Great Lakes Protection Fund

2019 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 2019, the Fund has made a total of 285 grants and program-related investments, representing an $87.8 million commitment to protecting and restoring the ecological health of the Great Lakes ecosystem. Additionally, the Fund has paid $52.7 million directly to its seven member states to support their Great Lakes priorities. Over the course of the past 30 years, the Great Lakes ecosystem has benefited from the States' initial investment of $81.0 million with an overall commitment of $140.5 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 2019

In the past year, the Fund realized over $5.3 million in investment income from the endowment. The Fund returned $1.2 million to its member states to support their Great Lakes priorities. The Fund paid $3.4 million to support regional projects. Audited financial statements can be found in Appendix 1.

The Fund's strategic plan (link here) focuses programming in three priority areas: ensuring sustainable use of water resources, controlling pollution from diverse sources and stopping the introduction and spread of non-native aquatic invasive species. Our focus is on building new solutions to these shared gubernatorial priorities. During 2019, the Fund developed and supported eight new projects, maintaining the portfolio of active, supported work at over $17.6 million. The complete portfolio of supported work, including new projects awarded in 2019, can be found in Appendix 3.

Our strategic plan also encourages new types and sizes of awards to better target large investments, better engage experts that provide advice and allow us to be more nimble. To explore new ways to accomplish our mission, the Fund launched an effort to expedite support of small, exploratory projects. See Appendix 3 for a list. The Fund also launched a Leadership Awards initiative. This year our Great Lakes Leadership Awards focused on Water Technology Innovation. The award highlights efforts to advance technologies that address current threats and anticipating future challenges to the ecological health of water in this region and beyond. More information about the awards can also be found in Appendix 3.

The Fund celebrated its 30th anniversary with a microsite that highlights the accomplishments of our teams and speaks to the far-reaching and lasting impacts of our investments. To read impact stories from our 30-year history, please visit http://30years.glpf.org.

In other activity, Stephen Cole was hired as vice president of Programs. The Fund also updated its Bylaws.

The Fund entered 2019 with 20 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 $16 million. Over the course of the year, work was completed on three 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.

Evaluation of the Corporation's Performance

The Fund accomplished its objectives in 2019. 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 $1.2 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 support agenda in support of these priorities.

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 2019

Governor of Illinois

J.B Pritzker

Governor of Michigan

Gretchen Whitmer

Governor of Minnesota

Tim Walz

Governor of New York

Andrew Cuomo

Governor of Ohio

Mike DeWine

Governor of Pennsylvania

Tom Wolf

Governor of Wisconsin

Tony Evers

Board of Directors in 2019

Kate Bartter (Columbus, OH)

Timothy Bruno (Erie, PA)

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)

Andrew McElwaine (Pittsburgh, PA)

Don Ness (Duluth, MN)

Mark Meijer (Grand Rapids, MI)

Kevin Shafer (Milwaukee, WI)

Debra Shore (Skokie, IL)

Great Lakes Protection Fund Staff

Stephen Cole – Vice President of Programs

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

Ryan Smith – Project Development Manager

Appendix 1

2019 Audited Financial Statements

Great Lakes Protection Fund

Financial Report
December 31, 2019

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Contents

Independent Auditor's Report

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, 2019 and 2018, 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, 2019 and 2018, 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.

RSM US LLP

Chicago, Illinois
March 23, 2020

1

Great Lakes Protection Fund

Statements of Financial Position
December 31, 2019 and 2018

	2019	2018
Assets		
Cash and cash equivalents	$ 3,999,291	$ 6,648,502
Investments	137,704,350	117,959,945
Accrued interest	57,675	62,816
Other assets	25,527	104,667
Furniture, equipment and leasehold improvements, net of accumulated depreciation of $45,280 and $61,329 in 2019 and 2018, respectively	19,187	22,210
	$ 141,806,030	$ 124,798,140
Liabilities and Net Assets		
Liabilities:		
State shares payable	$ 1,188,500	$ 1,135,900
Accrued expenses	153,382	169,906
	1,341,882	1,305,806
Net assets:		
Without donor restrictions	5,406,760	5,236,610
With donor restrictions	135,057,388	118,255,724
	140,464,148	123,492,334
	$ 141,806,030	$ 124,798,140

See notes to financial statements.

2

Great Lakes Protection Fund

Statements of Activities
Year Ended December 31, 2019

	Without Donor Restrictions	With Donor Restrictions	Total
Income:			
Realized investment income and gains, net	$ 69,326	$ 5,252,573	$ 5,321,899
Miscellaneous revenue	-	947	947
Net assets released from restrictions	6,321,960	(6,321,960)	-
	6,391,286	(1,068,440)	5,322,846
Expenses:			
Mission			
Regional grant payments	3,376,104	-	3,376,104
State shares	1,188,500	-	1,188,500
Salaries and benefits	624,627	-	624,627
Facilities	96,493	-	96,493
Other mission expenses	201,797	-	201,797
	5,487,521	-	5,487,521
Management and general			
Salaries and benefits	515,372	-	515,372
Facilities	101,308	-	101,308
Other management and general expenses	217,759	-	217,759
	834,439	-	834,439
Total expenses	6,321,960	-	6,321,960
Increase (decrease) in net assets before other items	69,326	(1,068,440)	(999,114)
Unrealized gains	100,824	17,870,104	17,970,928
Increase in net assets	170,150	16,801,664	16,971,814
Net assets:			
Beginning of year	5,236,610	118,255,724	123,492,334
End of year	$ 5,406,760	$ 135,057,388	$ 140,464,148

See notes to financial statements.

3

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)	-
	5,780,379	(711,106)	5,069,273
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
	4,941,699	-	4,941,699
Management and general			
Salaries and benefits	487,376	-	487,376
Facilities	101,291	-	101,291
Other management and general expenses	216,051	-	216,051
	804,718	-	804,718
Total expenses	5,746,417	-	5,746,417
Increase (decrease) in net assets before other items	33,962	(711,106)	(677,144)
Unrealized gains (losses)	49,413	(13,024,936)	(12,975,523)
Increase (decrease) in net assets	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	$ 5,236,610	$ 118,255,724	$ 123,492,334

See notes to financial statements.

4

Great Lakes Protection Fund

Statements of Cash Flows
Years Ended December 31, 2019 and 2018

	2019	2018
Cash flows from operating activities:		
Cash provided by dividends, interest, and miscellaneous	$ 3,937,194	$ 5,134,151
Cash payments for grants	(3,385,097)	(3,042,396)
Cash payments for state shares	(1,135,900)	(1,148,801)
Cash payments for salaries and benefits	(1,200,873)	(1,155,045)
Cash payments for facilities	(231,075)	(196,810)
Cash payments for investment management and advisory fees	(137,550)	(142,458)
Cash payments for other operating expenses	(458,805)	(331,967)
Net cash used in operating activities	**(2,612,106)**	(883,326)
Cash flows from investing activities:		
Purchases of investments	(10,143,377)	(9,081,704)
Proceeds from sales of investments	10,110,000	13,656,245
Purchases of furniture, equipment and leasehold improvements	(3,728)	(8,107)
Net cash (used in) provided by investing activities	**(37,105)**	4,566,434
(Decrease) increase in cash and cash equivalents	**(2,649,211)**	3,683,108
Cash and cash equivalents:		
Beginning of year	6,648,502	2,965,394
End of year	$ 3,999,291	$ 6,648,502

See notes to financial statements.

5

Great Lakes Protection Fund

Notes to Financial Statements

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 financial statements, the Fund considers money market funds 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. Purchases and sales of investments are recorded on a trade-date basis. 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.

6

Great Lakes Protection Fund

Notes to Financial Statements

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

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.

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, 2019 and 2018, there were no unrecognized tax benefits identified or recorded as liabilities.

Recent accounting pronouncements: In February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (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 2021; early adoption is permitted. The Fund is currently evaluating the impact of the adoption of this standard on its financial statements.

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 clarifies the guidance for evaluating whether a transaction is reciprocal (i.e., an exchange transaction) or nonreciprocal (i.e., a contribution) and for distinguishing between conditional and unconditional contributions. The ASU also clarifies the guidance used by entities other than non-for-profits to identify and account for contributions made. The ASU has different effective dates for resource recipients and resource providers. In 2019, the Fund adopted the portion of the ASU applicable to resource recipients, which did not have an impact on the financial statements. Where the Fund is a resource provider, the ASU is effective for 2020. The Fund is currently evaluating the impact of the adoption of this guidance on its financial statements.

7

Great Lakes Protection Fund

Notes to Financial Statements

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

Reclassifications: Certain amounts on the 2018 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 23, 2020, 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, 2019 and 2018:

		2019		2018
Financial assets at year-end:				
Cash and cash equivalents	$	3,999,291	$	6,648,502
Investments		137,704,350		117,959,945
Accrued interest		57,675		62,816
	$	141,761,316	$	124,671,263
Financial assets not available for general expenditures within one year:				
Donor restricted endowment	$	81,000,000	$	81,000,000
Donor restricted earnings on endowment, less future year				
appropriations of $6,854,000 and $6,537,000, respectively		47,203,388		30,718,724
	$	128,203,388	$	111,718,724
Financial assets available for general expenditures within one year:	$	13,557,928	$	12,952,539

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

8

Great Lakes Protection Fund

Notes to Financial Statements

Note 3.   Investments

Investments consist of the following:

	2019	
	Cost	Fair Value
Exchange-traded funds:		
Global equity:		
Global equity index	$ 6,078,632	$ 8,150,863
Mutual funds:		
Domestic equity:		
Large cap index	17,960,271	47,436,091
Mid cap index	4,851,399	7,124,351
Small cap index	4,853,386	6,950,798
International equity:		
Emerging markets	7,800,000	8,054,832
Small cap	3,430,153	3,790,962
International value	3,389,173	3,639,193
Developed markets index	2,000,000	2,380,055
Foreign Large Value	6,000,000	6,158,922
Fixed income:		
Core plus	13,900,000	14,020,701
Core	6,600,000	6,653,417
Strategic income	8,936,055	8,769,346
Short-term Treasury	4,150,000	4,199,844
Intermediate-term Government	5,000,000	5,086,524
U.S. government securities	5,234,925	5,288,453
	$ 100,183,994	$ 137,704,350

	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 index	4,853,386	5,536,468
International equity:		
Emerging markets	5,800,000	5,260,346
Small cap	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
	$ 98,410,517	$ 117,959,945

9

Great Lakes Protection Fund

Notes to Financial Statements

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, 2019 and 2018, 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, 2019 and 2018, there were no such instances.

All of the Fund's investments are classified as Level 1 as of December 31, 2019 and 2018.

10

Great Lakes Protection Fund

Notes to Financial Statements

Note 5.   **Grants Activity**

Grants activity for 2019 and 2018 is as follows:

	Grants Approved	Grants Paid	Grants Payable
2019	$ 3,441,200	$ 3,376,104	$ -
2018	3,272,000	2,951,747	-

As of December 31, 2019, total grants approved since the Fund's inception amounted to approximately $87.8 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 $5,406,760 and $5,236,610 in net assets without donor restrictions for 2019 and 2018, 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, 2019 and 2018:

	2019	2018
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
	81,000,000	81,000,000
Accumulated investment gains on endowment funds, which, once appropriated, are expendable to support the activities of the Fund	54,057,388	37,255,724
Total net assets with donor restrictions	$ 135,057,388	$ 118,255,724

11

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 2019 and 2018:

	2019	2018
	With Donor Restrictions	With Donor Restrictions
Endowment net assets, beginning of year	$ 118,255,724	$ 131,991,766
Realized income and gains, net	5,252,573	5,034,341
Miscellaneous revenue	947	967
Unrealized gain on investments	17,870,104	(13,024,936)
Amounts appropriated for expenditure	(6,321,960)	(5,746,414)
Endowment net assets, end of year	$ 135,057,388	$ 118,255,724

12

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 $198,658 and $181,989 for 2019 and 2018, respectively.

Minimum payments required under the lease are as follows:

2020	$	183,093
2021		185,672
2022		188,252
2023		190,831
2024		193,411
Thereafter		179,658
	$	1,120,917

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 $139,342 and $127,440 to the retirement plan for 2019 and 2018, respectively.

13

Great Lakes Protection Fund

Notes to Financial Statements

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 2019 and 2018.

14

Appendix 2

Projects Completed in 2019

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

A team led by the University of Michigan, developed the next generation of smart stormwater systems that will, when deployed at scale, reduce the occurrence of combined and sanitary sewer overflows and improve the quality of the Great Lakes and their tributaries. The system uses sensor data and powerful, easy-to-use algorithms to control the flow of water before and after storm events in real time. The team learned that the performance of a passive stormwater system can be matched with stormwater infrastructure half the size, if it is outfitted with real-time controls. They also found that real-time control can reduce nutrient outputs of watersheds by 30-50 percent, while only needing to control 30 percent of available stormwater assets.

The tools and resources developed are freely available at open-storm.org. Open-storm is the only open-source, end-to-end platform for water resources management that combines real-time sensing, control, and cloud services.

University of Michigan
Contact: Dr. Branko Kerkez

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

This project was built 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 water utilities to tailor pump operation schedules to minimize mercury emissions while meeting their system constraints.

Using LEEM-PEPSO, the team conducted a first-ever competition for municipal water utilities across the Great Lakes region to reduce mercury, and other energy-related pollution emissions. During the 12-month competition, five participating water utilities were able to make small shifts in the timing of pumping and filter washing to reduce emissions while maintaining the same high quality of service. The five utilities combined had mercury savings equivalent to removing 3,000 homes from the electrical grid for one month and were all recognized for their leadership.

American Water Works Association
Contact: Chad Weikel

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

This project is currently in transition. The grant to the Northeast-Midwest Institute was closed and the project has been transferred to Pennsylvania State University - Erie. The team at Penn State will continue the work to develop methods that will determine how the invasion risks vary with the numbers of invasive organisms released into the environment.

Northeast-Midwest Institute
Contact: Allegra Cangelosi

Appendix 3

Portfolio of Projects as of December, 2019

Team composition described includes both paid and unpaid collaborators.

Great Lakes Resiliency and Finance Cluster ($1,230,000)

This project will establish a self-sustaining cluster of public and private sector professionals interested in market-based, efficient, and effective, delivery/finance of resilient stormwater infrastructure across the Great Lakes. The project will seek large-scale impacts and investments that directly address water quality and climate resiliency and have socio-economic benefits.

Team Composition:

Environmental Consulting and Technology, Inc. (Fiscal Agent)
Delta Institute
Center For Neighborhood Technology
American Society of Adaptation Professionals
CDP North America
HIP Investor, Inc.
Quantified Ventures
Fitch Ratings

Nutrient Reduction through Real-time Optimization and Control ($905,000)

This is a foundational proof-of-concept project to develop a real-time monitoring and control system for reducing phosphorus, nitrogen, and sediment discharged by agricultural drains. The project team will deploy an array of sensors on farmland to continuously measure critical parameters such as precipitation, water levels, and flow, water quality, and soil moisture. They will build machine learning models using sensor and weather data to predict field drainage behavior on a variety of time scales.

Team Composition:

Xylem, Inc. (Fiscal Agent)
University of Notre Dame
Van Buren Conservation District

Massively Scaleable Water Information Systems ($905,000)

This project will provide a radical improvement in water data collection and watershed-scale information tools to reduce the pollutants carried by surges of stormwater. The team will deploy county-scale water information systems that will contain 40 to 50 sensors across stream networks and built infrastructure, each of which will report water level data continuously. This network will provide data at the spatial and temporal scales that stormwater, watershed, and emergency managers need to manage and respond to changing weather patterns and extreme events.

Team Composition:

Hyfi, LLC (Fiscal Agent)
University of Michigan
Flood Apex Program, Department of Homeland Security

Water Environment Foundation
rethought Insurance
AIR Worldwide
Springmatter
Michigan Department of Transportation
Kent County, Michigan
Kalamazoo County, Michigan
United States Army Corps of Engineers
Kent County Sheriff's Office
Ohio Emergency Management Agency
Cleveland Water Alliance
Lake Ontario Watershed Protection Alliance
Department of Water Environment Protection Onondaga County, NY
Division of Homeland Security and Emergency Services, NY

Monitor and Compare Orthphosphate Removal Technologies ($82,000)

The George Barley Water Prize was developed as a catalyst to spur innovation in removing phosphorus from water. This design grant will modify the engineering plans for the test site for the final phase of the George Barley Water Prize to accommodate automated orthophosphate monitoring systems and test and calibrate the monitoring system for use in the final phase of the prize competition.

Team Composition:
The Everglades Foundation (Fiscal Agent)
Ontario Ministry of the Environment
Riess Engineering

Building the Great Lakes Impact Investment Platform ($75,000)

The project team will deliver a plan to design and develop impact reporting and tracking systems for a Great Lakes Impact Investment Platform. The planned platform will contain investment products that contribute to the vitality of the Great Lakes and generate competitive financial returns for investors. It will also track the performance of these investments against key environmental outcomes for the Great Lakes.

Team Composition:
Great Lakes St. Lawrence Governors & Premiers (Fiscal Agent)
Public Sector Consultants
The Nature Conservancy
University of Michigan School for Environment and Sustainability

PARM Agricultural Retailer Survey ($50,000)

This project will develop the ninth annual Agriculture Retailer Field Application and Services Report. The team will also promote regenerative agriculture systems, which are farming principles and practices that

enrich soils, increase biodiversity, improve watersheds, and enhance ecosystem services. Working with food companies and agriculture retailers, the project team will work collaboratively to speed a transition to regenerative agriculture, prioritizing net revenue for both farmers and agriculture retailers.

Team Composition:

IPM Institute of North America, Inc. (Fiscal Agent)

Risk Release Follow up Study Revealing How Clean is Clean: Great Lakes Invasive Species ($54,200)

This project will focus on completing a previously awarded grant to Northeast Midwest Institute. The work is aimed at producing robust and practicable methods and first results on the risk-release relationship for worst-case Great Lakes aquatic invaders. While the data collection and experimental work was completed by Northeast Midwest, follow up activities related primarily to outreach and communication of results will enhance the outcome of the original project.

Team Composition:

Pennsylvania State University – Erie (Fiscal Agent)

Great Lakes Water Technology Leadership Innovation Awards ($140,000)

The Fund named six organizations from the United States and Canada as recipients of the 2019 Great Lakes Leadership Award for Water Technology Innovation. The award highlights efforts to advance water technology innovation—addressing current threats and anticipating future challenges to the ecological health of water in this region and beyond.

The winners—AquaHacking, the Cleveland Water Alliance, Current, The Everglades Foundation, Imagine H2O, and The Water Council—are all organizations that have built rich networks of entrepreneurs, financiers, public entities, and private industries to spur innovation for the benefit of the basin's people and environment. The Fund created the Leadership Awards to celebrate efforts that accelerate new actions for protecting and improving the Great Lakes and have the potential to improve water quality on a global scale.

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

Awarded in 2018, this design grant 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.

Team Composition:

Seneca County Soil and Water Conservation District (Fiscal Agent)
Heidelberg University
Bowling Green State University

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

Awarded in 2018, 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.

Team Composition:

Michigan Sea Grant (Fiscal Agent)
Michigan Clean Marina Program
Ohio Sea Grant
Erie Conservation District
Ohio Department of Natural Resources
Wisconsin Sea Grant
Wisconsin Coastal Management
Ohio State University

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

Awarded in 2018, this design grant 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.

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.

Team Composition:

Pennsylvania State University – Behrend (Fiscal Agent)
Mary Balcer—Scientist
Governors State University
United States Environmental Protection Agency, Research Triangle Park
United States Fish and Wildlife Service
US EPA NERL
United States Navy Research Laboratory
Central Michigan University
Lake Carriers Association
Chamber of Marine Commerce
Port of Erie
Port of Duluth-Superior
PA Office of the Great Lakes and Coastal Resource Management
The Nature Conservancy
Pennsylvania Department of Environmental Protection
Great Lakes Commission
NOAA
American Great Lakes Ports Association
Minnesota Department of Natural Resources
Alliance for the Great Lakes

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

Awarded in 2018, 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 work 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.

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.

Team Composition:
Wayne State University (Fiscal Agent)
Ingham Conservation District
City of Williamston
Tri County Regional Planning Commission
Michigan Association of Conservation Districts
Clinton River Watershed Council
OHM Environmental Advisors
Nymbus Systems Coorporation
Great Lakes Water Authority
Sierra Club Michigan Chapter
Great Lakes Environmental Research Laboratory, NOAA

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

Awarded in 2018, 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.

Team Composition:
WattTime (Fiscal Agent)
Rocky Mountain Institute
OhmConnect
UC Berkely Center for the Built Environment

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

Awarded in 2018, 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.

Team Composition:
OptiRTC, Inc. (Fiscal Agent)
NatureVest
Walmart
The Nature Conservancy

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.

Team Composition:

University of Pennsylvania (Fiscal Agent)
Cornell University
University of Minnesota
USGS Great Lakes Science Center
Michigan Aerospace
Anchor QEA
Ohio Environmental Protection Agency
U.S. Army Corps of Engineers
University of Wisconsin – Sea Grant Institute
Port of Toledo
Kurtz Brothers
Great Lakes Commission

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 community foundations that have committed to this effort are listed below.

Lake Erie

Community Foundation for Greater Buffalo
The Cleveland Foundation
Community Foundation of Lorain County
Community Foundation of Monroe County
Northern Chautauqua Community Foundation
Sandusky/Erie County Community Foundation
Community Foundation for Southeast Michigan
Toledo Community Foundation

Lake Superior

Duluth Superior Area Community Foundation
Keweenaw Community Foundation
Community Foundation of Marquette County
M&M (Marinette and Menominee Counties)
Community Area Foundation
Community Foundation of the Upper Peninsula

Lake Ontario

Burlington Community Foundation
Durham Community Foundation
Niagara Community Foundation
Oakville Community Foundation
The Toronto Foundation

Upper Lake Michigan

Charlevoix County Community Foundation
Grand Traverse Regional
Community Foundation
Leelanau Township Community Foundation
Petoskey-Harbor Springs Area Community
Foundation
Manistee County Community Foundation

Lower Lake Michigan

The Chicago Community Trust
Evanston Community Foundation
Legacy Regional Community Foundation
Unity Foundation of LaPorte County
Porter County Community Foundation

Lake Huron

Bay Area Community Foundation
Community Foundation Grey Bruce
Community Foundation for Northeast Michigan

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.

Team Composition:

Council of Michigan Foundations (Fiscal Agent)
American Society of Adaptation Professionals
Huron Pines
Michigan State University Extension
Networks Northwest
OAI, Inc.
Small Change Fund
Superior Watershed Partnership and Land Trust
The Cleveland Water Alliance
Tip of the Mitt Watershed Council
University of Minnesota Sea Grant
Watershed Center of Grand Traverse Bay
Alliance for the Great Lakes
American Rivers

Funders' Network for Smart Growth and Livable Communities
Great Lakes and St. Lawrence Cities Initiative
Great Lakes Commission
Great Lakes Funders Collaborative
Green Infrastructure Leadership Exchange
Public Sector Consultants, Inc.
SAL Consulting, Inc.
US Water Alliance
Verna Harrison and Associates

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.

Team Composition:
American Farmland Trust (*Fiscal Agent*)
The IPM Institute of North America
Utah State University
Agren, Inc.
Cornell University
Wood Soil and Water Conservation District
Partnership for Ag Resource Management

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.

Team Composition:
Kieser and Associates, LLC (*Fiscal Agent*)
Agren, Inc.
American Farmland Trust
Cocoa Corp
Newtrient, LLC
University of Wisconsin – Milwaukee
Van Buren Conservation District
St. Joseph River Basin Commission

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 (NEORSD) 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 NEORSD'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.

Team Composition:

American Rivers *(Fiscal Agent)*
Abt Associates, Inc.
Water Environment Federation
Grand Rapids Environmental Services Department
Northeast Ohio Regional Sewer District

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.

Team Composition:

National Wildlife Federation (Fiscal Agent)
Seneca Conservation District
No Till On The Plains
Farmer Led Watershed Council
Ohio State University
Prairie Rivers Network
Burleigh County Soil and Water Conservation District
North American Climate Smart Alliance
NEW Water, Green Bay Metropolitan Sewerage District
Sustainable Agriculture Systems
DuPont Pioneer
Polk County Government Center

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.

Team Composition:

Environmental Consulting & Technology, Inc. (Fiscal Agent)
Encourage Capital
Corvias Solutions
Milwaukee Metropolitan Sewerage District
City of Southfield, MI
City of Perrysburg, OH
City of Farmington Hills, MI
City of Racine, WI
Greenleaf Advisors, LLC
Skidmore Owings & Merrill
Storm and Stream Solutions, LLC
The Water Council
U.S. Environmental Protection Agency
Seattle Public Utilities
University of California, San Diego
Indiana Finance Authority
West Monroe Partners
Veolia North America
Great Lakes and St. Lawrence Cities Initiative

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).

Team Composition:

U.S. Geological Survey (Fiscal Agent)
University of Wisconsin
Water Environment Federation
Milwaukee Metropolitan Sewerage District
Macomb County Health Department
Monroe County Environmental Services
City of Milwaukee, WI
Stormwater Coalition of Monroe County, NY
Milwaukee Riverkeeper
University of Wisconsin
Clinton River Watershed Council
City of Wauwatosa, WI

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.

Team Composition:

AgModels LLC (Fiscal Agent)
Systems Made Simple, Inc.
DairyTuner LLC
Ontario Ministry of Agriculture, Food and Rural Affairs
Wisconsin Department of Natural Resources
The Ohio State University
New York State Department of Environmental Conservation
New York State Department of Agriculture and Markets
Cornell University
Natural Resources Conservation Service – New York

Agricultural Research Center, USDA
Adiron, LLC

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.

Team Composition:

Wayne State University (Fiscal Agent)
Lake Erie College of Osteopathic Medicine
Northeast-Midwest Institute
Isle Royal National Park
Fisheries and Oceans Canada
Harkins Engineering and Environmental Service LLC
Wisconsin Department of Natural Resources
Michigan Department of Environmental Quality
Minnesota Pollution Control Agency
Moss Landing Marine Laboratories
U.S. Coast Guard
U.S. Naval Research Laboratory

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. 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. 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.

The team will continue to develop the 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.

Team Composition:

Cleveland Botanical Garden (Fiscal Agent)
Case Western Reserve University
People United for Sustainable Housing
Groundwork Buffalo
Buffalo Neighborhood Stabilization Corporation
Massachusetts Avenue Project
Buffalo Sewer Authority
Buffalo Mayor's Office of Strategic Planning
Gary Department of Green Urbanism
University of Indiana Northwest
City of Gary, IN
Gary Storm Water Management District
Greeley and Hanson, LLC
Buckeye-Shaker Development Corporation
Cleveland City Planning Commission
Neighborhood Progress Inc.
Northeast Ohio Regional Sewer District
The Ohio State University
Urban Sustain
U.S. EPA
Toledo Waterways Initiative
Federal Reserve Bank of Cleveland
Lowe Eastside Action Plan
Data Driven Detroit
City of Milwaukee
Milwaukee Metropolitan Sewerage Authority
University of Michigan

Great Lakes
Protection Fund

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