 2:00 PM.

The trail looks pretty good now that the snow is gone, but the usual collection of leaves and occasional other crud from the winter will need to be picked up to make the trail more pleasant for riding. The annual Spring trail clean-up is set for Saturday, April 25th (it's always the last Saturday in April). Details: plan on meeting at 10:00 AM at the Viet-Nam Veterans Park on James P. Cole Blvd — on the river —and just south of Hamilton Avenue

In addition, there are occasional rides to other trails in mid-Michigan — on a schedule yet to be announced. It promises to be an exciting year — with two new trails less than an hour's drive from Flint — and lots of trail expansion / building / planning in the works for Genesee County and the immediate vicinity. Check the tires, get that tune-up, and get in some warm-up miles: see you on the trail!



The "Flint River Paddlers" is a group of paddle sport enthusiasts from the Flint Michigan area who share a common goal of paddling and conservation on the Flint River Watershed. We invite all ages and all paddle sport interests and abilities to join our group; canoeists and kayakers alike are welcome to join us, and both interests are present in our current membership. The group will paddle everything from kayaks, canoes and rafts on our "home river" (the Flint River) and more technical whitewater runs throughout Michigan and other parts of the country.

As a grassroots chapter of the Flint River Watershed Coalition (FRWC), The "Flint River Paddlers" helps promote river conservation, stewardship, and the recreational aspects and opportunities present in the Flint River Watershed. Currently there is no financial obligation related to becoming a member of the Paddlers. However, due to our association with the FRWC and our common goals, we do require a current annual membership with the FRWC to be an active member of the Flint River Paddlers.

Our first official business meeting of 2009 will most likely occur before this article reaches your mailboxes. We will discuss meeting locations, switching to a bi-weekly paddle, day and time of bi-weekly paddles (Sunday afternoon at 2:00 or a new day and time?), and the calendar for trip locations and dates for 2009. All of the events for the Flint River Paddlers are posted on our club's live interactive calendar on our web site at www.flintriverpaddlers.org. We also have our discussion forum, with threads related to all aspects of paddling not only on the Flint River, but also throughout the country. There also is a thread for selling used equipment, or for those of us who are looking for a piece of gear that a fellow paddler may be looking to sell.

As a part of our conservation efforts, the Paddlers will organize and lead a "Paddle Pick-Up" event in the spring and the fall of each year. The first "Paddle Pick-Up" will be May 9th in conjunction with the FRWC's Community and River Clean Up. We will be paddling a stretch of the river picking up any and all trash that we find both in the river and along its banks. If you would like to help with this event, or learn more about it, we will be having a pre-planning meeting in late April, time and location TBD.

We will be working on some fund raising events this year including a kayak package raffle, club logo shirt and hat sales, and more. We also recently received some, what I believe to be, excellent news from the YMCA Downtown Flint. After much work trying to find a pool to use for working on rescue, safety, rolling, and general paddling techniques during the winter and throughout the season, the staff at the Watershed Coalition has established the initial communications for us to be able to use the YMCA Aquatic Center for this purpose. More updates related to this development to follow shortly.

This year, the second year for the Flint River Paddlers, promises to be a very exciting one indeed. Through the generous sponsorship of the FRWC, not only will we be able to have fun paddling together and expanding the recreational user base on the Flint River Watershed, but we also will be able to work to improve the resources that we use for our sport.

I sincerely look forward to seeing each of you on the river sometime soon. So get out there and get your paddles wet.

Yours in paddling,

Eric M. Hall

Founder of the Flint River Paddlers

erichall@flintriverpaddlers.org

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Hats are only \$12.00 each and shipping is just \$3.00 no matter how many hats you buy!

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Get Set For Spring Benthic Monitoring

Its time to look for bugs. And worms. And snails. And maybe even some crayfish. For the 10th year, the FRWC is conducting benthic (under the water) macro (large) invertebrate (critters with no spines!) sampling on the creeks and streams of the Flint River Watershed. We have 33 sites in Genesee and Lapeer Counties, and we need additional monitors to get out and get wet to help us gather valuable data used by the FRWC, the county, and even the state. Monitoring dates are April 25 (Saturday) and April 30 (Thursday).

Contact Sue Lossing at the FRWC if you are interested in participating. No need for experience, we'll have a training session for new monitors, and will make sure your first trip to the creek is with an experienced volunteer.

To see our sites, past years' data, and other information on Benthic Monitoring, please visit our website at www.FlintRiver.org and click on programs. We have a fun interactive map that provides links to data, photos, and directions to all our monitoring sites.

Genesee GREEN, now with STEM!

Every spring, students throughout Genesee County participate in GREEN — Global Rivers Environmental Education Network. With support from the Genesee County Community Water Quality Consortium and General Motors, the FRWC has helped coordinate this amazing program that gets area students out into their local creek to conduct chemical and sometimes biological water quality monitoring. Each participating classroom then prepares a presentation of their results, develops some ideas of why their stream is scoring the way that it is, and presents their ideas to their peers at the annual Student Summit held at Mott Community College.

We are very proud of all our past and current GREEN participants. And this year, we are looking forward to expanding the program in two big ways.

First, with generous support of the Royal Bank of Canada, we have some additional funds to begin bringing GREEN to classes in Lapeer County. Second, with generous support from EarthForce and the GISD, up to 20 GREEN classrooms in Genesee County will begin incorporating a service learning project into their studies through a program titled STEM — Science, Technology, Engineering, and Mathematics. STEM classrooms will receive additional training and curriculum to help them in this new and exciting endeavor.

The Student Summit will be held May 15th, and the public is welcome to attend. Come hear what kids in your area have discovered about your stream, and what you can do to help protect, preserve, and improve your watershed.

Want to see photos from the FRWC? Check them out at
<http://www.flickr.com/photos/frwc/>



Flint River Watershed Coalition's
photostream **flickr®**

Great Lakes Funding Integral Part of 2010 Budget

President Obama recently announced an unprecedented investment of \$475 Million in his Fiscal Year 2010 Budget to restore the Great Lakes - an effort that is key to creating jobs and growing our economy. Additionally, there



could be as much as \$1 billion in other Great Lakes restoration and economic recovery funding provided to the Great Lakes states through increased funding for the Clean Water and

Drinking Water State Revolving Fund programs. Thirty-five million people rely on the Great Lakes for their drinking water, and millions more benefit from the commerce and business that depends on the waters of the Great Lakes.

This investment is a major victory for the Great Lakes, and represents the largest, most serious commitment to Great Lakes restoration in history. The U.S. House Committee on the Budget recently passed its budget resolution that that calls for a commitment to restore the Great Lakes. This action paves the way for the full House and Senate to pass a budget that advances Great Lakes restoration and economic recovery before the problems get worse and the solutions more costly.

The funding the President has called for

will create jobs, revive our economy, and restore the Great Lakes. According to the Brookings Institution, an investment of \$26 billion to restore the Great Lakes will lead to at least \$50 billion in economic benefit for the region. Funds also will begin implementation of a multi-year strategy for tackling problems such as untreated sewage and invasive species, and calls for action to: modernize sewage treatment, clean-up polluted harbors, restore wetlands, and prevent unwanted, new species from invading the lakes. Each of these steps is essential if we are to restore the lakes and revive our economy.

You can learn more and contact your Members of Congress by visiting www.healthylakes.org.

CALENDAR OF EVENTS

MONTH	DATE/DAY	TIME	EVENT	
APRIL	13	MONDAY	3:30-5:30pm	Benthic Monitoring Training, Lapeer
	15	WEDNESDAY	10:00am - 2:00pm	UM-Flint Earth Day Celebration
	17	FRIDAY	8:30am	FRWC Board Meeting Genesee Room, MCC
	18	SATURDAY	9am-3pm	Annual Earth Day & Garden Celebration, MCC
	21	TUESDAY	7:00pm	Lapeer Chapter Meeting
	22	WEDNESDAY	Various time/locations	Schools take part in GREEN water quality test
	25	SATURDAY	9am	FFRT Annual Clean Up, Vietnam Vet's Park
	25	SATURDAY	10:00am-4:00pm	Wild Lapeer, annual fest downtown Lapeer
	25	SATURDAY	10:00am-3:00pm	Benthic Monitoring Lab Hours UM-Flint
	30	THURSDAY	12:00pm-3:00pm	Benthic Monitoring Lab Hours UM-Flint
MAY	9	SATURDAY	9:00am-12:00pm	FRWC & Community River Clean Up
	9	SATURDAY	10:00am-2:00pm	Household Hazardous Waste Collection Day
	15	FRIDAY	8:30am	FRWC Board Meeting (@ GORMAN bldg prior to GREEN Summit, MCC).
	15	FRIDAY	8:30am-1:45pm	Genesee GREEN Summit at MCC
	19	TUESDAY	7:00pm	FRWC Lapeer Chapter Meeting
27	WEDNESDAY	10:00am	Flushing River Trail Walk (start at Riverview park)	
JUNE	6	SATURDAY	TENTATIVE	Creekfest, Ortonville, Michigan
	16	TUESDAY	7:00PM	FRWC Lapeer Chapter meeting
	18	THURSDAY	6:00pm-7:30pm	Barber Memorial Park Walk Montrose; also Kayaking instruction from the Flint River Paddlers
	19	FRIDAY	8:30am	FRWC Board Meeting Genesee Room MCC

The Watershed Reporter

“What is a Watershed?”

From Executive Director Rebecca Fedewa

“Who here knows what a watershed is?” It’s a simple question we at the FRWC often use to start a conversation. The response that we get is usually anything but simple.

What is a watershed? This term is integral to our name and to our mission



Rebecca Fedewa

– “partnering to protect, preserve, and improve the Flint River Watershed.” But the more we ask the question, the more we realize this

is not a term commonly used by the very people we are trying to reach. Why would any person care about our mission if it makes no sense to them? How is our cause going to flourish if we don’t connect with people where it matters -- in their heart?

As we move into summer, the FRWC will be working hard to clarify our mission to all residents of the Flint River Watershed. Our programs and activities help to build a shared sense of ownership and caring to “Our Watershed” by bringing participants to the rivers and streams that define the character of our communities.

- We’ll be providing recreational opportunities for you, your friends and family, and your neighbors to better get to know your rivers and streams -- see our calendar of events for dates and times.

- We’ll be working on the ground with residents and business owners in the South Brach subwatershed to begin implementing a plan to protect and preserve the fragile upper reaches of the Flint River -- see Board Chair Jack Minore’s column for more info.

- And we’ll be celebrating our rivers in new and exciting ways – a sunset cruise on the Genesee Belle, the Flint River 500 in Flushing, and our fall speaker (we can’t tell you who it is, but trust me, you don’t want to miss this!).

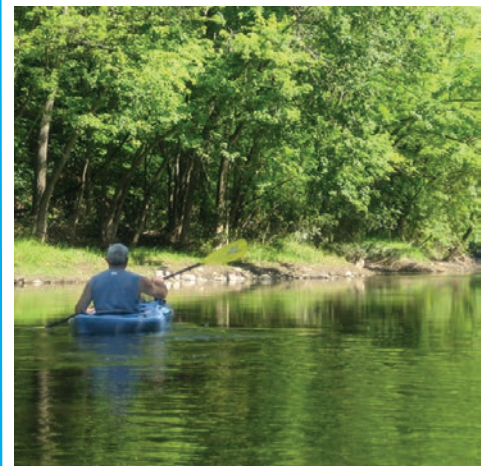
So who here knows what a watershed is? It’s a fun question to ask (just don’t make them feel bad if they don’t know!) and a great way to start the conversation about what we all can do to protect Our Watershed. Bring that person along to one of our summer events so that they, too, can join us in our efforts to Protect, Preserve, and Improve the Flint River Watershed.

If you need a refresher, see our section “What Is A Watershed” on page 4 of this newsletter, or visit our website at www.FlintRiver.org & click on “Our Watershed”



Celebrate the Flint River by enjoying it!

Bring friends and family with you to enjoy the Flint River in one or more of the upcoming river walks and paddling events. With support from the Genesee County Community Water Quality Consortium, the Flint River Watershed will hold four river walks and four paddle events for your enjoyment. You also just might learn a thing or two along the way! Each event provides a unique perspective of the watershed. See our event calendar for dates, times, and locations. These are wonderful opportunities to “Get Outside and Have Fun!” For more information or to reserve your place call 810-767-6490, or email Suzanne Lossing at: slossing@flintriver.org



Visit Us On The Web! www.FlintRiver.org



432 N. Saginaw St. Ste. 238
Flint MI 48502
810-767-6490
www.Flintriver.org

The Watershed Reporter is published quarterly by the Flint River Watershed Coalition. The Coalition is dedicated to promoting the importance of protecting our natural resources. It works closely with the public and with private agencies and citizens' groups in carrying out its mission.

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FRWC Board meetings are held the third Friday of the month at Mott Community College in the Genesee Room of the the Pahl Conference Center.

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design & layout by Jon Wood

2009 FRWC Cleanup Volunteers Are Among the Toughest

Give yourselves a hand! Over 270 volunteers and 21 site coordinators battled the rain, wind, cold, and threat of thunderstorm and made a HUGE impact on our watershed. Because of all your dedication, enthusiasm and care our watershed is a much cleaner place. The statistics are impressive:

- 18 different sites were cleaned up in the watershed in Genesee and Lapeer counties
- Over 296 bags of trash were collected plus 53 yards worth of dumpster space
- 99 tires were fished out of the river or removed from its banks
- 16 organizations partnered with the FRWC to make this a successful event
- 21 sponsors donated their support to make the cleanup possible

One volunteer in particular carries the lions-share in organizing this event. The FRWC would like to especially thank Sue Kubic who once again



sacrificed her parking spot in her garage and filled it full of garbage bags, gloves, trash pickers, water bottles and t-shirts. This was her fourth year volunteering and organizing the Flint River cleanup.

This year the FRWC is unveiling the 1st Annual Golden Gloves Award. We have a little friendly competition going on to see who pulls the most interesting thing out of the river. The cleanup committee will determine a winner and award the Golden Gloves Award at our Annual Meeting in January. So

far in the running for the Award are a: pop machine, hula hoop, water heater, traffic barricade, tractor tire, toilet, buoy, and a Christmas tree.

The FRWC is looking forward to next year already with plans underway to make 2010 another successful cleanup. See you next year!



Water: A Resource to be Treasured and Protected

Chairman's Update: Jack Minore

Citizens of Michigan – indeed of the entire Great Lakes Basin often take our ample supply of fresh water for granted. We read or hear about the ‘water wars’ raging in Colorado this month – even between neighbors – and experience a sense of disbelief. We hear about rationing and apportioning snow



Jack Minore

run-off and/or river water in the entire southwest and it seems unrealistic to many of us in the mid-west. As we pay \$3 a gallon for gas, we scoff at the idea that water will be the ‘oil’ of the world in decades to come. But those are real issues!

Protecting our water resources often takes on the ‘it’s mine and you can’t have it’ mentality. While protecting the water cycle in the Great Lakes basin is critical, it is a very small part of what we can all do personally to protect the water resources with which we are blessed. It isn’t just keeping “our” water: protecting its quality is equally important. And that starts with recognizing what has become my favorite saying about protecting our Great Lakes. We need to start with the knowledge that the catch basin or the ditch in front of our home is a headwaters of the Great Lakes. For this area, that means Lake Huron – but the saying is accurate for all of Michigan and much of the area of our surrounding states and provinces.

Preserving the purity of the water at the local level is the best, easiest and most cost effective way to keep our

waters clean. Restoring water quality is critical, too. ALL of us have a hand in doing both. Most of the people reading this will already know the standard drill: there are variations, but all the lists contain these steps in one form or another. *(a) Keep pollution out of the storm drains or ditches; (b) Fertilize sparingly and carefully; (c) Carefully store and then dispose of household chemicals, medicines, cleaners and oil; (d) clean up after your pet; (e) practice good car care; (e) choose earth friendly landscaping; and, (f) conserve water.*

These are standard practices for all of us. But, if you live in southern Lapeer County – in the watershed of the South Branch of the Flint, please take special heed. Over the next few weeks and months, the Flint River Watershed Coalition will be making a special effort to implement good water quality practices throughout that watershed. We will be guided by a comprehensive watershed management plan assembled by the University of Michigan – Flint’s Center for Applied Environmental Research. Many agencies and individuals from Lapeer County will be involved.

As we embark on this ambitious project, let’s remember that we all benefit! Everyone who drinks water from wells – or from the Lake Huron pipeline will benefit. Everyone who lives downstream – Lapeer, Flint, Flushing, Montrose and, yes, Saginaw and Bay City – will benefit.

It’s a big undertaking, and we’ll be asking for your help – and especially so if you live in the South Branch Sub-Watershed area.

Doing Well by Doing Good

When Sabrina Race started her cleaning business seven years ago, she took a full four months to research her competition to see how she could stand apart. The answer: using all natural products. Which



Sabrina Race, Owner and operator of Creative Cleanings

sued Sabrina just fine —as a cancer survivor, she already was using natural products in her own home. It only made sense to bring what worked at home to her clients. Sabrina mixes most of her own products from ingredients such as vinegar, baking soda, and lemon juice. Her summer wood floor cleaner? Fresh Bing cherries and vinegar (and boy does it smell good!). Sabrina jokes that you can literally lick your counters when she is done. Why go to all this trouble? “Because the products work, they are good for you, and it just makes you feel better about your house and your health.”

For a free estimate, call 810-449-6801. Creative Cleanings is locally owned and operated, licensed and insured, and will work with residential and commercial clients.

Come and read our blog at



LIVEJOURNAL™

<http://frwc.livejournal.com>



Thank You! You Did it!

More than an “At-a-boy” but an extremely heartfelt “Thank You!” to our volunteers! This past Spring, volunteers stepped up to the plate and gave of themselves to help support FRWC efforts in our communities. Despite weather dampening many of our efforts, the spirit of our volunteers was heartfelt in each and every program we held this spring. Whether it was participating in one of our numerous Earth Day events, or collecting bugs for water quality monitoring, or picking up garbage for our annual Flint River and Community Clean Up, you have made a difference. As our Benthic Monitoring Chairperson said (in the context of the hazardous conditions for monitoring): “We need our volunteers more than we need the bugs.” Truer words have not been spoken, and we appreciate your efforts!

Friends of the Flint River Trail

With a number of the Sunday rides ‘under our belt’ their popularity seems to continue unabated. We are averaging forty-plus riders each week, and have had attracted new riders regularly. The “Second Saturday” rides have been ‘OK’ – except that the weather has not cooperated very well. When it’s cool and raining, people tend not to get in their cars and drive for an hour to a trail – betting that the weather will be better at the end of that hour.

The FFRT leadership is working closely with the City to facilitate some improvements on the trail – most notably an improved crossing at Dort Highway and a new entrance to the trail at the Flint Water Plant at Dort and Stewart.

Riding, by the way, is not the only activity of the members of the FFRT. Already this year volunteers have logged 185+ hours of volunteer time on mowing / cleaning / trimming the bushes / etc along the trail. That includes the spring clean up; but basic

maintenance is ongoing throughout the year. This kind of dedication has been common, but this is the first year that we have attempted to keep track of the volunteer hours.

Thursday rides have begun and have been revised somewhat. The more experienced and ‘ambitious’ riders had turned the Thursday rides into longer and faster rides than some of our riders liked. As a result, they have ‘spun off’ into an independent ride – not directly sponsored by the FFRT: the FFRT Thursday rides have reverted to a more leisurely pace and continue to leave the City (Farmers’) Market at 6:00 PM. Regular Sunday rides continue, leaving the Farmers’ Market at 2:00 PM every Sunday. The Saturday rides are always on the second Saturday of the month on trails around mid-Michigan. The schedule for the location of the Saturday rides for July – October will be set shortly, but are likely to include the Lansing River Trail and the new Southern Links Trail among others.

What Is A Watershed?

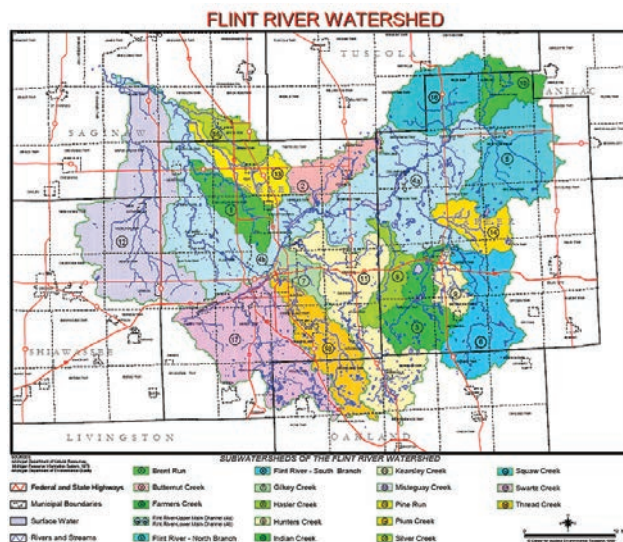
“Watershed” is the term used to describe the geographic area of land that drains water to a shared destination.

For the Flint River Watershed, that shared destination is the Shiawassee River. All of our streams—from Indian Creek in the northeast corner of our watershed to the Mistequay Creek on the far west side—drain into the Flint River, which joins with the Shiawassee, then the Cass, then the Saginaw river which flows into Saginaw Bay.

The Flint River Watershed covers an area of approximately 1,400 square miles, and includes

portions of Genesee, Lapeer, Oakland, Tuscola, Sanilac, Shiawassee, and Saginaw counties.

We all live in a watershed. . .actually, we live in several watersheds at the same time! For example, if you live in Ortonville, you are in the



- 1) Kearsley Creek subwatershed of the
- 2) Flint River watershed, which is a part of the
- 3) Saginaw Bay watershed that makes up part of the
- 4) Lake Huron watershed, which in turn is a small section of the land that makes up the watershed for the
- 5) Atlantic Ocean.

See our website at www.FlintRiver.org for more information, maps, and data on the Flint River Watershed.

10 Questions With Duane Elling

1. Why are you a member of/work for /volunteer for the FRWC?
Over the years, I've heard all the negative jokes and comments about the Flint River. My goal is to help tell the new stories of the watershed and all it offers the community.
2. What FRWC programs do you participate in?
Benthic monitoring, canoe trips, serving on the FRWC board. Looking forward to doing more.
3. When did you first get involved in the FRWC?
About three years ago. It's been a great experience since!
4. What's your favorite part of the watershed?
Whichever part I happen to be in, on or near at the time.
5. What is the most interesting thing you have seen in the watershed (wildlife, garbage, someone doing something unexpected, etc.)
All the really cool critters I've seen and learned about during FRWC monitoring events.
6. What's your favorite river (any river) memory?
Spending hours as a kid trying -- with little success -- to build miniature beaver dams in the creek near my family's house.
7. What worries you most about the watershed?
That many people seem too busy, skeptical or ambivalent to care about it.
8. What gives you the most hope?
The many others who are lending their hands and voices to support the watershed.
9. If you could change one thing to help improve the watershed, what would it be?
The minds of those noted in question seven.
10. Who is your river/watershed/environmental/conservation hero?
The person picking up that piece of garbage from the sidewalk or stream, just because they know it needs to be done.

Game Rained-Out!

Score: Bugs 18, Bug Hunters 16



Hardy Flint River Watershed Coalition volunteers did benthic macro-invertebrate sampling in Flint River Watershed steams at the end of April to assess water quality. Unfortunately, half of April's rain fell during our monitoring week, causing high water levels in streams that ultimately impeded our sampling at many locations. Only 16 of 34 sites were sampled. While we didn't get our data, many fortunate benthic macro-invertebrates escaped capture to live another day. Let's hope for better weather for sampling in the fall. The water quality scores for the sites we could access this spring will be posted on the FRWC web-site at www.flintriver.org. Thanks to all bio-monitoring volunteers!

GREEN Summit Reflections

Irene Bashore, GM Environmental Engineer

The 2009 GREEN Summit was a great success! Students and teachers from all over the Flint area joined with their mentors and FRWC members for a fun filled day of stream sampling presentations and environmental breakout sessions. I was fortunate enough to get a sneak peak at a variety of the seminars that occurred that day. The first was "Alien Invaders of the Great Lakes" by Mary Bohling. This presentation dealt with the aquatic invasive species that are taking over portions of our Great Lakes. The great part about Mary's talk was that she had many hands-on examples. The students really enjoyed handling zebra mussels, rusty crayfish, and sea lamprey.

Another great presentation was "Biking and the Environment" by Bruce Nieuwenhuis. Bruce provided a lot of

great information about why we should ride bikes, how you can ride in a safe manner, and the location of some scenic bike trails. He also had his personal bike on display and used it during his presentation to discuss the various attributes of safe riding.

The FRWC's very own Darren Bagley and Eric Hall also were stars of this year's Summit. Darren presented "Rats in Your Drinking Water" and talked about potential contaminants of our well water systems. He did a great job keeping the students involved by asking them many questions and showing videos about contaminated wells. He may have scared all our well water drinkers, but it was an excellent presentation. Eric presented "Kayaking: Mild to Wild" and talked about the various safety items and features of a

kayak. He had his own personal kayak and let the students "try it out" during the presentation. The students also were very interested in the various videos he had showing mild kayaking and crazy kayaking down waterfalls. Both presentations were excellent additions to the day.

Besides all of the great seminars, the students also were able to present their water quality monitoring findings to one another throughout the day. From a mentor's point of view, this is what made the GREEN Summit worthwhile. It was nice to see what the different schools had accomplished and how proud they were of the work they had done. For this being my first GREEN Summit experience, I thoroughly enjoyed it and cannot wait to come back next year!

Mark Your Calendar: Upcoming Events

As I write, it is a beautiful sunny day in the Flint River Watershed. It is Tuesday, May 19th and I anticipate glorious spring weather for our 10:00AM Wednesday Sierra Club Nepessing Group weekly hike. Each Wednesday we hike for 2 hours at one of many woodland trails in the watershed.

The Wild Geraniums with their delicate pink blossoms are in full bloom. Last week the Trillium covered the hillside of the Otter Lake trail and May Apples appeared in shady clusters on the forest floor.

Of course it is the height of the morel mushroom hunting season in our local forest. Morels are highly prized and highly sought after. I believe that more Michiganders enjoy our woodland during the spring season than at any other season. It is helpful to remember that mushrooms are propagated by single celled reproductive bodies known as spores, produced by spore sacs in the pits of the mushroom's cap. As the morel's dry spores are released and spread by the wind assuring the presence of morels next year.

Finding morels, or any other woodland delight, connects us with the land. To paraphrase John Ratzloff, the great morel guru, "Nature's cycles are without beginning or end, while continuously changing. They must be properly cared for and respected as an endowment, not a commodity." As our Sierra Club Founder John Muir said, "When we try to pick out anything by itself, we find it hitched to everything else in the universe." The Sierra Club tries to extend this philosophy to our hikes.

We hike every Wednesday at 10:00AM and most weekends. Hikes are open to everyone, you need not be a member and hikes are held rain or shine. For

Wednesday hikes, please e-mail your request to be added to the hiker's list to nepessinghiker@aol.com, and Don will send you an e-mail providing the meeting location a few days before each hike. He will also notify you of our weekend hikes and other outings and events.

Hope to see you soon!

AUGUST 1

(SAT) Time TBA: FRESH WATER FOREVER & CANOE EVENT, Flushing (FRWC & FTNP). 8301 N. McKinley Road. Contact Tom Enright @ Flushing Twp. Nature Park 810-639-6161, e-mail ftnp@usol.com or Sue Lossing (810) 767-9491, slossing@flinriver.org.

AUGUST 8

(SAT) 10:00am SAGINAW VALLEY RAIL TRAIL BIKE TRIP; (15 miles) St. Charles trail head. Denny Crispell 989-624-5038.

AUGUST 12

(WED) 6:00pm BOARD MEETING (open to the public) Mott Community College, 1401 E. Court St., Flint, Prah Center, Genesee Room. Flint, 48503 Linda Berker 810-348-8664.

AUGUST 12

(WED) 7:30pm PROGRAM & General Membership Meeting: Presentation: TBA

AUGUST 12

(WED) 10:00am RICHFIELD PARK RIVER WALK (FRWC) Join us at Pavilion #4 for a nice walk through Richfield Park on nicely maintained trails of grass, dirt, old stone-inlaid steps and a unique old bridge. Plenty of pavilions are available, so plan to bring lunch.

If you like to ride bikes this is a choice location for many riders. This park is not far from the Holloway Reservoir Regional Park, which includes boating, swimming and camping in an "Up North" atmosphere.

AUGUST 16-19

(SUN-WED) CANOE & CAMP: TWO HEARTED RIVER CRUISE; Moderate Meet at the campground 5 p.m. Sunday. Join us for our 13th annual campout at the beautiful Two Hearted River State Forest campground on Lake Superior as we spend a few days hiking, canoeing the Two Hearted River and enjoying the great outdoors. This outing starts at 5 p.m. Sunday at the campground. We will camp at the river mouth. Campsites are rustic with pit toilets and are 1st come 1st serve, although we will reserve a few early, so look for the Sierra Club sign on a campsite. Monday we will canoe the Two Hearted River and Tuesday we'll hike the North Country trail. Canoe rentals available at Rainbow Lodge for around \$35.00 for two people.

Bring your own food and gear and there may be a potluck dinner on Monday night. Gas and groceries available at Rainbow Lodge. This area of Lake Superior is known for great agate hunting and salmon fishing. Take County Road 500 North from M123, a few miles west Tahquamenon Falls State Park and follow the signs to the Rainbow Lodge about 12 miles. Go past Rainbow Lodge, down the hill to the campground at the river mouth. Reservations required by August 10th. Campsites are \$15 per night and may be shared. Outings fee – \$2.00. Lynn Livingston 586-795-1678.

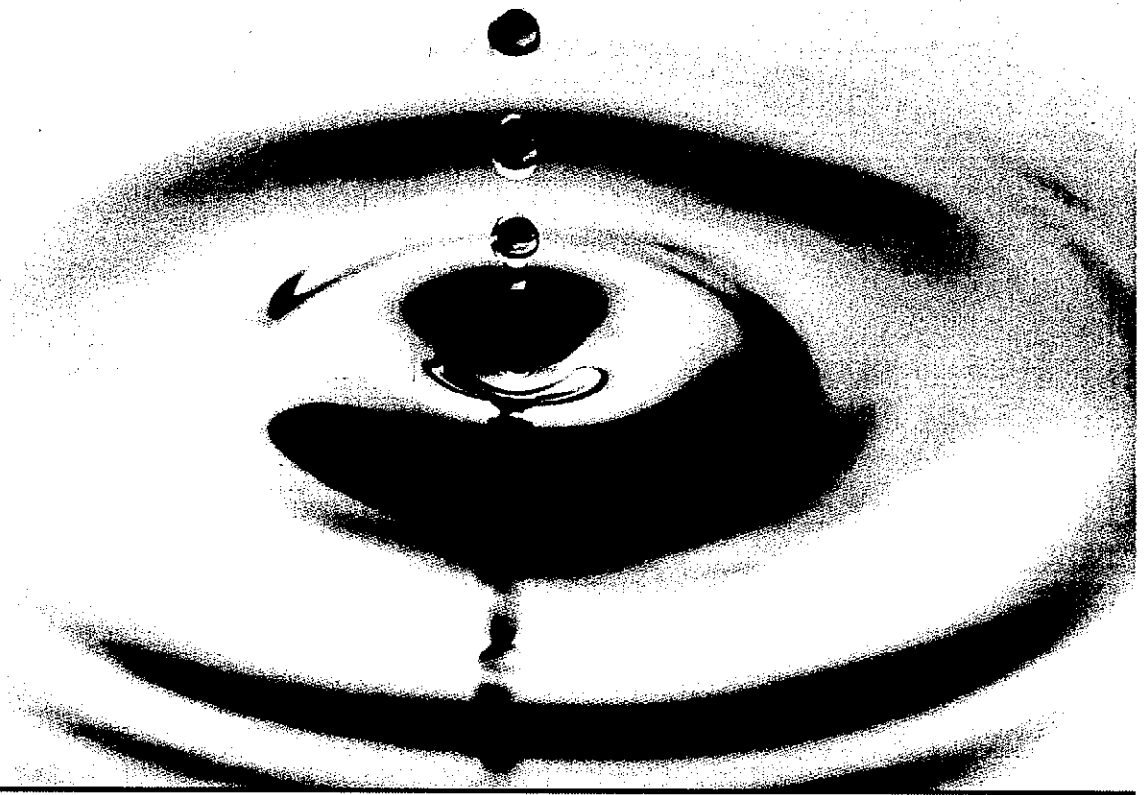
AUGUST 22

(SAT) 10:00am HIKE: KEARSLEY PARK TRAIL; Easy Hike through Kearsley Park. Meet on north side of Flint Farmer's Market. Mike Haley (810) 686-6354, thaley@gfn.org

Genesee GREEN Student Summit 2009

May 15, 2009

Mott Community College—Gorman Science Building



Surface Water Management



History of GREEN and the FRWC

The Global Rivers Environmental Education Network—GREEN—provides youth the educational opportunities to understand, improve and sustain the water resources in their communities. GREEN empowers young people to learn more about water quality within their watershed and use their findings to create lasting solutions.

This award-winning program teaches middle and high school-aged youth essential academic skills including critical thinking, teamwork, problem solving and decision making. GREEN provides educators with innovative resources including a network of support, an online watershed exploratory tool, water monitoring equipment, technical manuals and action guides. Today, GREEN programs flourish in every state and a number of countries. From the original idea by one group of students, GREEN has grown into a global network of educators and students working to improve their watersheds and in 1999 became an Earth Force program.

Locally, the Flint River GREEN project connects mentors from our sponsors, General Motors and The Genesee County Drain Office, as well as other environmental professionals with middle and high school students throughout the watershed. The students conduct stream monitoring every year. For more information on Flint River GREEN, visit www.geneseegreen.org

The Flint River Watershed Coalition (FRWC) was formed in the fall of 1997 and is a collaboration between educational institutions, local government, local business, environmental groups, and concerned citizens who feel strongly that the Flint River and its tributaries are a vital resource we all need to protect. The FRWC was incorporated as a non-profit 501(c)3 organization in August of 1998.

Staff: Rebecca Fedewa, Executive Director
Email: rfedewa@flinriver.org

Edythe Westhoff, Office Manager
Email: ewesthoff@flinriver.org

Jack Minore, Board Chair
Email: jacksonmin@aol.com

Sue Lossing, Education/Outreach Coordinator
Email: slossing@flinriver.org

Tara Cuvelier, Program Assistant
tcuvelie@flinriver.org



Flint River Watershed Coalition
432 N. Saginaw St., Suite 1001, Flint, Michigan 48502
Phone: (810) 767-6490 <http://www.flinriver.org>

YES, I want to join the FRWC!

Enclosed is my membership amount:

- \$10 Student/Limited Income
- \$25 Individual
- \$40 Family/Friend
- \$100 River Sponsor
- \$250 River Patron
- \$500 Watershed Protector
- \$1,000+ Watershed Guarantor
- ***SPECIAL*** \$5.00 membership for 1 year – for GREEN participants!**

NAME _____

ORGANIZATION _____

ADDRESS _____

CITY/STATE/ZIP _____

PHONE _____

EMAIL _____

Please circle one WORK HOME CELL

Flint River Watershed Coalition Board Members

Rebecca Fedewa, Executive Director	Jack Minore, Board Chair	Diane Peplinski, Board Vice Chair
Darren Bagley, Secretary	Linda Berker	Bob Carlyon
Brad Hill	Olof Karlstrom	Jim Ananich
Brent Nickola	Dr. Robert McAllister, Treasurer	Sara McDonell, Treasurer
Bill Welch	Irene Bashore	Amy McMillan
Duane Elling		

GREEN and Earth Force Watershed STEM Initiative

Earth Force is an environmental education and service-learning program that engages young people in learning and taking action on local environmental issues.

In 2008, Genesee ISD and Flint River GREEN joined the Earth Force Watershed STEM Initiative (WSI). WSI engages students active in Flint River GREEN with environmental stewardship. Through the WSI, teachers combine STEM and civic education into service learning projects. Students investigate watershed problems in their community and engage with leaders to solve those problems. Students in the WSI have a deeper understanding of scientific issues, expand their civic skills, and are more likely to act as community problem solvers.

For more information, contact: Erin Gallay, Environmental Education, Earth Force, Inc., 734.997.9451, or email egallay@earthforce.org.

What is a Watershed?

A watershed is an area of land which drains into a particular body of water. Just as when you pour water in a bathtub it all ends up in the drain, when it rains or snows on the surface, that water flows to a particular body of water. That water can flow both above the ground through lakes, streams, and wetlands, or below the ground through groundwater and springs.

The Flint River Watershed is...The Flint River has 1,639 total river miles—over 753 of those river miles have water in them all the time. The Flint River Watershed is made up of 18 smaller watersheds (such as Kearsley Creek or Swartz Creek) and encompasses more than 1,358 square miles—59 townships, 43 school districts, 25 cities and villages, 25 county commission districts, 9 state house districts, 7 state senate districts, 7 counties, and 4 U.S. House districts. For a map of the watershed, see the back page of this program.

The Flint River Watershed is home to more than 600,000 people, nearly half of whom drink groundwater affected by the Flint River. Over 250,000 more people use the River as the backup supply for drinking water. Thousands live along its banks and even more recreate on the river and its associated lakeside beaches.

The Flint River and its tributaries are an important resource for fish and wildlife and provides spawning habitat for small mouth bass, walleye, Northern pike, and other Saginaw Bay fisheries. The upper stretches of Thread Creek, Kearsley Creek, and the south branch of the Flint River are designated as cold water fisheries by the Michigan Department of Natural Resources. The high quality of these streams also means they face the most threat to degradation from development and other land use practices.

Sauk, Ojibwa, later Chippewa, and Ottawa Indians originally populated the Flint River. The Native American name for this river was Pewonigowink, meaning "river of fire stone." European settlement brought fur traders, trading posts, trapping, farming, and lumbering. As the forests were depleted, manufacturing became the primary economic driver of the area.

What does this mean for you? As part of the Flint River Watershed, anything you do can flow downstream and potentially harm your neighbors. We are all connected by the water that flows past us, over our yards and streets, and into the storm drains and roadside ditches. What you do at your home, in your car, your place of work or at your school, and at the places you play all can have an important effect on the Flint River.

Core Beliefs

We are committed to improving and maintaining environmental quality in the Flint River watershed.

We are committed to environmental education.

We value input and participation from our entire community.

We value a positive approach to people and problem solving.

Participating GREEN Schools

Atherton High School

Teacher: Matt Hyslop
Mentor: Jennifer Tegen/GM

Beecher Middle School

Teachers: Annette Zemon-Parker, Don Hammond
Mentors: Darren Bagley/MSU-E, Nicole Raymond/GISD Outdoor Education

Bentley High School

Teacher: Cheryl Hobson
Mentors: Eric Hake/Tetra Tech, Dan McComb/GM

Brandon Middle School

Teacher: Dave Green
Mentor: Rebecca Fedewa/FRWC

Carman Ainsworth High School

Teacher: Julie Lawrence
Mentors: Irene Bashore and Jeff Parker/GM Flint Metal Center

Clio-Carter Middle School

Teachers: Chip McCallum, Ryan Nemi
Mentor: Craig Buike/GM Flint North

Davison Middle School

Teacher: Jodie Kosaris
Mentor: Erin Galloway/Earth Force

Fenton-A.G. Schmidt Middle School

Teacher: Lynn Behr
Mentor: John Moldovan/GM-GLTC

Flint Northern Commencement Academy

Teacher: Nadina Aversa
Mentors: Stacey Helton/GM, Julie Lenz/GM, Sue Bloch/Delphi

Flint Whittier Classical Academy

Teacher: Jarrett Trombley
Mentor: Sara McDonnell, CAER

Flint Holmes Foundation Middle School

Teacher: Chris Ochodnick
Mentor: Stacey Helton/GM

Flushing High School

Teacher: Chad Anderson
Mentor: Heather Griffin/UM Flint Alumni

Genesee High School

Teacher: Matt Malenich
Mentor: Stacey Helton/GM

Goodrich Middle School

Teachers: Brad Dawson, Cindy Rivet, Craig Salter
Mentors: Pier Bollini/Delphi Flint, John Bradburn/Environmental Services, Al Putney/Delphi Flint

Kearsley-Armstrong Middle School

Teachers: Diana Bowman, Carrie Brown, Jennifer Hall
Mentors: Sue Kubic/Genesee County Drain Commission, John Moldovan/GM

Lake Fenton High School

Teacher: Joe Grigas
Mentor: John Maksimchuk/Grand Blanc Weld Tool

Lakeville Middle School

Teachers: Josh Henley, Andrea Thelen
Mentors: Suzanne Lossing/FRWC, Saed Issac/UM Flint Alumni

Linden Middle School

Teachers: Kim Bigelow-Cornell, Charlene Nester
Mentors: Bill Welch/FRWC, Erin Galloway/Earth Force, Dan Harret/GM Retiree

Montrose Hill-McCloy High School

Teacher: Bob Masser
Mentor: Bob Carlyon/FRWC Board

Montrose Kuehn-Haven Middle School

Teachers: Tammy Belson, Jennifer Kahn
Mentor: Bill Welch/FRWC Board

Mt. Morris Junior High School

Teacher: Bekah D'Haene
Mentor: Tom Jones/Genesee County Drain Commission

St. John Vianney Catholic School—Grade 8

Teacher: Elizabeth Petrides
Mentor: Tom Hutchens/Flint Water Pollution Control

Swartz Creek Middle School—Grade 8

Teachers: Amy Culver, Brandolyn Forbes, Dori Hill
Mentors: Pat Schultz, Eric Hall/Flint River Paddlers, Dennis Weiler/GM SPO

The Valley School

Teacher: Mike White
Mentor: Dawn Welsh/Flint Waste Water Treatment

Westwood Heights—Hamady High School

Teachers: Tom Chedister, Tammy Wylie
Mentors: Thad Dominick, Eric Brubaker/Flint Water Pollution Control

Student Presentation Schedule

Session 1 8:20—9:05	Session 2	Session 3 10:00—10:45	Session 4	Session 5 12:10—1	Session 6
Armstrong MS (Bowman)		Armstrong MS (Hall)		Carter MS (McCallum)	Bentley HS (Hobson)
Linden MS (Nester)		St. John Vianney (Petrides)		Armstrong MS (Brown)	Carman Ainsworth HS—Lawrence
Swartz Creek Middle School—Hill		The Valley School (White)		Whittier Academy (Trombley)	Flushing HS (Anderson)
Davison MS (Kosaria)		Lakeville MS (Henley)		Mt. Morris Jr. High (D'Haene)	Northern Comm. Academy (Aversa)
		Goodrich MS (Rivet)		Holmes Foundation Acad—Ochodnick	

Session 1: 8:20 a.m.—9:05 a.m.

Auditorium	<i>Student Presentations</i>	
Room 1104	<i>"Surfing the DEQ! Finding Resources"</i>	Pam Howd, Environmental Assistant Program, MI DEQ
Room 1106	<i>"Recent & Future Water Legislation"</i>	Nathan Murphy, Environmental Policy Analysts, Senate Democratic Caucus
Room 1108	<i>"Sewer CSI"</i>	Dawn Welsh, Tom Hutchings, Eric Brubaker, Water Pollution Control Specialists, Flint Waste Water Treatment Center
Room 2105	<i>"Biking & The Environment"</i>	Bruce Nieuwenhuis, President, Friends of the Flint River Trail
Room 2208	<i>"Paddling the Pewonigowink"</i>	Riley McLincha, Watershed Enthusiast
Room 3207	<i>"Green Power Strategy"</i>	Rob Threlkeld, Manager, GM Contracts, Green Initiative
Room 3208	<i>"Bee a Keeper!"</i>	Jim Dodder, Genesee County Bee Keeper
Greenhouse/ Museum	<i>Walk through MCC's state of the art Greenhouse and Geology Museum.</i>	

Session 1A: 8:20 a.m.—9:55 a.m.

Entrance	<i>"Applewood-Gilkey Creek Restoration Project"</i>	Students will walk down to the Gilkey Creek/Applewood Estate restoration site at 8:20 a.m. and will return for Session 3.
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Session 2: 9:10 a.m.—9:55 a.m.

Auditorium	<i>Vacant</i>	
Room 1105	<i>"Great Lakes and The Regional Climate"</i>	Stephen Riley, USGS, Great Lakes Science Center
Room 1104	<i>"Surfing the DEQ! Finding Resources"</i>	Pan Howd, Environmental Assistant Program, MI DEQ
Room 1106	<i>"Recent and Future Water Legislation"</i>	Nathan Murphy, Environmental Policy Analyst, Senate Democratic Caucus
Room 1108	<i>"Sewer CSI"</i>	Dawn Welsh, Tom Hutchings, Eric Brubaker, Water Pollution Control Specialists, Flint Waste Water Treatment Center
Room 1204	<i>"Owl Habitats"</i>	Layne Hillman, Naturalist, Seven Ponds Nature Center
Room 1210	<i>"Connecting with Conservation"</i>	Sarah Kilgore, Education Director, Genesee Conservation District
Room 2105	<i>"Biking & The Environment"</i>	Bruce Nieuwenhuis, Friends of the Flint River Trail
Room 2208	<i>"Paddling the Pewonigowink"</i>	Riley McLincha, Watershed Enthusiast
Room 3207	<i>"Green Power Strategy"</i>	Rob Threlkeld, Manager, GM Contracts, Green Initiative
Greenhouse/ Museum	<i>Walk through MCC 's state of the art Greenhouse and Geology Museum.</i>	

Session 3: 10:00 a.m.—10:45 a.m.

Auditorium	<i>Student Presentations</i>	
Room 1105	<i>"Great Lakes and the Regional Climate"</i>	Stephen Riley, USGS, Great Lakes Science Center
Room 1106	<i>"Recent & Future Water Legislation"</i>	Nathan Murphy, Environmental Policy Analyst, Senate Democratic Caucus
Room 1108	<i>"Sewer CSI"</i>	Dawn Welsh, Tom Hutchings, Eric Brubaker, Water Pollution Control Specialists, Flint Waste Water Treatment Center
Room 1204	<i>"Owl Habitats"</i>	Layne Hillman, Naturalist, Seven Ponds Nature Center
Room 1210	<i>"Kayaking: Mild to Wild"</i>	Eric Hall, Flint River Paddlers
Room 2201	<i>"Rats in Your Drinking Water?"</i>	Darren Bagley, MSU-E Extension Educator, 4-H Youth Development
Room 2105	<i>"Alien Invaders of the Great Lakes"</i>	Mary Bohling, MI Sea Grant
Room 3208	<i>"Bee a Keeper!"</i>	Jim Dodder, Genesee County Bee Keeper
Greenhouse/ Museum	<i>Walk through the MCC state of the art Greenhouse and Geology Museum.</i>	

Session 4: 10:50 a.m.—11:35 a.m.

Auditorium	<i>Vacant</i>	
Room 1104	<i>"Surfing the DEQ! Finding Resources:"</i>	Pam Howd, Environmental Assistant Program, MI DEQ
Room 1106	<i>"Energy Futures and Impacts on our Water"</i>	Lee Sprague, Clean Energy Campaign Manager
Room 1108	<i>"Muck on the Beaches in Saginaw Bay"</i>	Margaret Lansing, NOAA Great Lakes
Room 1204	<i>"Owl Habitats"</i>	Layne Hillman, Naturalist, Seven Ponds Nature Center
Room 1210	<i>"Connecting with Conservation"</i>	Sarah Kilgore, Education Director, Genesee Conservation District
Room 2201	<i>"Rats in Your Drinking Water?"</i>	Darren Bagley, MSU-E Extension Educator, 4-H Youth Development
Room 2105	<i>"Biking and the Environment"</i>	Bruce Nieuwenhuis, Friends of the Flint River Trail
Room 2208	<i>"Paddling the Pewonigowink"</i>	Riley McLincha, Watershed Enthusiast
Room 3207	<i>"Green Power Strategy"</i>	Rob Threlkeld, Manager, GM Contracts, Green Initiative
Room 3208	<i>"Bee a Keeper!"</i>	Jim Dodder, Genesee County Bee Keeper
Greenhouse/ Museum	<i>Walk through MCC's state of the art Greenhouse and Geology Museum.</i>	

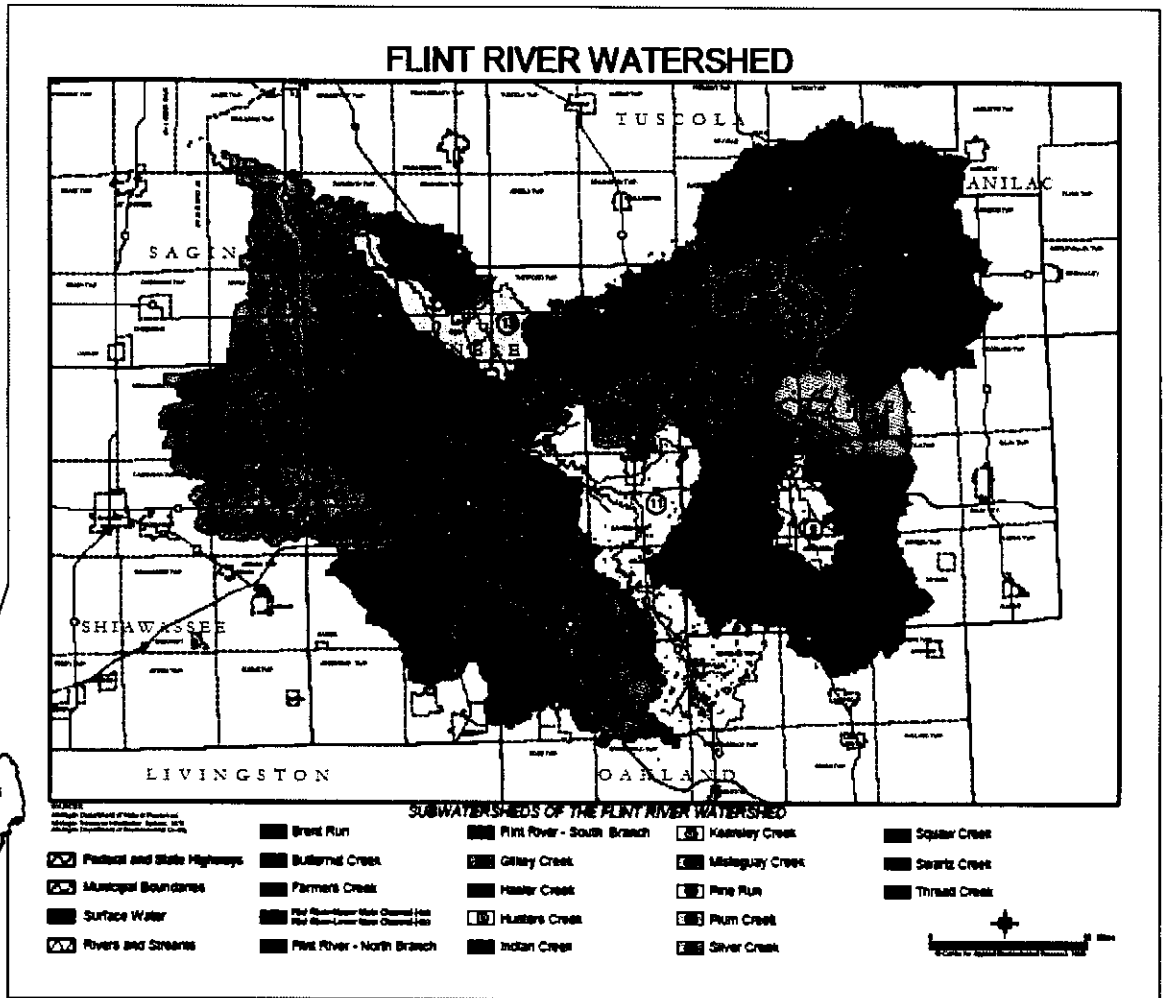
LUNCH: 11:40 a.m. —12:05 p.m. Room 2109
Additional Seating Available in Rooms 2107, 2109, 3202, 3204, and 3206

Session 5: 12:10 p.m.—12:55 p.m.

Auditorium	<i>Student Presentations</i>	
Room 1105	<i>"Great lakes & The Regional Climate"</i>	Stephen Riley, USGS, Great Lakes Science Center
Room 1106	<i>"Energy Futures & Impacts on our Water"</i>	Lee Sprague, Clean Energy Campaign Manager
Room 1108	<i>"Muck on the Beaches in Saginaw Bay"</i>	Margaret Lansing, NOAA Great Lakes
Room 1210	<i>"Kayaking: Mild to Wild"</i>	Eric Hall, Flint River Paddlers
Room 2201	<i>"Rats in Your Drinking Water?"</i>	Darren Bagley, MSU-E Extension Educator, 4-H Your Development
Room 2105	<i>"Alien Invaders of the Great Lakes"</i>	Mary Bohling, MI Sea Grant
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Room 3207	<i>"Green Power Strategy"</i>	Rob Threlkeld, Manager, GM Contracts, Green Initiative
Room 3208	<i>"Bee a Keeper!"</i>	Jim Dodder, Genesee County Bee Keeper
Greenhouse/ Museum	<i>Walk through the MCC state of the art Greenhouse and Geology Museum.</i>	

Session 6: 1:00 p.m.—1:40 p.m.

Auditorium	<i>Student Presentations</i>	
Room 1105	<i>"Great Lakes & The Regional Climate"</i>	Stephen Riley, USGS, Great Lakes Science Center
Room 1104	<i>"Surfing the DEQ! Finding Resources"</i>	Pam Howd, Environmental Assistant Program, MI DEQ
Room 1108	<i>"Sewer CSI"</i>	Dawn Welsh, Tom Hutchings, Eric Brubaker, Water Pollution Control Specialists, Flint Waste Water Treatment Center
Room 1204	<i>"Owl Habitats"</i>	Layne Hillman, Naturalist, Seven Ponds Nature Center
Room 1210	<i>"Kayaking: Mild to Wild"</i>	Eric Hall, Flint River Paddlers
Room 2201	<i>"Rats in Your Drinking Water?"</i>	Darren Bagley, MSU-E Extension Educator, 4-H Youth Development
Room 2105	<i>"Alien Invaders of the Great Lakes"</i>	Mary Bohling, MI Sea Grant
Greenhouse/ Museum	<i>Walk through MCC's state of the art Greenhouse and Geology Museum.</i>	



Thank You!

To the Students... for protecting our water resources. We value your hard work and your dedication to this project.

To the Teachers... for bringing science to life for your students—starting the ripples for future environmental awareness.

To the Presenters... for taking time to be a part of the GREEN Student Summit. You are key to turning students into environmental stewards.

To the Mentors... for volunteering your time to be involved with students. You send the message that environmental awareness is for everyone. Thank you for your dedication to educating our young people.

Sponsors and Supporters of Flint River GREEN

On behalf of the Flint River Watershed Coalition we would like to recognize and thank our program partners and sponsors. FRWC continues to partner with Earth Force/GREEN to bring educational and community problem solving activities to our educators.



Surface Water Management

Flint River GREEN Summit Evaluation

Date: _____

School: _____

Race/Ethnicity (check all that apply): Amer. Indian/Alaska Native Asian/Pacific Islander Black/African American
 Hispanic/Latino White Other

Gender: Female Male Grade: _____ Status: Student Teacher

Scoring key: 1 = Strongly DISAGREE 2 = DISAGREE 3 = AGREE 4 = Strongly AGREE

BEFORE PROJECT GREEN

AFTER PROJECT GREEN

1	2	3	4		1	2	3	4
				The Flint River is clean and healthy.				
				I can make a difference in the health of the Flint River				
				I understand how a river may become polluted.				
				I want to do things to help the environment.				

My favorite summit session was... _____

During of Project GREEN, I learned..... _____

List something you will do differently because of what you learned in Project GREEN: _____

Other/Suggestions for improvement: _____



FLINT RIVER WATERSHED COALITION

Volunteer Stream Monitoring Results Sites, Spring 2009

* = Data collection was limited by weather conditions.

** = Benthic samples not reviewed by Dr. Pace.

# of Sites	Current #	Previous #	Site Name	Site Location	Score	Habitat Assessment	Monitors at Site	Testing Attempts
1	12	6	Butternut Creek	Genesee Twp T8NR7ES12	* Poor	No	2	2
2	26	6B	Butternut Creek, Headwaters	Forest Twp T9NR8ES16	53.9 / Excellent	Yes	4	1
3	30	7B	Pine Run Headwaters	Vienna Twp T9NR6ES13	37.5 / Good	Yes	3	1
4	20	8B	Misteguay Creek Headwaters	Clayton Twp T7NR5ES8	26.7 / Fair	Yes	2	1
5	8	9	Swartz Creek	Flint Twp T7NR7E	*Poor	No	2	2
6	22	9B	Swartz Creek Headwaters	Fenton Twp T5NR6ES6	*Poor	Yes	2	2
7	7	10	Flint River, Flushing	Flushing Twp T8NR5ES3	49.2 / Excellent	Yes	6	3
8	10	11	Thread Creek	Burton Twp T7NR7ES20	** 5.4 / Poor	Yes	2	2
9	23	11B	Thread Creek Headwaters	Grand Blanc Twp T6NR8ES32	*Poor	No	2	1
10	12	12	Kearsley Creek (For-Mar)	Burton Twp T7NR7ES2	*Poor	Yes	4	2
11	24	12B	Kearsley Creek Headwaters	Atlas Twp T6NR8ES36	43.5 / Good	Yes	2	1
12	9	13	Gilkey Creek	City of Flint T7NR7E	23.8 / Fair	Yes	6	1
13	25	13B	Gilkey Creek Headwaters	Burton Twp T7NR7ES1	19.5 / Poor	Yes	2	1
14	15	15B	Brent Run	Montrose Twp T9NR5ES15	33.8 / Fair	Yes	3	1
15	21	15B	Brent Run Headwaters	Mt. Morris Twp T8NR6ES23	10.2 / Poor	Yes	3	1
16	16	16	Flint River, Richfield	Richfield Twp T8NR8ES10	Replaced w/Site 16R/Clark Drain		x	x
17	new	16R	R Clark Drain, Richfield Park	Richfield Twp T8NR8ES16	35.2 / Good	Yes	6	1
18	31	20	Shiawassee River Argentine	Argentine Twp T5NR5ES20	** 13.2 / Poor	Yes	2	3
19	32	21	Shiawassee River Linden	Fenton Twp T5NR6ES19	** 25.4 / Fair	Yes	3	3

Three monitors attended the April 13th training. This sixteen new monitors participated for the first time this spring.

56

29

Score Ratings:	
> 48 = Excellent	10-33.9 = Fair
34-48 = Good	< 19 = Poor