GREAT LAKES PROTECTION FUND

SUPPLEMENTAL REQUEST FOR PREPROPOSALS:

INFORMATION TECHNOLOGY, TRANSPARENCY, AND POSITIVE CHOICES

PREPROPOSALS DUE: APRIL 20, 2008

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SUMMARY

The Great Lakes Protection Fund seeks a suite of projects to design, deploy, and evaluate information technology prototypes that permit individuals, institutions, and/or private corporations to make healthier choices for the Great Lakes ecosystem. These prototypes will provide resource users with real-time feedback about their choices and how those choices can improve or degrade ecosystem health. Projects should use new or available technology to present opportunities for a range of actors to undertake seemingly inconsequential activities that, in aggregate, can lead to ecologically meaningful results. The Fund believes that the deployment of new or existing information technology prototypes that connect behaviors and ecosystem outcomes can push the collection of individual, isolated behaviors towards a tipping point that improves Great Lakes health. We want to support a number of project teams willing to test this hypothesis.

Like all Fund supported work, these projects should be team-based, collaborative efforts that lead to meaningful actions to restore Great Lakes' health. The most successful prototype efforts will combine cutting edge information technology skills, conservation leadership, and commercial partners willing to work together. Teams must discover new collaborative partnerships and synergies. The Fund will not support advocacy campaigns.

Five page preproposals are due by Midnight, April 20, 2008. The Fund will begin review upon receipt and earlier submittals are encouraged. In early May 2008 project teams from the selected preproposals will be invited to submit a more detailed full proposal in June 2008. Funding decisions will be made in September 2008.

BACKGROUND

Many of the problems plaguing the Great Lakes are the result of a large number of individual, seemingly inconsequential, disjointed decisions. These problems include: the widespread use of water at times that stress the infrastructure and lead to combined sewer overflows; the use of electricity during peak periods from power plants that are relatively high emitting facilities; purchasing, shipping, and other contract decisions that lead to the release of exotic species; and other manufacturing, planning, development, or land-use choices that result in toxic or nutrient pollution of the Lakes.

The common thread in these problems is that they are often the result of choices whose consequences are invisible to the decision maker—superior environmental performance cannot be selected, poor environmental performance cannot be avoided. For example, individual households that choose not run their appliances during a rainstorm are usually unaware of and not rewarded for the reduced stress on

combined sewers. Similarly, individuals or institutions that overcool their facilities during peak summer power hours are unaware of the impacts of this decision on the region's ambient air quality. The aggregate impact of such small choices can be significant enough to drive either degraded or improved ecosystem conditions.

The Fund believes that information technology can be used to increase the transparency of these seemingly inconsequential actions and provide individuals with the opportunity to make changes on basin lands, and in basin waters, to improve the ecological integrity of the Great Lakes.

PROJECT CRITERIA

The Fund wishes to support a portfolio of projects that design, test, and deploy information technology prototypes that make consequences visible to the decision maker and lead to a healthier Great Lakes ecosystem. Projects may undertake activity anywhere that affects Great Lakes' health.

The Fund wishes to support multi-institution and multi-sector project teams. Teams that design and run projects should include the full range of experts relevant to their project's expected outcome, work plan and strategy. These might include software design engineers, social networking experts, hardware developers, hydrologists, biologists, management professionals, and individuals and institutions that will test the prototypes developed.

Ideally, projects will not only include a subset of users in demonstration or pilot settings, but also be designed with the active involvement of future, potential users or customers. This strategy has proven to be the most effective way of creating a path to scale, so that the project team can influence behavior across the set of actors that affect the health of the basin. Projects that rely on a "create and disseminate" approach—building a prototype without the involvement of the basin-wide community of potential users and distributing reports, software or samples—are not encouraged.

As with all Fund-supported work, these teams must be collaborative in nature and represent the full suite of interests relevant to improving the health of water resources. The Fund will not support advocacy campaigns. Supported teams must be willing to collaborate with other grantees, Fund staff, and others in the basin to capture and share the lessons learned from the supported projects.

The Fund hopes to support an array of innovative strategies to apply information technology in actions that lead to a healthier Great Lakes ecosystem. The Fund prefers projects that target multiple sites for pilot testing, but will also consider smaller, regionally relevant projects that add value to the larger body

of work supported. Some projects could also begin as an early planning and development stage, to be implemented with future Fund support.

Projects could be financed with outright cash grants, convertible grants, debt, equity or some combination.

Each project should:

- Test a hypothesis about what behavior(s) can be changed by the provision of information in the right form at the right time and how the Lakes are likely to benefit from those changes;
- Consider possible incentives that lead to behavior change and identify the particulars of information delivery—time, granularity, and format;
- Demonstrate an innovative and scalable strategy;
- Create a prototype information system that meets an important and existing demand;
- Be a collaborative effort by a multi-institution and multi-sector team that includes users of the tools to be developed;
- Include an evaluation plan to verify and quantify the project results and test the hypothesis; and,
- Make maximum use of existing efforts and leverage Fund support as much as possible.

ELIGIBILITY

The Great Lakes Protection Fund can support a wide variety of applicants. Non-profit organizations (including environmental organizations, trade associations, and universities), governmental agencies, individuals, and for-profit businesses are eligible for Fund support. Successful applicants must maintain open access to certain project data, records and information.

All applicants must show that the proposed work has clear public benefit and that any related financial benefits will accrue to the public good. Government agencies must show that Fund support is not being used to replace or duplicate funds.

CONTENT OF PREPROPOSALS

Preproposals should include an applicant cover sheet, no more than five pages of narrative (including the project budget), and a copy of the project manager's resume. No other attachments are permitted. The Fund prefers that preproposals be submitted via e-mail.

All preproposals must be delivered to the Fund's offices no later than Midnight, April 20, 2008. The Fund will begin review upon receipt. In May 2008, the Fund expects to request more fully developed project proposals from a subset of teams submitting preproposals. Fund staff and other technical experts will review these full proposals prior to a funding decision by the Fund's Board of Directors.

In your preproposal, please address the following issues in the order below:

Ecosystem Impacts

Identify how the proposed work will improve ecosystem health and why it is important for the Great Lakes. Be as specific as possible. Please include a testable hypothesis for the project's on-the-ground work, describe the specific, exportable prototype system the team expects to create, identify how success will be measured, and explain what—if anything—must happen beyond the work proposed to ensure that these outcomes are realized.

Proposed Work

Outline the work to be carried out. Include a project timeline that contains the major interim objectives. Show how the work will lead to the expected environmental outcome identified above. Describe the human behavior the project intends to change, the incentives that will drive that change, the information technology (hardware, software, and/or data necessary) to relay those incentives, and explicitly what the team will do to demonstrate positive changes and grow the impact of the work. Describe the target audiences for the project and identify their role. Discuss how the exportable tools and other results matter to the target audiences, and lay out a strategy to engage them, even if projected environmental outcomes are not achieved.

Key Personnel

Identify the project team members (those supported by the request, by other funding sources, and volunteers), and indicate their roles, responsibilities and qualifications. By the time a full proposal is submitted (and ideally well before) the team should reflect meaningful collaboration among all interests affected by the project and include members from entities that will ultimately use the tools and approaches developed.

Financial Plan

Present the estimated costs of the proposed work in summary categories: personnel, equipment and supplies, travel, consultants, overhead, etc. The Fund will not support overhead costs in excess of 15% of

the direct project costs (excluding travel and sub-contracts.) Identify the type and amount of support requested of the Fund. Identify how other monies will be raised to support the proposed work.

Submit a single copy via e-mail to:
TransparencyandchoiceRfP@glpf.org

If electronic submission is not possible, submit six (6) copies via mail to:
Preproposal:
Great Lakes Protection Fund
1560 Sherman Ave., Suite 880
Evanston, IL 60201
Fax: 847.424.9832

Visit the Fund's Information Technology RfP website to find important links to *Project Ideas*, *Frequently Asked Questions*, and *Additional Resources*.

CALENDAR

March 2008
Requests for Preproposals

April 20, 2008
Preproposal Submissions Due
(Note—Preproposals will be reviewed as received. Early submissions are strongly encouraged so that Staff may provide feedback on project ideas, team membership, etc.)

May 2008
Full Proposals Invited

Summer 2008
Full Proposal Review and Revision

September 2008
Announcement of Awards

INFORMATION TECHNOLOGY, TRANSPARENCY, AND POSITIVE CHOICES
POSSIBLE PROJECT IDEAS

The Fund is interested in supporting projects that use information technology to help shape behaviors in ways that generate beneficial effects for the physical[1], chemical[2], and biological integrity[3] of the basin's ecosystem.

The following is an illustrative list of what project teams might do. Depending on how they are designed and executed, they may or may not ultimately fit our funding criteria. This list is not a specification sheet, a desired product list, or in any way meant to constrain what applicants should consider proposing. Please consider this as a starting point for what teams might propose doing with new information technology or innovative applications of current technologies to improve ecosystem health. Do not be bound by the handful of ideas listed below.

Water metering programs that affect the timing and amount of water use. Projects could: link residential and commercial users to real-time meters and pricing information, to test how customer demand is shaped; test "curtailment" programs that, for a financial incentive, stop uses during periods of high demand and/or high sensitivity to releases; track agricultural products grown without irrigation or without artificial drainage, verify the physical integrity improvements achieved and produce a label that allows consumers to select water positive products.

Wet weather monitoring/management programs that: link collective user activities or land use changes to CSO/SSOs release reductions and in-stream impacts; or, test the performance of agricultural practices and cropping decisions on groundwater and surface water levels to identify incentives for farmers to "grow water".

Build-out scenario systems that explicitly and visually represent the water-impacts of developing to the limits of planning and zoning codes or other "rules." The project would represent the aggregate effects of

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[1] Physical integrity refers to the pattern of water and sediment movements that are sufficient to support the biological community native to the aquatic system. This means that water is at the right place at the right time, and in the right amounts.
[2] Chemical integrity means that the waters of the Great Lakes are virtually free of toxic chemicals, that humans and wildlife are virtually free of bioaccumulating chemicals, and the Lakes are not impaired by excess nutrients.
[3] Biological integrity refers to the full complement of biota native to the waters of the Great Lakes, living in balance with one another and the environment.

development upon built (sewers, water supplies) and green infrastructure (streams, rivers, wetlands, coastlines) to illustrate the differential impacts of various systems of incentives and disincentives. Actors would be able to better identify, build, and execute projects that consider the collective, aggregate impacts of their land-use decisions (or development management systems) on ecosystem health.

Infrastructure visualization software that forecasts the ecological impacts (i.e. long-term drainage, soil permeability, changes to instream flow patterns) of public infrastructure projects through their entire lifecycle, testing climate scenarios and the growth consequences of public investment.

Electronic registries that measure and verify the positive ecological impacts of innovative actions, such as green infrastructure development or water conservation programs. Projects could showcase leaders and report on the environmental consequences of their actions, thereby creating an incentive to replicate or improve such actions.

A publicly available expert system for permit applicants that provides ecosystem positive treatment technologies for a set(s) of dischargers in the basin could be developed to complement the regulatory and public involvement practices currently required by law. This could include participation from public NGOs, regulators, and dischargers.

Purchasing programs that identify "clean practices/practitioners" and make them available to buyers and sellers throughout a product's value chain. For example, "clean/water-friendly" biofuels could be identified based on the growers' practices. Additionally, the basis for existing certifications/labels could be promoted through mobile or internet technologies for products already known to be environmentally superior.

Electronic delivery/solicitation of fish advisories could be made available on mobile devices to inform consumers at the point of purchase or consumption based upon state-specific pollutant criteria.

An ecological early warning system for the Great Lakes. This project could develop a prototype "immune" system that generates automatic warnings of potential ecological harm and engages/manages/deploys methods to mitigate or eliminate the detected threat.

Real-time energy impact monitors that use dispatch data to show the real-time environmental consequence of energy generation. For example, a project could identify the energy-related emissions

associated with water withdrawal, delivery, and treatment and track the ecological consequences of the emissions reductions achieved through water conservation programs.

A clean packaging system where all shipping containers are verified to be free of invaders. This system would make it easy to comply with existing laws and allow shippers/carriers to differentiate themselves as Great Lakes-compatible.

A clean shipping system, such as one that allows brokers, agents, and shipping managers to choose clean vessels based on routes, risks, and management measures. The project could include ship tracking, management oversight/reporting, risk modeling, and "certification".

An interactive website for the purchase of live organisms that allows consumers to select products from those vendors that have adopted "safe trade" practices. Such practices might consider: safe transport, safe disposal, bar coding, and point of purchase information. The project could utilize web data bases, data-mining throughout the value chain, and a certification system for "best practices".

A citizen's based invasive species alert network that equips individuals with GPS enabled phone cameras linked to digital identification databases. Participants would be able to take photos, automatically download species information, and simultaneously update publicly available first responder networks and/or digital maps.

Port alert network that allows port operators to link digital images of incoming ships with the ecological and human health conditions associated with the ship's travel history, onboard treatment equipment, chemical profile of the ship's ballast tanks, and the cargo history. This network could also include managers of public water supplies and the range of first responders for human health threats.

INFORMATION TECHNOLOGY, TRANSPARENCY AND POSITIVE CHOICES

FREQUENTLY ASKED QUESTIONS

Updated: 3/7/08

Q: What, in your view, is Information Technology (IT)?

In the context of this RfP, IT is the use of computers, software, and communication technologies in the service of improving the health of the Great Lakes. Experts we have contacted suggest that web-based applications, internet tools, datamining, the use of mobile devices, and data visualization technologies are under-deployed in this area. The Fund wants to advance the state-for-practice in the Great Lakes and the state-of-the-art globally. Much of the technology may not be novel, but the application of this technology to the issues affecting ecosystem health will be.

Q: Will you support the update and/or creation and maintenance of existing/new database systems?

It depends. The purpose of this set of projects is to build pervasive, interactive systems for people to receive information about the choices they are making, allow them to make healthier choices for the Great Lakes ecosystem, and validate the environmental impact of those choices. The goal of this work is not to maintain or add information to existing data repositories. However, this work may result in new information repositories or data that is added to existing databases as the prototypes are built and tested.

Q: There are a number of data resources pertaining to the Great Lakes currently available. It seems that an evaluation of existing resources must be done before any go-forward action can be taken in this area. Will you support such an evaluation?

It is unlikely that we will support descriptive, evaluation-based projects that will solely result in a set of go-forward recommendations for others to implement. The Fund is interested in projects that acknowledge the existence of current resources and build tools that harness information technology to use and/or move beyond the current data sets to inform individuals and institutions of healthier, ecosystem positive choices for the Great Lakes. We hope to see teams propose efforts that apply existing data to lead to action.

Q: How many proposals will you support?

We do not have a specific target number of projects in mind. Past RfPs have typically resulted in six to ten projects. The Fund does hope to support a portfolio of complimentary projects.

Q: Will the Great Lakes Protection Fund support projects other than those submitted in response to this RfP?

Yes. This RfP is developed to supplement our general funding guidelines. Other project ideas that are consistent with those guidelines are welcomed at any time.

Q: How much money should I ask for?

Budget requests should reflect the full amount of funds necessary to complete the work. The average level of support has been $150,000-$250,000, but budgets in the past have ranged from $15,000 to $1.5M. Matching funds are not necessary. If the team has acquired matching funds, please indicate that in the preproposal budget.

Q: What is a reasonable timeline for a project?

The project should last as long as necessary to complete the work. Projects that last for multiple years are typical.

Q: Does my organization need to be located in the basin or a Great Lakes state to qualify for funding?

No. Activities affecting the basin's ecosystem are becoming increasingly distant in space and time from the shores of the lakes. The solutions will be as well.

Q: I have a project idea related to the RfP that was not included in the project descriptions; can I still submit a preproposal?

Yes. Teams are encouraged to submit ideas that meet the intent of the RfP whether they appear as an illustrated idea or not. We expect that many teams will propose different, and better ideas than those presented as illustrations. The list of projects is meant to be illustrative of ideas of the types of projects that teams could consider and improve upon. It should not be considered an exhaustive or exclusive list.

Q: I have a project idea, but I have not secured a commitment from many of the team members; can I still submit a preproposal?

Yes. The Fund recognizes that it may be difficult to secure a commitment from all of the necessary team members prior to the preproposal submission deadline. However, if a full proposal is invited, the project manager must have a complete team assembled prior to the full proposal submission.

Q: I have a project idea, but I am having difficulty securing a partner to test the prototype. Will you provide support for my current team to work on the early stages of prototype development and to secure a final pilot group for testing?

The Fund has provided small planning grants for projects that require additional groundwork and team-building before a full project can be undertaken. If the project idea is particularly innovative, the Fund may consider such an option.

Q: What factors will you consider in the preproposal evaluation process?

The most successful preproposals will identify novel strategies to build and deploy information technology to improve ecosystem health. We will evaluate proposals on their potential to create positive ecological change in the basin; the amount of innovation in the proposed strategy; the level of collaboration from the full range of stakeholders; and how well the proposed effort fits in a portfolio of supported projects. Each individual project should create a prototype system that can be tested during the project, be a collaborative effort that includes users of the tools developed, and include sufficient evaluation to verify and quantify the project results. Teams should consider the particulars of information to be delivered including its format, timing, and granularity (level of detail). Successful preproposals will likely include innovative incentives for behavior change.

Q: How is the work supported in this RfP different from current and future work of programs like the Great Lakes Observing System (GLOS) and the Great Lakes Information Network (GLIN)?

Projects will complement these activities, especially the data gathering and clearinghouse applications of GLOS and GLIN respectively. The Fund does not wish to replicate efforts currently underway in the basin, and does not envision providing support to efforts that compete with those initiatives. In particular, teams should seek to enhance these resources with new, advanced, and practical analytic, mobile, interactive, and datamining capabilities.

Q: What do you mean by "the particulars of information delivery – time, granularity and format"?

In order to influence and change behaviors that lead to a healthier ecosystem, projects should consider the set of details that make the information and/or incentive delivery the most valuable. Based upon our discussions with information technology experts these details include: the time and frequency at which that information is delivered, the granularity or level of detail of the information provided (i.e. ballast tank v. individual vessel information v. annual ship traffic; gallons of water discharged each minute v. gallons used per month; or, emissions released at this moment v. emissions released last year), and the form in which the information is conveyed (i.e. rss feed, custom dashboard, mobile alert, etc.).

INFORMATION TECHNOLOGY, TRANSPARENCY, AND POSITIVE CHOICES
ADDITIONAL RESOURCES

Examples of related projects, complementary initiatives, and allied activities are provided below. Some of these are clearly outside the scope of what the Fund would support. However, many illustrate the power of coupling information technology and ecological health. The Fund hopes that teams proposing projects will build on the strengths of these efforts. These links are solely provided as inspiration. The Fund, its employees, directors, and/or members offer no endorsement of any of the sites or products below.

Currently Available Tools:

http://www.ineedtobreatheplease.com/maintenant/
A mobile, mp-3 compatible air quality monitor that can be plugged into an i-pod and alert the user of potentially harmful air quality conditions throughout their day.

http://therealcosts.com/
A Firefox plug-in that calculates the travel-related CO_2 emissions associated with certain transportation purchasing decisions. The goal of this plug-in is to increase the environmental awareness of an individual's day-to-day life with respect to carbon emissions. The Fund might be interested in a similar project that looks at the water impacts of these or similar purchasing decisions.

http://www.badbuster.com/
This is a Windows Explorer plug-in that tags company brand names as good (green), so-so (yellow) and bad (red) as they appear in your web browser. The Fund might be interested in supporting a collaborative project that highlights Great Lakes "friendly" products, firms, or value chains.

http://www.vesseltracker.com
Vesseltracker allows individuals access to ship traffic information via a range of free and for-fee products. A free Google Earth plug-in that allows people to visualize ship traffic positions as reported from the Automatic Identification System (AIS) required of commercial vessels. This can be found at: http://www.vesseltracker.com/GoogleEarthKML/vesseltrackerlight.kmz. For areas not currently in their system, they offer a receiver/uplink kit. If you live in the region, Vesseltracker will provide you with access to ship data around the globe if you provide them with an antenna location in that area and the installation of the AIS software package. See: http://www.vesseltracker.com/en/Installation-Kit.html for more information.

http://www.breathingearth.net

A presentation of carbon dioxide levels emitted for countries around the world coupled with the number of demographic changes that are likely occurring as you watch.

http://earth.google.com/outreach/env_science.html

Environment related KMLs (Google Earth layers) developed for Google Earth.

http://www.superfund365.org/

Conceived and designed by Brooke Singer, this is an online data visualization application with an accompanying RSS-feed of Superfund sites across the United States. They visit one site each day for a year and develop creative displays of toxicity and other site specific information.

http://www.willyoujoinus.com/

An interactive game supported by Chevron that lets the user select among different energy resources to power their city, and in turn, their daily lives. This site allows people to understand the economical and environmental impacts of their decisions.

http://www.urban-atmospheres.net/Experiments/Ergo/index.html

Mobile devices equipped with air quality sensors that allow individuals and communities to interact and understand the quality of air in their immediate surroundings.

http://www.urban-atmospheres.net/ParticipatoryUrbanism/index.html

This site describes the concept of participatory urbanism – communities of individuals linked through mobile technology to provide environmental and social information related to a particular urban area. The concept is currently focused on air quality measures and provides examples of how it has been and can be used. However, this concept is not limited to air quality and can be tested in other applications to change behaviors that lead to additional ecosystem improvements.

http://carma.org/

This website displays carbon emission levels of power plants around the globe. The visual display of red, yellow and green expandable circles is backed up by carbon dioxide levels reported by utility plants. The Fund might be interested in a collaborative project that highlights efficient use, or rehabilitation of Great Lakes resources.

http://www.ilovemountains.org/myconnection/

This website directly connects the energy used by an individual (or organization) with the source coal and details how that coal was mined. It is targeted at raising the awareness of individuals to a type of coal mining that the authors consider particularly detrimental to ecosystem health. The Fund might be interested in efforts to link consumers to the beneficial effects of Great Lakes "friendly" purchasing choices.

http://www.sierraclub.org/environmentallaw/coal/plantlist.asp

This site provides up-to-date status on proposed coal-fired power plants in their area, including investors and financiers. The Fund might be interested in collaborative efforts that illustrate which value chains create Great Lakes benefits, and link consumers to them.

http://earth.google.com/outreach/program_details.html

This Google Earth resource link allows non-profits to use different applications within Google Earth to further their mission.

http://nature.berkeley.edu/infolab/projects/informationtoolsdevelopmentproject

An information tools development project at Berkley that is trying to use the mobile phone (a ubiquitous part of our society) to deliver consumer relevant health, environmental and social information.

http://www.equator.ac.uk/

Information on the Equator project that tested linkages between the digital and physical world to influence behavior/experiences and improve the quality of life.

News & Articles:

http://whysustain.us/

This is a blog site for "sustainability" professionals to provide their perspective and project ideas on innovations in the field.

http://www.wired.com/techbiz/it/magazine/15-07/ff_maps

This article describes how the availability of Google maps and Google Earth has changed how people interact and the availability of new software developments in real-time.

http://gristmill.grist.org/story/2007/10/3/103644/416

This article summarizes the new 'fishphone' technology developed by Monterey Bay aquarium that allows seafood purchasers and consumers to text the name of a food item to an automated service. The service then sends consumers feedback on the environmental friendliness of that particular seafood item, such as how it was harvested or the contaminants it contains.

http://www.startribune.com/389/story/1457997.html

This article lists and describes a handful of interactive websites that allow people to visualize information in a different way.

http://www.timesonline.co.uk/tol/news/uk/science/article2609451.ece

http://www.vosizneias.com/2007/10/london-smart-shopping-carts-is-battle.html

These news articles describe a new shopping cart that counts the calories and nutritional value of foods added during an individual trip to the grocery store. In a similar vein, what ecological information can be tracked and displayed (at a grocery store or other retail or wholesale establishment) to change an individual's purchasing behavior?

Data Visualization: People, Concepts, etc.

http://www.eyebeam.org/learning/eco_vis02.php

The main website for a design challenge where individuals are asked to create new and innovative ways to display ecological impact data and information.

http://www.globalscorecard.net/guide_to_ECR/I02.asp

This website describes how to follow the value of a particular service or resource through the business supply chain. Such practices would be necessary to truly understand the ecological inputs and outputs of a particular decision or manufacturing process.

http://www.mulbrandon.com/portfolio.html

This website demonstrates unique and compelling ways to correlate and display data.

http://www.gapminder.org/video/talks

Examples of different methods to interpret and display data and information.

http://www.visualizingeconomics.com/

"Making the 'invisible hand' visible". This site displays global economic and growth information.