



Huron River Report

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Winter 2009

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Millers Creek Film Festival pg 11
2010 Wall Calendar pg 11

Climate Change Edition

Why Climate Change Matters on a Watershed Level

HRWC considers the impacts of climate change from a variety of local perspectives

This special issue of the Huron River Report addresses climate change and how it will impact the Huron River and the lakes and streams that you love. We will try to distill the best available scientific and policy information on climate change for you and connect it to your community and your life. We believe this unprecedented challenge to the Huron River deserves our full attention. Understanding climate change is the first step toward protecting our freshwater.



Recent low lake levels in Michigan will become a frequent occurrence if climate change continues unchecked and regional temperatures increase. credit: Michigan Sea Grant

which are adapted to a narrower range of conditions, decline. As a result, Michigan will be far less diverse ecologically.

WHEN IT RAINS, IT POURS

Precipitation in Michigan is projected to increase in winter and spring, and to become more intense throughout the year. While annual average precipitation may not change much, seasonal precipitation in Michigan likely will increase in winter and decrease

in summer. As a result, Michigan summers may grow drier with droughts becoming more common.

In conjunction with drier summers, the rain that does fall will be concentrated into heavy downpours, which erode topsoil and increase runoff. The trend toward more days with very heavy precipitation can be seen in the last fifty years, with the Great Lakes region's average number of days with very heavy precipitation increasing 27%.

LOSING THE "ICE BLANKET" MEANS LOWER LAKE LEVELS

Lakes depend on a seasonal "ice blanket" to prevent water loss due to evaporation.

CLIMATE CHANGE AND THE STATE OF MICHIGAN

Even slight changes in seasonal temperatures will disrupt global and local water cycles, compromising the ecosystem we all depend on for drinking water, recreation and tourism.

"GREENHOUSE GAS EMISSIONS"

Scientists are convinced that human activity - burning fossil fuels to produce electricity and drive our cars, along with the way we process materials and manage land - is changing the Earth's climate at an unprecedented rate. These activities emit gases, principally carbon dioxide, that blanket the planet and trap heat.

IT'S A MATTER OF DEGREES

Without policies in place to reduce greenhouse gas emissions, Michigan will be warmer by the end of this century. Air temperatures are projected to rise 6-10° F in winter and 7-13° F in summer; extreme heat will be more common. As a result, summers in Michigan will feel progressively more like summers currently experienced in southern and western states.

Additionally, the warmer air will increase evaporation and water temperatures will rise. For our lake systems, this dynamic increases the risk of anaerobic "dead zones" that kill fish and other aquatic organisms. Fish populations are expected to change as cold-water species give way to warm-water species, and non-native species expand their territory while native species,

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Come Take A Look!

HRWC's website is new and improved

HRWC is pleased to report the launch of its brand new website. You can still find us at www.hrwc.org, but you'll notice some changes! Over the past year staff and volunteers have been working to make HRWC's site more user-friendly and current with important watershed news and helpful information.

HRWC has added several new features including: a place for public comments on the latest postings, an RSS feed subscription for automatic updates when something new posts to the site or to Facebook or Twitter, easier search options, and sidebars that highlight priority actions and issues.

Other new tools include a master calendar of HRWC events and on-line sign-up for volunteer opportunities.

HRWC could not have done it without your help. This past spring 251 of you completed the initial HRWC website survey, about a 15% completion rate. This is double the normal response rate for these kinds of surveys, proving that HRWC supporters are interested and involved!

Many of you came back again this fall for user-testing of the new site. Your feedback was invaluable. Thank you for your time and effort in making the new site an effective communication tool.



www.hrwc.org

Events

Friday, December 4, 6:30-8:30 PM
Opening Reception for "Hydrology" Exhibition
Chelsea Center for the Arts
400 Congdon Street, Chelsea
Pam: plabadie@hrwc.org or x17

Thursday, January 28, 5:30 PM
HRWC Board Meeting
1100 N. Main St, Ann Arbor
Laura: lrubin@hrwc.org or x12

Saturday, January 30
10:30 AM - 3:30 PM or
12:00 PM - 5:00 PM
Winter Stonefly Search
1100 N. Main St, Ann Arbor
Register by January 11
Joan: jmartin@hrwc.org or x11

More events and updates on the web at: www.hrwc.org
HRWC offices are located at the NEW Center
1100 N. Main Street in Ann Arbor
Call (734) 769-5123 or visit the HRWC website for directions

Tuesday, February 4
Deadline for Millers Creek Film Festival Submissions
details: www.hrwc.org/filmfestival

Friday, March 19, 4:30 PM
Millers Creek Film Festival
Michigan Theater
603 East Liberty, Ann Arbor
Free Admission
Pam: plabadie@hrwc.org or x17

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Climate Change Edition

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SECTORS AFFECTED	POTENTIAL IMPACTS
Health	Increased illness from water contamination and poorer water quality
Fisheries	Loss of species, loss of habitat (e.g. spawning areas), contamination
Tourism & Recreation	More beaches, aesthetic issues, less access to marinas and lake front
Transportation	Decreased depth of navigation channels, stranded docks and harbors
Industry & Energy	Less potential for hydropower, less water for industrial operations
Water Infrastructure	Increased water quality problems and water use restrictions
Agriculture	Less water available for irrigation and farm operations

Lower water levels in Michigan lakes and rivers will impact many sectors creating mismatches between water supply and demand. Water disputes will intensify and trade-offs will become necessary. credit: adapted from Field et al in *Regional Climate Impacts: Midwest* by the U.S. Global Change Research Program

As temperatures rise, ice covers inland lakes and the Great Lakes for a shorter length of time each winter, which means more water is lost to evaporation and lake levels drop. Already, seasonal maximum ice coverage on the Great Lakes has decreased nearly 30% from 1973 to 2008.

The bottom line for our Great Lakes State if we don't curtail climate change? Warmer and more extreme temperatures, heavy, concentrated precipitation, and increased risk of drought and flooding.

CLIMATE CHANGE AND THE HURON RIVER WATERSHED

To give you an idea of how climate change will affect parts of the watershed differently, let's take a tour of the watershed under an altered climate scenario. Use the map on page 4 as a guide for each region.

THE HEADWATERS

The headwaters of the Huron River are dominated by small streams, lakes and wetlands. For the area upstream of Kent Lake in Oakland County, climate change will mean increased evaporation rates and longer periods between rainfalls, increasing the likelihood of drought and decreased water levels. Reduced summer water levels likely will reduce the recharge of groundwater, causing small headwater streams and wells to dry up. Man-made impoundment lakes will have reduced levels of water supply throughout the summer, potentially leading to conflicts between lake-shore residents and those

living downstream as managers struggle to maintain lake levels that were established long before climate change became an issue. Impoundments will likely need to be maintained at lower levels, which will expose more shoreline to erosive forces like heavy rain and storm surge. Lakes and streams in headwater areas may suffer a "double-whammy" – longer dry periods exposing more shoreline to erosion, with more frequent extreme storms increasing the intensity of erosive forces.

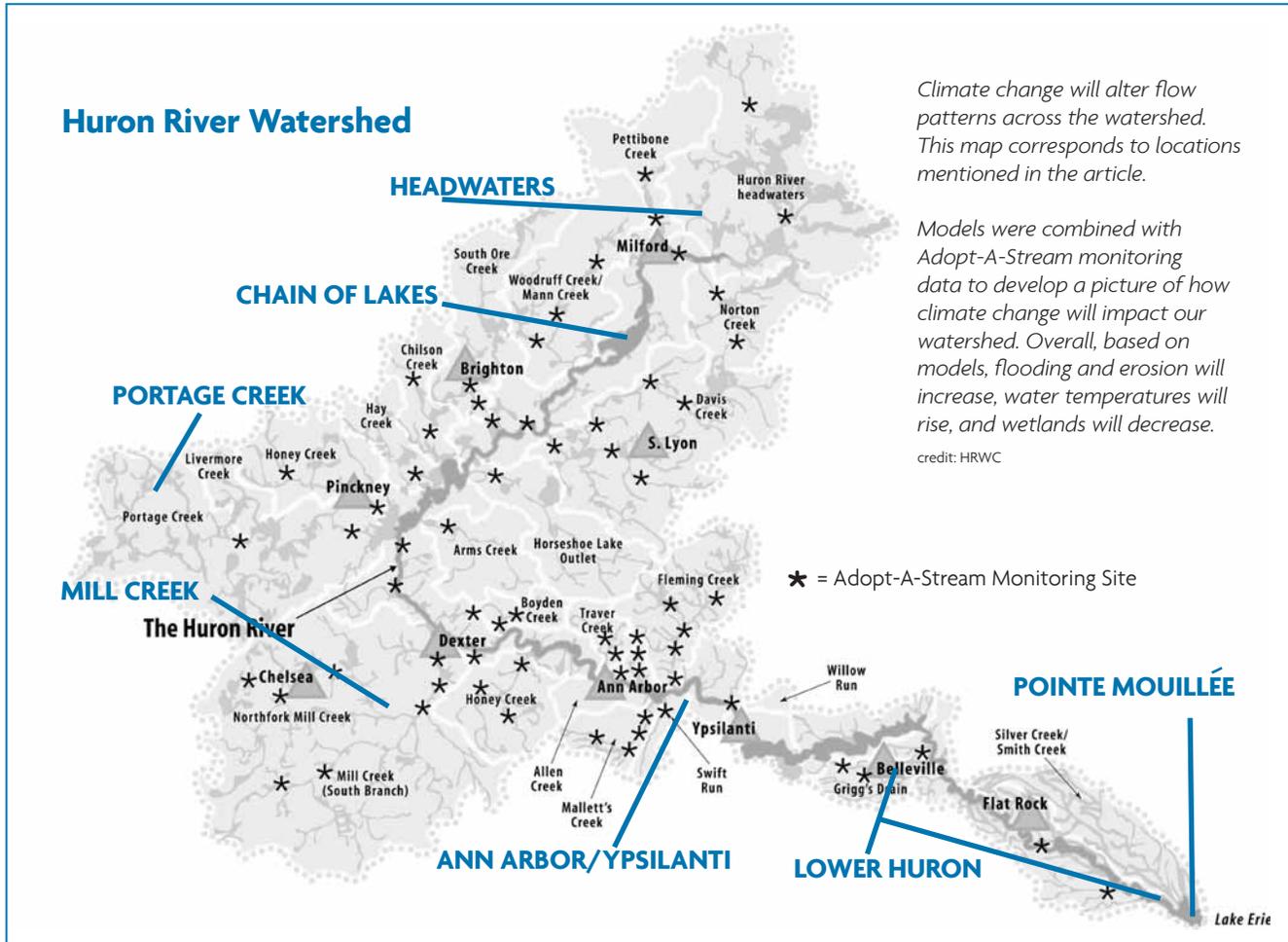
THE CHAIN OF LAKES

The section of the Huron River downstream of Kent Lake is relatively flat and dominated by natural, in-line lakes such as Ore, Strawberry, Baseline and others. The river is bigger, but still flows slowly through this section. The Chain of Lakes region can expect more frequent flooding under an altered climate, due to a greater frequency of extreme storms. Longer dry spells in the summer will alter wetland plant communities and likely reduce wetland and floodplain capacity for flood storage, further increasing the flood risk. Aquatic plants and algae that remain submerged will thrive with the higher average temperatures and longer growing seasons. These changes, coupled with increased erosion from upstream, may lead to decreased water quality across the Chain of Lakes.



More frequent flooding will impact residents in the Chain of Lakes region. photo: HRWC files

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PORTAGE CREEK (I.E. PROTECTED AREAS)

The Portage Creekshed is dominated by large tracts of protected forest stands, lakes and wetlands. Much of the creekshed is within the Pinckney State Recreation Area. Under a climate change scenario, it will be one of the most adaptable areas in the watershed. The diversity and size of ecological communities should offer resilience against catastrophic loss. Forest structure may change, lakes may shrink in size with wetlands filling the margins, and some wetlands may change from permanent to seasonal. But the large groundwater recharge area under this creekshed will offer a buffer against the effects of drought, and the diverse topography will offer water storage capacity to prevent major impacts downstream from extreme storms.

MILL CREEK (I.E. RURAL AREAS)

Mill Creek, the largest tributary to the Huron River, is mostly rural in character. The affects of climate change could be significant. The higher frequency of extreme storms could lead to significant erosion from agricultural areas, and the Mill Creekshed could suffer from water shortages in the summer months. Since the extreme storms will mostly wash off the surface and provide little groundwater recharge, summer droughts will further exacerbate the problem and lead to significantly lower aquifers. Farms and other residences may need to adapt by drilling deeper wells or finding other sources for water supply.

ANN ARBOR (I.E. URBAN AREAS)

Ann Arbor and other urban areas in the watershed could suffer myriad impacts from changing hydrology. Areas with aging stormwater infrastructure will likely see

greater failure rates, leading to flooding and decreased water quality. Water treatment facilities could fail to provide full treatment due to larger than anticipated water volumes, leading to direct sewage discharges to the river. Other infrastructure, such as aging dams and detention ponds, could also fail more frequently with an increased number of extreme storms. Finally, with increased erosion and water quality impacts upstream, impoundments downstream in the watershed could suffer from increased sedimentation and nutrification, leading to a greater number of algae blooms, fish kills, and decreased water quality.

LOWER HURON TO LAKE ERIE

The section of the watershed downstream of Belleville Lake would likely be the least impacted by climate change. The

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river through this section would certainly widen out to the flood plains during the larger storms and river banks could be more exposed during the summer, but many of these flood plains are protected by parkland and would not impact homes or businesses. However, where the Huron River enters Lake Erie at Pointe Mouillée, there could be dramatic impacts. If Lake Erie drops the projected 1-2 feet over the next 30 years, much of the near shore marshes within the estuary would be exposed, altering the lake-river connection. This alteration would change the habitat structure within the estuary, and it is not clear how the community would adapt.

Climate change will have a significant impact on hydrology across the Huron River watershed. The direct effects may be quite different depending upon where you are. However, many of these impacts can be addressed through adaptive policy and management. The time to begin this adaptation is now.

CLIMATE CHANGE AND LOCAL FISH

WATER TEMPERATURE AFFECTS A FISH'S OXYGEN SUPPLY

Water temperature and the ability of water to hold dissolved gases are inextricably linked; colder water holds more gas. This fact creates all kinds of challenges for animals that must take oxygen from water in order to breathe. Fish and aquatic insects will be particularly susceptible to climate change-induced increases in water temperature because warm water holds less oxygen.

Fish species are suited to different temperature ranges based on their bodies' physiological requirements. Trout, for example, need very high oxygen levels and will only inhabit cold-water streams (50-65° F in the summer). The Huron River does not have good trout populations because our summer water temperatures are naturally higher than this range. The Huron is a cool-water system (65-76° F in the summer) throughout most of the watershed and is better suited to holding cool-water fish like smallmouth bass, northern pike, and walleye.

Scientists expect the distribution of fish to shift north as the climate warms and water temperatures rise. Fish once happy in the Huron will be found more readily in Northern Michigan and Canada, while warm-water fish normally found south of Michigan will move into the Huron. Large-mouth bass, channel catfish and invasive species (such as carp and round goby) will be more likely to spread through the watershed as food and habitat resources are abandoned by departing native species.

THE HURON RIVER WITHOUT SMALLMOUTH BASS?

It won't take much to tip the scale. Smallmouth bass prefer temperatures between 70-80° F and, according to a U.S. Fish and Wildlife study, the lethal water temperature for smallmouth is 84° F. At this temperature, smallmouth must find cooler and more oxygen rich waters quickly or they will suffocate.

Careful measurements by Adopt-A-Stream staff and volunteers show summer water temperatures throughout the system currently range from 67-82° F. A projected increase of just 5 degrees by this century's end will mean smallmouth bass cannot survive in most of the Huron River system.

Removing dams from the river is a major way in which we can alleviate some of the future temperature effects on fish. Dams slow water down and increase water's exposure to the sun, which respectively decreases oxygen aeration and increases water temperature. A free flowing river will be far more likely to hold our current fish community than a river full of artificial, stagnant lakes.

LAKE WARMING WILL RESULT IN MORE ALGAE AND POSSIBLE FISH KILLS

Temperature stratification is a normal part of the annual life cycle of Michigan lakes. In the summer, cold water sinks to the bottom of the lake and remains very cold; shallower water is exposed to the air and sun, and warms up. This dynamic creates two distinct layers of water. As our climate warms, lakes will stratify much earlier in the year, impacting the fish community.

The deepest, bottom layer of a stratified lake often becomes anoxic (no oxygen left in the water) because bits of algae and organic material settle to the bottom of a lake and are decomposed by bacteria, a process that uses up the oxygen in the water. Oxygen cannot enter the lower



Can smallmouth bass survive in the Huron River system? Get the full story and review the Adopt-A-Stream data at www.hrwc.org illustration: courtesy of the U.S. Fish and Wildlife Service

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layer from the surface layer because the different water densities of the two layers prevent mixing.

Chemical reactions of phosphorus further complicate this issue. In anoxic conditions, phosphorus can be released from the lake bottom sediments, increasing growth of algae, which eventually die and decompose, removing even more oxygen from the lake.

Fish face an increasingly inhospitable environment. Earlier and longer periods of lake stratification mean deep waters are inhospitable due to a lack of oxygen. Increases in water temperature mean less oxygen throughout the water supply. Large fish die-offs (aka “fish kills”) are common in oxygen-stressed lakes, and climate change will mean increases in fish kills in the Huron River system.

CLIMATE CHANGE SOLUTIONS: SMART GROWTH

USE COMPACT DEVELOPMENT

How we manage our land has a substantial impact on climate change. Communities need to change land use patterns and infrastructure to reduce greenhouse gas emissions. The same land use strategies that HRWC has been advocating to help protect the Huron’s water quality – developing in more compact patterns where infrastructure already exists and preserving natural areas – are those that must occur to both reduce greenhouse gas emissions and provide our communities with the resiliency to weather climate change. According to a new report by the U.S. EPA, 16 to 20% of the U.S.’s greenhouse gas emissions are related to how we develop land: transportation, construction, and lost vegetation when natural areas and farm fields are cleared for development. Conversely, the equivalent of 13% of U.S. emissions is absorbed by natural areas.

PROTECT NATURAL AREAS

New subdivisions, shopping malls, parking lots, and roads increase greenhouse gas emissions through their energy demand (for heating and cooling). They also add to climate change through the heat their



Natural areas, such as these forests and wetlands in Unadilla Township, buffer the impacts of climate change. photo: HRWC

surfaces reflect into the atmosphere, a process known as the “heat island effect.”

In contrast, forests, wetlands, prairies and fields absorb greenhouse gases as well as the sun’s heat and provide a host of ecological services. Natural areas slowly absorb rainwater and melting snow, recharging groundwater supplies. Plants soak up and filter this water before it flows into the river, which cools the water and helps remove pollutants. This water is then released slowly into rivers and streams, keeping flow levels steady throughout each season, even during periods of little or no precipitation. Natural areas also absorb excess water, preventing flooding. With predicted intense rainfalls, droughts, and impacts on wildlife, we will need these natural areas more than ever to clean and store water, prevent floods, and provide habitat to wildlife.

REDUCE DEPENDENCE ON CARS

Walkable, bikable communities with public transit are key to reducing automobile use, thus reducing harmful greenhouse gas emissions. There is a lot of talk about new automotive technology, but studies by the Urban Land Institute show that any reductions in greenhouse gases gained from increased fuel economy and cleaner fuel will be overwhelmed if sprawling development continues to fuel growth in driving.

The study projected a 48% increase in the total miles driven between 2005 and 2030. Even if the most stringent fuel-efficiency proposals under consideration are enacted, notes co-author Steve Winkelman, “vehicle emissions still would be 34% above 1990 levels in 2030 – entirely off-track from reductions required for climate protection.”

Currently, most people have little choice but to drive everywhere. Providing people with alternatives to their cars and making it feasible to switch to those alternatives would have significant impacts. Shifting 60% of

new growth to compact patterns would save 79 million tons of carbon dioxide annually by 2030. This savings is equivalent to increasing federal vehicle efficiency standards to 32 m.p.g.

Compact development reduces driving by 20%-40%. People who move into compact cities and neighborhoods that provide a variety of transportation choices are making as big a contribution to fighting climate change as those who buy the most efficient hybrid vehicles, but remain in car-dependent areas.

“Growing Cooler: the Evidence on Urban Development and Climate Change” by the Urban Land Institute www.smartgrowthamerica.org

USE GREEN INFRASTRUCTURE IN NEIGHBORHOODS

Providing green infrastructure like rain gardens, green roofs, and vegetated stream buffers will help counter climate change. Planting trees in public spaces reduces the amount of heat-absorbing surface area and provides shade, reducing temperatures.

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Planting trees also increases the permeable surface area, which, in turn, reduces runoff and relieves stress on stormwater infrastructure. Reducing impervious surfaces and installing green roofs will mitigate the heat island effect.

LOCAL COMMUNITIES TAKE STEPS TO COMBAT CLIMATE CHANGE

Many Michigan communities are adopting policies to reduce climate change. Here are just a few examples:

- Plans are underway for rail service from Detroit to Ann Arbor, and also a commuter train connecting Ann Arbor to Brighton and Howell.
- Traverse City has undergone a “smart growth” transformation, redeveloping its downtown, participating in a regional “Grand Vision” plan with surrounding communities, and converting a 100-year old mental institution, the Northern Michigan Asylum, into a mixed-use neighborhood called The Village at Grand Traverse Commons.
- Several communities in the watershed have active land preservation programs to purchase natural areas and farmland, or purchase their development rights for permanent preservation. The City of Ann Arbor, Ann Arbor Township, Scio Township, and Washtenaw County all participate.

CLIMATE CHANGE SOLUTIONS: WATER EFFICIENCY

Water conservation is a fundamental strategy to reduce and adapt to the effects of climate change. If we can cut our water use across sectors, we can cut our water-related energy use at a roughly proportionate rate. Studies show that a 25% reduction in water usage is within our reach, and it would result in a 25% reduction in energy use – allowing us to retire hundreds of dirty power plants, give us cleaner, healthier air to breathe, and significantly advance efforts to reduce greenhouse gases. Plus it means keeping more water in streams and lakes where it belongs!

How do we do it? These reductions don’t require us to go without showers or to live in self-contained eco-bubbles using and reusing a small amount of water. But it will require a fundamental change in the way we think about fresh water (no, it’s not infinite). As we continue to replace, upgrade, and build our water infrastructure (treatment plants, distribution and stormwater pipes, etc.) we need to do it with a new long-term vision for water management. A comprehensive and integrated approach is needed that focuses on three areas: conservation, efficiency, and reuse.

CONSERVATION

Water conservation includes changing habits to reduce water waste. On an individual scale, this means using less water for everyday activities like toothbrushing and lawn watering. On a community-wide scale, municipalities can change water use-related ordinances and water rate structures to add incentives to conserve water. Today, most municipalities charge one flat rate for water, and that rate is usually far lower than the actual cost of the water (cleaning it, transporting it through infrastructure, processing storm water, etc.). Increasing fees in general motivates residents to conserve more water. Staggered rates for water use can also inspire water conservation. For example, the City of Ann Arbor recently implemented a new structure in which water rates increase as use increases. A similar approach would be to charge more for water used during dry seasons.

EFFICIENCY

While conservation is about habits, efficiency is about hardware – the performance of our plumbing in and around our homes and businesses, and in our municipal systems. Efficiency strategies save resources, plus the investment in retrofits is often recovered quickly through water savings.

There is tremendous existing potential in efficiency strategies. In our homes, this means using efficient toilets, faucets, showerheads, washing machines, dishwashers, and hot water heaters (tankless models save little or no water, but save a lot of energy). If even just 10% of existing

fixtures were replaced with U.S. EPA Water Sense certified appliances – which are at least 20% more water-efficient than most other devices currently in the market – we could save 128 billion gallons of water each year. That’s enough water to meet the needs of 3.5 million people.

U.S. EPA estimates that as much as 50% of the water we use outdoors is wasted. Outdoor water use is also a huge consideration at times of peak demand, which usually coincides with dry weather and low creek flows. Improving the efficiency of outdoor water use means better targeting of use (taking care not to water sidewalks and drives, and watering early in the morning to reduce evaporation), and better methods of use (drip irrigation, etc.).

In our municipal systems, U.S. EPA estimates that, on average, 10-20% water and energy savings could be realized by tightening up the systems in practical ways, saving as much as 6 billion gallons per day (enough to supply the 10 largest American cities). Repairing leaks and properly maintaining pumps will pay for themselves in a few years or even months. In many cities, more than 20% of water is lost in leaks before it ever reaches homes or businesses. In the developing world, these estimates are often more than 50%.

WATER REUSE

Water reuse may hold the greatest conservation potential. For reuse to work, we need to stop “throwing away” our water and instead look at ways to capture and reuse this precious resource. Examples include: rain water held on site (rain barrels and cisterns) for use on plants and lawns; water reused from activities such as dish washing, showering, and laundry (known as “gray water”); and stormwater and “wastewater” treated to levels adequate for reuse.

On a larger scale, when we capture water in retention or detention basins, the question should become, “Is there some good use that can be made of this water before it’s released to the soils or the stream?” Stormwater is useful for many outdoor applications, and some indoor uses as well.

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Climate Change: National and International Policies

A brief synopsis of climate change policies in the U.S. and around the globe

NATIONAL

The House of Representatives recently passed the American Clean Energy and Security Act (H.R. 2454). The bill includes a cap-and-trade global warming reduction plan designed to reduce economy-wide greenhouse gas emissions 17% by 2020. Other provisions include new renewable requirements for utilities, studies and incentives regarding new carbon capture and sequestration technologies, energy efficiency incentives for homes and buildings, and grants for green jobs. In the Senate, Senators Kerry and Boxer have introduced a similar bill, the “Clean Energy Jobs and American Power Act.”

INTERNATIONAL

As we write this, 100 world leaders are gathering at the United Nations in New York for the highest level summit meeting on climate change ever convened. The discussions are in preparation

for the United Nations Climate Change Conference in Copenhagen, Denmark, this December. At the conference, member countries will create a new global plan to tackle climate change.

THE COURTS

In a recent landmark ruling, the federal court of appeals in New York ruled in favor of states and private land trusts that had sued America’s largest global warming polluters to curb their emissions.

The Second Circuit Court of Appeals ruled that five large electric power companies can be sued in federal court because their carbon dioxide emissions contribute to rising temperatures and a host of damaging impacts in other states, including heat waves, smog episodes, droughts and forest fires.

The Second Circuit held that federal courts are empowered to curb damag-

ing carbon pollution unless and until the legislative and executive branches actually regulate that pollution, either under the existing Clean Air Act or the comprehensive new energy and climate legislation pending in Congress.

TAKE ACTION!

And so, with climate change being confronted by all three branches of our government and the United Nations, what can we do to help?

Call your Senators. Urge them to support the Kerry/Boxer Bill:

Sen. Carl Levin at 202-224-6221

Sen. Debbie Stabenow at 202-224-4822

Get involved with climate change.

Check out the following organizations:

www.repoweramerica.org

www.lsky.org

www.350.org/dia.php

www.rivernet.org

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Instead of using treated drinking water to water public green spaces, flush toilets, water lawns, and provide fire protection, we need to look at stormwater and gray water alternatives.

While climate change normally gets us thinking about fossil fuel consumption from cars, airplanes, and heating and cooling, saving water can be the “low-hanging fruit” that reduces energy consumption while keeping more water in the streams and lakes. Similarly, climate change is such a huge issue that it can be difficult to know how one can take action that makes a difference. Saving water is one way you can take action and make a meaningful difference to your watershed.

HRWC RESPONDS TO CLIMATE CHANGE

Many HRWC programs are already reducing greenhouse gas emissions and increasing the Huron River system’s resiliency to climate change:

VOLUNTEER STREAM MONITORING

One of HRWC’s oldest and most established programs, Adopt-A-Stream, trains volunteers to monitor the health of the Huron River and its tributaries. Volunteer teams collect aquatic macroinvertebrates, temperature readings and flow rates for the River and its tributaries. This scientific data is used by HRWC staff to track changes in the river system, helping HRWC and state biologists develop monitoring priorities. The program has created a constituency of motivated volunteers who advocate for protecting the river system.

STREAM BUFFER INITIATIVE

Forested buffers alongside the Huron River, streams and lakes are critical for wildlife habitat, storing water during periods of high water flow, and protecting lakes and rivers from pollutants. With projected increases in flood and drought events, these buffers will become even more important. Also, wildlife pressured by climate change will have greater need for suitable habitat. HRWC created a model stream buffer ordinance, which has been adopted by Scio and Green Oak Townships to date.

WETLANDS PROTECTION

Wetlands filter pollutants from water as it flows into the Huron River, streams, and lakes. They also absorb excess water, preventing flooding. HRWC created a model wetlands ordinance and 14 communities have enacted ordinances, including Scio, Ann Arbor, Brighton, and West Bloomfield Townships.

MILLERS CREEK RAINWATER PROJECT

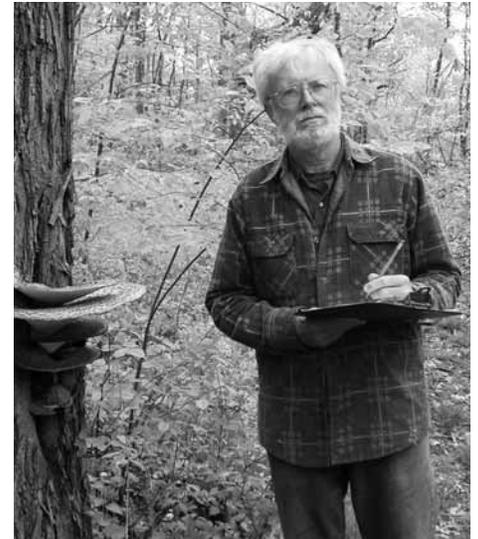
HRWC is working with a residential neighborhood in suburban Ann Arbor to install rain gardens, rain barrels, native plants and otherwise help the land absorb rainwater. These tools will protect Millers Creek and the Huron River from the impacts of climate change by slowing the flow of rainwater that enters the creek during storms.

STORMWATER AND WATERSHED PLANNING

HRWC has worked with communities throughout the watershed to create management plans for nearly every subwatershed in the Huron. These plans specify strategies for land use and stormwater planning that will reduce pollution and runoff to the watershed. Most of these strategies – natural areas protection, development design that reduces impervious surfaces, and stormwater management to reduce flooding – will help mitigate climate change.

NATURAL AREAS MAPPING

HRWC’s Bioreserve Project assesses and works to protect the remaining natural areas in the watershed. Natural areas provide a host of ecological services, and their presence will become even more important as the climate changes. So far the project has mapped 247,000 acres of large, contiguous forests, wetlands, prairies, and fields, and has prioritized them based on their potential to provide groundwater recharge, wildlife habitat, biodiversity, and other ecological services. Natural area preservation programs and land conservancies throughout the watershed are using the Bioreserve Map to guide their decision-making. Field assessments on the highest ranking sites educate landowners directly about the value of their property and how they can permanently protect it.



Bioreserve volunteer Steve McCormick assesses a natural area. photo: HRWC

PUBLIC INFORMATION & EDUCATION

HRWC’s public information and education efforts promote the use of rain gardens, rain barrels, natural landscaping and other river-friendly residential practices that protect the river system from pollution while increasing its resiliency in the face of climate change.

NATIONAL ADVOCACY

In addition to the local and regional programs listed above, we have acted on the national level by signing on with over 600 groups nationwide to urge the Senate to pass legislation to safeguard America’s natural resources from the negative impacts of climate change.

— HRWC Staff

A variety of resources were used for this article. The following are of particular interest for our region:

“Confronting Climate Change in the Great Lakes Region – Impacts on Michigan Communities and Ecosystems” by George Kling, Mark Wilson and Donald Zak (University of Michigan). Available for review on the website: www.ucsusa.org/greatlakes/glregionmic.html

“Regional Climate Impacts: Midwest” from Global Climate Change Impacts in the United States by the United States Global Change Research Program. www.globalchange.gov

SUDS on the River a Success

Thanks to everyone who participated!



2009 Suds on the River Restaurants

Afternoon Delight
Anthony's Gourmet Pizza
Café Habana
Common Grill
Jerusalem Garden

Morgan & York
No Thai!
Pacific Rim
Paesano's
People's Food Cooperative

Terry B's
Tio's
Tuptim's
Vinology
Whole Foods Ann Arbor

Thanks to the generosity and hospitality of our hosts Bill and Mary Kinley, this year's Suds on the River was both memorable and successful, with over 200 river lovers raising their glasses to our beautiful Huron River and watershed!



Thank you to Timothy R. Gretkierewicz, President of

KeyBank, for sponsoring Suds on the River. Thank you to Ann Arbor Trout Unlimited, Colton Bay Outfitters, Google, First Martin Corporation, Hudson Mills MetroPark, Dunning Toyota, Glacier Hills, Grafaktri, Tom Thompson Flowers, Busch's of Dexter, HRWC Board Members, the brewers, the chefs, the volunteers, and the donors.

Thank you to Suds volunteers: Niki Anguilm, Ingrid Ault, Steve Bean,

Lynette Cable (KeyBank), Paul Cousins, Pat Cousins, Maura Cousins, Kaila Crowley, Alice Curley, Linda Diane Feldt, Julia Henshaw, Ralph Kridner, Kris Kurzawa, John Lloyd, Jo Latimore, Jessi Leiding, Brigit McGowen, Rosalie Meiland, Sue Monet, Craig and Jill Money, Dan Morris, Elizabeth Riggs, Kelly Stinson, Kathy Stocking, Blair Treglown, Lynn Vacarro, Marcia Van Fossen and Sandy Wilson.

Thank you donors to HRWC's first on-line auction Bids on the River: Appel Environmental Design, City of Ann Arbor Canoe Liveries, Colton Bay Outfitters, eve Restaurant,

Fox Hills, Grange Bar and Restaurant, Grizzly Peak Brewing, Herbert Dreiseitl, Huron River Fly Fishing Adventures, Keller Williams Realty, Marc Akemann Photographer, Motawi Tile, Scrap Happy, Steve Gilzow, Ted Nelson Photography, Unadilla Boatworks, University Musical Society, Vie Spa, Washtenaw Audubon Society, and Zingerman's.



2010 Calendar Available

Pick up one of these stunning wall calendars featuring watershed photography and 12 tips for protecting the Huron River for FREE at HRWC offices or go to www.hrwc.org for a list of participating communities and retail outlets. Cities that mailed calendars to their residents in October include Ann Arbor and Brighton.

If you are unable to pick up your FREE calendar, HRWC can send it to you for a \$5 charge. Submit your request by mail with a check payable to HRWC. For questions, contact Pam Labadie at (734) 769-5123 x17 or plabadie@hrwc.org.



Call for Entries

Fifth Annual Millers Creek Film Festival



HRWC invites filmmakers of all ages and abilities to join us in celebrating and protecting the Huron River.

Winners receive \$500. All qualifying films will be shown at a gala public screening at the Michigan Theater in Ann Arbor on March 19, 2010.

ENTRIES DUE by February 2, 2010.

Get more information at www.hrwc.org or contact Pam at (734) 769-5123 x17 or plabadie@hrwc.org.



Photo: Jeff Oleksinski

Fulfilling Goals

Leave a legacy by including the Huron River Watershed Council in your will and estate plans. Please remember HRWC and our important watershed protection and restoration programs with a generous bequest in your will or trust. Help us meet the challenges of keeping our river running clean. If you have already included HRWC in your will, please let us know so we can thank you. With your support the watershed will be enjoyed for many generations to come.

Please contact us to discuss planned giving options.
Margaret Smith, Development Director.
(734) 769-5123 x 19, msmith@hrwc.org

*Every individual has a role to play.
 Every individual makes a difference.*

Your membership supports HRWC programs. Send us this membership form with your check made out to "HRWC" or join on-line at www.hrwc.org and click on Join Now! Your contribution is tax-deductible.

MEMBER LEVELS

- \$35 **Mayfly**
- \$50 **Crayfish**
- \$100 **Dragonfly**
- \$250 **Soft Shell Turtle**
- \$500 **Salamander**
- \$1,000 **Smallmouth Bass**
- \$2,500 **Great Blue Heron**
- \$5,000 **Mink**

thank you!

Name _____

Address _____

City _____ State _____ Zip _____

Email _____

Phone _____

The Huron River Watershed Council receives contributions via payroll deduction through EARTH SHARE of Michigan.



Printed on 30% minimum post-consumer recycled content paper



Thanks to Our Volunteers!

Protecting the Huron is a big job and we would be lost without the donations of time, talents, and resources from our dedicated volunteers. **We extend Special Thanks to:**

Sharon and Dave Brooks, Marilyn and Edward Couture, Tom Jenkins, Pauline Loewenhardt, Don Rottiers, Jana Smith, Kathy Snow and Mike Steele for their efficient work in setting up the gear and putting it away again for both the RoundUp and the ID Day.

Beverly Black, Roberta Carr, Dick Chase, Marcia Van Fossen, Tom Jenkins, Kari Walworth and Pauline Loewenhardt for so competently staffing the Fall RoundUp.

One hundred and forty two volunteers who conducted the Fall RoundUp at 50 stream sites with the expert help of aquatic entomologists **Gary Crawford, Beth Sparks-Jackson, Graham Lewis and Julie Mida.**

Big City Bakery for delicious muffins for the RoundUp event.

Sixty volunteers who trained and then assessed the stream habitat at 19 stream sites.

Forty four volunteers who identified 5,000 bugs that were collected at the RoundUp - thus making our data complete!

Tom Jenkins for coordinating HRWC's Fall Rain Barrel Sale and for **all the volunteers** who helped distribute rain barrels at Huron High School on October 25.

Jared Collins for his many volunteer hours on data entry and protocol.

All the volunteers in the Middle Huron Monitoring Program for another successful year of water quality sampling and flow measurement.

Tom Jenkins for organizing and carefully inputting Bioreserve Project data, as well as for assistance with grant proposals.

Tom Chettleburgh, Dave Brooks and Tom Jenkins for finding our buried survey pins for geomorphic studies.

Cynthia Radcliffe for her many years of generous and conscientious volunteer service as both the HRWC webmaster and a newsletter proofreader.