

Appendix I: Actions by Partner Organizations

The following two tables list actions that will reduce nutrient loads to Lake Erie that are expected or underway in Ohio by a number of our partner organizations. This list may duplicate projects listed in the Ohio or USEPA DAP. The intention of including these tables is to show that our partners are engaged in a number of supporting projects, often with contributions of their own time and funds.

Table I-1: Actions by the Agricultural Community					
Activity	Objectives	Tools/Resources	Responsible Parties	Target Date	Status & Results, as applicable
Ohio Farm Bureau Water Quality Action Plan	<p>Under Ohio Farm Bureau's Water Quality Action Plan, four priorities have been initiated:</p> <ul style="list-style-type: none"> • On the ground research; • Education and outreach efforts; • Establishing new management practices; and • Seeking financial resources to address all water issues. 	Staff time, financial resources	Ohio Farm Bureau with county Farm Bureaus, OSU Extension, USDA-NRCS, USDA-ARS and other collaborating partners	Ongoing	<p>See items in list below:</p> <p>Blanchard River Demo Farms</p> <p>Funding for Nutrient Management Plans</p> <p>Funding for Edge of Field research</p> <p>Promoting 4Rs</p> <p>Ohio Nutrient Management Record Keeper (ONMRK)</p> <p>Ohio Agriculture Conservation Initiative (OACI)</p>
County Water Quality Grants	Matching grants to county Farm Bureaus to work in partnership with local collaborators to improve water quality in their communities.	Staff time and financial resources	Ohio Farm Bureau with county Farm Bureaus and collaborating partners	Ongoing	Invested nearly \$450,000 in Water Quality Grants for county Farm Bureau projects aimed at improving water quality in their communities. With additional matching funds from dozens of partners, these projects have

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					generated over \$1.1 million in total resources (2015 – 2019).
The Ohio Nutrient Management Record Keeper (ONMRK)	Development and continual technical support for ONMRK, a free mobile app that helps farmers record their manure and fertilizer applications as required by law (Senate Bill 1 and Senate Bill 150).	Staff time and financial resources	Knox County Farm Bureau, and Knox County Soil and Water Conservation District with the Ohio Farm Bureau, Muskingum Watershed Conservancy District and Ohio State University Extension.	Ongoing, continuous updates to reflect changes in state law	<p>The ONMRK free mobile app is the only standardized recordkeeping tool available for farmers who have been certified by ODA to apply fertilizer. The app helps farmers record their manure and fertilizer applications a required by current regulations.</p> <p>The app’s latest version (version 2.0) is available at Google Play and the Apple Store.</p>
Healthy Water Ohio Coalition	Assemble a diverse group of water stakeholders to develop a comprehensive water resource management plan for the State of Ohio.	Staff time and financial resources	Ohio Farm Bureau with environmental organizations, university leaders, businesses,	Complete. Healthy Water Ohio Coalition successfully transitioned into the Ohio Agriculture Conservation	Healthy Water Ohio brought together 200 individuals and organizations with diversified interests. Publication of the Healthy Water Ohio Strategy Report (August 2015) recommend the creation of a public-private Ohio Water Trust that would fund the group’s

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			water providers, farmers and other water stakeholders	Initiative (OACI)	recommendations for preserving the state's water resources.
Blanchard River Demonstration Farms Network	Establish the Blanchard River Demonstration Farms Network to demonstrate on-farm conservation practices to help improve water and nutrient conservation	Staff time and financial resources to support project administration, field days, site tours, promotion, technology transfer and outreach	Ohio Farm Bureau with USDA-NRCS	Ongoing	Over 1,500 individuals have visited the Blanchard River Demonstration Farms Network including the Mayor of Toledo, Senator Rob Portman, hundreds of FFA students, farmers, non-farmers and media outlets. The farms are showcasing a wide array of conservation practices including edge of field monitoring, phosphorus removal beds, sub-surface placement of fertilizer and drainage water management structures. Website developed for interested individuals to conduct a virtual tour (https://blancharddemofarms.org).
Tri-State Western Lake Erie Basin Phosphorus Reduction	Implementation of multi-state project in western basin of Lake Erie by reducing phosphorus and sediment loading to decrease Harmful Algal Blooms	Staff time to support outreach, education, programming and promotion of farmer	Ohio Farm Bureau, USDA NRCS, Michigan Department of Agriculture	2020	Project is wrapping up and new documentation should be out sometime in 2020.

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Initiative (NRCS RCPP)		participation opportunities	and Rural Development and other collaborating project partners		
Fertilizer applicator certification program	Continue to promote certification and recertification workshops, provide resources to those counties in need of hosting a workshop, educate producers about program and certification requirements	Staff time, publication and notification support, financial support	Ohio Farm Bureau with OSU Extension (in partnership with ODA)	Ongoing	Current Certifications: 15,302 Training portal: https://nutrienteducation.osu.edu/FertilizerCertification
Fertilizer and manure application restrictions	Continue to educate farmers about the fertilizer and manure application restriction in the Western Lake Erie Basin	Staff time, publication and notification support	Ohio Farm Bureau with OSU Extension	Ongoing	A total of 11 news stories were prepared and posted on the OFBF website (www.ofbf.org) related to the newly passed legislation. Three (3) targeted emails were sent to approximately 17,000 OFBF members in the basin providing information on the newly passed legislation.
Nutrient Management	Ohio State University Extension hired 4 program specialists to work with farmers in the Western Lake	Financial support, promotion and outreach via OFBF electronic and	Ohio Farm Bureau with OSU Extension and	Ongoing	Completed 98 nutrient management plans on 55,039 acres which included 29 CNMP plans for livestock manure and commercial fertilizer. Provided

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Plan Development	Erie Basin to develop nutrient management plans	print publications and website	National Fish and Wildlife Foundation		nutrient management plan develop training for 15 Certified Crop Advisers. Presentations on Nutrient Management plans were given to 3,385 farmers. Supported the 4R Nutrient Certification Program resulting in an additional 50 Nutrient Service Providers attaining certification representing 1.9 million acres.
Western Lake Erie Basin Technical Advisory committee	Subcommittee to the State Technical Committee to provide technical assistance specific to water quantity and nutrient management issues in the Western Lake Erie Basin	Staff time, travel	Ohio Farm Bureau; with USDA-NRCS and US Army Corps of Engineers	Ongoing	The Western Lake Erie Basin Partnership Leadership Team and Advisory Committee meet at least 2 times a year. A tour of the Blanchard River Demonstration Farms Network was conducted in July 2019.
Conservation Kick (Water Quality Market)	Aims to keep soil and nutrients out of the Great Lakes and protect drinking water by allowing utilities, industries and businesses, nonprofit organizations and concerned citizens to invest in water quality credits. (expanding from prior Erie P Market)	Initially, staff time, travel to participate as members of the project advisory group; eventually will generate revenue to put towards	Great Lakes Commission, City of Defiance, Avon Lake Regional Water, and other project partners	Initial funds from US-EPA through the GLRI until February 2022, then ongoing as a self-sustaining program of the Great	Starting up Advisory Council in 2020. At least one credit transaction will be pursued for 2020 in Ohio's portion of the Lake Erie basin, with specific focus on the Maumee River watershed.

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		agricultural BMP installation		Lakes Commission	
4R Nutrient Stewardship Certification Program	Reach out to WLEB retailers and CCAs to enroll in program, as well as encourage statewide adoption of program in Indiana	Staff time and travel, OABA education specialists and auditors to ensure progress and compliance.	Ohio Agribusiness Association, Nutrient Stewardship Council; with other partners including The Nature Conservancy and Ohio Farm Bureau	80% of farmed acres in the WLEB under certified management by 2022	Certification status has been earned by 58 Nutrient Service Providers in Ohio, Indiana and Michigan, with 44 Certified in the WLEB. Nearly 3 million acres and 6,000 grower customers are serviced by these NSPs, with approximately 1.6 million acres located in the WLEB (out of ~4 million acres of farmable land in the WLEB). Ohio has the majority of the participation with 53 overall Certified NSPs; 40 of the Certified NSPs service 1.46 million WLEB acres. The Ohio Farm Bureau Federation serves on the Nutrient Stewardship Council and Advisory Committee.
Enhancement of Ohio Phosphorus Risk Index	Revise current Ohio Phosphorus Risk Index to incorporate components addressing dissolved phosphorus in addition to total phosphorus	Financial support	Ohio Agricultural industry with USDA NRCS and OSU	Complete	This tool is now available, see: https://nutrientmanagement.osu.edu/
Edge of Field Monitoring and Research	Continue to support the on-going edge-of-field monitoring and management	Financial support	Ohio Agricultural industry with	Field work will continue for several years	Dr. Kevin King (USDA-ARS) and associated researchers continue to present progress reports at

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	practice implementation, present results at Blanchard River Demonstration Farms Network field days, site visits and presentations.		USDA-ARS, and NRCS		conferences, meetings, field days and workshops across Ohio and the United States.
Ohio Agriculture Conservation Initiative (OACI)	<ul style="list-style-type: none"> ❖ Assess farm practices in Ohio to better understand current on-farm conservation and nutrient management efforts; ❖ Create a new, voluntary certification program for farmers to promote continuous improvement and increase the adoption of best management practices to improve water quality. 	Staff time, travel	Leaders from a diverse group of partners in agriculture, ENGOs, and academia	Ongoing	<ul style="list-style-type: none"> • Hosted a two-day retreat bringing together agriculture and environmental partners, government and university leadership to establish the guidance of the organization • Established working groups to work on Farmer Assessment, Certification, Education and Outreach • Created benchmarks in conservation practices for farmers • Held more than 50 meetings throughout the year to create the OACI program • Hosted engagement opportunities to inform farmers about the program • Created a communications outreach program specifically for target farmers in the Western Lake Erie Basin, but available to farmers statewide.

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					<ul style="list-style-type: none">• Contracted with Ohio State and Iowa to create a statistically-valid survey of conservation practices in the WLEB• Launched the availability of the app on both iTunes and the Google app stores.

Table I-2: Actions by Local or Regional Governments and Non-Governmental Organizations

Activity	Objectives	Resources	Responsible Parties	Target Date	Target Load Reduction	Status & Results
Western Lake Erie Nutrient Source Inventory	Mapping of potential nutrient sources that contribute to the growth of harmful algal blooms in the Western Lake Erie Basin. Modeling of the HUC (Hydrologic Unit Code) 8's that comprise the Western Lake Erie Basin.	Staff time, mapping to identify critical HUC 12's to target with nutrient reduction strategies and resources.	The Board of Lucas County Commissioners, The City of Toledo, The Toledo-Lucas County Sustainability Commission	Ongoing	In accordance with the goal of a 40% reduction of total phosphorus and dissolved reactive phosphorus entering Lake Erie by 2025.	The interactive web-based mapping tool has been developed and is available online. The tool includes all available data regarding nutrient loading in the Western Lake Erie Basin. Point source and non-point source potential nutrient sources are included in the tool, water quality projects that have been implemented, the algae detecting buoys in Lake Erie, and water quality monitoring stations throughout the basin. A SWAT (Soil & Water Assessment Tool) model of the Lower Maumee has been completed and critical HUC 12's within the sub-watershed identified.
Ag Drainage Infrastructure	Engage county surveyors and drainage professionals in water management activities to help meet nutrient reduction goals. Establish water management target goals for WLEB and innovative drainage pilot projects.	Staff time, travel, and meeting and outreach expenses	The Nature Conservancy; Lucas County Drainage engineer; Lenawee County SWCD	Ongoing	New initiative: Project loads could be estimated	Subsurface drainage water recycling project installed in 2019 in Lenawee County, MI. TNC working with statewide partners OEPA, USDA, NRCS to establish standard protocols for Agriculture Conservation Planning Framework toolbox model runs

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						<p>and incorporate those results into HUC-12 9-element plans.</p> <p>Engagement with drainage engineers in Lucas County, OH led to three successful proposals in 2019 to install two-stage ditches.</p> <p>A proposal TNC, private drainage industry partners, and OSU to install and study automated drainage water management structures is planned for 2020 USDA Conservation Innovation Grant competition.</p>
Natural Infrastructure	<p>Restore 1% of WLEB to natural infrastructure (wetlands, floodplains, and connected riparian corridors).</p> <p>Research indicates 3-6% of ag acres converted to wetlands could address nutrient loading. TNC acknowledges that many in field practices will be used in concert with natural infrastructure to meet the 40% reduction.</p>	<p>Staff time, mapping to target, travel, engineering, construction, monitoring.</p>	<p>The Nature Conservancy, Ducks Unlimited, US FWS, ODNR, Black Swamp Conservancy, Toledo Metroparks, and others.</p>	<p>Ongoing</p>	<p>Project loads could be estimated.</p>	<p>Developed opportunity maps & water storage goals for wetlands, floodplains to enable farmers/CCAs to make better choices about land management.</p> <p>Collaborate with various organizations to assist/promote implementation through existing and evolving funding opportunities and programs.</p> <p>Since 2014: Restored over 300 acres of new wetlands & natural</p>

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						<p>vegetation on over 200 acres of wetlands/floodplains, restored connectivity of over 1,300 acres of coastal wetlands.</p> <p>In engineering and design for over 200 acres of wet prairie restoration in Oak Openings, 200 acres in Muddy Creek Bay, Sandusky Bay, Oak Openings Preserve, and 25 acres of wetlands in agricultural areas of the WLEB.</p>
<p>Central Lake Erie Basin (CLEB) Collaborative of watershed organizations</p>	<p>Increasing implementation of stream restoration, water resource protection, stormwater management and stormwater retrofits throughout the Central Lake Erie Basin.</p>	<p>Current funding from local foundations, & grants from OEPA 319, Healthy Watershed Consortium, Great Lakes Commission GI Champions. Pursuing opportunities to expand and</p>	<p>17 Northern Ohio watershed organizations. Steering Committee includes The Nature Conservancy, West Creek Conservancy, Chagrin River Watershed Partners,</p>	<p>2015-2018</p>		<p>2 additional full time staff equivalents (FTE's) are providing services to the CLEB Collaborative organizations, including:</p> <p>Develop concept plans, write grants, and assist with project management for stream/wetland restoration or storm water retrofit projects. Vetting a robust project pipeline for various funding sources.</p> <p>Review and update of local zoning codes to improve protection of</p>

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		sustain current service levels.	Doan Brook Watershed Partnership, Tinkers Creek Watershed Partners.			<p>natural resources during and after development.</p> <p>Assistance with protection of critical areas.</p> <p>Increase awareness of the value of healthy watersheds and foster individual, community and corporate watershed stewardship.</p>
Soil Health Partnership	Identify willing landowners, attend field days, and share results	Staff time and travel	The Nature Conservancy, landowners, Soil Health Partnership, & local SWCDs	5-10 year research farm network starting in 2015	<ol style="list-style-type: none"> 1. Research in progress 2. Goal: link soil health metrics with yields, water quality and economics 	<p>Supported establishment of the Soil Health Partnership, a network of more than 130 farms measuring data on practices related to soil health. 5 farms currently in WLEB (4 in Ohio).</p> <p>USDA CIG On Farm Soil Health Trial proposal written in 2020 to establish 5 more SHP farms in Ohio WLEB.</p>
Sponsor and present at soil health/4R/farmer working group field days and events	Two to three events/year, serve on Tri-State Watershed Alliance Board, and sponsor and help host annual expo	Staff time, travel, and sponsorship/exhibitor fees	The Nature Conservancy and event partners	Ongoing	In progress - direct contact with 3,000 WLEB stakeholders annually	<p>Sponsor and present at soil health, 4R, and farmer working group field days and events.</p> <p>Launched lunch and learn series in 2019 and GLRI-funded peer-led farmer advocate training program in 2020.</p>

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Demonstration BMPs and field research sites	Identify willing landowners, apply for grants, install BMPs, and engage universities in on-farm research	Staff time, travel, BMP design/installation, water quality & ecological sampling	The Nature Conservancy, landowners, and researchers	2014-2019 installation & on-going monitoring	4,800lb/yr N, 2,400lb/yr TP, 2,400 tons/yr Sediment	Assisted in establishing demonstration farms and field research sites where we have installed/advised/directly supported implementation of 12 phosphorus-filter beds, 2 woodchip bioreactor, 2 miles of two-stage ditch, 9 blind inlets, 400 acres of cover crops, 200 acres of no-till, 1,000 acres under a nutrient management plan, 7 acres of filter strips, 3,500 linear feet of cascading waterway, 1 infiltration basin, conservation tile retrofits to support 90 acres of conservation treatment, 3 drainage water control structures.
Research	CEAP Wildlife Modeling	Staff time, travel, outreach events, watershed-scale model.	The Ohio State University, The Nature Conservancy, USDA-ARS, NRCS, Texas A&M,	2016	40% TP, SRP and improvement to stream aquatic health	Combined SWAT+APEX model to assess impacts of nutrient management and erosion control practices on nutrient reduction and stream health. Goal was to find wins for tributaries and Lake Erie. Completed in 2016; shared in webinars, public meetings, and

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						<p>agency-specific meetings. http://lakeerieceap.com</p> <p>Results highlights:</p> <ol style="list-style-type: none"> 1. modeled the entire WLEB, whereas the multi models are for just Maumee River watershed. 2. Includes stream health parameters. 3. Includes economics analysis. 4. Confirmed that wide scale adoption (of erosion and control nutrient management) was needed to meet the Annex 4 target at Lake Erie. IBI scores could improve in tributaries with removal of nutrient stressors. Annual costs to achieve this level of management were well above current state and federal funding levels. Alternative funding mechanisms would be needed to meet Annex 4 goals.
Protect and restore wetlands and	Seek and implement North American Wetlands Conservation Act (NAWCA) grants to protect and restore	NAWCA grants and partner staff &	Ducks Unlimited, Western Reserve Land	2009-ongoing	Not a specific objective but projects	Since 2009 this partnership has protected or restored 9,020 acres of wetlands and associated uplands via fee-title acquisition,

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associated uplands	wetlands and associated uplands in the Lake Erie watershed of northeastern Ohio.	financial resources	Conservancy, Cleveland Museum of Natural History, USFWS Partners for Fish and Wildlife, Ohio Division of Wildlife and others		protect and improve water quality	conservation easements and through restoration on private land. If funded, a NAWCA proposal submitted in February 2020 will protect or restore an additional 2,090 acres. DU and partners expect to seek at least two additional NAWCA grants in northeastern Ohio over the next 4-6 years.
Restore 987-acre Howard Marsh Metropark	Restore approximately 930 acres of coastal wetlands and adjacent uplands, provide fish passage, reconnect Lake Erie hydrology and divert agricultural drainage into restored wetlands at this new Metropark in Lucas County.	Ducks Unlimited engineering, GLRI funding via NOAA, additional funds by Ohio Division of Wildlife and Toledo Metroparks	Metroparks of the Toledo Area, Ducks Unlimited, Ohio Division of Wildlife	2013 – ongoing	Improving water quality is a project objective but no specific load reduction established.	Restoration of 572 acres of coastal wetlands and 151 acres of upland forest and native grass was completed in 2018. This includes taking 750 acres out of agricultural production and diverting off-site agricultural drainage into the restored wetlands. Restoration of an additional 210 acres of agricultural land to wetlands is in the engineering phase.
Protect and restore 203 acres of	Ducks Unlimited will purchase four farms in Ottawa County near Lake Erie or the Toussaint	Ducks Unlimited engineering,	Ducks Unlimited, US Fish and	2017 – ongoing	Improving water quality is a	DU has purchased four agricultural properties totaling 203.2 acres. Restoration of the agricultural

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agricultural land	River, restore the agricultural land to wetlands and uplands, then donate the land to USFWS for inclusion into Ottawa NWR.	GLRI funding via USEPA	Wildlife Service		project objective but no specific load reduction established.	portions of these properties to wetlands and upland forest or native ground cover totaling 132 acres is underway and will be complete in 2020. All four properties will be donated to USFWS by June 2020.
Restore wetlands and uplands on private land in the WLEB	Seek and implement Great Lakes Fish and Wildlife Restoration Act (GLFWRA) and other grants to restore wetlands and native grasslands on private lands throughout the WLEB of Ohio, Indiana and Michigan	GLFWRA funding, partner staff and financial resources	Ducks Unlimited, USFWS Partners for Fish and Wildlife Program (OH, MI, IN), Ohio Division of Wildlife, Indiana DNR, Michigan DNR, Ottawa SWCD	2014 – ongoing	Improving water quality is a project objective but no specific load reduction established.	Phase I grant restored 494 acres of wetlands and 137 acres of native grasslands. Phase II will be complete in 2021 and will restore at least another 250 acres of wetlands and 250 acres of grasslands. A Phase III grant was awarded in late 2019 and will restore another 200 wetland acres by 2022. Partners intend to seek additional grants to continue this program indefinitely.
Enhance coastal wetlands, restore Lake Erie hydrology	Seek and implement grants to enhance management capability, restore hydrology and fish passage and divert agricultural drainage into	DU engineering, NOAA GLRI grant	Ducks Unlimited, US Fish and Wildlife Service,	2012 – ongoing	Improving water quality is a project objective	Phase I is complete and restored Lake Erie hydrology, management capability and fish passage into the 1,460-acre Pool 1 wetland. Phase I also diverted 200+ acres of

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and improve water quality at Cedar Point National Wildlife Refuge	coastal wetlands at Pools 1 and 2 of Cedar Point NWR in Lucas County, Ohio		NOAA, The Nature Conservancy		but no specific load reduction established.	agricultural drainage into Pool 1. USFWS has received GLRI funding for Phase II that will restore approximately 150 acres of coastal wetlands and divert additional agricultural drainage into the wetlands.
Improve water quality, enhance coastal wetlands and restore Lake Erie hydrology at the Navarre Marsh Unit of Ottawa National Wildlife Refuge	Enhance management capability, restore hydrology and fish passage and divert agricultural drainage into 779 acres of coastal wetlands at the Navarre Marsh Unit of Ottawa NWR in Ottawa County	DU engineering, USFWS GLRI grant, GLFWRA grant, H2Ohio grant	Ducks Unlimited, US Fish and Wildlife Service, First Energy, Ohio Department of Natural Resources (H2Ohio)	2019-2022	Improving water quality is a project objective but no specific load reduction established.	Topographic and bathymetric surveys completed by DU. Project is currently in the conceptual design phase. Upgrading and replacing pumps and water control structures and other actions to be completed by fall 2022.
Enhance coastal wetlands, restore Lake Erie hydrology and improve	Enhance management capability, restore hydrology and fish passage and divert private drainage into 125 acres of coastal wetlands at the confluence of Toussaint and	DU engineering, GLFWRA grant, NOAA GLRI grants, NFWF	Ducks Unlimited, Ohio Division of Wildlife, The Nature Conservancy,	2013-2021	Improving water quality is a project objective but no	The expensive and complex nature of this project required it to be completed in three phases and to utilize five public grants to cover project costs. Phases I and II are complete and Phase III will be done

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water quality at Toussaint Wildlife Area	Packer Creeks at Toussaint Wildlife Area in Ottawa County	SOGL GLRI grant (via TNC)	USFWS, NOAA, NFWF		specific load reduction established.	in 2021. When completed, the entire wetland management infrastructure of levees, water control structures and a pump will be upgraded and offsite private drainage diverted into the enhanced wetlands.
Improve water quality, enhance coastal wetlands and restore a hydrological connection with the Little Portage River at Little Portage Wildlife Area in Ottawa County	Divert up to 406 acres of private agricultural drainage into coastal wetlands, enhance management capability and restore hydrology at the confluence of the Portage and Little Portage Rivers	DU engineering, NOAA grant (for engineering), H2Ohio grant	Ducks Unlimited, Ohio Division of Wildlife, The Nature Conservancy, NOAA, Ohio Department of Natural Resources (H2Ohio)	2018-2022	Improving water quality is a project objective but no specific load reduction established.	Topographic survey completed by a consultant hired by TNC. Project is currently in the conceptual design phase by DU. Diverting offsite agricultural drainage, removing unnecessary levees, renovating existing levees and upgrading and replacing pumps and water control structures and other actions to be completed by fall 2022.
Improve water quality by purchasing 398 acres of	Phase 1 of this two-phase project will purchase 398 acres in Wyandot County, complete a topographic survey and	DU land acquisition and engineering, H2Ohio grant	DU, Ohio Division of Wildlife, Ohio Department	2019-2022	Improving water quality is a project	Phase I is underway with the topographic survey completed, land purchase expected by June 2020, conceptual engineering by

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agricultural land and natural habitats, restoring the agriculture to wetlands and uplands	conceptual engineering design for wetland restoration and transfer the property to the Ohio Department of Natural Resources. Phase II will complete the engineering design and implement restoration to improve water quality.		of Natural Resources (H2Ohio)		objective but no specific load reduction established.	September 2020 and title transfer to ODNR by November 2020. Phase II is pending additional H2Ohio funds but should be completed within three years of acquisition.
Reduce CSOs	NEORS D Project Clean Lake	\$3 B Capital Investment	Northeast Ohio Regional Sewer District	2011 - 2036	89% reduction in Phosphorus from CSOs in NEORS D service area	Reducing pollution to Lake Erie from CSOs through a combination of large tunnels, treatment plant improvements and green infrastructure. Program is currently underway.
Optimize WWTP Performance	Optimizing Phosphorus Removal at NEORS D WWTPs	Plant Operations, Wastewater Treatment Chemicals	Northeast Ohio Regional Sewer district	Ongoing	Approximately 749 tons per year removed by the WWTPs	Reducing nutrients to Lake Erie from optimized phosphorus removal at all three NEORS D WWTPs
Address local water quality problems through	NEORS D Member Community Infrastructure Grant Program	Grant Funding 2017 - \$ 6.8 M 2018 - \$3.9 M 2019 - \$7.9 M 2020 - \$10.9 M	Northeast Ohio Regional Sewer District and Member Communities	Ongoing		A program providing grant funding to assist 62 member communities to perform sewer infrastructure repair and rehabilitation work on their local systems to address failing home septic systems,

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infrastructure repair						sanitary sewer overflows, and inflow/infiltration that contribute to phosphorus loading.
Reduce nutrient loads from stormwater	NEORSD Green Infrastructure Grant Program	Annual Grant Funding (varies) 2019 - \$1.9 M 2020 - \$1.9M	Northeast Ohio Regional Sewer District, Communities, Government entities, Non-profit organizations and businesses	Ongoing		Providing grant funding to assist communities, government entities, non-profit organizations and businesses working in partnership with their communities to implement green infrastructure projects that remove stormwater from the NEORSD combined sewer system.
Preservation of high-quality stream corridors and wetlands	NEORSD Sponsorship for Water Resource Restoration Sponsor Program (WRRSP) Projects	Approximately \$15 million annually (varies)	Northeast Ohio Regional Sewer District	Ongoing		Work with regional partners to preserve high quality wetland habitats and stream corridors to improve water quality and reduce nutrient loading. <ul style="list-style-type: none"> Since 2005, 2,450 acres of wetlands and 47 miles of stream corridors preserved.
Research	NEORSD Water Quality Monitoring Program	Staff time and resources	Northeast Ohio Regional Sewer District	Ongoing		Continue NEORSD program of monitoring the water quality in Lake Erie and tributary rivers and

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						streams within the NEORSD service area.
Address flooding, erosion, and water quality issues through a watershed-based approach	NEORSD Regional Stormwater Management Program	\$43 M annually Stormwater Utility	Northeast Ohio Regional Sewer District	Ongoing	To be determined. Research in progress to estimate load reductions per project	<p>The District is responsible for over 476 miles of the regional stormwater system.</p> <ul style="list-style-type: none"> • Restoration of streams to improve function and reduce erosion along reaches that have been impacted by urbanization and poor stormwater management practices. <ul style="list-style-type: none"> ○ To date, projects have restored 14,310 LF of stream in the Greater Cleveland area. ○ 40,425 tons of sediment removed from flood control & basin projects. ○ 10.61 acres of floodplain reconnected to streams • Master Plan studies are underway to understand the problems and opportunities along the regional system which will result in protection and restoration of these assets

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						<ul style="list-style-type: none"> Operations and Maintenance activities have resulted in the removal of 31,879 cubic yards of nutrient-rich sediment from the system.
Voluntary Best Management Practices for Stormwater Management	NEORSD Stormwater Management Program Fee Credits Program	NEORSD Stormwater Management Program	Northeast Ohio Regional Sewer District	Ongoing	To be determined	Stormwater Fee Credits program incentivizes stormwater BMP installation and maintenance by individuals and corporations. <ul style="list-style-type: none"> Credits currently applied to 5,268 parcels.
Required Best Management Practices for Stormwater Management	NEORSD Community Discharge Permit Program	NEORSD Wastewater Program	Northeast Ohio Regional Sewer District	Ongoing	To be determined.	Active development plan review program ensuring minimum stormwater management standards are met and identifying opportunities to go above the minimum.