



## GREAT LAKES PROTECTION FUND

### **Healthy Waters Pilot Project Workshop: Summary Report**

June 27 & 28, 2011

Evanston, Illinois

#### **Background and Purpose**

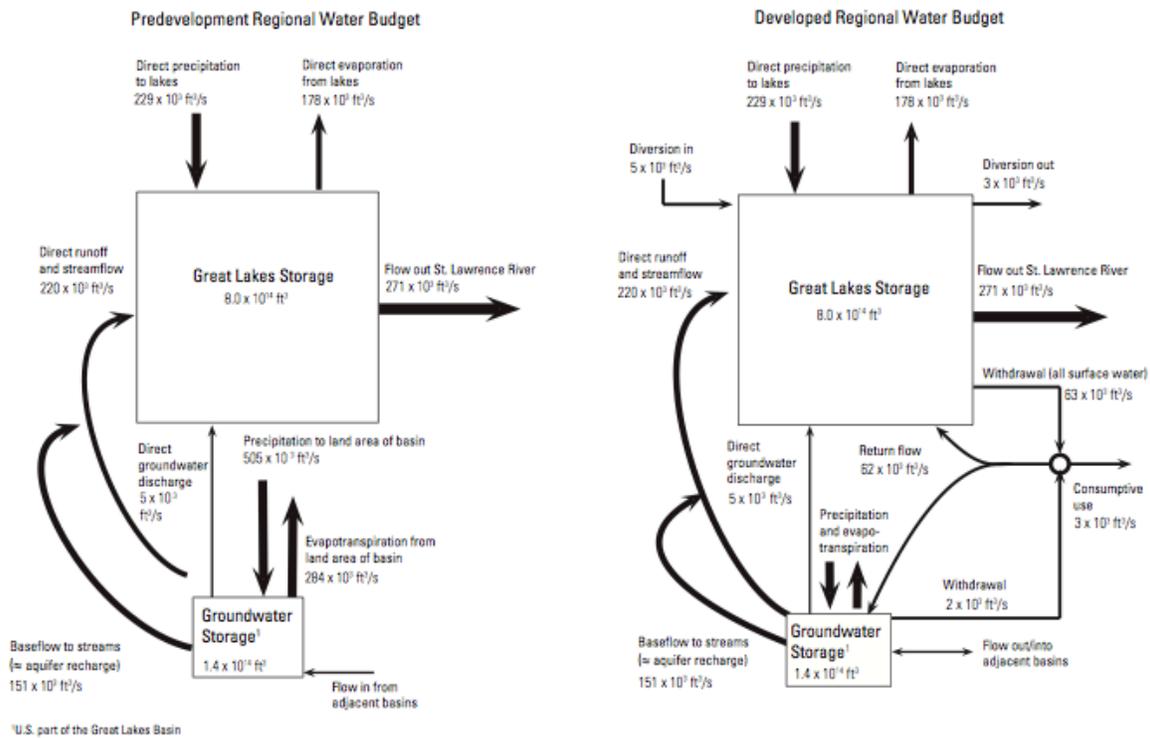
The Great Lakes Protection Fund hosted a workshop of team leaders from seven project teams and other experts on June 27 and 28, 2011. There were three purposes for the workshop. First, and most importantly, to accelerate the development and funding of projects to test ways to formulate, target and assess “water conservation” strategies in an ecosystem that contains nearly 20% of the world’s fresh surface water. Second, to exchange what the teams have discovered in their research and design phase efforts. Third, to help Fund staff better understand how they can help teams do their work and build strong projects.

Attendees are listed in Attachment 1. The agenda is included as Attachment 2. The attendees had also reviewed a working paper (drafted by Fund staff in consultation with other water experts) and other background materials in advance of our roundtable. That working paper is included as Attachment 3.

*The following synopsis is intended to capture the spirit of those discussions, not to be a complete transcript. Unless consensus is specifically noted, this document should not be read to imply endorsement of the contents by all of the individuals present. The Fund deeply appreciates the participation of these experts not only at the meeting, but also in preparation and post-meeting follow-up.*

**Things are different here: abundance exposes anomalies in the current “water conservation” paradigm and creates an opportunity for new “water efficiency,” “sustainable use,” or “restorative use” models.** Attendees noted that the present “use less” paradigm of water conservation does not guarantee, and may not commonly produce, positive ecological change in a system where water is abundant and in-stream flows far exceed withdrawals. A recently published study of Great Lakes hydrology confirms that flows dominate withdrawals. Team members reported that linking tracing the consequences of reduced use through public supplies to changes in surface water hydrology to ecological outcomes was difficult given the dominance of other flows.

The Great Lakes water budget, sketched below by USGS, gives one a sense of why. The sum of all uses (excluding in stream uses like hydropower) is lower than magnitude of flows such as stream flows into the lakes, flow out of the lakes, and precipitation by a factor of ten.



Scarcity in this region, therefore, is not (generally) about the absence of water, but about the disruption of the timing and distribution of flow patterns in the tributaries feeding and connecting the lakes. These disruptions can cause ecological harm. As USGS scientists note, such ecological impacts will likely drive “water” scarcity in this region.

Using less water, or pumping less water can benefit users by lowering costs and delaying expensive system expansion. One participant noted, “an emphasis on ecosystem benefits (which may not occur) could dissuade users from adopting conservation practices for other reasons.” This implies that some water users are not sensitive to the economic signals. This may be because water is priced low; the political cost of completely paying for water systems is high, or both. The statement also recognizes that ecological health is not tightly linked to classic conservation behaviors—using less water over long time frames.

Conservation is different in Great Lakes. Substantial investment in classic conservation practices—low flow fixtures, less use, reduced pumping—is likely required to drive any ecological gain. New efforts, however, those that conserve the function of water movement—how it moves is a key ecological process—may generate outsized ecological gains. Water conservation in this region is not binary (making water present where it is absent) or monotonic (less withdrawal is better), but about restoring patterns of high and low flows, the pathways that water follows, and the resilience of the landscape.

These differences present challenges for teams designing projects. Some teams assumed that it would be relatively easy to map the impact of specific modifications of water use to ecosystem change. They struggled to bridge the gap between “what everyone knows water

conservation to be” and the hydrologic changes that lead to ecological improvements. Teams have emerged from their planning efforts with a strong sense of the hard work ahead in changing how water conservation is conceived, practiced, and targeted.

**It’s about the runoff: the full set of water “uses” needs to be addressed in meaningful water conservation or “restorative water use” schemes.** Rainfall onto the land in the basin is nearly 10 times the amount of all water withdrawn for human use, according to the USGS. How this water moves across and through the landscape is a major driver of ecological health. The dominant “use” of water in our region is drainage—moving water off of the land, the streets and buildings.

Teams are looking at the full set of uses in designing implementation phase efforts. Some team leaders are looking at modifying agriculture drainage as a “conservation” or “efficient use” strategy. Others are exploring how to optimize uses among a set of users- so that the timing and rates of release of storm water can benefit not only landowners but also downstream interests.

Just as in the American West, where the big uses (agricultural and urban abstraction) dominate the management landscape, the big uses in our region—drainage in urban and rural settings—must be central in reframing what must be conserved and designing strategies that yield ecological payoffs.

**The economics matter: getting the financing right can drive substantial business model innovation.** Teams reported that their work has identified that water is a value driver in the region. Using water to cool electric generating turbines increases their efficiency and adds to shareholder returns. This industry is very interested in finding new ways to use water for these purposes. Similarly, water as an ingredient in agriculture provides value when used wisely, but imparts risks when used to carry wastes (even if that latter use is unintentional.) Businesses that supply farmers with fertilizer, advice and other supplies are concerned that their incomes may be at risk if nuisance algae conditions lead to regulation of farmers or fertilizer sales.

As one participant noted, we “need the skills to find where value is concentrated in water-dependent value chains, so that we can work there.” This implies a need for teams to include financial, accounting and business skill sets. This sentiment was echoed by those who saw business and investment opportunities in providing distributed solutions to drainage issues, such as rain-water harvesting to address combined sewer overflows or urban storm water problems. Some participants suggested that private investment can be pulled toward such solutions, if there could be performance contracting that paid for every gallon removed/prevented in a storm event. An economic or financial perspective reveals new opportunities in what has been previously seen as either a natural “single-provider” monopoly (urban water systems) or a “single-payer” system (government payments for conservation practices).

Emerging tools like social impact bonds could open up a new set of business models for managing how water moves across the land and through the regions’ economy. This tool could support water efficiency/restoration efforts with debt, where the payments are only

made if the practices create the outcomes desired. For this model to work, the right metrics and payment terms must be designed.

**Patience, persistence and performance are more important than perfection.** Teams have spotted interesting innovations in the abstract, but struggle to create tangible tests of those ideas in real places. What seems essential is that teams articulate a clear “theory of change” in their proposed projects. A theory of change is the expected sequence of events that begins with the first task in a Fund-supported project and ends with a specific, ideally measurable, ecological improvement in the Great Lakes.

Changing practices, water rates, or even water use is not the same as changing the ecological health of the system. This is a space where proxies (reduced water use) can easily be confused with outcomes (improved river or lake health.) Creating metrics, assessing value chains and building leadership capacity could be important next steps for the Fund and others to support. This is an important area to work, but progress may seem slow initially. Experts encourage “hitting some singles and doubles, not swinging for the fences every time.” Some team leaders reminded the group that substantial talent and expertise exists elsewhere—not just the US and North America, but across the world, and that we should look to build on innovations tried elsewhere. Breakthroughs will happen when leaders have the tools to lead.

Teams must also have the full set of skills—ecological experts that know what outcomes they want, technicians who can deliver tasks, experts in business and finance who can spot opportunity and create new business models, and effective leadership. The challenge is to deploy these teams, as one expert put it, “in places that are excellent learning labs.”

While it makes sense to be patient for systemic change, we must be impatient for results. Growth, large-scale change, and adoption of innovation will take time. Pilots must drive for results during their funding cycles. These results should be, at a minimum, leading indicators of positive ecological change, or meaning reductions in threats to ecological integrity.

**The region will likely benefit from a growing Community of Practice that advances new notions of “water conservation.”** The team leaders and experts suggested that ecological gains will be found in areas not commonly addressed in water conservation planning—by expanding the scope of conservation to the entire hydrologic cycle, and including the energy, chemical and emission endpoints of “conservation” action. Testing these new approaches, especially new business models to deliver them, will create a group of practitioners that can draw upon one another for support, and begin to reshape how previously isolated practices—storm water management, runoff control, and the management of withdrawals—work to restore health to the Lakes and the watershed they drain.

As states develop, and then refine, water conservation programs under the Great Lakes St. Lawrence River Water Resources Compact, they can draw upon these lessons. Similarly, as storm water management requirements are established and implemented, state and local agencies can draw on the lessons that these teams create.

The Fund has played a key role in creating and sustaining such Communities of Practice. In the early parts of the last decade, Fund-supported teams explored how various elements of what became the Compact might work in practice. Those teams built momentum around the Governors' commitments intact as the process began. Even when all parties did not initially embrace their work, those teams created a set of examples, tools and fact-bases that were not otherwise available. Over time, according to recent interviews of Great Lakes stakeholders, that work has become seen as some of the most important investments the Fund has made.

Successful pilot work will test elements of strategies that will not only redefine what "water conservation" means, but will explore new ways to create ecological quality in the basin. Teams will likely create things that help redefine what our water management institutions do, how they work, how they are financed, and their role in this new century.

Attachment 1

**Healthy Waters, Healthy Uses  
Pilot Project Workshop  
June 27-28, 2011**

**Attendees**

Sandra Albro  
Research Manager  
Cleveland Botanical Garden  
11030 East Boulevard  
Cleveland, Ohio 44106  
216.707.2860  
[salbro@cbgarden.org](mailto:salbro@cbgarden.org)

Joe DePinto  
Senior Scientist  
Limnotech  
501 Avis Drive  
Ann Arbor, MI 48108  
Tel: 734.332.1200  
[jdepinto@limno.com](mailto:jdepinto@limno.com)

Mary Ann Dickinson  
President and CEO  
Alliance for Water Efficiency  
300 W. Adams, Suite 601  
Chicago, IL 60606  
773.360.5100  
[maryann@a4we.org](mailto:maryann@a4we.org)

Lisa Wojnarowski Downes  
The Nature Conservancy  
710 N. Plankinton Ave.  
Suite 340  
Milwaukee, WI 53203  
414.248.8095  
[ldownes@tnc.org](mailto:ldownes@tnc.org)

Jeff Edstrom  
Senior Scientist  
Environmental Consulting & Technology, Inc.  
125 S Wacker Dr.  
Suite 300

John Jackson  
Program Director  
Great Lakes United  
17 Major Street, Kitchener, Ontario  
N2H 4R1  
519.744.7503  
[jjackson@glu.org](mailto:jjackson@glu.org)

Wendy Larson  
Senior Project Scientist  
Limnotech  
501 Avis Drive  
Ann Arbor, MI 48108  
Tel: 734.332.1200  
[wlarson@limno.com](mailto:wlarson@limno.com)

Alex Mayer  
Director  
Michigan Tech Center for Water & Society  
Department of Civil & Environmental Engineering  
Michigan Technological University  
1400 Townsend Drive  
Houghton, MI 49931  
906.487.3372  
[asmayer@mtu.edu](mailto:asmayer@mtu.edu)

Dennis McGrath  
The Nature Conservancy  
Michigan Field Office  
101 East Grant River  
Lansing, MI 48906  
517.316.2251 P  
517.881.9866 Cell  
[dmcgrath@tnc.org](mailto:dmcgrath@tnc.org)

Rebecca Pearson  
Project Manager  
[Great Lakes Commission](http://www.greatlakescommission.org)  
2805 South Industrial Highway  
Suite 100

## Attendees

Chicago, IL 60606  
312.421.0444 P  
773.484.0254 Cell  
[jedstrom@ectinc.com](mailto:jedstrom@ectinc.com)

Ann Arbor, Michigan 48104  
734.971.9135  
[bpearson@glc.org](mailto:bpearson@glc.org)

Victoria Pebbles  
Program Director  
Great Lakes Commission  
2805 S. Industrial Hwy., Suite 100  
Ann Arbor, MI 48104-6791  
734-971-9135  
[vpebbles@glc.org](mailto:vpebbles@glc.org)

Marcus Quigley, P.E., D. WRE  
Principal  
Geosyntec Consultants  
1330 Beacon Street, Suite 317  
Brookline, MA 02446  
617.992.9065  
Google Voice: 617.329.1436  
[mquigley@geosyntec.com](mailto:mquigley@geosyntec.com)

Howard Reeves  
Hydrologist  
USGS Great Lakes Science Center  
6520 Mercantile Way  
Lansing, MI 48911  
517.887.8914  
[hwreeves@usgs.gov](mailto:hwreeves@usgs.gov)

Jeff Ripp  
Water Conservation Coordinator  
Wisconsin Public Service Commission  
610 North Whitney Way  
Madison, WI 53707-7854  
608.267.9813  
[Jeffrey.ripp@wisconsin.gov](mailto:Jeffrey.ripp@wisconsin.gov)

Evelyn Strader  
Strader & Company  
*representing* The Council of Great Lakes Industries  
248.340.7062  
[straderco@aol.com](mailto:straderco@aol.com)



Attachment 2

AGENDA

Health Waters, Healthy Uses  
Pilot Project Workshop  
*Provisional Agenda*

Great Lakes Protection Fund  
June 27-28, 2011  
Orrington Hotel, Evanston

**June 27**

12:00 pm Introductions and Working Lunch.  
12:30 pm Welcome- Russell Van Herik, Executive Director, GLPF  
12:35 pm Workshop Introduction, Expectations, Ground rules-David Rankin, GLPF  
1:15 pm Team Headlines: Discoveries, Actions, Audiences

- Water and Energy Nexus Team
- Value of Water Team
- Ecological Benefits of Water Conservation Team
- Watershed Ecological Stewardship Strategy Team

2:45 pm Break  
4:00 pm Reaction and Synthesis  
4:15 pm Discussion: What have we learned, what will drive ecosystem improvements,  
what must we overcome?  
5:00 pm Homework Assignments and Adjourn  
*6:30 pm Dinner at Bravo Cucina Italiana, Evanston, Illinois*

**June 28**

8:00 am Coffee and Breakfast available.  
8:30 am Discussion: What specific things can we try that matter the most to the GL?  
Who should be engaged?  
10:00 am Break  
10:20 am Discussion: What are the best ideas? What must we avoid? What might we  
have done differently?  
12:00 pm Adjourn



GREAT LAKES PROTECTION FUND

**Healthy Waters, Healthy Uses  
Pilot Project Workshop  
June 27-28, 2011**

**Why We Are Here**

In December 2009 the Great Lakes Protection Fund (Fund) financed five first/design phase projects to test how water conservation strategies can best benefit the physical, biological and chemical integrity of the Great Lakes. This set of projects was selected after review of some 30 preproposals and interactions with the project teams. This was an unusual initiative for the Fund – supporting a series of design phase projects is not something we have tried before. The result was a portfolio of five initial projects supported by the Fund. We also supported three follow-on proposals that arose out of conversation resulting from those preproposals.

Because this was an unusual approach, the Fund would like to find out how these planning projects worked for the teams - and we would like to explore what you want to do next. The Fund wants to identify a next best set of actions to fund at a level of \$1.5–2.0 MM. We hope the workshop leads to 4-6 implementation/next phase projects for our next set of investments. Ideally, we are looking for projects that have the following characteristics:

- They complement the Fund's current portfolio.
- They are action-oriented and transformative.
- They engage the decision-makers in the region.
- They move away from the measure of “gallons of water used”.
- They drive towards ecological improvements.

We ask that you be prepared to make a brief (10-12 minute) presentation on your work.

Please address four things:

- a. Introduction: What did you explore and who did you work with (high level)
- b. Big headline: What did you discover, what surprised you?
- c. Action opportunity: What do you want to do next?
- d. For whom: Who will use it and take it to scale?

Feel free to bring or send us a short (four slide) powerpoint/keynote deck if you wish. We want to have an open conversation about the “headlines” from your design efforts, explore what actions we should test, and think expansively about who the work is for. Fund staff will be listening for lessons on the approach we took (design/planning phase support), what we should do more (and less) of to support you, and what funding choices our Board will face on follow-up projects.

As usual, our meeting will be informal and candid.

## **Background**

This set of projects was the result of decisions made by the Fund's Board in 2008, the Fund's 2009 budget process, an expert workshop in 2009, and a 2009 request for preproposals. The Fund used its typical process to build and advance this effort. We looked for an opportunity, vetted the approach with experts, solicited project ideas, assembled teams and worked with teams post-funding. Attached is an excerpt working paper from a February 2008 workshop that outlines the steps the Fund follows to get from idea to funded project portfolio.

Experts advised the Fund that the following key points were particularly relevant to water conservation in the Great Lakes. These formed the basis for the Fund's request for preproposals:

- “Gallons of water used” is not a good measure of environmental stress in this water rich region. Reducing gallons used is not a good measure of ecological consequence. An expanded notion that incorporates timing, seasonality, and local conditions, needs to be explored.
- “Use” (a.k.a withdrawals) is a minor portion of the Great Lakes hydrologic cycle. The full hydrologic cycle, particularly runoff, needs to be considered and managed. Conserving patterns of movement is likely more important than conserving gallons.
- The timing is ripe for work to align an expanded notion of “water conservation” with ecological impact. It is possible because the science exists to make the connection. It is important because of the opportunity to inform those implementing the water conservation requirements of the Great Lakes Compact, the aging of existing water and wastewater infrastructure, and the expected future water demand in the Great Lakes Region.

Attached is a series of documents that the Fund created throughout the process: the report of the April 2009 expert workshop (that includes a white paper provided to meeting attendees), the request for preproposals the Board released in 2009, and fact sheets for the supported projects. The background materials summarize the advice we received and our funding intent.

## **Where We're At**

One of the five supported design projects has concluded and its implementation phase has commenced. This team, led by the Council of Great Lakes Industries, is testing and modifying a set of water footprinting protocols for use in the Great Lakes. That team is exploring how existing frameworks can be adapted to predict ecological impact of water conservation strategies, and to be relevant in a water-rich region.

The other four original projects are wrapping up their work. In a snapshot:

**Water and Energy Nexus team-** is currently sorting out team priorities for next steps. Competing ideas are a call for, and tools to support, integrated water and power generation planning; place-based trials of better water and power operation, and methods to reconcile what EPA envisions for cooling requirements under the new proposed 316(b) rule and the analyses required by the Compact and Regional agreement. From the project, the team has learned that EPA's new proposed rule requiring the use of cooling towers in the power generating sector is likely to create hundreds of applications for new consumptive uses of Great Lakes basin water.

**Value of Water team**—is looking for locations to pilot how ecological change can be driven by better pricing water. The team is wrestling with the fact that municipal supplies are not a large portion of water use in the region, and exploring how those uses might be examples of better withdrawal (and discharge) management across categories.

**Ecological Benefits of Water Conservation team**— has discovered that traditional uses are likely not the place to invest in conservation efforts, if ecological gain is the desired outcome. The leakage of water is a bigger issue in public supplies, and how runoff is captured, transmitted, and released present far greater gains (ecologically) than decreased residential or commercial use.

**Watershed Ecological Stewardship Strategy team**— has evaluated how water movement patterns have been disrupted in Great Lakes watersheds, and is exploring where (and how) to pilot integrated restoration efforts. The team is exploring how to shift away from centrally planned watershed strategies, to creating tools that businesses, cities, and individuals can use to better “use” water so that their watershed benefits.

Three additional projects were funded in December 2010. One team is looking at the ecological impacts of water conservation in selected industrial facilities that use public water supply, and is laying the groundwork for a basin-wide industrial water conservation assistance program. The second team is looking at the ‘virtual water’ embedded in products or services in pilot watersheds, the economic value of those uses, the relevance to the Compact, and impacts to ecosystem health. A third is looking at how vacant land might be used to restore health to water resources. We have invited representatives of those teams, and other experts to our meeting.

### **Where We Want to Go**

We hope to support a series of pilot projects later this year. These can follow directly from what the design teams hoped to build, or can be variations on the original intent, based on what has been learned. It is conceivable that one team could spawn two (or more) projects to test very different actions. It is likely that the teams best suited to conduct pilot work are composed of different members than did the planning and design work.

We have sufficient funds to support follow-up work from all teams. This is not a competition among you for limited funds, it is a challenge to all of you to find the best ideas to test in support of healthier Great Lakes.

We look forward to a productive meeting.