ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

Biennial Report
2023

APPENDIX E: PARTNER UPDATES - POINT SOURCE

Illinois Department of Agriculture

Illinois Environmental Protection Agency

Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Appendix E: Partner Updates - Point Source

Des Plaines River Watershed Workgroup

The Des Plaines River Watershed Workgroup, DRWW, formed in 2015 with a primary goal of improving water quality in the Des Plaines River basin in Lake County through a collaborative, locally led process. Membership in the group consists of 41 Municipal and County government agencies, Publicly Owned Treatment Works, POTWs, Park Districts, Consulting Firms, and Environmental not-for-profits.

For more information, see drww.org.

Nutrient Assessment Reduction Plan

In 2021, the DRWW contracted with Geosyntec to develop a Nutrient Assessment Reduction Plan. The NARP, required by special condition in the National Pollutant Discharge Elimination System (NPDES) permits of multiple DRWW members, aims to address phosphorus-related impairments in waters receiving discharge from publicly owned treatment works. The objectives of this plan include establishing water quality targets, identifying measures to eliminate the phosphorus-related impairments, and determining mechanisms to facilitate cost-effective implementation of the NARP.

In 2021, Geosyntec completed an extensive review of the water quality data collected by the DRWW and began developing a watershed model that will be used to estimate phosphorus loading to the mainstem Des Plaines River from its tributaries. The initial review indicated the phosphorus impairments in the Des Plaines River may be strongly influenced by upstream loading from Wisconsin. Preliminary findings also indicated that point source pollution in the watershed had decreased from 2013 to 2018.

In 2022, the major efforts in Phase 2 included the development of modeling tools to identify relationships between phosphorus inputs and identified instream impairments. To estimate discharge rates and pollutant loads from the land surface and tributaries, a Soil and Water Assessment Tool, SWAT, watershed model was developed by project partner Kieser & Associates. The SWAT watershed model estimates nonpoint source nutrient loads to the mainstem Des Plaines River. The results of the SWAT model output were then input into a QUAL2kw instream model developed by Geosyntec Consultants. The QUAL2kw model estimates hydrodynamics and water quality according to the governing physical and biological processes for the 2020 growing season (May – October). The instream model was calibrated with historical water quality data from 35 miles of the mainstem Des Plaines River, 7 miles on Hasting's Creek, and 4 miles on Mill Creek. The modeling tools developed in 2022 will be used in Phase 3 to assess watershed management strategies for the best ways to address phosphorus-related impairments within the watershed.

Monitoring Program

The DRWW continues to conduct water quality and bioassessment monitoring. Data from this program provides the foundation of the Integrated Prioritization System, IPS, and NARP models that will be used to prioritize and implement water quality improvement projects. The Monitoring Committee meets frequently with Geosyntec Consultants for updates and decisions on next steps for completion of the 2023 DRWW NARP. The Committee reviewed and approved the DRWW 2020 Water Quality Monitoring Report, completed by MBI. Similar to previous years' reports, the 2020 report suggests that quality aquatic life in the Des Plaines River mainstream improves downstream through the workgroup area.

Illinois EPA Section 319 Grant Projects

In 2018, the DRWW began partnering on three 319 grant applications in the watershed. All three 319 grant applications received funding and have now been completed.

- The DRWW partnered with Lake County Health Department, Lake County Forest Preserve District, and Lake County Stormwater Management Commission and completed the Removal of Carp to Reduce Nutrient Enrichment Project in October of 2022. Eight lakes within the Des Plaines River Watershed were selected: Crooked, Hastings, McDonald 2, Slough, Des Plaines, St. Mary's, Big Bear, and Little Bear Lakes. Carp removal was identified as a high-priority action at all project locations within the Des Plaines River Watershed-Based Plan.

In total, 11,721 carp equaling 57,433 lbs were removed from the lakes throughout this project. The amount of phosphorus removed from each lake system ranges from an average of 161–351 lbs/year. This project reduced a source of phosphorus for internal loading in the lake, removed phosphorus contained in the flesh of the carp, allowed the re-emergence of aquatic plants to grow and increased water clarity. The Lake County Health Department plans to continue to monitor the water quality of the project lakes and carp removal efforts.

- The DRWW partnered with Lake County Forest Preserve District on the Van Patten Woods Hydrologic Restoration and Enhancement Project. In Spring 2021, LCFPD completed their 96-acre retirement of row crop farm field into native plant restoration at the Van Patten Woods Forest Preserve. This project included 20 acres of wetland creation and enhancement, 716 native tree and shrub plantings (36 acres), 11,150 feet of drain tile disabled, one trail berm to restore natural flow path and wetland hydrology and 13 rock check dams.

Deicing Workshops

The Des Plaines River Watershed Workgroup continues to sponsor and support the Northeastern Illinois Regional Deicing Workshop. The deicing workshop focuses training efforts to keep public and private sector professionals up-to-date on best management practices for winter maintenance that safely reduces road salt use. The 2022 workshops trained over 900 individuals in winter best management practices for public roads, parking lots, and sidewalks. The DRWW encourages members to look for ways to reduce road salt use while ensuring safe travel on transportation surfaces.

DuPage River Salt Creek Workgroup

The DuPage River Salt Creek Workgroup, DRSCW, formed in 2005 in response to concerns about total Maximum Daily Loads, TMDLs, set for the east and west branches of the DuPage River and Salt Creek located in portions of Cook, DuPage, and Will counties in northeastern Illinois. The DRSCW seeks to

implement targeted watershed activities that resolve priority waterway problems efficiently and cost-effectively.

In 2015 and 2020, a Special Condition to DRSCW NPDES permits was added that substantially increased financial commitments to restoration efforts focused on improving aquatic life. The Special Condition includes 10 stream restoration projects, two studies, and the development of a Nutrient Implementation Plan.

For more information, see drscw.org.

Physical Projects

- Post-project monitoring was conducted at the Oak Meadows Golf Course dam removal and stream restoration project along the Salt Creek in Addison, Ill. Post-project, both the Macroinvertebrate Index of Biological Integrity (MIBI) score and individual species taxa biodiversity improved. The 2021 post-project mean MIBI (38.8) increased 15.2 points compared to the 2013 score resulting in the site now partially meeting the general use standard for aquatic life. Additionally, the post-project Qualitative Habitat Evaluation Index (QHEI) increased at all sites with improvements in substrate, riparian, pool, and riffle scores. Mean QHEI at the project location increased 17.58 points to 74.83. All QHEI scores in 2021 were in the range defined as good (>60 QHEI points).
- Post-project monitoring was conducted at the Spring Brook Phase 2 Stream Restoration project in Wheaton, Illinois. After one year of post-project monitoring, Spring Brook Phase 2 has met its post-project targets for QHEI and MIBI both within the project footprint and at sites monitored as part of the post-project impact evaluation. Data also shows that two new species of fish, Stonecat Madtom and Rock Bass, were observed for the first time within the project limits. Post-project MIBI targets have not been met but it is expected that MIBI scores will continue to increase in Years 2 and 3 of post-project monitoring.
- The DRSCW entered a Memorandum of Understanding with the Village of Carol Stream to fund the river resource improvement elements of the Klein Creek Section I Stream Bank Stabilization Project which was completed in 2022. This project re-meandered the channel and increased its length by approximately 200 feet. A new stream bed was also constructed with a bioengineered cobble/gravel/sand mix. As the longitudinal slope was too flat for riffle structures, two rock substrate areas were added to provide riffle-type benefits. Stream banks were stabilized with vegetated rock toes or rootwads embedded at outside bends, as well as rock vanes, also known as stream barbs, at strategic locations. The top of bank was lowered adjacent to approximately 1.4 acres of newly created wetlands.
- In cooperation with Forest Preserve District of DuPage County, FPDDC, the Metropolitan Water Reclamation District of Greater Chicago, MWRDGC, and Hey and Associations, the DRSCW has been working on the final design, permitting, and preparation of contract bid documents for the Master Plan for Salt Creek at Fullersburg Woods. The Master Plan includes the removal of the Fullersburg Woods Dam and 1.25 miles of stream restoration along Salt Creek within the Fullersburg Woods Forest Preserve. Project construction is expected to begin in Fall 2023.
- In cooperation with the FPDDC and DuPage County Stormwater Management, DC SWM, the DRSCW completed the preliminary design of a fish ladder system for the Fawell Dam

modification – the dam is located on the West Branch of the DuPage River in Naperville, Illinois. The fish ladder is expected to be installed in 2023.

- In cooperation with the Forest Preserve District of Will County, FPDWC, the Villages of Bolingbrook and Naperville, and the Bolingbrook and Naperville Park Districts, the DRSCW has developed conceptual design plans for the Lower East Branch Stream Restoration Project. The designs cover the East Branch DuPage River from Hobson Road in Woodridge, which is in DuPage County, downstream to Weber Road in Naperville which is in Will County. Final design of the project and preparation of contract bid documents is scheduled for 2023.

Studies and Nutrient Implementation Plan

- The DRSCW completed its Identification and Prioritization System (IPS) model update. The IPS model is an analysis of causal factors influencing aquatic life, including the effects of nutrients. The IPS model also identified watershed-based thresholds for total phosphorus which is under review as a basis for the development of a watershed-based phosphorus target to be included in their Nutrient Implementation Plan (NIP; equivalent of a NARP).
- QUAL2Kw models were developed, calibrated, and validated for the East Branch DuPage River, West Branch DuPage River, and Salt Creek watersheds. These models are being used to evaluate projects and scenarios for the NIP.
- The DRSCW and LDRWC evaluated the impact of area street sweeping and leaf litter management practices on nonpoint source loadings of total phosphorous pollution and developed recommendations on how those programs might be made more effective in regard to total phosphorus removal. The Non-Point Source Phosphorus Reduction Feasibility Analysis Report can be found at drscw.org/activities/project-identification-and-prioritization-system.

Fox River Study Group

Introduction

The Fox River Study Group, FRSG, is a diverse coalition of stakeholders who have been working for 20 years to improve the health of the Fox River for the benefit of the nearly 1 million people in the Fox River Valley and the over 300,000 people whose drinking water comes from the river. The study group is using research, data, and collaboration to guide the region toward a cleaner, safer, and more beautiful Fox River and to support sustainable policies and development across the Fox River watershed. The group's study area encompasses 1,405 square miles of the Fox River watershed from the Stratton Dam in McHenry County to the mouth of the river in LaSalle County. The watershed includes an additional 1,253 square miles upstream in the Chain O'Lakes region in Illinois and into Wisconsin to the river's source near Waukesha.

In 2022, they completed an update of their 2015 Fox River Implementation Plan, FRIP, based on new modeling of river conditions under various management scenarios. The group also successfully advocated for the relaunch of an Army Corps of Engineers' feasibility study that looks at the benefits of removing dams on the river. FRSG is now in its 21st year of water quality data collection in the watershed. The group also continues to contract work with the United States Geological Survey, Illinois State Water Survey, and the Illinois Natural History Survey to collect and analyze data on water quality

and aquatic life in the Fox River watershed. The FRSG conducted a number of public outreach events during 2021 and 2022 in addition to virtual monthly board meetings that are open to all.

Army Corps' Fox River Connectivity and Habitat Study

FRSG continues to work with U.S. Army Corps of Engineers and the Illinois Department of Natural Resources to complete the Fox River Habitat and Connectivity Study that had been placed on hold in August 2015. This study is evaluating the efficacy and cost-effectiveness of fish passage and riverine function restoration methods at 10 low head, run-of-the-river dams on the Fox River from Algonquin to Montgomery. The FRSG and many of its member organizations reached out over three years to the leadership at the Corps and to members of Congress from the Fox River Valley to advocate for the restart of the study. In November 2021, the FRSG entered into a Joint Funding Agreement with the IDNR to cover the local cost share needed to complete the study. In March 2022, Illinois Senators Durbin and Duckworth reported that $250,000 in funding for completion of the study was included in the Corps' 2022 budget. A project restart kickoff meeting was held by the Corps in June 2022, with the Corps hosting meetings with their IDNR and FRSG partners approximately every month. The Corps plans to have complete the study by mid-2024 and to release the draft report to be out for public review in 2023.

2022 FRIP Update

In 2021 the FRSG used its updated models of Fox River, an HSPF model and a QUAL2Kw model, to evaluate scenarios that combined actions reducing phosphorus inputs to the river along with the removal of dams from the Fox River mainstem. These results were presented at a public webinar in August 2021 by engineer Rishab Mahajan, who led the model update work performed by the firm Geosyntec. The results showed a reduction of phosphorus concentrations by major wastewater facilities in the study area to 0.5 mg/L annual average geometric mean, which, when combined with the removal of dams from the Fox River main stem, reduced algae levels and improved oxygen levels. Geosyntec staff then worked with the group throughout 2022 to incorporate these findings into an update of the FRIP. The 2022 FRIP calls for:

- Achievement of a 0.5 mg/L total phosphorus limit on effluent from major wastewater treatment plants by 2030
- Support of removal of dams along the Fox mainstem as identified in the Corps study and for the FRSG to take the lead in monitoring the water quality impacts of the removed dams
- Encouragement of state-of-the-art watershed management practices that can mitigate the impact of projected population growth
- Statewide cooperation to leverage support for evaluation of streambank erosion and quantification of its impact on phosphorus loads in the watershed
- Expansion of partnerships to reduce nutrients entering the FRIP study area, especially with the agricultural community in the most southern portion of the study area and upstream entities in the Chain O'Lakes region of Illinois and Wisconsin
- Collaboration with other agencies and organizations on goals to eliminate impairments in the river due to pollutants besides nutrients and to remove the river from the Illinois EPA list of impaired waters

The 2022 FRIP, an Executive Summary, and all appendices can be found at tinyurl.com/2022FRIPFolder.

Water Data Collection and Analysis

On a monthly basis since 2002, an all-volunteer and in-kind effort by FRSG member groups collects and analyzes samples from seven mainstem locations and seven tributary locations along an 80-mile stretch of the Fox River from McHenry to Yorkville. FRSG also continues to fund the U.S. Geological Survey to collect continuous water quality data on the Fox River at the Stratton Dam (USGS Station #05549501) during the growing season.

The Illinois State Water Survey maintains the FoxDB environmental database, where all available data for the Fox River watershed are compiled and publicly available at ilrdss.sws.uiuc.edu/fox. In 2022, ISWS staff updated the FoxDB with newly collected data and submitted the data to the Illinois EPA for inclusion in their next update of the Illinois Integrated Water Quality Report. ISWS staff are also working on an analysis of trends in chloride, conductivity, turbidity, water temperature, pH, and chlorophyll levels in the watershed, which is due to be released in 2023. This analysis is a follow-up to the first Fox River water quality trend analysis released in 2019.

In anticipation of the planned removal of the Carpenter Dam by the Forest Preserve District of Kane County, the FRSG coordinated a number of pre-removal studies of pooled and free-flowing reaches near the dam. In 2021, FRSG executed a contract with the Illinois Natural History Survey to conduct a mussel survey before the dam is removed. Mussel field surveys were conducted in the summer 2021 at three sites – one impact site at the Carpenter dam location, one reference site upstream near Algonquin, and one reference site downstream of the dam near West Dundee. The INHS field sampling results were presented at the FRSG annual meeting in November 2021. The INHS scope of work also includes mussel tagging during the dam's removal and subsequent tracking and other post-removal studies.

FRSG and the Chicago Metropolitan Agency for Planning continue to collaborate with other watershed stakeholders on the development of a watershed-based plan for the Indian Creek watershed in Kane and DuPage counties. The HSPF model for the Indian Creek watershed has been updated as part of this effort.

Communications and Outreach

In 2021 and 2022, FRSG conducted 13 outreach activities. Many were presentations that informed the public about the results of the river model simulations of management scenarios and the incorporation of those findings into the 2022 FRIP Update. Aileron Communications helped the FRSG create a dam removal benefits fact sheet.

For more information, see foxriverstudygroup.org.

Illinois River Watershed Study Group

The Illinois River Watershed Study Group, IRWSG, held formational meetings in May and July 2022. From those meetings, a steering committee formed and the following mission and implementation steps were outlined. The study group held its first full meeting in November 2022.

Illinois River Watershed Study Group Mission

The mission of the Illinois River Watershed Study Group, IRWSG, is to facilitate improvement in long-term water quality in the Illinois River watershed with an initial focus on phosphorous loads and eutrophication. IRWSG's near-term goals include monitoring data collection efforts and identifying data gaps that may require additional research and possible funding.

Implementation Plan

The IRWSG will be made up of stakeholders in the Illinois River System including wastewater treatment plants, municipalities, agricultural groups, environmental groups, industrial facilities, and state and federal agencies. The group will be led by a steering committee made up of volunteers representing these sectors. Through August 2023, facilitation and administration of the group will be supported by University of Illinois Extension with support from Illinois EPA.

The Steering Committee will meet regularly through August 2023 to discuss emerging issues, research, and local concerns. Subcommittees will be formed around special topics as identified by the Steering Committee. The group reevaluated the meeting schedule and administration during the summer of 2023 and adjusted as needed.

A full meeting of the IRWSG stakeholders will convene every six months to showcase monitoring data, steering committee and subcommittee progress, and new programs or research as applicable. Meetings are at Peoria Sanitary District facilities unless other arrangements are set by the Steering Committee.

Steering Committee

- Fredric Andes, Barnes & Thornburg LLP
- Shelby Best, American Farmland Trust
- Elliot Clay, Illinois Environmental Council
- Andrea Cline, HDR Inc.
- Kent Cox, Illinois Rural Water Association
- Ashley Curran, Association of Soil and Water Conservation Districts
- Albert Ettinger, Illinois Chapter Sierra Club and Mississippi River Collaborative
- Brandon Janes, Deerfield Water Reclamation Facility
- Brian Johnson, Greater Peoria Sanitary District
- Lauren Lurkins, Illinois Farm Bureau
- Adrienne Marino, The Nature Conservancy
- Rebecca Maddox, Constellation Nuclear
- Adrienne Nemura, Geosyntec
- Karoline Qasem, Geosyntec
- Nicole Vidales, Illinois EPA

Lower Des Plaines Watershed Group

The Lower Des Plaines Watershed Group formed in 2017 as a proactive way for municipalities and other dischargers to work together to address water quality issues in the watershed. The watershed encompasses approximately 490 square miles from Willow Creek, just north of O'Hare Airport in Cook

County, to the confluence with the Kankakee River in Will County. All but two municipal dischargers are participating in the LDWG. In 2018, the LDWG worked with Illinois EPA to develop special conditions language for NPDES permits that allow and encourage dischargers to work together to develop a NARP.

For more information, see www.LDPWatersheds.org.

NARP Related Activities

- In 2022, the LDWG completed the first five-year cycle of the Bioassessment Program, including 146 stations across the Lower Des Plaines River and 19 tributaries. Sampling included water and sediment chemistry, fish, macroinvertebrates, and habitat assessments. Additional dissolved oxygen, nutrient, and chlorophyll sampling was done at a subset of sites. Reports for the mainstem and Hickory Creek will be available in 2023.
- The LDWG is working with the DuPage River Salt Creek Workgroup to utilize their IPS model for the tributary watersheds. The IPS model is an analysis of causal factors influencing aquatic life, including nutrient effects. The IPS thresholds will likely be utilized in the development of the NARP for the tributary streams.
- The LDWG is working with a consultant on a strategy for developing a NARP for the Des Plaines River that addresses the differing needs for the Mainstem Des Plaines River and the tributaries.

Other Activities

- Working with the Lower DuPage River Watershed Coalition, the LDWG continues to expand and develop new materials to help members meet MS4 outreach requirements. Campaigns focus on ways residents can reduce their negative impacts on water quality. Topics include using native plants, rain gardens, and rain barrels, detention basin maintenance, pet waste, proper leaf disposal, and reducing chlorides. Outreach materials include social media posts, articles for newsletters and websites, printable handouts, and posters. All materials are available on the website ldpwatersheds.org/outreach with additional winter-related materials at www.SaltSmart.org.
- To further facilitate the coordination of outreach and education activities, a joint website between LDWG and the Lower DuPage River Watershed Coalition was launched in 2021. The new website is at www.LDPWatersheds.org and includes information about each group and joint information about water quality related topics, stream ecology, involvement opportunities for residents.

Lower DuPage River Watershed Coalition

The Lower DuPage River Watershed Coalition was formed in 2012 to identify and address priority water quality issues in the Lower DuPage River and its tributaries, located almost entirely in Will County. The coalition is comprised of municipalities and other public agencies, with participation from all six municipal wastewater dischargers. For more information, see www.LDPWatersheds.org.

Physical Projects

- The LDRWC worked in partnership with the Forest Preserve of Will County to remove the Hammel Woods Dam on the DuPage River in Shorewood. The project included the removal of the above-grade portion of the dam and the construction of an extended riffle in its place. The

project provides passage of fish species to upstream reaches and improves the instream habitat and dissolved oxygen. The project was completed in September 2021.

- Planning and design of a second habitat restoration project is underway on the DuPage River downstream of Route 126 in Plainfield. The project will include instream and shoreline habitat improvements and diversify flow patterns. Partners in the project include the Village of Plainfield and the Plainfield Township Park District. Project completion is planned for 2024.

Studies and Nutrient Implementation Plan

- The LDRWC partnered with the DuPage River Salt Creek Workgroup to complete its IPS model update. The IPS model is an analysis of causal factors influencing aquatic life, including the effects of nutrients. The IPS model also developed watershed-based thresholds for phosphorus, which will be utilized to develop a watershed-based phosphorus goal to be included in their nutrient implementation plan.
- Development of a QUAL2Kw model for the Lower DuPage River commenced in 2020. Calibration and validation for the model was completed in 2022. This model is being used to evaluate projects and scenarios for the nutrient implementation plan.

Other Activities

- Working with the Lower Des Plaines Watershed Group, the LDRWC continues to expand and develop new materials to help members meet MS4 outreach requirements. Campaigns focus on ways residents can reduce negative impacts on water quality. Topics include using native plants, rain gardens and rain barrels, detention basin maintenance, pet waste, proper leaf disposal, and reducing chlorides. Outreach materials include social media posts, articles for newsletters and websites, printable handouts, and posters. All materials are available on the website ldpwatersheds.org/outreach with additional winter-related materials at www.SaltSmart.org

To further facilitate the coordination of outreach and education activities, a joint website between LDRWC and the Lower Des Plaines Watershed Group was launched in 2021. The new website is at ldpwatersheds.org/outreach and includes information about each group and joint information about water quality related topics, stream ecology, involvement opportunities for residents.

North Branch Chicago River Watershed Workgroup

The North Branch Chicago River Watershed Workgroup was formed in January 2018 to identify and assess water quality issues along the three forks of the North Branch Chicago River. The watershed encompasses over 95 square miles, with northern and southern boundaries roughly extending from Illinois Route 132 in Waukegan, Lake County, southward to Dempster Street in Morton Grove, Cook County. The workgroup membership consists of 42 separate organizations, including 24 MS4 communities and agencies, two of which are POTWs.

In 2019 and 2020, NBWW updated the NBWW work plan and progress report to evaluate progress. Illinois EPA approved the NBWW Quality Assurance Project Plan in April 2019 and the NBWW continued its water quality monitoring program. The monitoring program included:

- Identifying 25 sites in the watershed for consistent sampling.
- Collecting and analyzing water column chemistry samples from all 25 sites.

- Deploying yearly data sondes at multiple sites throughout the watershed for collecting dissolved oxygen, pH, temperature, and specific conductance.
- Collecting and analyzing fish, macroinvertebrates, habitat, and sediment samples at 14 of the 25 sites. The third cycle of bioassessment data was completed in 2021.
- Collecting and analyzing fish, macroinvertebrates, habitat, and sediment samples at 11 more sites. The fourth cycle of bioassessment data was completed in 2022.
- Receiving a draft comprehensive monitoring report detailing the second full cycle of monitoring data (2020-21). In 2023, the NBWW Monitoring Committee will be reviewing this draft to produce a final version of the comprehensive monitoring report.

In 2021, a NARP workplan was developed; and in 2022, a consultant was hired to assist in the completion of that workplan. The first year of NARP work consisted of additional stream sampling to fill in data gaps, which will assist in the modeling of stream segments and data analysis of the entire watershed. Sediment oxygen demand was also tested to determine impact on certain stream segments. The next steps include additional monitoring of the Skokie River, development of modeling tools, watershed management scenarios, and the creation of an implementation plan. The NARP is scheduled to be completed by December 31, 2025.

For more information, find the NBWW website at nbwwil.org.