

# Great Lakes Protection Fund

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2018 Annual Report



## Background

In 1989, the governors of the Great Lakes states created the Protection Fund to help them protect and restore their shared natural resources. The Fund is the first private endowment created to benefit a specific ecosystem. It is designed to support the creative work of collaborative teams that test new ideas, take risks, and share what they have learned. It is a source of financial support for groups that value innovation and entrepreneurship, focus on tangible benefits for the Great Lakes ecosystem, and learn by doing. Seven Great Lakes states contributed \$81.0 million to the Fund's permanent endowment.

The Fund does three things. First, it invests the endowment to produce income. This income supports regional projects, member states' individual Great Lakes priorities, and operations. Second, it designs and finances regional projects. These projects identify, demonstrate, and promote regional action to enhance the health of the Great Lakes ecosystem. Third, it monitors those regional projects to ensure that they are successful, modified when necessary, or terminated if they are not creating value for the ecosystem.

From its inception through December 2018, the Fund has made a total of 277 grants and program-related investments, representing an \$84.4 million commitment to protecting and restoring the ecological health of the Great Lakes ecosystem. Additionally, the Fund has paid \$51.5 million directly to its seven member states to support their Great Lakes priorities. Over the course of the past 29 years, the Great Lakes ecosystem has benefited from the States' initial investment of \$81.0 million with an overall commitment of \$135.9 million.

## Governors' Ongoing Priorities

From time to time the governors establish, modify and renew their ongoing Great Lakes priorities. Currently, the Fund's goals are responsive to the governors' stated priorities including the following:

- Ensure the sustainable use of our water resources while confirming that the States retain authority over water use and diversions of Great Lakes waters.
- Promote programs to protect human health against adverse effects of pollution in the Great Lakes ecosystem.
- Control pollution from diffuse sources into water, land and air.
- Continue to reduce the introduction of persistent bioaccumulative toxics into the Great Lakes ecosystem.
- Stop the introduction and spread of non-native aquatic invasive species.
- Enhance fish and wildlife by restoring and protecting coastal wetlands, fish and wildlife habitats.
- Restore to environmental health the Areas of Concern identified by the International Joint Commission as needing remediation.
- Standardize and enhance the methods by which information is collected, recorded and shared within the region.



- Adopt sustainable use practices that protect environmental resources and may enhance the recreational and commercial value of our Great Lakes.

### **Activities During 2018**

In the past year, the Fund generated over \$5 million in investment income from the endowment. The Fund returned \$1.1 million to its member states to support their Great Lakes priorities. The Fund paid \$2.9 million to support regional projects. Audited financial statements can be found in Appendix 1.

Over the course of the year, the Fund hired David Rankin as executive director to replace Lee Swindall whom retired. The Fund completed a new strategic plan to better focus its work on the governor's shared priorities for the basin. The Fund also adopted a new communications strategy to more deeply engage with the Great Lakes communities and showcase the impact of its work.

The Fund entered 2018 with 18 active projects focused on efforts to prevent biological pollution, restore natural flow regimes, stimulate market forces to adopt best practices and promising technology solutions, and provide leadership for ecosystem restoration in the Great Lakes Basin. These projects represented an investment by the Fund of \$13 million.

Throughout the year, work was completed on four of these projects. These projects are identified in Appendix 2. All projects generated new and useful tools that will ultimately improve the health of the Great Lakes ecosystem. Each project provided a unique and positive mission-related return on the Fund's investment.

During 2018, the Fund developed and supported six new projects, growing the portfolio of active, supported work to more than \$16 million. These projects will help to achieve the Governors' objectives of controlling pollution from diffuse sources into water, land and air; continuing to reduce the introduction of persistent bioaccumulative toxics into the Great Lakes ecosystem; and, adopting sustainable use practices that protect environmental resources and may enhance the recreational and commercial value of our Great Lakes. The complete portfolio of supported work can be found in Appendix 3.

### **Evaluation of the Corporation's Performance**

The Fund accomplished its objectives in 2018. Regional projects were designed and funded to address key gubernatorial priorities. Ongoing regional efforts were monitored, adjusted when required, and closed out when appropriate. Significant funds totaling \$1.1 million were paid directly to the member states to support their individual priorities.

### **Emerging Trends and Future Needs**

The Governors have identified their priorities for Great Lakes Basin ecosystem protection and restoration. The Fund will continue its multi-year research agenda in support of these priorities, emphasizing efforts to ensure the sustainable use of basin water resources, control diffuse pollution, and limit the impact of invasive species.

### **Actions Taken by the Directors in Response to Public Comments**

The Directors have sought, but not received, public comments on this report.



# Members of the Corporation in 2018

## **Governor of Illinois**

Bruce Rauner

## **Governor of Michigan**

Rick Snyder

## **Governor of Minnesota**

Mark Dayton

## **Governor of New York**

Andrew Cuomo

## **Governor of Ohio**

John Kasich

## **Governor of Pennsylvania**

Tom Wolf

## **Governor of Wisconsin**

Scott Walker



## Board of Directors in 2018

Kate Bartter (Columbus, OH) *Appointed, March*

Timothy Bruno (Erie, PA) *Appointed, May*

Vita DeMarchi (Syracuse, NY)

Kendra Fogarty (Chicago, IL)

Patricia Glaza (Royal Oak, MI)

Peter Gove (St. Paul, MN)

Richard Hylant (Ottawa Hills, OH)

Jill Jedlicka (Lancaster, NY)

Jeffrey Logan (Mechanicsburg, PA) *Replaced, May*

Andrew McElwaine (Pittsburgh, PA) *Appointed, May*

Richard Meeusen (Pewaukee, WI)

Don Ness (Duluth, MN)

Mark Meijer (Grand Rapids, MI)

Kevin Shafer (Milwaukee, WI)

Debra Shore (Skokie, IL)



# Great Lakes Protection Fund Staff

Simon Belisle – Project Development Manager

Shannon Donley – Project Implementation Manager

Amy Elledge – Communications Manager

Mariela Lawrence – Office Administrator

Drew Pfeifer – Vice President of Operations

Janis Post – Business Manager

David Rankin – Executive Director

Lee Swindall – Executive Director, *Retired, March*



# Appendix 1

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## 2018 Audited Financial Statements



## **Great Lakes Protection Fund**

Financial Report  
December 31, 2018





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## Independent Auditor's Report

RSM US LLP

To the Board of Directors  
Great Lakes Protection Fund

### Report on the Financial Statements

We have audited the accompanying financial statements of Great Lakes Protection Fund (the Fund), which comprise the statements of financial position as of December 31, 2018 and 2017, the related statements of activities and cash flows for the years then ended, and the related notes to the financial statements.

### Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

### Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Great Lakes Protection Fund as of December 31, 2018 and 2017, and the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

### Emphasis of Matter

The Fund adopted ASU 2016-14, *Not-for-Profit Entities (Topic 958): Presentation of Financial Statements of Not-for-Profit Entities*, during 2018. The adoption of the standard resulted in additional footnote disclosures and significant changes to classification of net assets and the disclosures related to net assets. Our opinion is not modified with respect to this matter.

**RSM US LLP**

Chicago, Illinois  
March 15, 2019

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# **Great Lakes Protection Fund**

## **Statements of Financial Position December 31, 2018 and 2017**

	2018	2017
<b>Assets</b>		
Cash and cash equivalents	\$ 6,648,502	\$ 2,965,394
Investments	117,959,945	135,365,740
Accrued interest	62,816	58,176
Other assets	104,667	13,963
Furniture, equipment and leasehold improvements, net of accumulated depreciation of \$61,329 and \$54,143 in 2018 and 2017, respectively	22,210	21,289
	<b>\$ 124,798,140</b>	<b>\$ 138,424,562</b>
<b>Liabilities and Net Assets</b>		
Liabilities:		
State shares payable	\$ 1,135,900	\$ 1,148,801
Accrued expenses	169,906	130,760
	<b>1,305,806</b>	<b>1,279,561</b>
Net assets:		
Without donor restrictions	5,236,610	5,153,235
With donor restrictions	118,255,724	131,991,766
	<b>123,492,334</b>	<b>137,145,001</b>
	<b>\$ 124,798,140</b>	<b>\$ 138,424,562</b>

See notes to financial statements.



## Great Lakes Protection Fund

### Statements of Activities Year Ended December 31, 2018

	Without Donor Restrictions	With Donor Restrictions	Total
Income:			
Realized investment income and gains, net	\$ 33,965	\$ 5,034,341	\$ 5,068,306
Miscellaneous revenue	-	967	967
Net assets released from restrictions	5,746,414	(5,746,414)	-
	<u>5,780,379</u>	<u>(711,106)</u>	<u>5,069,273</u>
Expenses:			
Mission			
Regional grant payments	2,951,747	-	2,951,747
State shares	1,135,900	-	1,135,900
Salaries and benefits	622,842	-	622,842
Facilities	95,367	-	95,367
Other mission expenses	135,843	-	135,843
	<u>4,941,699</u>	<u>-</u>	<u>4,941,699</u>
Management and general			
Salaries and benefits	487,376	-	487,376
Facilities	101,291	-	101,291
Other management and general expenses	216,051	-	216,051
	<u>804,718</u>	<u>-</u>	<u>804,718</u>
Total expenses	<u>5,746,417</u>	<u>-</u>	<u>5,746,417</u>
<b>Increase (decrease) in net assets before other items</b>	33,962	(711,106)	(677,144)
Unrealized gains (losses)	49,413	(13,024,936)	(12,975,523)
<b>Increase (decrease) in net assets</b>	83,375	(13,736,042)	(13,652,667)
Net assets:			
Beginning of year	5,153,235	131,991,766	137,145,001
End of year	<u>\$ 5,236,610</u>	<u>\$ 118,255,724</u>	<u>\$ 123,492,334</u>

See notes to financial statements.



## Great Lakes Protection Fund

### Statements of Activities Year Ended December 31, 2017

	Without Donor Restrictions	With Donor Restrictions	Total
Income:			
Realized investment income and gains	\$ 79,385	\$ 5,265,283	\$ 5,344,668
Miscellaneous income	-	1,338	1,338
Net assets released from restrictions	5,583,696	(5,583,696)	-
	<u>5,663,081</u>	<u>(317,075)</u>	<u>5,346,006</u>
Expenses:			
Program grants	2,546,264	-	2,546,264
Other program activities	870,548	-	870,548
State shares	1,148,801	-	1,148,801
Investment management and advisory fees	143,383	-	143,383
Administrative expenses	882,198	-	882,198
	<u>5,591,194</u>	<u>-</u>	<u>5,591,194</u>
<b>Increase (decrease) in net assets before other items</b>	71,887	(317,075)	(245,188)
Unrealized (losses) gains	(53,754)	13,189,724	13,135,970
<b>Increase in net assets</b>	18,133	12,872,649	12,890,782
Net assets:			
Beginning of year	5,135,102	119,119,117	124,254,219
End of year	<u>\$ 5,153,235</u>	<u>\$ 131,991,766</u>	<u>\$ 137,145,001</u>

See notes to financial statements.



## Great Lakes Protection Fund

### Statements of Cash Flows Years Ended December 31, 2018 and 2017

	2018	2017
Cash flows from operating activities:		
Cash provided by dividends, interest, and miscellaneous	\$ 5,134,151	\$ 3,314,658
Cash payments for grants	(3,042,396)	(2,546,264)
Cash payments for state shares	(1,148,801)	(1,136,168)
Cash payments for salaries and benefits	(1,155,045)	(1,242,506)
Cash payments for facilities	(196,810)	(186,969)
Cash payments for investment management and advisory fees	(142,458)	(121,183)
Cash payments for other operating expenses	(331,967)	(405,393)
<b>Net cash used in operating activities</b>	<b>(883,326)</b>	<b>(2,323,825)</b>
Cash flows from investing activities:		
Purchases of investments	(9,081,704)	(19,792,663)
Proceeds from sales of investments	13,656,245	20,726,775
Purchases of furniture, equipment and leasehold improvements	(8,107)	-
<b>Net cash provided by investing activities</b>	<b>4,566,434</b>	<b>934,112</b>
<b>Increase (decrease) in cash and cash equivalents</b>	<b>3,683,108</b>	<b>(1,389,713)</b>
Cash and cash equivalents:		
Beginning of year	2,965,394	4,355,107
End of year	<b>\$ 6,648,502</b>	<b>\$ 2,965,394</b>

See notes to financial statements.



## Great Lakes Protection Fund

### Notes to Financial Statements

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#### Note 1. Nature of Activities and Significant Accounting Policies

Great Lakes Protection Fund (the Fund) is a nonprofit organization designed to have as its members the governors of the eight states bordering on the Great Lakes. Seven of the states have joined the Fund and have made contributions, as specified in the Fund's articles of incorporation, to establish their membership in the Fund. Income earned on the contributions is used to provide grants which finance projects advancing the health of the ecosystem of the Great Lakes Basin.

**Basis of accounting:** Under accounting principles generally accepted in the United States of America, not-for-profit organizations report net assets in two classes: net assets with donor restrictions or net assets without donor restrictions based on the existence or absence of donor-imposed restrictions.

**Cash and cash equivalents:** For purposes of the statements of cash flows, the Fund considers all highly liquid debt instruments purchased with a maturity of three months or less to be cash equivalents.

The Fund maintains cash accounts at financial institutions, which at times may exceed \$250,000. A significant portion of cash equivalents is invested in interest-bearing money market accounts. Such amounts are insured by the Federal Deposit Insurance Corporation up to \$250,000 per taxpayer ID number. The Fund has not experienced any losses in such accounts. Management believes that the Fund is not exposed to any significant credit risk on cash and cash equivalents.

**Investments:** Investments are reflected at fair value based on quoted market prices. Realized gains on the sale of mutual funds are computed using the specific-identification method. Realized gains on the sale of other investments are computed using the first-in, first-out method. Interest is recorded on the accrual basis. Dividend income is recorded on ex-dividend date. Endowment fund investment income or loss (including gains and losses on investments, interest and dividends) is recorded as increases or decreases in net assets with donor restrictions until appropriated for expenditure by the Fund. Other investment income or loss is included in the statement of activities as increases or decreases in net assets without donor restrictions unless the income or loss is restricted by donor or law. Changes in fair value are recorded as unrealized gains/losses in the statements of activities.

The Fund invests in various investments. Such investments are exposed to various risks such as interest rate, market and credit risk. Due to the level of risk associated with certain investments, it is at least reasonably possible that changes in the values of investments will occur in the near term and that such changes could materially affect the amounts reported in the statements of financial position.

**Furniture, equipment and leasehold improvements:** Furniture, equipment and leasehold improvements are stated at cost. Depreciation is recorded on a straight-line basis over the estimated useful lives of the assets ranging from three to seven years. Leasehold improvements are amortized over the lesser of useful life or lease term.

**Grant commitments:** Payment of grants beyond the initial installments is contingent on the satisfaction by the recipients of agreed-upon requirements. Unpaid amounts are accrued only if the contingencies have been met. Most grants cover a three-to-five year period.

**State shares:** In accordance with the articles of incorporation, the Fund is required to disburse to the member states one-third of its realized income after deducting operating expenses, excluding grants. Amounts paid to the states are to be used for the furtherance of the Fund's activities and are allocated on the basis of the state's respective contribution.

**Functional expenses:** The costs of providing the Fund's mission and other activities have been summarized on a functional basis in the statements of activities. Accordingly, certain costs have been allocated among mission and management and general expenses.



## Great Lakes Protection Fund

### Notes to Financial Statements

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#### Note 1. Nature of Activities and Significant Accounting Policies (Continued)

The financial statements report certain categories of expenses that are attributed to more than one function. Therefore, expenses require allocation on a reasonable basis that is consistently applied. The expenses that are allocated include salaries and benefits, which are allocated on the basis of estimates of time and effort, as well as facilities, which are allocated on a square footage basis.

**Use of estimates:** The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions affecting the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements, as well as the reported amounts of revenue and expenses during the reporting period. Actual results could differ from the estimates.

**Income taxes:** The Fund is exempt from income taxes under Section 115(1) of the Internal Revenue Code and applicable state law.

The Fund follows the accounting guidance related to accounting for uncertainty in income taxes, which addresses the determination of whether tax benefits claimed or expected to be claimed on a tax return should be recorded in the financial statements. Under this guidance, the Fund may recognize the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by taxing authorities, based on the technical merits of the position. Examples of tax positions include the tax-exempt status of the Fund and various positions related to the potential sources of unrelated business taxable income. The tax benefits recognized in the financial statements from such a position are measured based on the largest benefit that has a greater than 50 percent likelihood of being realized upon ultimate settlement. At December 31, 2018 and 2017, there were no unrecognized tax benefits identified or recorded as liabilities.

**Adopted accounting pronouncement:** In the current year, the Fund adopted Accounting Standards Update (ASU) 2016-14, *Not-for-Profit Entities (Topic 958): Presentation of Financial Statements of Not-for-Profit Entities*. This guidance is intended to improve the net asset classification requirements and the information presented in the financial statements and notes about a not-for-profit entity's liquidity, financial performance, and cash flows. The main provisions of this guidance include: presentation of two classes of net assets versus the previously required three; additional disclosures useful in assessing liquidity within one year of the financial position date; new reporting requirements related to expenses including disclosure of expenses by both nature and function; and reporting of net investment return. Certain provisions, as required, have been applied retrospectively to 2017. Amounts previously reported as temporarily or permanently restricted have been reclassified to be reported as with donor restrictions.

**Recent accounting pronouncements:** In January 2016, the Financial Accounting Standards Board (FASB) issued ASU 2016-01, *Financial Instruments—Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*, which updates certain aspects of recognition, measurement, presentation and disclosure of financial instruments. ASU 2016-01 will be effective for the Fund in 2019. This standard impacts disclosures only and will not have a significant impact on the financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. The guidance in this ASU supersedes the leasing guidance in Topic 840, *Leases*. Under the new guidance, lessees are required to recognize lease assets and lease liabilities on the statement of financial position for all leases with terms longer than twelve months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the statement of activities. The new standard is effective for the Fund in 2020; early adoption is permitted. The Fund is currently evaluating the impact of the adoption of this standard on its financial statements.





## Great Lakes Protection Fund

### Notes to Financial Statements

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#### Note 1. Nature of Activities and Significant Accounting Policies (Continued)

In June 2018, the FASB issued ASU 2018-08, Not-for-Profit Entities (Topic 958): *Clarifying the Scope and the Accounting Guidance for Contributions Received and Contributions Made*. This ASU provides guidance surrounding the categorization of certain transactions as contributions or exchange transactions. It further clarifies when contributions should be deemed conditional. The new standard is effective for the Fund in 2020; early adoption is permitted. The Fund is currently evaluating the impact of the adoption of this standard on its financial statements.

**Reclassifications:** Certain amounts on the 2017 financial statements have been reclassified to conform to the current year presentation. These reclassifications have no effect on the net assets or changes in net assets as previously reported.

**Subsequent events:** The Fund has evaluated subsequent events for potential recognition and/or disclosure through March 15, 2019, the date the financial statements were available to be issued.

#### Note 2. Liquidity and Availability

The Fund regularly monitors liquidity to meet its grant payments, operating needs and the annual state share payments (general expenditures). The Fund relies on investment income and available financial assets to meet general expenditures over the next 12 months.

The tables below present information related to financial assets available for general expenditures within one year at December 31, 2018:

Financial assets at year-end:	
Cash and cash equivalents	\$ 6,648,502
Investments	117,959,945
Accrued interest	62,816
	<u>\$ 124,671,263</u>
Financial assets not available for general expenditures within one year:	
Donor restricted endowment	\$ 81,000,000
Donor restricted earnings on endowment not appropriated for 2019 general expenditures	31,897,653
	<u>\$ 112,897,653</u>
Financial assets available for general expenditures within one year:	
2019 endowment appropriation for general expenditures	\$ 6,537,000
Investments without donor restriction	5,236,610
	<u>\$ 11,773,610</u>

Cash and cash equivalents are available on demand. All investments at year-end can be converted to cash within three days of a sale.



## Great Lakes Protection Fund

### Notes to Financial Statements

#### Note 3. Investments

Investments consist of the following:

	2018	
	Cost	Fair Value
Exchange-traded funds:		
Global equity:		
Global equity index	\$ 6,078,632	\$ 6,598,857
Mutual funds:		
Domestic equity:		
Large cap index	18,784,498	38,898,257
Mid cap index	4,851,399	5,522,322
Small cap	4,853,386	5,536,468
International equity:		
Emerging markets	5,800,000	5,260,346
Small cap index	3,430,153	2,972,617
International value	8,802,777	9,044,635
Developed markets index	2,000,000	2,013,850
Fixed income:		
Core plus	13,900,000	13,243,751
Core	6,600,000	6,249,820
Strategic income	8,938,591	8,443,904
Short-term Treasury	4,150,000	4,108,110
Intermediate-term Government	5,000,000	4,893,225
U.S. government securities	5,221,081	5,173,783
	<u>\$ 98,410,517</u>	<u>\$ 117,959,945</u>
	2017	
	Cost	Fair Value
Exchange-traded funds:		
Global equity:		
Global equity index	\$ 6,078,632	\$ 7,414,458
Mutual funds:		
Domestic equity:		
Large cap index	19,283,472	42,723,474
Mid cap index	5,000,000	6,375,414
Small cap index	5,000,000	6,385,781
International equity:		
Emerging markets	5,800,000	6,345,207
Small cap	3,800,000	3,982,142
International value	8,802,777	13,375,355
Developed markets index	2,853,213	3,731,249
Options:		
Puts on S&P 500 Index	391,808	4,250
Fixed income:		
Core plus	13,900,000	13,741,572
Core	6,600,000	6,451,619
Strategic income	11,356,522	11,063,989
Short-term Treasury	3,800,000	3,763,532
Intermediate-term Government	5,000,000	4,930,044
U.S. government securities	5,174,364	5,077,654
	<u>\$ 102,840,788</u>	<u>\$ 135,365,740</u>



## Great Lakes Protection Fund

### Notes to Financial Statements

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#### Note 4. Fair Value Disclosures

The accounting guidance on fair value provides a framework for measuring fair value and defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants on the measurement date. That framework provides a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements).

Financial assets and liabilities carried at fair value will be classified and disclosed in one of the following three categories:

Level 1. Valuations for assets and liabilities traded in active exchange markets, such as the New York Stock Exchange. Level 1 assets primarily include listed equities, money market funds, government securities, mutual funds and exchange-traded funds. Valuations are obtained from readily available pricing sources for market transactions involving identical assets or liabilities.

Level 2. Valuations for assets and liabilities traded in less active dealer or broker markets. Valuations are obtained from third-party pricing services for identical or similar assets or liabilities. Level 2 assets primarily include equities traded in over-the-counter markets.

Level 3. Valuations for assets and liabilities that are derived from other valuation methodologies, including option pricing models, discounted cash flow models and similar techniques, and not based on market exchange, dealer, or broker-traded transactions. Level 3 valuations incorporate certain assumptions and projections in determining the fair value assigned to such assets or liabilities.

In certain cases, the inputs used to measure fair value may fall into different levels of the fair value hierarchy. In such cases, an investment's level within the fair value hierarchy is based on the lowest level of input that is significant to the fair value measurement. The Fund's assessment of the significance of a particular input to the fair value measurement in its entirety requires judgment, and considers factors specific to the investment.

For the years ended December 31, 2018 and 2017, the application or valuation techniques applied to similar assets and liabilities have been consistent. The following is a description of the valuation methodology used for assets measured at fair value:

Investments in securities traded on a national securities exchange, or reported on the NASDAQ national market, are stated at the last reported sales price on the day of valuation. These financial instruments are classified as Level 1 in the fair value hierarchy.

The Fund assesses levels of the investments at each measurement date, and transfers between levels are recognized on the actual date of an event or change in circumstances that caused the transfer. For the years ended December 31, 2018 and 2017, there were no such instances.

All of the Fund's investments are classified as Level 1 as of December 31, 2018 and 2017.

The carrying amounts of financial instruments, including cash and cash equivalents, receivables, investments, accrued interest receivable, other assets, member state shares payable and accrued expenses approximate fair value due to the short maturity of these instruments.



## Great Lakes Protection Fund

### Notes to Financial Statements

#### Note 5. Grants Activity

Grants activity for 2018 and 2017 is as follows:

	Grants Approved	Grants Paid	Grants Payable
2018	\$ 3,272,000	\$ 2,951,747	\$ -
2017	2,695,000	2,546,264	-

As of December 31, 2018, total grants approved since the Fund's inception amounted to approximately \$84.4 million, of which approximately \$7.6 million related to grants for which the contingencies have not been met and, therefore, the grant expenses have not been recognized. Upon satisfaction of the contingencies by the recipients, the Fund will recognize the grant expenses and disburse the remaining payments. The terms of most grants cover a three-to-five year period.

#### Note 6. Net Assets

##### *Net assets without donor restrictions:*

Net assets that are not subject to donor-imposed restrictions and may be expended for any purpose in performing the primary objectives of the Fund. Certain net assets without donor restrictions have been designated by the Board of Directors as a Sequestration Fund, representing an estimate of amounts sufficient to provide for commitments and obligations of the Fund. The balance of \$5,236,610 and \$5,153,235 in net assets without donor restrictions for 2018 and 2017, respectively, represents the unspent portion of the Sequestration Fund of \$5,000,000 plus any interest earned.

##### *Net assets with donor restrictions:*

Net assets subject to stipulations imposed by donors and grantors. Some donor restrictions are temporary in nature; those restrictions will be met by actions of the Fund or by the passage of time. Other donor restrictions are perpetual in nature, where the donor has stipulated the funds be maintained in perpetuity.

Net assets with donor restrictions were as follows for the years ended December 31, 2018 and 2017:

	2018	2017
Original donor-restricted endowment contribution amount and amounts required to be retained by donor:		
Illinois	\$ 15,000,000	\$ 15,000,000
Michigan	25,000,000	25,000,000
Minnesota	1,500,000	1,500,000
New York	12,000,000	12,000,000
Ohio	14,000,000	14,000,000
Pennsylvania	1,500,000	1,500,000
Wisconsin	12,000,000	12,000,000
	<u>81,000,000</u>	<u>81,000,000</u>
Accumulated investment gains on endowment funds, which, once appropriated, are expendable to support the activities of the Fund	37,255,724	50,991,766
Total net assets with donor restrictions	<u>\$ 118,255,724</u>	<u>\$ 131,991,766</u>



## Great Lakes Protection Fund

### Notes to Financial Statements

#### Note 6. Net Assets (Continued)

Donor-restricted endowment contributions represent the contributions received from member states in accordance with the Fund's articles of incorporation. These amounts cannot be expended.

With the exception of Indiana, all states have made their required contributions. There is no due date for the contribution payable by Indiana, which has not yet joined the Fund.

#### Note 7. Endowment Net Assets

The Fund's endowment net assets are comprised of restricted contributions made by the member states, as well as the net effect of the realized and unrealized investment returns and losses on those investments and the operating expenses of the Fund. As the original contributions were made for the purpose of establishing a fund of assets to provide income for the Fund, the Fund's net assets are considered an endowment, as defined by accounting guidance related to financial statement presentation for not-for-profit organizations.

*Interpretation of Relevant Law* – The Fund has interpreted the Illinois Uniform Prudent Management of Institutional Funds Act (UPMIFA) as requiring the preservation of the fair value of the original contribution as of the contribution date of the donor-restricted endowment funds absent explicit donor stipulations to the contrary. As a result of this interpretation, the Fund classifies as net assets with donor restrictions (a) the original value of contributions donated to the permanent endowment, (b) the original value of subsequent contributions to the permanent endowment, and (c) accumulations to the permanent endowment made in accordance with the direction of the applicable donor contribution instrument at the time the accumulation is added to the Fund. In accordance with UPMIFA, the Fund considers the following factors in making a determination to appropriate or accumulate earnings on donor-restricted endowment funds:

- 1) The duration and preservation of the Fund;
- 2) The purpose of the Fund and the donor-restricted endowment fund;
- 3) General economic conditions;
- 4) The possible effect of inflation and deflation;
- 5) The expected total return from income and the appreciation of investments;
- 6) Other resources of the Fund; and
- 7) The investment policies of the Fund.

The changes in endowment net assets for the Fund were as follows for 2018 and 2017:

	2018	2017
	With Donor Restrictions	With Donor Restrictions
Endowment net assets, beginning of year	\$ 131,991,766	\$ 119,119,117
Realized income and gains, net	5,034,341	5,265,283
Miscellaneous revenue	967	1,338
Unrealized gain on investments	(13,024,936)	13,189,724
Amounts appropriated for expenditure	(5,746,414)	(5,583,696)
Endowment net assets, end of year	<u>\$ 118,255,724</u>	<u>\$ 131,991,766</u>



## Great Lakes Protection Fund

### Notes to Financial Statements

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#### Note 7. Endowment Net Assets (Continued)

*Return Objectives and Risk Parameters* – The Fund has adopted endowment investment and spending policies that attempt to provide a predictable stream of funding to its programs while ensuring that the original value of the endowment contributions is preserved. Assets are invested in a manner intended to achieve an annualized nominal return of 5 to 7 percent. Actual returns in any given year may vary from this amount.

*Strategies Employed for Achieving Objectives* – To satisfy its long-term rate-of-return objectives, the Fund relies on a total return strategy in which returns are achieved through both capital appreciation (realized and unrealized) and current yield (interest and dividends). The Fund targets a diversified asset allocation that places a greater emphasis on equity-based investments to achieve its long-term return objectives within prudent risk constraints.

*Spending Policy and How the Investment Objectives Relate to Spending Policy* – The Fund has a policy of appropriating an estimate of expenditures each year as part of a formal, annual budget. Adjustments to appropriations are also approved during the year as unexpected changes arise.

#### Note 8. Commitments

The Fund is obligated under an office lease expiring in December 2025 with an option to extend the lease for an additional five-year period.

Rent expense totaled \$181,989 and \$191,389 for 2018 and 2017, respectively.

Minimum payments required under the lease are as follows:

2019	\$ 180,513
2020	183,093
2021	185,672
2022	188,252
2023	190,831
Thereafter	389,401
	<u>\$ 1,317,762</u>

#### Note 9. Retirement Plan

The Fund maintains a retirement plan under the provisions of Section 401(a) of the Internal Revenue Code applicable to governmental retirement plans. The Fund makes contributions under two provisions in the plan:

- 1) Contributions equal to 10 percent of each employee's compensation. All employees must participate upon commencement of employment.
- 2) Discretionary matching contributions in the amount of 100 percent of the employee's deferral contributions to the Fund's 457(b) deferred compensation plan (Note 10). The Fund's discretionary matching contributions are limited to 6 percent of the employee's compensation for the year. All employees contributing to the Fund's 457(b) deferred compensation plan are eligible to participate.

All Fund contributions on behalf of employees are 100 percent vested when made. The Fund contributed \$127,440 and \$146,933 to the retirement plan for 2018 and 2017, respectively.



## **Great Lakes Protection Fund**

### **Notes to Financial Statements**

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#### **Note 10. Deferred Compensation Plan**

The Fund maintains a deferred compensation plan under the provisions of Section 457(b) of the Internal Revenue Code. All employees are eligible to voluntarily participate upon commencement of employment. Participants can elect to participate in the deferred compensation to the extent permitted by applicable contribution limits under Section 457(b) of the Internal Revenue Code.

The Fund makes discretionary matching contributions to the retirement plan (Note 9) in the amount of 100 percent of the employee's deferral contributions to the Fund's 457(b) deferred compensation plan. The Fund's discretionary matching contributions are limited to 6 percent of the employee's compensation for the year. Only employee contributions were made to the deferred compensation plan for 2018 and 2017.



# Appendix 2

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## Projects Completed in 2018





### **Community Foundations Great Lakes Water Initiative – Phase I (\$137,000)**

This project design support resulted in an implementation proposal for a network of new water initiatives led by community foundations on the coasts of the Great Lakes. During the project design grant, the team met with over 50 community foundations and gathered information via surveys, phone interviews, webinars and in-person meetings to determine each foundation's relationship to water, what actions they want to undertake in the Great Lakes, their efforts to date, and what they need to succeed.

The Fund's board of directors awarded a subsequent grant of up to \$1,030,000 to expand the ability of the region's shoreline communities to address aging water and wastewater systems, and the water quality and human health challenges posed by these systems. The team expected to launch initiatives in 12-18 Great Lakes coastal cities, but found such enthusiasm for the work they had to limit the team to foundations representing 31 coastal cities.

This work builds on the Community Foundation Network, a Fund-supported initiative which created environmental endowments in 26 communities, made successful by this team's leadership.

Council of Michigan Foundations

Contact: Robert Collier

### **Port Futures: (Modeling) Adaptive Strategies for Health Great Lakes Ports (\$78,500)**

During this design grant, the team worked closely with a consortium of decisions-makers in the basin and met with port managers, industry leaders and other stakeholders in Minnesota, Wisconsin, Michigan, New York, Illinois and Ohio to better understand and identify the needs in the region. Through a massive compilation of the most up-to-date datasets (and development and piloting of new field data collection techniques), the team determined the range of sediment management technologies that exist within the Great Lakes system, in addition to where and how dredging occurs, and the characteristics of individual ports. The products from these efforts include a Port Atlas of the Great Lakes basin and a Mappings and Existing Strategies Catalog. From these efforts, the team identified a range of sediment management opportunities for ports in the basin and places to pilot new strategies.

The Fund's Board of Directors awarded a subsequent grant of up to \$1,590,000 to pilot an innovative passive sediment management strategy in two medium-sized ports; that if successful will be adopted in the over forty medium-sized port communities through all states in the Great Lakes basin.

Cornell University and University at Buffalo

Contact: Brian Davis, Sean Burkholder (formerly at University at Buffalo)

### **A Self-Scaling Market Mechanism to Reduce Indirect Electricity Pollution (\$677,000)**

This project was built around technology that will reduce mercury and other air pollutants into the Great Lakes by giving customers the power to choose clean energy over dirty. Automated Emissions Reduction, or AER, sends real-time clean energy data straight to internet-connected smart devices such as energy management systems for large buildings, residential thermostats, refrigerators, etc. and



allows these devices to shift the timing of electricity use to work at times when the grid is supplied by clean energy sources.

The team's theory of change was that smart devices would be more popular with consumers if they carried the AER feature, and that smart device manufacturers would be willing to install AER on their own, establishing a market where there had previously only been a technology.

The team proved their ambitious theory of change. Through their pilot work the team proved that AER is popular with consumers, the addition of AER enables smart devices to outsell rival brands, and AER is painless enough that consumers want to keep it over time.

In September, 2018 the Fund made a [second grant](#) to WattTime to allow them to team with electric utilities and demand response recruiters to pilot the combination of two unrelated programs—electric utility demand response and AER—and demonstrate that more customers will be drawn to demand response programs with the addition of AER.

WattTime

Contact: Gavin McCormick

### **Expanding Ag Retailer Roles in Resource Management (\$759,000)**

This project built upon the team's successes in a [prior-supported project](#) where they tested an ambitious idea of disrupting the agricultural (ag) retailer business model in the Great Lakes region. They developed new revenue-generating conservation products and successfully activated a network of agricultural retailers in the Sandusky River watershed to sell those products and to eliminate over 18,000 pounds of dissolved reactive phosphorus runoff in one year. In this project, IPM Institute set out to prove that retailers can make a profit selling products and services that improve water quality; and that they no longer have to be tied to a business model that relies on inefficient practices that degrade waters and lead to diminishing financial returns. At the time, this team was one of the first to consider ag retailers as a valuable ally in the fight to reduce nutrient pollution in the Great Lakes.

Leading a team of ag retailers and crop advisors, farmers, watershed organizations, non-profits, and academics, the team expanded their work across the Great Lakes, keeping nearly 2 million pounds of dissolved reactive phosphorus and over seven million pounds of total phosphorus out of the Great Lakes through the sales of products and services over the duration of the grant. The team used, and improved upon, the innovative tools they developed in the prior project that included: a popular [Phosphorus Loss Reduction Handbook](#); phosphorus loss [wallet cards](#); "sell sheets" to improve retailer effectiveness in marketing key conservation products; phosphorus vulnerability maps for the Maumee, Lower Fox and Saginaw Bay watersheds; and a unique nutrient calculator that allows retailers to estimate site-specific nutrient loss reduction and profit estimates for specific products and services at field level.

The IPM Institute of North America, Inc.

Contact: Dr. Thomas Green



# Appendix 3

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## Portfolio of Projects as of December, 2018



### **Smart2Genius: Catalyzing Farmer Adoption of Strategic Best Practices (\$200,000)**

This is a design grant that will establish a farmer-led network of agricultural producers, service providers, and other experts who will drive adoption of strategic practices and new technologies that will improve farm profitability and reduce nutrient loads and stream flashiness without involving government programs, making them more attractive to the majority of farm operators in the basin. This network will be supported by a dedicated online platform that will integrate the most recent science and technology with a social support system.

In this design phase the team will: expand the core team to include expertise in Ohio, Wisconsin, Michigan, and Ontario; establish a community of leader farmers and match them to strategic practices; determine the impact and adoption metrics for the implementation phase; and prepare an implementation proposal to the Fund to test a suite of technologies and management actions on farm fields. An initial community of farmers, grouped in hub farms, will select strategic practices, test them, and evaluate the impact on their operations (yield, profit) and the health of nearby water resources to inform the implementation proposal.

Seneca County Soil and Water Conservation District  
Contact: Beth Diesch

### **Advancing Stormwater Management at Marinas in the Great Lakes (\$839,000)**

This team will improve nearshore water quality and habitat quality in the Great Lakes by advancing better stormwater management at Great Lakes marinas. Great Lakes marinas and the boating industry depend on clean waters and a healthy coastal environment for the success of their business. Yet, they operate on the nearshore of the Great Lakes and their tributaries, where concentrated human activity can significantly impact flora and fauna. Furthermore, the operation of marinas can cause various sources of pollution, such as sediments, pesticides, oil and road dirt, heavy metals, and nutrients to runoff into nearshore waters during storm events.

To improve stormwater management at Great Lakes marinas, the team will develop a marina-specific stormwater management decision support tool and pilot the installation of green infrastructure practices in three private marinas in Michigan, Ohio and Wisconsin. The team will develop and implement monitoring and maintenance plans at each marina, as well as develop training curricula. They will host a technical training workshop to scale up green infrastructure practices across the nearly 1,000 marinas in the Great Lakes watershed. The team will leverage its multi-state Clean Marina program (there are currently 200 marinas certified in the region) to drive adoption of the practices identified by the tool and demonstrated in the pilots.

Michigan Sea Grant  
Contact: Catherine Riseng



### **Early Detection of Ship-Mediated Invasive Species through eDNA Detection (\$178,000)**

This is a design grant that will reduce the spread of aquatic invasive species (AIS). Spread of AIS is often well underway, and practically impossible to contain, by the time the Great Lakes region becomes aware of it. One promising, underutilized AIS management tool is environmental DNA, or eDNA. EDNA is the identification of an organism by finding its genetic material in the environment without any obvious signs of the organism being present.

What does it mean when a signal is detected? Currently the presence of eDNA may or may not signal the presence of live organisms, in real time or in the past, depending on how long that eDNA persists in the environment. For eDNA to have relevance as a management tool, an understanding of how recently a specimen may have been alive is critical.

The team will build a regional network of advisors and customers that will work together to advance the use of eDNA as a Great Lakes AIS prevention and management tool; develop a scientific method for determining eDNA extinction rates for Great Lakes relevant AIS; conduct a set of experiments determining the rates of eDNA extinction for at least one and up to three Great Lakes–relevant invertebrate AIS; and develop a Go-Forward plan and a proposal for a larger implementation project.

Pennsylvania State University – Erie

Contact: Ivor Knight

### **Smart Management of Microplastic Pollution in the Great Lakes (\$929,000)**

This project will empower a new set of regional leaders focused on reducing the amount of microplastics that enter the Great Lakes each year. The team will do this by working with municipal leaders and local groups to pilot a plastic reduction campaign and mitigation initiative in Williamston and Pontiac, MI. To support this campaign, the team will design and build a first-of-its-kind, portable optical sensor that they will use as a monitoring tool to evaluate the performance of the plastic reduction campaign.

The portable technology will integrate optical sensors with machine learning and edge computing to enable a low- cost, real-time quantification of plastic particles in water. Use of this technology will offer a dramatic improvement over the current monitoring techniques which are laborious and consist of manual counting of plastic particles under a microscope.

The optical sensor will test the effectiveness of two very different mitigation strategies: one strategy will seek to reduce plastic fibers coming off clothing in the wash; the second will seek to reduce large plastics entering the stormwater system by installing green infrastructure to capture trash during large rain events.

The team will engage users from around the region and develop a robust social marketing plan for pilot study results. By developing a microplastics mitigation toolbox (tested mitigation strategies supported by new sensor technology) this team is developing solutions that can be adopted by communities throughout the basin to reduce microplastics. New approaches are needed now, as most of the



microplastics work being done in the region has been focused on trying to determine the extent of the problem or reducing litter, not large-scale solutions.

Wayne State University  
Contact: Yongli Zhang

### **Harnessing Automated Demand Response to Reduce Great Lakes Mercury Emissions (\$1,006,000)**

This project is a first-of-its-kind effort to reduce mercury emissions from coal-powered plants by combining two unrelated programs; electric utility Demand Response and Automated Emissions Response.

Consumer demand for more choice around energy production, and specifically demand for choosing clean energy, sits at the heart of this work. Demand response programs provide financial incentives from the utility to the users to conserve energy during high demand times (e.g., a hot summer day) to reduce the strain on the electric grid. They try to reconcile too much demand with not enough supply. These programs have the infrastructure in place to connect with many electricity customers, but interest and participation are low.

Alternatively, Automated Emissions Response (AER) is an innovative technology that determines when the electric grid is supplied by cleaner sources of energy and allows customers the ability to choose clean energy for their electricity needs. For the first time, consumers can now have control over their emissions reductions with this popular program without compromise to cost, comfort or functionality.

The AER software will be an add-on feature of familiar demand response programs (which cut consumption during a handful of peak energy demand events) and will optimize your emissions reductions the rest of the year. The impacts from this project are optimistic based on research showing a 3x increase in participants when AER is offered as part of a demand response program. More program participants and increased demand for mercury emissions reductions will incentivize mercury-emitting power plants to run or install mercury emissions reduction technology which cuts emissions by at least 90%.

The team will work closely with electric utilities and demand response recruiters to demonstrate that more customers will be drawn to demand response programs with the addition of AER. The project will run two distinct pilots: one for residential electricity customers, the other for commercial electricity customers. Both pilots will involve software engineering; pilot implementation; and scaling efforts. Four utilities in the region; ComEd, Xcel Energy, DTE Energy, and Consumers Energy, have all agreed to participate in the project.

WattTime  
Contact: Gavin McCormick



### **Investing in Outcomes: Retrofit of Existing Private Stormwater Assets for Public Benefit (\$120,000)**

This project design award will lead to a later implementation proposal to launch a third-party stormwater management service that will help restore natural flow regimes in basin waters. The focus of this work will be on stormwater management assets (e.g., detention basins, cisterns, green infrastructure) on private property, which are commonplace and underutilized in the region. The team will begin working with Walmart, which has over 200 stormwater assets within the Great Lakes watershed and will bring in other companies as needed.

The team will evaluate the existing designs of Walmart's private stormwater assets, and determine how to optimize the assets by retrofitting them with a real-time, automated monitoring and control system. With such a system, water can be held back to reduce the amount of sediment, nutrients and other pollutants that enter downstream waters. The team's evaluation will show the water quality benefit that is achievable at a site after a retrofit.

The team will calculate the water quality benefits and will engage with potential buyers – stormwater utilities, municipal governments, and groups of dischargers facing tighter water quality requirements – in the areas where the assets can deliver impact. They will develop a scalable financing and project delivery model and then host a competition with 3-5 water quality benefit buyers who will be asked to bid on the newly-produced water quality benefits.

OptiRTC, Inc.

Contact: Marcus Quigley

### **Healthy Port Futures (\$1,590,000)**

Awarded in 2017, this team will pilot new passive sediment management strategies at river mouths that will create critical wetland habitat, improve water quality, support local economies, and greatly reduce the cost and environmental impacts from dredging. Specifically, working with the US Army Corps of Engineers, a number of medium-sized port authorities and the Ohio EPA, the team will pilot passive sediment management (PSM) strategies in Ashtabula, Ohio creating over forty acres of new, publicly accessible wetland habitat. A second pilot port community will be added once Ashtabula is underway. PSM directs sediment through natural processes to shorelines and shallow zones and out of deep channels. This creates healthy wetland and benthic habitat benefiting both aquatic and terrestrial wildlife, creates recreational and tourism opportunities in the ports, and greatly reduces the need for dredging.

If successful basin-wide, this project will result in the adoption of landscape-based strategies and practices for PSM in the over forty medium-sized port communities through all states in the Great Lakes Basin.

University of Pennsylvania, Cornell University

Contact: Sean Burkholder, Brian Davis



### **Great Lakes Community Foundations Water Initiative – Phase 2 (\$1,000,030)**

Awarded in 2017, this project will expand the ability of the region's shoreline communities to address aging water and wastewater systems, and the water quality and human health challenges posed by these systems. The team includes 31 shoreline community foundations, community water managers, regional leaders, and technical experts—to identify infrastructure challenges, accelerate innovation, explore new financing strategies, and build community will to support necessary improvements to grey and green infrastructure.

The 31 community foundations will work together in six regional clusters to address the water infrastructure issues in their respective communities. These clusters are: Lake Erie, Lake Huron, Upper Lake Michigan, Lower Lake Michigan, Lake Ontario, and Lake Superior. During the project, each regional cluster will prepare an action plan that will identify infrastructure challenges—water quality, financing barriers, use of green infrastructure, rate structures, water literacy, etc.—that exist in each community.

The six clusters will activate and grow regional networks, advance water literacy, broker new financing strategies, recruit new local donors, and build new programs around water. As they begin to execute their action plans, they will document what works, and share the lessons they learn. The lessons (and the products and strategies) will be documented and shared via a basin-wide learning network.

Council of Michigan Foundations  
Contact: Robert Collier

### **Accelerating the Shift to Environmentally Sensitive Electricity Through Collaborative Competition (\$557,000)**

Awarded in 2016, this project builds upon the Fund's previous investments in developing the Locational Electricity Emissions Methodology (LEEM) and the Polluting Emission Pump Station Optimization tool (PEPSO). LEEM interacts with the power grid to determine, in real-time, the fuel sources that are being used to generate electricity and the emissions from those sources, and signals when cleaner forms of energy are available. The LEEM-PEPSO combination enables utilities to tailor pump operation schedules to minimize mercury emissions while meeting their system constraints.

Using LEEM-PEPSO, the team will conduct a collaborative competition for municipal water utilities across the Great Lakes Region. They will identify and engage prospective contestants by introducing them to LEEM, and provide free access to the software and technical assistance. They will then recruit contestants to participate with their cohorts across the region in a "Biggest Emissions Loser" competition over a 12 month term. A panel of judges will select winners in different categories. A public relations campaign will provide information about the competition in-progress, and showcase the winners.

Five water utilities are finalists in the competition. They are:

City of Highland Park (Illinois), PEPSO;  
City of Ann Arbor (Michigan), LEEM;  
Great Lake Water Authority (Michigan), LEEM;





Onondaga County Water Authority (New York), PEPSO; and  
City of Bayfield (Wisconsin), LEEM

American Water Works Association  
Contact: Chad Weikel

### **Addressing Nutrient Runoff from Leased Farmland in the Great Lakes (\$1,087,000)**

Awarded in 2016, this project will engage women non-operator farmland owners (WNOLs) and their tenant farmers in piloting creative lease arrangements that dramatically increase conservation practices on leased farmland. Previous work supported by the Fund estimated that over 48% of land farmed in the Great Lakes Basin is leased from owners who do not live on the land. An increasing proportion of that rental land is owned by women newly in a decision-making role after their husbands have died, but who are feeling poorly equipped and disempowered to be actively involved in the treatment of the land they own. Research shows that women owners take a long view of the land and place great value on leaving a legacy of health soils and healthy waters. Research also shows that women owners need gender-specific support, education, programs and tools to empower their conservation-based decision-making.

The pilot will increase awareness and understanding of conservation practices among WNOLs, stimulate actions that mutually benefit the landowner and tenant farmer while sharing the risks of those actions, and engage agricultural retailers in supporting those actions. The pilots will be conducted in the Portage and Toussaint River basins in northwest Ohio, and the Genesee River watershed in western New York. The three year project will directly reach 80 WNOLs and 160 tenant farmers and will scale across the basin by mobilizing a community of practice.

American Farmland Trust  
Contact: Jennifer Filipiak

### **Advancing Systematic and Fundamental Changes in Agricultural Water Resources Management (\$1,135,000)**

Awarded in 2016, this project will reshape traditional agricultural operations by demonstrating approaches that merge drainage management authority objectives with conservation services that follow circular economy principles. The project aims to improve water quality, rebuild soil health and increase crop resiliency, while benefiting farm economics and creating new business opportunities throughout the region.

Agricultural landowners in legal drainage districts must pay assessments to maintain and improve the public drainage systems that serve them. These assessments are generally based purely on acreage and/or linear extent of the adjacent drainage. This project will test new methods for calculating drain assessments that reward farmers who implement land management practices that improve soil and water quality. This adaptive drain fee assessment model presents the opportunity to test market-based approaches that work in support of the model.



Three treatment approaches will be tested in this project with pilot locations in Van Buren County, Michigan, Milwaukee River watershed, Wisconsin and a to-be-finalized location in Indiana. These pilots will yield information on both water quality benefits and economic opportunities associated with phosphorus capture. The project will create and propel a community of practice that includes drainage district authorities, conservation managers, agricultural retailers, commodity buyers, farmers, and food waste generators that will extend this work beyond the initial Great Lakes pilot locations.

Kieser and Associates, LLC  
Contact: Mark Kieser

### **Engaging Private Capital for Great Lakes Green Infrastructure Financing (\$690,000)**

Awarded in 2016, this team will test two new financing approaches available to Great Lakes municipalities to facilitate the installation of green stormwater infrastructure on both private and public property. Currently, Great Lakes communities have largely focused on implementing green infrastructure on public properties and with public financing. Yet, considerable opportunities exist to augment the public funds with private investment to reduce the environmental impacts of storm events in urban areas.

The team will focus in the Northeast Ohio Regional Sewer District (NEORS) service area in greater Cleveland and the City of Grand Rapids, Michigan – two cities with distinctly different existing conditions and opportunity sets that represent a large cross-section of Great Lakes communities.

In Grand Rapids, the team will build and deploy a public-private stormwater credit trading program that will provide a market-based exchange for green infrastructure. Such a program will allow private property owners to meet stormwater requirements more cost-effectively, and achieve benefits beyond just volume retention. This program would be the first of its kind in the Great Lakes region.

In greater Cleveland, the team will optimize the NEORS's significant public expenditures on green infrastructure by aggregating projects and leveraging private and additional public sector investment through their existing grant programs.

This pilot project is the result of a design grant where the team explored different financing options that would facilitate private investment in the installation and operation of green infrastructure on both public and private property in the Great Lakes region.

American Rivers  
Contact: Jeff Odefey

### **Strategies to Engage Middle Adopter Farmers on Cover Crops (\$653,000)**

Awarded in 2015, this team, led by the National Wildlife Federation, will improve water quality in the Great Lakes by increasing adoption of conservation practices that improve soil health on agricultural



lands throughout the basin. They will do this by identifying and testing strategies for engaging middle-to-late adopter farmers to implement conservation practices.

Current conservation outreach, policies and financial incentives strongly focus on innovators and early adopters, which comprises a small percentage (16%) of the farming population. This team will develop and test a series of outreach and communications strategies to engage the middle and late adopters (comprising 70% of farmers) that will address the fundamental cultural components of their decision making as it pertains to the implementation of conservation practices.

The project team is a collaboration of organizations that have had uncommon and notable success with this approach in localized areas. They seek to bring these lessons to scale in the Great Lakes basin.

National Wildlife Federation

Contact: Ryan Stockwell

### **Green Infrastructure – Private Capital (\$886,300)**

Awarded in 2015, the project will execute first-ever green infrastructure public-private partnership agreements (P3s) in several Great Lakes municipalities as a demonstration of a new approach to financing and optimizing the performance of distributed green infrastructure. The P3s are expected to be large-scale (up to \$50 million) and enable aggregation of services, and optimization of performance, with the goal of making it economically feasible for governments and utilities to greatly expand green infrastructure throughout the Great Lakes region. The team will organize a project advisory committee, identify pilot communities, create and execute business plans, and—based on actual experience—create an implementation toolkit for other communities.

The project will implement an approach developed through previous Fund-supported work—a well-received business model development tool that describes how to form, market and position aggregation services to deliver high-performing green infrastructure services.

Environmental Consulting & Technology, Inc.

Contact: Sanjiv Sinha

### **An Intelligent Cyberinfrastructure for the Decentralized Sensing, Modeling and Control of Urban Stormwater (\$800,000)**

Awarded in 2014, this project will develop a novel, smart, stormwater control framework that, when deployed at scale, will reduce the occurrence of combined and sanitary sewer overflows thereby improving the water quality of the Great Lakes and its tributaries.

The framework will optimize the management of sump pumps, rain barrels and stormwater outlets by fusing real-time sensor data and location-specific weather forecasting with control algorithms. Customers for the computing framework are water utilities seeking to optimize the use of distributed



green infrastructure assets to improve stormwater management decision-making. The framework will be pilot tested in residential neighborhoods in Milwaukee, Ann Arbor and Toledo.

University of Michigan:

Contact: Dr. Branko Kerkez

### **Optical Technology to Efficiently Detect Sewage Contamination for Rapid Remediation (\$1,424,000)**

Awarded in 2014, this project will improve the water quality of the Great Lakes and its tributaries with the development of hand-held, real-time, optical sensors that will locate and accelerate repair of sources of human sewage contamination in streams and storm sewers. The team will do this by developing a new methodology for identifying the best optical signals to predict sewage contamination in water.

Optical properties of water are largely determined by organic matter and human sewage, as a form of dissolved organic matter, has distinctive characteristics. Through extensive field sampling and laboratory analysis, the team will determine those optical signals that consistently indicate human sewage and will work closely with partner sensor manufactures to expand the capabilities of existing sensors. The team will pilot the technology in Milwaukee, Macomb County (MI) and Monroe County (NY).

U.S. Geological Survey

Contact: Steven Corsi

### **Uncovering How Clean is Clean: Great Lakes Invasive Species (\$542,000)**

Awarded in 2014, this work will lead to fewer successful invasions of the Great Lakes by aquatic nuisance species. The team will do this by continuing the work that they began under a previous Fund project to develop methods that will determine how the invasion risks vary with the numbers of invasive organisms released into the environment. As these methods are established, work can begin to create receiving water standards that protect the Lakes from invasions.

This project will have two components: mesocosm studies and field surveys. The mesocosm studies will use the methods developed and refined in a prior project to characterize the relationship between inoculum concentrations and colonization success using a surrogate invader, the spiny water flea. The field survey work will focus on investigating the use of environmental DNA (eDNA) as a reliable, quick and affordable screening method to identify priority samples for analysis and will focus on Hemimysis species.

Northeast-Midwest Institute

Contact: Allegra Cangelosi



### **Implementation and Evaluation of Accurate Dairy Feeding (\$690,000)**

Awarded in 2013, this project will reduce the dairy industry's contribution of excess nutrients, particularly phosphorus, to the Great Lakes. With an estimated three million dairy cows in the Great Lakes region, the team expects to reduce annual contributions of phosphorus by 20,000 metric tonnes per year. (To put this into perspective, the Great Lakes Water Quality Agreement of 2012 specified the combined maximum phosphorus loading target for all of the Great Lakes at 31,360 metric tonnes per year.) The team will do this by developing a novel feed management and nutritional accounting system that will intervene directly in farm feed management practices to streamline dairy operations and reduce nutrient waste. The cloud-based system will interact with feeding systems already available in the market-place. In its final form, the system will consist of a series of modules (mixing, feed inventory, animal inventory and production), and a custom analytical engine that will perform statistical analysis and reporting and provide real-time feedback to on-farm decision-makers. The team will pilot the system on ten large dairy farms in Ontario, Ohio, Wisconsin, and New York.

AgModels LLC  
Contact: Michael Barry

### **Automated Ballast Treatment Verification Project (\$823,000)**

Awarded in 2012, this project will reduce the likelihood of new invasive species entering the Great Lakes. The team will accomplish this by creating an automated, shipboard, rapid-testing system that will be able report, in real time, the presence of any live organisms in ballast water following treatment. If successful, this effort will eliminate one of the greatest challenges facing invasive species control—the ability to capture sufficient volumes of water to properly assess the efficacy of ballast treatment methods and compliance with ballast standards.

The team will work closely with leaders in the ballast monitoring field including university experts, state and federal agency staff, shippers, carriers, and equipment manufacturers, and will convene at least annually a regional ballast verification management workshop. The team will also maintain an informal network of stakeholders and interested parties and will promote the work at regional, national and international meetings.

Wayne State University  
Contact: Dr. Jeffrey Ram

### **Vacant to Vibrant: Vacant Land as Green Infrastructure (\$902,000)**

Awarded in 2012, this project will lead to improved water quality in the Great Lakes by reducing stormwater runoff and the incidence of combined sewer overflows. To accomplish this, the team will establish a neighborhood-based network of small-parcel green infrastructure (GI) projects on vacant land in three Great Lakes cities. They will determine the potential for urban neighborhoods with an abundance of vacant land to serve as a GI network. This project will be the first to test the effectiveness of aggregated small parcels as a viable strategy for effective GI and stormwater management. It will also



be the first to develop a simple GI portfolio that will be replicable across cities in the Great Lakes region. The team will work with local community partners in the cities of Buffalo, NY; Cleveland, OH; and Gary, IN—cities with high commercial and residential land vacancy; aging sewer/stormwater infrastructure; and a demonstrated interest and capacity for an interdisciplinary approach to green infrastructure.

This project is the result of a successful convening and planning phase which brought together experts from fourteen cities around the Great Lakes to assess the regional interest of reusing vacant urban lands as green infrastructure. The team will continue to develop this network by holding at least two regional meetings and by creating a regional community of practice—a Great Lakes Vacant Land and Green Infrastructure Collaborative that will engage stakeholders from the original fourteen cities and be expanded to include other stake holders from around the Great Lakes.

Cleveland Botanical Garden  
Contact: Sandra Albro



Great Lakes  
Protection Fund

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The Fund's mission is to identify, demonstrate, and promote regional action to enhance the health of the Great Lakes Ecosystem.

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