Community Assistance Planning Report No. 330

A RESTORATION PLAN FOR THE OAK CREEK WATERSHED

Chapter 6

PLAN RECOMMENDATIONS

[Headings shown in blue indicate sections that have been previously reviewed by the Advisory Group.]

6.7 RECOMMENDED ACTIONS FOR PUBLIC AWARENESS AND PARTICIPATION IN WATERSHED RESTORATION ACTIVITIES

The Oak Creek Watershed Restoration Plan includes an information and education (I&E) element designed to enhance the understanding of the watershed plan recommendations and the measures to achieve its goals and objectives, and to increase public awareness and participation in watershed management activities. The I&E element is designed to encourage the public's early and continued participation in selecting, designing, and executing the nonpoint source management measures that will be implemented.

Civic Engagement

Civic engagement is essential to the implementation of watershed plans. Technical advisors and funding agencies are key to successfully completing watershed projects, but having an engaged core of committed municipalities, citizens, business leaders, grassroots organizations, and local agencies is paramount. When the entire group is willing and able to understand each other's goals and are committed to working together, implementation plans lead to successful on-the-ground projects. Stakeholders who are affected by the watershed plan, who can provide information on the issues in the watershed, and who work to implement existing programs or plans that incorporate similar goals should actively participate.

Efforts to educate, inform, and engage Oak Creek watershed stakeholders about the watershed restoration planning process have been accomplished through the convening of stakeholder and community meetings. Stakeholder input has been a key factor in developing plan objectives and refining priority projects and programs. Community input about issues of concern is reflected in the results of an online survey that was distributed early in the outreach effort. Community meetings have also provided a means to identify problems and potential solutions, share progress on the development of the restoration plan, and receive input from the public. The questionnaire results established that the Mill Pond dam, water quality, and habitat conditions were major concerns regarding the watershed. The responses indicated that the presence of invasive species, the die off of trees in the stream corridor, sediment accumulation in stream channels and the Mill Pond, and the poor quality of the fishery were specific issues of concern.

The following stakeholders were identified during the information and education process:

- Businesses

- Cities of Cudahy, Franklin, Greenfield, Milwaukee, Oak Creek, and South Milwaukee

- Friends of Grant Park
- Friends of the Mill Pond
- Landowners
- Milwaukee County
- Milwaukee Metropolitan Sewerage District
- Residents
- Restore the Lagoon
- Root-Pike Watershed Initiative Network (Root-Pike WIN)
- Southeastern Wisconsin Regional Planning Commission
- Southeastern Wisconsin Watersheds Trust (Sweet Water)
- Trout Unlimited
- Universities and Colleges
- U.S. Environmental Protection Agency
- Wisconsin Department of Natural Resources

Driving Forces

Stakeholders within the Oak Creek watershed have worked together at varying scales to improve conditions for many decades. In the early 1980s, the Commission developed a comprehensive plan for the watershed at the request of MMSD and the City of South Milwaukee.[1] This plan addressed flooding and stormwater

[1] *SEWRPC Planning Report No. 36,* A Comprehensive Plan for the Oak Creek Watershed, August 1986.

drainage, water quality, changing land use as it related to flooding and water quality, and the deterioration of the natural resource base, particularly the loss of important natural areas and wildlife habitat. Aspects of this plan related to flooding were subsequently updated in several planning efforts conducted for MMSD.[2]

More recently, interest in improving conditions in coastal watersheds of Southeastern Wisconsin led to the formation of two organizations: Root-Pike WIN in 1998 and Sweet Water in 2010. The mission of Root-Pike WIN is to restore, protect, and sustain the Root-Pike basin watersheds, including the Oak Creek watershed, through the funding and facilitation of a regional network of locally initiated projects. Sweet Water's mission is to restore the greater Milwaukee watersheds, including Oak Creek, to conditions that are healthy for swimming and fishing through bringing diverse partners together and providing leadership and innovation. These two groups have collaborated with each other and with municipalities and counties within southeastern Wisconsin to develop the Respect Our Waters campaign, a regional information and education effort to fulfill the public education requirements of municipal stormwater discharge permits.

The Milwaukee County Parks has been actively developing and implementing ecological restoration and management plans for county-owned natural areas within the watershed. Implementation of these plans and other natural area management activities has involved numerous partner organizations including park friends' groups, local universities and colleges, neighborhood associations, nature centers, and scouting groups.

In 2014, the USEPA directed that the majority of funds available through Section 319 of the Clean Water Act for nonpoint source pollution abatement projects are to be used in watersheds covered by watershed plans that have been found to be consistent with the nine key elements that the USEPA has identified as being critical for achieving improvements in water quality.[3] Since Oak Creek has been designated as impaired due to high concentrations of phosphorus and chloride and the North Branch of Oak Creek and Mitchell Field Drainage Ditch have been designated as impaired due to high concentrations of chloride, it

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[2] *Camp Dresser & McKee,* Oak Creek Phase 1 Watercourse System Management Plan, *prepared for the Milwaukee Metropolitan Sewerage District, August 2000; SEWRPC Memorandum No. 198,* Oak Creek Updated Phase 1 Watercourse System Management Plan, *December 2011, Revised May 2019 (draft); Short Elliot Hendrickson, Inc.,* Oak Creek Watershed Conceptual Floodproofing Designs, *Technical Memorandum to the Milwaukee Metropolitan Sewerage District, June 22, 2018.*

[3] *U.S. Environmental Protection Agency,* Handbook for Developing Watershed Plans to Restore and Protect Our Waters, *EPA 841-B-08-002, March 2008.*

is necessary to establish and implement a plan to meet the USEPA goal indicated in Section 101(a)(2) of the Clean Water Act: "water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, wherever attainable". As a result, this watershed restoration plan has been designed to be consistent with USEPA's nine key elements.

Goal and Objectives

The goal of the I&E element of the Oak Creek watershed restoration plan is to provide information that local decision makers, landowners, and watershed residents can use to protect, restore, and improve the natural resources of the Oak Creek watershed. More specifically, this goal is to promote active stewardship among residents, landowners, businesses, community associations, and governmental and non-governmental organizations.

The objectives of the I&E element are to:

- Make elected officials; county, municipal, and agency staffs; landowners; businesses; nongovernmental organizations; and the general public aware of the plan and its recommendations

- Encourage Milwaukee County and the municipalities in the watershed to adopt the plan and amend their relevant plans, ordinances, and municipal codes to recognize plan recommendations

- Educate the general public regarding conditions in the watershed and threats to water quality, habitat, biota, and recreation

- Inform staffs of relevant organizations including Milwaukee County, municipalities, public agencies, and nongovernmental organizations about specific plan recommendations that they are able to implement and to encourage them to include these recommendations in their activities and in proposals for funding and assistance

- Provide information on technical and funding assistance to County and municipal staffs, nongovernmental organizations, riparian landowners, and other organizations that have the capabilities to implement recommendations of this plan

- Provide information to homeowner and business associations on how to maintain their stormwater management practices

- Provide information and education to landowners and businesses about the impacts and management of nutrients, fertilizers, and pesticides to the watershed and measures that they can take to reduce the impacts and to encourage them to adopt the recommended management actions

- Provide information regarding plan recommendations to developers, contractors, engineers, and landscapers and to encourage them to adopt the recommended management activities and include them in their activities and proposals

- Provide information and education to County and municipal staffs, private applicators, businesses, property managers, and homeowners regarding application of chemical deicers to roads, driveways, parking lots, and sidewalks

- Measure information and educations activities and outcomes

- Evaluate the effectiveness of the information and education element of the plan

Other Watershed Initiatives

Several other currently active initiatives provide public information and education and opportunities for public participation in watershed management in the Oak Creek watershed. These are mostly regional programs that address larger areas that contain the watershed. Because their activities encompass the Oak Creek watershed, they should be considered part of the I&E element of this plan.

Since 2012, Root-Pike WIN, Sweet Water, and several counties and municipalities in southeastern Wisconsin have sponsored the Respect Our Waters campaign. This program is a joint effort to fulfill the public information and education requirements of the counties' and municipalities' MS4 discharge permits. This campaign has included broadcasting public service announcements on radio and television, giving interviews to media outlets, hosting and attending community events, and providing educational content on participating organizations' websites. Both Root-Pike WIN and Sweet Water have expressed interest in targeting the messaging in this campaign more finely through the use of social media and direct mail.

Sweet Water sponsors the annual Clean Rivers, Clean Lake conference. At this meeting, participants from nonprofit organizations, governmental units, businesses, academic organizations, and the general public discuss challenges facing the greater Milwaukee watersheds including the Oak Creek watershed, their impact upon Lake Michigan, and strategies to improve conditions in the watersheds and the Lake.

Sweet Water also sponsors the Adopt-Your-Drain program. Through this program, volunteers adopt a local storm drain. At least twice a month, the volunteers remove debris from the surface and vicinity of the drain and properly dispose of it. Depending on the type of debris removed, disposal may occur through composting, recycling, or placement in the trash. Volunteers are asked to track and report their progress, including the amount of time spent removing debris and the types and weight of debris removed.

MMSD sponsors the Fresh Coast Guardians Resource Center to support implementation of its green infrastructure plan. Through live events, webinars, and its website, the center provides information on green infrastructure to residents, municipalities, businesses, nonprofit organizations, developers, and contractors. This information includes discussions on the benefits of green infrastructure, guides to installing green infrastructure, and notices of funding opportunities to pay for green infrastructure installation. The website also has links to tools for sizing and selecting plants for green infrastructure projects and a list of vendors providing green infrastructure projects, products, and services.

Plastic-Free MKE is a collaborative of non-profit organizations, government agencies, and businesses working to reduce the use of single-use plastic items in order to reduce the amount of plastic entering local waterways. Their educational efforts provide information on plastic pollution and what can be done to address it through a number of communication vehicles including webinars, social media campaigns, and their website. They also ask individuals and businesses to pledge to take specific efforts to reduce their use of single-use plastics.

While Milwaukee Riverkeeper's main area of interest does not include the Oak Creek watershed, some of its programs provide information and education to the watershed. Milwaukee Riverkeeper sponsors annual workshops on snow and ice control practices, with separate workshops focusing on municipal practices for winter management of roads and parking lots, and practices by private applicators for winter management of parking lots and driveways. Milwaukee Riverkeeper's website also provides resources to support volunteer water quality monitoring. Riverkeeper also provides field and classroom programs for local schools.

Engagement Strategies

Specific measures recommended as part of the information and education element of this plan are summarized in Table 6.20.

Copies of the watershed plan are being provided to public officials in the civil divisions within the watershed as shown on Map 3.3 in Chapter 3 of this report. Individual meetings and presentations about the plan will be scheduled with public decision-making bodies at the request the County and municipalities, and adoption of the plan will be requested from each civil division in the watershed.

Additional targeted audiences include private landowners; commercial stakeholders including businesses, developers, engineers, and landscapers; professionals involved in nutrient, chemical, and snow and ice management; nature centers, service clubs, and potential grant recipients; the general public; and the media.

Integration of Potential Future Efforts in the Information and Education Element

There are several potential information and education efforts that should be considered for incorporation into the information and education element of the Oak Creek watershed plan when they come to fruition. Integrating them could enhance public knowledge of and involvement in watershed restoration efforts.

Recently reissued MS4 discharge permits have included additional public education and outreach requirements among the conditions set forth in the permits. For group permits some of these conditions apply to all of the municipalities covered. Examples of these permit conditions include requirements that each municipality:

- Evaluate its stormwater education needs and develop a prioritized list of those needs
- Complete targeted outreach and education within its MS4 boundary for at least one identified need
- Develop metrics to measure progress after the targeted education project has been completed

The recently reissued MS4 permits also include conditions specific to individual municipalities. Examples of these types of conditions from the recently reissued Menomonee River Watershed-Based MS4 permit include that one or more municipality:

- Update the stormwater management page on its website
- Coordinate its education and outreach with planned IDDE screening efforts to supply education to residents and businesses in areas tributary to screening locations

It is anticipated that as additional MS4 permits are reissued for municipalities in the Oak Creek watershed, similar permit conditions will apply to these communities.

As part of the Respect Our Waters campaign, Root-Pike WIN is beginning to develop specific messaging targeted to individual subwatersheds. Root-Pike WIN is also placing greater emphasis on the use of social media for the delivery of this messaging.

Sweet Water is beginning to develop a library of high-quality, unbranded education and outreach materials that will be available to local communities and other groups for use in public education efforts. It is hoped that the availability of this library will encourage consistent messaging among public education campaigns.

As these various efforts reach completion, they should be considered for inclusion in the information and education element of this watershed restoration plan.

Renaming of the Mitchell Field Drainage Ditch

The official name of the Mitchell Field Drainage Ditch in State of Wisconsin records is Unnamed Tributary to Oak Creek. This stream is known locally as the Mitchell Field Drainage Ditch. This is an unfortunate name as drainage ditch carries a negative connotation that may lead the public to underestimate its value as a natural resource. Such an underestimation of its value could act to reduce support for projects seeking to restore this creek.

It is recommended that Milwaukee County submit a proposal to the Wisconsin Geographic Names Council to officially name the Mitchell Field Drainage Ditch "Mitchell Creek." This name would be consistent with policies of the U.S Board on Geographic Names that local usage be followed wherever possible and that names include only a single name followed by the generic feature name.

A proposal to rename this stream should be submitted to the Wisconsin Geographic Names Council through the WDNR.[4] The proposal would consist of completion of a standard form and submission of supporting information.

[4] *This can be done through the WDNR website at dnr.wi.gov/lakes/gnc.*

Renaming this stream would create a better connotation for it and raise public awareness of its value as a natural resource. It would be a positive step in promoting restoration of this stream and its surrounding habitat.

6.8 PRIORITY PROJECTS FOR IMPLEMENTATION

As previously described, table 6.1 identifies specific projects that could be undertaken as part of implementation of the general recommendations given in this chapter. Completion of these projects would produce improvements relative to the four focus areas of this watershed restoration plan. This list of projects was assembled from several sources including plans, engineering reports, and surveys developed for local governments; discussions with staff from State agencies, county and municipal departments, MMSD, and interested nongovernmental organizations; findings of an instream survey conducted by SEWRPC staff; and suggestions from members of the public. Because of the large number of projects listed in Table 6.1, it would be useful to identify a smaller number of high-priority projects that could be implemented early in the plan implementation period that would provide substantial benefits relative to the focus areas of the plan. This section identifies those high-priority projects.

Because a large number and many different types of projects are listed in Table 6.1, projects were grouped into several classes of similar projects and prioritized within each class. While some projects could potentially be classified as of more than one type, each project was assigned to only one class for the purpose of prioritization. Because of the difference among the type of projects, different criteria were used to prioritize each class of project. Where estimates of costs and benefits were available, the prioritization generally gave more weight to projects that could be expected to result in high levels of benefits at a relatively low cost. The projects were assigned a relative priority of high, medium, or low. Table 6.1 shows this priority for each project.

Within this prioritization framework, other opportunities may arise that should be acted upon. For example, even though it is a general principle of the strategy suggested for fish passage projects that activities progress from downstream to upstream, the completion of an action in a headwaters area or on a tributary stream should not be passed up or ignored simply because it does not conform to the downstream-to-upstream strategy. Rather, all opportunities should be acted upon as they become available. However, where multiple opportunities exist, and where limited funds are available, this prioritization is intended to assist decision-makers in allocating resources where they would be most appropriate and effective in achieving the goals of this watershed restoration plan. In addition, since this prioritization was conducted

on a watershed level and not on a community, implementation organization, or assessment area level, some implementation organizations may find opportunities to implement medium or low priority projects relatively early during plan implementation.

High-priority projects for implementation are listed in the following tables. The prioritization criteria for each project class are noted under each table.

- Table 6.21 lists high-priority riparian buffer expansion projects
- Table 6.22 lists high-priority stream channel restoration projects
- Table 6.23 lists high-priority projects for management of the Mill Pond dam and Mill Pond area
- Table 6.24 lists high-priority debris jam modification and removal projects
- Table 6.25 lists high-priority stormwater drainage and flood relief projects
- Table 6.26 lists high-priority floodplain reconnection projects
- Table 6.27 lists high-priority illicit discharge detection and elimination projects
- Table 6.28 lists high-priority land restoration projects
- Table 6.29 lists high-priority outfall repair and replacement projects
- Table 6.30 lists high priority projects to address passage barriers to aquatic organisms
- Table 6.31 lists high-priority stormwater treatment projects
- Table 6.15 lists high-priority streambank stabilization projects
- Table 6.32 lists high-priority projects that do not fall into any of the above groups

6.9 MEASURING PLAN PROGRESS AND SUCCESS

Monitoring of plan progress will be an essential component of achieving the plan's goals. Plan progress and success will be measured by adoption of the plan by County and municipal legislative bodies and concerned State and Federal agencies, participation rates in public awareness and education efforts, progress in implementation of best management practices and other recommended projects and actions, and improvement in conditions within the watershed.

Adoption of the plan by local units of government in the watershed and concerned State and Federal agencies is an important measure of progress. Formal adoption demonstrates a commitment to the goals of the plan and will assist a unit or agency of government to more fully integrate the plan's elements into existing work plans and enable staffs to program the necessary implementation work. Adoption of this plan is discussed more fully later in this chapter.

As discussed in the previous section, public, stakeholder, and civic engagement is essential to the implementation of watershed plans. A high level of public and stakeholder engagement is a sign of public interest in the plan and of the level of the public's motivation to implement its recommendations. Recommendations for public awareness and participation activities were discussed in the previous section.

The general recommendations and specific projects called for in this chapter constitute the recommended actions to improve conditions in the Oak Creek watershed. Tracking implementation of these recommendations measures the effort being expended and constitutes a measure of progress towards restoring conditions in the watershed. While the ultimate test of success is shown through monitoring conditions in the watershed, over short time periods it can be difficult to detect the impact of watershed restoration activities due to factors such as the variability in water quality indicators, the relatively small pollutant load reductions associated with any single best management practice, and the presence of reservoirs of stored pollutants within the watershed. Tracking implementation of the recommendations of this plan can provide valuable information to assess the progress being made toward achieving restoration goals. Tracking of implementation is discussed in a later section of this chapter.

Monitoring and information collection programs are invaluable at helping planners, local officials, agency staff, and community members better understand the condition of the water resources of the Oak Creek watershed. These programs are necessary in order to assess and evaluate conditions within the watershed and they can provide information to determine where management efforts should focus, help better target

management programs, and help determine project feasibility. When conducted on an ongoing basis, monitoring programs can reveal trends and changes in watershed conditions, detect new and emerging water quality problems, assess long-term progress in plan implementation, and provide data for evaluating the success of management projects.

Monitoring Recommendations

At a conceptual level, future monitoring in the Oak Creek watershed needs to address the question of what conditions are like in the watershed. Addressing this question will require ongoing water quality monitoring within the watershed. This monitoring should encompass a number of indicators, including, but not limited to, water chemistry, stream flow, fecal indicator bacteria, and indicators of biological conditions. Due to the effects of the surrounding landscape upon the water resources of the watershed, this monitoring should also include indicators of conditions in the associated riparian and upland areas. This monitoring should encompass several indicators, including, but not limited to, land use and terrestrial invasive species. Several organizations are presently conducting these types of monitoring within the watershed.

It should be noted that many monitoring activities may provide data that address more than one focus area of this plan. For example, monitoring fish and macroinvertebrate communities in the watershed provides direct measures of both the state of water quality and the state of fishing-related recreational opportunities in the watershed, as well as indirect measures of the state of the habitat. Similarly, measurements of suspended solids or turbidity provide both direct measures of water quality conditions and indirect measures of habitat conditions. In view of this, the recommendations related to monitoring will be presented by type of monitoring and program, rather than by individual focus issue.

Evaluation of Existing Water Quality Monitoring and Data Collection Programs

Considerable effort has recently been expended on water quality monitoring in the Oak Creek watershed. During the period from 2015 through 2019, several agencies conducted monitoring in the watershed. Table 6.33 lists and Map 6.36 shows the stations regularly sampled as part of these monitoring efforts. Much of this monitoring was conducted specifically to support the development of this watershed restoration plan. The water quality indicators that were sampled by each agency are described below.

Milwaukee Metropolitan Sewerage District

The Milwaukee Metropolitan Sewerage District (MMSD) currently monitors water chemistry and bacteria at seven sampling stations along the mainstem of Oak Creek. One to two samples are collected at these stations each month, with more frequent sampling occurring during warmer months. MMSD is currently

reviewing the placement of their sampling stations and considering moving one station from the mainstem of Oak Creek to the North Branch of Oak Creek. As part of the MMSD Corridor Study, the District in partnership with the USGS collects biological samples, including fish, macroinvertebrates, and algae, at one sampling station along the mainstem of Oak Creek at about three-year intervals. The Corridor Study also includes assessments of aquatic toxicity.

U.S. Geological Survey

The USGS monitors stream flow at one continuous recording stream gaging station in the watershed located along the mainstem of Oak Creek. On behalf of Milwaukee Mitchell International Airport (MMIA), the USGS also conducts water chemistry monitoring at one site along the Mitchell Field Drainage Ditch. As previously mentioned, the USGS in partnership with MMSD collects biological samples, including fish, macroinvertebrates, and algae, at one sampling station along the mainstem of Oak Creek at about three-year intervals as part of the Corridor Study. The Corridor Study also includes assessments of aquatic toxicity.

City of Racine Public Health Department

During 2015 and 2016, the City of Racine Public Health Department (RHD) monitored bacteria, temperature, and water chemistry at 18 sampling stations in the Oak Creek watershed—13 along the mainstem of Oak Creek including sites in the Mill Pond, two along the North Branch of Oak Creek, two along the Mitchell Field Drainage Ditch, and one along Unnamed Creek No. 5. As part of this project, RHD conducted several other studies in the watershed during this period including observation and sampling of flow from selected stormwater outfalls, microbial source tracking of discharge from outfalls showing high concentrations of fecal indicator bacteria, and characterization of bathymetry and water circulation patterns within the Mill Pond. RHD's study was funded through a grant from the Fund for Lake Michigan. This monitoring ended in 2016.

Wisconsin Department of Natural Resources

The Wisconsin Department of Natural Resources (WDNR) periodically conducts biological sampling in the Oak Creek watershed. In 2015, it conducted fish and macroinvertebrate surveys at nine sampling stations in the watershed—six along the mainstem of Oak Creek, two along the North Branch of Oak Creek, and one along the Mitchell Field Drainage Ditch. In 2018, the WDNR also sampled surface sediment for polychlorinated biphenyls (PCBs) in the Mill Pond and the mainstem of Oak Creek downstream of the Mill Pond.

Milwaukee Riverkeeper

Between 2015 and 2019, volunteers from Milwaukee Riverkeeper conducted monitoring at eight sampling stations in the Oak Creek watershed—two along the mainstem of Oak Creek, two along the North Branch of Oak Creek, two along the Mitchell Field Drainage Ditch, and one each along Southland Creek and Unnamed Creek No. 5. Monitoring at four stations was conducted as part of baseline monitoring. Five were monitored in support of an urban road salt study that Riverkeeper was conducting in cooperation with the USGS. As of the end of 2019, Riverkeeper's sampling in the Oak Creek watershed had ended.

Southeastern Wisconsin Regional Planning Commission

During 2016 and 2017, Commission staff deployed continuous temperature monitoring devices at 24 sites within the Oak Creek watershed. These sites included 12 sites along the mainstem of Oak Creek including sites in the Mill Pond, six sites along the North Branch of Oak Creek, two sites along the Mitchell Field Drainage Ditch, and one site each along Southland Creek, Unnamed Creek No. 5, an unnamed tributary to the North Branch of Oak Creek (the Rawson Avenue Tributary), and an unnamed tributary to the mainstem of Oak Creek. Commission staff also deployed eight continuous temperature monitoring devices at sites within and immediately upstream and downstream of the Mill Pond during the summer and fall of 2019. During 2016 and 2017, Commission staff conducted instream surveys of channel and aquatic habitat conditions along the mainstem of Oak Creek, the North Branch of Oak Creek, and the Mitchell Field Drainage Ditch. As part of these surveys, Commission staff noted the presence of native freshwater mussels, but mussel distribution and populations were not surveyed.

In 2018, Commission staff installed continuous temperature and specific conductance monitoring equipment at one site along the mainstem of Oak Creek as part of the Commission's study on the environmental impacts of chlorides.[5] As part of this study's monitoring effort, Commission staff are also collecting water chemistry samples at this site. It is anticipated that this monitoring will continue into 2021.

Milwaukee County Department of Parks, Recreation and Culture

The Milwaukee County Department of Parks, Recreation and Culture (DPRC) conducts several types of surveys in County parks and natural areas in the Oak Creek watershed. These include surveys of wildlife, vegetative community, invasive plants, and ephemeral wetlands on sites owned by DPRC.

[5] *Southeastern Wisconsin Regional Planning Commission,* Prospectus for a Chloride Impact Study for the Southeastern Wisconsin Region, *March 2016.*

Identification of Additional Monitoring Needs

The 2007 SEWRPC RWQMPU included an evaluation of the existing water quality monitoring and data collection programs in the watersheds within its study area, including the Oak Creek watershed.[6] This evaluation identified several data gaps in the water quality monitoring data available for the Oak Creek watershed. These data gaps include:

- Most of the water quality monitoring conducted in the watershed had focused on the mainstem of Oak Creek

- Relatively few samples were collected from tributary streams and few tributary streams had been sampled. Between 1998 and 2001, samples were collected from only one tributary stream

- Relatively few samples had been collected during winter months

The monitoring conducted during the development of this watershed restoration plan made substantial progress toward filling these data gaps. During the period from 2016 through 2017, regular monitoring was conducted at stations along the mainstem of Oak Creek and six tributary streams, although the monitoring of some of these tributary streams was limited to continuous monitoring of water temperature. Winter sampling was conducted at several mainstem and tributary sampling stations, although not as frequently as it was during other seasons. These efforts have improved our knowledge of conditions in the watershed. Despite the considerable effort described above, the following gaps still remain in the water quality data set for the Oak Creek watershed:

- Several tributary streams are not routinely monitored. This is especially the case for streams tributary to the North Branch of Oak Creek and for water entering the mainstem of Oak Creek through the ditches in the Oak Creek Drainage Ditches assessment area.

- The amount of sampling conducted during the winter has not been sufficient to determine the extent of problems posed by chloride concentrations in surface waters of the Oak Creek watershed. Direct measurements of chloride are available only for sites on the mainstem of Oak Creek and have rarely been collected during the months of January or February.

[6] *SEWPRC Planning Report No. 50,* op. cit.

- Much of the recent monitoring was conducted as part of short-term projects initiated in support of the development of this watershed restoration plan. As of 2020, many of the monitoring sites established as part of these projects were no longer being actively monitored. Current monitoring is occurring mostly along the mainstem of Oak Creek and the Mitchell Field Drainage Ditch.

- Sediment sampling only consisted of surface grab samples.

Recommended Water Quality Monitoring Plan

It is important to assess the condition of water quality, biological communities, and habitat in the watershed and determine whether these conditions are improving or deteriorating. It is, therefore, important to establish and maintain a robust program to monitor and assess conditions within the watershed. Such a monitoring program should integrate and coordinate the use of the monitoring resources of multiple agencies and groups, generate monitoring data that are scientifically defensible and relevant to the decision-making process, and manage and report data in ways that are meaningful and understandable to decision makers and other affected parties. This watershed restoration plan recommends maintaining the existing monitoring network and expanding monitoring in the watershed to continue to fill data gaps. Toward these ends, the plan includes the following recommendations for water quality monitoring:

<u>Maintenance of Current Monitoring Activities</u>

Continue the current ongoing monitoring activities in the Oak Creek watershed and support and maintain the efforts of the agencies conducting these activities. This includes several specific recommendations:

1. **Continue the current USGS stream gaging program in the watershed.** Stage and discharge monitoring should continue at the currently active gage on the mainstem of Oak Creek at 15th Avenue

2. **Continue the MMSD Oak Creek survey monitoring program.** Monitoring of water temperature, water chemistry, and fecal indicator bacteria should continue at the District's existing sampling stations. At a minimum sampling frequency, the current sampling schedule in which samples are collected monthly should be continued. **MMSD should consider moving one of its monitoring stations that is currently located on the mainstem of Oak Creek to a site along the North Branch of Oak Creek.** This would help address the data gap due to there currently being no monitoring stations on this tributary

3. **Continue the USGS monitoring of the Mitchell Field Drainage Ditch on behalf of MMIA.** Monitoring of water temperature and chemistry should continue at the existing sampling station

4. **Continue the joint MMSD-USGS biological and toxicity sampling program in the watershed.** Sampling should be conducted at the existing sampling station at three-year intervals

5. **Continue the WDNR's biological monitoring in the Oak Creek watershed continued.** Monitoring of fish and macroinvertebrates should continue at the nine sampling stations monitored in the Department's 2015 survey. At a minimum, sampling should occur every three-to-five years. In order to accomplish this amount of biological monitoring consideration could be given to monitoring sites on a rotating basis with two to three sites being sampled every year

6. **Continue the Milwaukee County Park's monitoring of native plants, wildlife, and invasive species in County parks and natural areas of the Oak Creek watershed.** Surveys should be conducted in accordance with the schedules set forth in the ecological restoration and management plans developed for parks in the watershed.

Table 6.34 summarizes the monitoring stations at which it is recommended that existing monitoring efforts be continued. These stations are shown on Map 6.37.

Expansion of Water Quality Monitoring Activities

It was previously noted that several gaps still remain in the water quality data set for the Oak Creek watershed. Most tributary streams are not currently being routinely monitored and, as of 2020, monitoring is no longer being conducted as several stations that were actively monitored during 2015 through 2017. **It is recommended that the water quality monitoring network in the Oak Creek watershed be expanded to fill these data gaps.** This includes the following specific recommendations which are also summarized in Table 6.34 and on Map 6.37:

1. **Establish or reactivate at least one water quality monitoring station on each of the following streams not currently being sampled for water temperature, water chemistry, and fecal indicator bacteria:** Southland Creek, Unnamed Creek No. 5, the Rawson Avenue tributary to the North Branch of Oak Creek, the College Avenue Tributary to the North Branch of Oak Creek, and the outlet of the Oak Creek drainage ditches into the mainstem of Oak Creek. On those streams that have been monitored in the past, siting monitoring stations at locations that have been previously

monitored would allow for the assessment of temporal trends. Samples should be collected every month and analyzed for water temperature, water chemistry, and fecal indicator bacteria.

2. **Establish or reactivate at least two water quality monitoring stations on the North Branch of Oak Creek.** Siting monitoring stations on this stream at locations that have been previously monitored would allow for the assessment of temporal trends. Samples should be collected every month and analyzed for water temperature, water chemistry, and fecal indicator bacteria.

3. **Establish one additional water quality monitoring station on the Mitchell Field Drainage Ditch.** Siting this station at a location that has been previously monitored would allow for the assessment of temporal trends. Samples should be collected every month and analyzed for water temperature, water chemistry, and fecal indicator bacteria.

4. **Survey the Oak Creek watershed should for freshwater mussels every 10 years.** A standard protocol should be used to ensure the comparability of results among surveys. Mussel surveys could be conducted ty the WDNR or by a consultant. It is suggested that future surveys record and report the amount of time spent surveying each sample site and the size of each area surveyed. This information would allow for the computation of the catch per unit effort at each site, which would make it possible to compare relative population sizes among sites.

5. **Conduct additional sediment sampling in the lower reaches of the mainstem of Oak Creek within and downstream of the Mill Pond to determine the amount, extent, and source of PCB contamination.** This assessment should include collection and examination of sediment cores to characterize the extent, types, and amounts of contaminants within the sediment through its entire depth.

6. **Collect and analyze and evaluate sediment samples for contaminants from the Mill Pond in accordance with the requirements set forth in Chapter NR 347, "Sediment Sampling and Analysis, Monitoring Protocol and Disposal Criteria for Dredging Projects," of the *Wisconsin Administrative Code* prior to any dredging to remove sediment from the Mill Pond or prior to removal of the Mill Pond dam.**

7. **Deploy a continuous dissolved oxygen monitoring device in the Mitchell Field Drainage Ditch.** Deployment of such a device will help to better characterize causes and effects of low dissolved oxygen concentrations in this stream.

8. **Sample and analyze stream sediment in the Oak Creek watershed for PAHs.** In recent years, several municipalities in the Oak Creek watershed have banned the use of coal tar-based pavement sealants, a major source of PAHs to waterbodies. Monitoring PAH concentrations in stream sediment over time will provide information on the length of time needed to result in improvements in sediment quality sufficient to avoid regular exceedance of sediment quality guidelines for aquatic life.

9. **Assess water samples from the Oak Creek watershed for concentrations of PFAS chemicals.** While PFAS contamination in soil and groundwater has been reported at some locations in the Oak Creek watershed, little is known about the concentrations of these chemicals in surface waters of the watershed. Such monitoring will establish baseline levels.

10. **Collect and analyze water and sediment samples for emerging pollutants such as pesticides, pesticide degradation products, pharmaceuticals, flame retardants, and sewage contamination indicators.** These data could be combined with water and sediment chemistry, biological, toxicity and other available data to better assess the integrity of the stream system.

11. **Assess the availability of phosphorus contained in sediment to algae and the potential of harmful blooms of cyanobacteria to occur in the Oak Creek watershed.** Such a monitoring project would provide data for assessing the amount of legacy phosphorus in streambed sediments and provide baseline data on the abundance of cyanobacteria that can produce harmful algal blooms.

Table 6.34 and on Map 6.37 summarize the recommended expansion of the water quality monitoring network for the Oak Creek watershed and identify potential locations for establishing the additional sampling stations along tributary streams. Several factors should be considered when siting these stations, including the suitability of the stream for the type of sampling contemplated at the potential stations, the availability of past monitoring data from the site of the potential station, accessibility of the site, and safety considerations. The selection process for sites for monitoring stations should include a field examination of the sites. Final selection of sites for monitoring stations should be made in consultation with field staff.

The recommended expansion of water quality monitoring in the Oak Creek watershed will provide several benefits related to the management of surface waters in the watershed. First, this expansion of monitoring activities to additional tributaries will allow for the development of a more complete picture of the state of water quality conditions in the watershed. This more complete picture may be useful for determining the sources of local water quality problems. In addition, observed water quality data are essential to the calibration and validation of water quality models used to assess anticipated future water quality conditions. Expansion of the observed water quality database for the watershed would enable future refinement of the water quality models though additional calibrations. This will be especially valuable should the WDNR or some other party develop a Total Maximum Daily Load (TMDL) study to address water quality impairments in the watershed. Second, expansion of monitoring activities to additional tributaries will allow assessment of whether these waterbodies are meeting the water quality criteria that support their designated use objectives. Third, this expansion of monitoring activities to additional tributaries will provide information needed for informing the management of these waterbodies.

Water Quality Indicators to Be Monitored

There are numerous indicators available for measuring and describing water quality, including physical indicators such as water temperature, chemical indicators such as concentrations of suspended and dissolved substances, and biological indicators such as the abundance and taxonomic identities of the macroinvertebrates present. Historically, many different indicators have been used to assess the state of water quality in the Oak Creek watershed. The list of constituents given in Table 6.35 includes those physical and chemical indicators that were routinely monitored in the Oak Creek watershed by at least one monitoring program during the period 2015-2017.

As previously described, several agencies and organizations are currently conducting monitoring activities in the Oak Creek watershed. While there is overlap among these monitoring programs in which water quality constituents they sample and analyze, each program monitors a unique suite of indicators. There are several reasons for this.

In part, this reflects the natures of the constituents. Some constituents, such as water temperature, pH, and water transparency, can be assessed relatively easily and inexpensively in the field. Others, such as total phosphorus and fecal indicator bacteria, require that water samples be transported to laboratory facilities for chemical or biological analysis. Sampling and analysis of some constituents, such as many metals and organic compounds, may require the use of highly specialized sampling techniques and analytical equipment.

The differences in the constituents monitored by the different programs also reflect differences in the capacities of these programs. Some of the programs have greater analytical capabilities and more resources than others. The need to use highly specialized techniques and equipment for sampling and analyzing some constituents impacts the ability of monitoring programs to monitor these constituents. For example, programs that rely upon volunteers to conduct sampling will be less suited to monitoring constituents that require highly specialized sampling techniques than those that have highly trained professional staff.

Finally, it is important to recognize that each monitoring program has its own monitoring goals. These goals may differ from program to program and achieving different goals may require different monitoring strategies, including monitoring different constituents.

In an ideal situation, there would be coordination among monitoring programs such that a consistent set of water quality constituents would be monitored throughout the watershed. Because of the considerations discussed in the previous paragraphs, it seems unlikely that this ideal could be achieved in the Oak Creek watershed in the foreseeable future. Despite this, it should be possible to achieve some additional convergence among the sets of constituents monitored by the various programs active within the watershed.

It is recommended that each of the programs conducting water quality monitoring within the Oak Creek watershed continue monitoring the constituents that they are currently monitoring.

The list of physical and chemical indicators given in Table 6.35 is meant to provide guidance to monitoring programs in the Oak Creek watershed when they consider adding constituents to what they currently monitor. The table lists these in five tiers that roughly correspond to the priority for adding them to the suite of constituents in an existing program, with Tier 1 representing constituents of the highest priority for addition and Tier 5 representing constituents of the lowest priority.

The water quality constituents listed in Tier 1 are either easy to sample or important enough to sample that it is desirable that they be collected by all monitoring programs in the watershed. Several of the constituents listed in Tier 1 can be assessed in the field using hand-held meters or other field techniques. The main exceptions to this generalization are fecal indicator bacteria and total suspended solids which require that samples be transported to a laboratory for analysis. It should be noted that turbidity and water transparency assess the same factor. While assessment of turbidity gives a more precise measure, it generally requires that samples be transported to a laboratory for analysis. Water transparency can be measured in the field

using a turbidity tube at stream and river sites or a Secchi disk at lake and pond sites. As part of Tier 1, one of these two constituents should be assessed.

It should also be noted that some constituents listed in Tier 1 such as water temperature, dissolved oxygen concentration, and specific conductance can be measured through the use of small, continuous monitoring devices. These devices can take measurements at finer time intervals than can be achieved through the collection and analysis of water samples.

The water quality constituents listed in Tier 2 represent the minimum set of additional water quality constituents that would be necessary to make assessments that are most critical to the water quality focus area of this plan. Assessing these constituents requires that samples be transported to a laboratory for analysis. As noted in Chapter 5 of this report, a major approach that this plan takes to address the impaired aquatic biological community in the Oak Creek watershed is to reduce phosphorus inputs into the surface water system. Monitoring of total phosphorus allows for a direct evaluation of the success of this approach. Monitoring of chlorophyll-*a* concentrations provides a check on this because this constituent is a measure of the biomass of the phytoplankton community. In freshwater systems, this community's growth is often limited by the availability of phosphorus and responds to additions of phosphorus. Monitoring chloride concentrations would help to address the water quality impairments related to chloride concentrations in the mainstem of Oak Creek, the North Branch of Oak Creek, and the Mitchell Field Drainage Ditch and allow for the refinement of statistical models relating specific conductance to chloride. Monitoring ethylene glycol and propylene glycol in the Mitchell Field Drainage Ditch would help to address the chronically low dissolved oxygen concentrations present in this stream. Given the high biochemical oxygen demand associated with these compounds, it may also be prudent to conduct some sampling for these compounds at a station along the mainstem of Oak Creek downstream from the confluence with the Mitchell Field Drainage Ditch.

The constituents listed in Tier 3 comprise those constituents needed to give a complete picture of the status of major plant nutrients within the surface water system and several constituents whose chemistries affect the chemistry of other substances in water. Assessing these constituents requires that samples be transported to a laboratory for analysis. There are three issues that should be noted about the nitrogen-related constituents in this tier. First, the toxicity of ammonia to aquatic organism depends upon ambient water temperature and pH, as well as the ambient concentration of ammonia. Whenever sampling is conducted for ammonia, sampling should also be conducted for water temperature and pH. Second, some laboratories analyze and report combined concentrations of nitrate and nitrite. In order to get a complete

picture of nitrogen conditions, sampling should be conducted either for combined nitrate-plus-nitrite or for both nitrate and nitrite. Third, complete characterization of nitrogen conditions within surface waters requires that ammonia, Kjeldahl nitrogen, nitrate, and nitrite be sampled simultaneously. This allows for the calculation of organic nitrogen and total nitrogen. These four constituents should be sampled together.

Tier 4 includes those constituents not included in higher priority tiers required to characterize conditions related to minor plant nutrients, solids, and several toxic metals in surface waters. Assessing these constituents requires that samples be transported to a laboratory for analysis. Assessment of several of these constituents also requires the use of highly specialized techniques and equipment for conducting sampling and analysis. It should be noted that the toxicity of cadmium, chromium, copper, lead, nickel, and zinc to aquatic organisms depends upon the hardness of the water, as well as the concentration of the metal. Whenever sampling is conducted for these metals, sampling should also be conducted for hardness.

The constituents listed in Tier 5 consist of several organic compounds of environmental concern that are classified either as polycyclic aromatic hydrocarbons (PAHs), individual polychlorinated biphenyl compounds (PCB congeners), commercial mixtures of PCB congeners, or perfluoroalkyl substances (PFAS). Assessing these constituents requires both that samples be transported to a laboratory for analysis and the use of highly specialized techniques and equipment for conducting sampling and analysis.

While this watershed management plan envisions that monitoring programs will add constituents to the suites they sample on a tier-by-tier basis, it recognizes that particular management issues and the goals and objectives of individual monitoring programs may require that some constituents be added to sampling suites without regard to their presence or locations in this tiered list. **It is recommended that, in the absence of other such considerations, monitoring programs in the Oak Creek watershed follow this tiered scheme when adding constituents to the suite that they sample and analyze.**

Periodically Analyze Monitoring Data and Report Results

Data analysis is an integral component of the water quality management process. For monitoring programs to be useful in guiding management decisions, generating good data is not enough. The data must be processed and presented in a manner that aids understanding of the spatial and temporal patterns in water quality. The data must be placed into a context that reveals the existing state of water quality conditions and any changes or trends occurring in those conditions. This should be a context that takes the natural processes and characteristics of the watershed into account, that allows the impact of human activities upon the watershed to be understood, and that enables the consequences of management actions to be

predicted. Establishing such a context requires that monitoring data be periodically analyzed, interpreted, and summarized. This should be done at a frequency that provides decision makers and managers with reasonably current information while recognizing the substantial effort that is required to analyze and interpret data from a watershed the size of the Oak Creek watershed.

Since 1964, eight studies, including this watershed restoration plan, have presented analyses, interpretations, and summaries of water quality conditions in the Oak Creek watershed. These studies are listed in Table 6.36. Most of these studies were conducted either as part of or in conjunction with major planning efforts, including efforts that developed a comprehensive watershed plan and that developed and updated the regional water quality management plan, the MMSD's facilities plan, and the State's basin plan. It should be noted that some of these studies examined subsets of the data that were available at the time of the study. For example, some studies examined data from only a portion of the available record, generally incorporating data collected since about 1976. Despite the narrow focus of some of these studies, there has been a tendency over time for studies examining water quality in the Oak Creek watershed to examine a larger set of water quality indicators and to incorporate data from a greater variety of sources.

The intervals between the conduct and release of studies examining water quality in the Oak Creek watershed have been irregular. The interval between the release of this watershed restoration plan and the last major examination of water quality in the Oak Creek watershed is about 14 years. This is tied for the longest interval between studies that included examination of water chemistry. Other such intervals were on the order of eight to 11 years.

It is recommended that monitoring data for the Oak Creek watershed be collated, analyzed, and placed into context at an interval no greater than once every 10 years. This effort should include review and analysis of a wide variety of data and should include data from all publicly available sources. While the full range of data to be incorporated into these studies will depend upon availability, these studies should seek to include those data that have become available since the previous study, including such indicators as streamflow, water chemistry, fecal indicator bacteria, biological conditions, land use, stream channel conditions, habitat conditions, recreational use, and abundance and distribution of aquatic invasive species, as well as other indicators for which data that are deemed important or informative are available at the time the study is conducted. As part of the collation and analysis of these data, they should be compared to historical data. Such a comparison is necessary, both to assess trends in conditions within the watershed and to determine and document whether those conditions are improving or worsening. These analyses should include an assessment of the achievement of water use objectives through a comparison of the data

to the applicable water quality criteria. These studies should assess the adequacy of the data and identify any gaps in the data. Finally, the analyses, results, and conclusions of these studies should be published and made available to the public and to the agencies and organizations involved in the management of the Oak Creek watershed.

Costs of Monitoring Recommendations

The cost of maintaining the existing water quality monitoring network was estimated based upon consultations with the agencies conducting monitoring during development of the Oak Creek watershed restoration plan and the Root River watershed restoration plan.[7] Because these are existing stations, no capital costs are associated with maintaining the existing monitoring network in the Oak Creek watershed. The annual operations and maintenance costs for these stations is estimated to be about $183,400. Table 6.37 presents estimated costs attributable to each element of the existing monitoring network. Note that the cost estimate associated with biological monitoring conducted by the WDNR assumes that this monitoring will be conducted once every four years.

The cost of the recommended expansion of the water quality monitoring network in the Oak Creek watershed was estimated based upon consultations with the agencies that are anticipated to participate in this expansion. The capital costs associated with the expansion are estimated to be $3,900. These costs are associated with purchase of equipment and software for continuous monitoring of dissolved oxygen and for outfitting volunteer stream monitors. Annual operation and maintenance costs associated with the recommended expansion of the monitoring network are estimated to be $14,590. Table 6.37 presents estimated costs attributable to each element of the expanded monitoring network. These estimates assume that monitoring at the eight additional stream monitoring stations will be conducted through the UWEX/WDNR Water Action Volunteers Program, and that the mussel survey will be conducted once every 10 years. The mussel survey could be conducted by the WDNR, a local college or university, or a consultant.

The cost of the recommended collation and analysis of monitoring data is estimated at $39,000, which is anticipated to be incurred once every 10 years.

Tracking Implementation of Plan Recommendations

The ultimate test of whether watershed restoration activities are having a beneficial effect on conditions is the evidence of improvement in conditions shown in environmental monitoring data. Unfortunately, while

[7] *SEWRPC Community Assistance Planning Report No. 316,* A Restoration Plan for the Root River Watershed, *July 2014.*

this is simple in concept, several factors make it difficult to detect the impacts of restoration activities over a relatively short time period. An example of this is given by factors that complicate the interpretation of water quality monitoring data.

First, many water quality indicators show high variability. This variability can obscure changes and trends. As a result, long-term data sets comprised of large numbers of samples can be required to detect the changes in water quality conditions resulting from the implementation of watershed restoration activities.

Second, there are likely to be reservoirs of pollutants stored within the watershed. Examples of these reservoirs in the Oak Creek watershed include legacy phosphorus contained in both soils and sediment deposits on streambeds and lakebeds, and chloride contained in groundwater. It can take time, sometimes years or decades, for these stored pollutants to pass through the system. Mobilization of pollutants from these reservoirs can cause reductions in water quality, even in the presence of reduced loadings from point and nonpoint sources. As a result, the presence of these reservoirs can produce time lags between the implementation of a watershed restoration activity and the impact of the activity upon ambient conditions.[8]

Third, the pollutant load reductions produced by any single practice installed in the watershed are relatively small when compared to the pollutant load reductions needed to produce the level of water quality envisioned in the RWQMPU or to meet water quality standards. For example, the results of the calibrated water quality model indicated that an annual reduction in the load of TSS of about two million pounds would be necessary to produce the envisioned level of water quality in the Oak Creek watershed. Preliminary studies of potential stormwater ponds for the City of South Milwaukee indicate that the range of reduction in TSS washed off the land surface each year achieved by these ponds could be expected to be between about 5,800 and 46,000 pounds TSS, depending upon factors such as pond size, location, tributary land use, and contributing area.[9] On a watershed basis, these reductions each represent less than about 2 percent of the needed reductions. While these reductions may represent somewhat larger fractions of the required load reductions on a subwatershed basis, they are still small relative to the needed reductions.

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[8] *For a discussion of time lags in the response of water quality to implementation of management measures, see D.W. Means and S.A. Dressing, "Lag Time in Water Quality Response to Land Treatment,"* National Nonpoint Source Monitoring Program Tech Notes 4, *U.S. Environmental Protection Agency, 2008, available at www.epa.gov/polluted-runoff-nonpoint-source-pollution/nonpoint-source-monitoring-technical-notes.*

[9] *AECOM,* Stormwater Water Quality Management Analysis: Prepared for the City of South Milwaukee, *November 2008.*

Fourth, it is important to recognize that water quality conditions at any site in a watershed reflect the cumulative effects of all the influences at the site and at all points in the watershed that are directly upstream of the site. Monitoring data will always reflect an integration of these influences.

As a result, though a management practice may be functioning to greatly improve the future water quality of a waterbody, the visible effects of the practice, such as an increase in water clarity or a reduction in the concentrations of a nutrient, may not be immediately apparent and may only become apparent at some future time as part of the cumulative effects of many projects. Because of this, it will be useful to have a measure of progress in addition to the water quality monitoring data. To address this, **it is recommended that tracking efforts for the implementation of this watershed restoration plan be completed**.

In order for this plan to be most effective, it is important to track the projects and recommendations that are implemented. This could be best accomplished by having a reporting mechanism in which the organizations implementing recommendations of this plan report the initiation and completion of projects to some agency or agencies that would oversee the tracking of implementation. The role of the overseeing agency or agencies would be to receive these reports, periodically compile this information, and evaluate the status of the implementation of the watershed restoration plan.

It is recommended that the Milwaukee County Environmental Services Division act as the entity overseeing tracking of plan implementation. It is further recommended that all organizations acting to implement this plan report the initiation, completion, and details of projects implementing plan recommendations to the Milwaukee County Environmental Services Division.

Interim Measurable Milestones

Interim measurable milestones for the Oak Creek watershed restoration plan are presented in Table 6.38. These milestones provide standards against which progress in implementing the plan and the success of the plan can be assessed. They establish expectations as to the minimum progress that should be made in restoring the watershed. If minimum progress is not being made, the plan will be reevaluated and revised with new interim milestones. Adjustments to this plan will be made based on measured progress towards plan interim milestones and also after any additional new water quality monitoring data, management tools, and/or BMPs are implemented or obtained over time. See "Evaluating the State of Plan Implementation and the Success of the Plan" section below for additional information on tracking progress against this plan's interim milestones.

Evaluating the State of Plan Implementation and the Success of the Plan

The evaluation of a watershed restoration plan's implementation is a continuing function. Due to several factors including the inherent variability of water quality constituents, the variability in the reduction efficiencies of best management practices in this plan, and the presence of reservoirs of pollutants such as legacy phosphorus in the watershed, **it is recommended that an adaptive approach to management be followed in the Oak Creek watershed.**[10] An adaptive approach to management is a process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management activities and other events become better understood. It is an iterative approach that involves monitoring to learn about the impacts of management actions, evaluating the results of those actions, and adjusting actions based on what has been learned. The components of an adaptive approach to management are illustrated in Figure 6.29.

Following an adaptive approach to management requires that a body be designated to periodically evaluate the state of plan implementation. Given the continuing nature of planning, it would also be desirable that this body be available to coordinate and advise on the execution of this watershed restoration plan and to undertake plan updating as necessitated by changing events. Given the roles of local governments and private organizations in plan implementation, the active participation of representatives from these organizations in such a body is crucial.

Based on these considerations, **it is recommended that the Oak Creek Watershed Plan Advisory Group be maintained as a continuing advisory committee to provide advice and coordination for and to evaluate the state of implementation of this watershed restoration plan.** Consideration should be given to adding members to this group as needed, with these additional members being drawn primarily from local units of governments and private organizations that are actively implementing plan recommendations.

It is recommended that the Advisory Group meet annually at the request of the Milwaukee County Environmental Services Division in order to evaluate the status of plan implementation. This evaluation will include review of the project reports received by the Milwaukee County Environmental Services Division as well as other available information relevant to evaluating plan implementation. Examples of such information include, but are not limited to, annual reports that are submitted by land

[10] *In much of the literature this is referred to as an adaptive management approach or adaptive management; however, it is referred to in this report as an adaptive approach to management in order to avoid confusion with the option described in Chapter NR 217 of the* Wisconsin Administrative Code *for point sources to comply with phosphorus discharge limits.*

conservation departments and MS4 communities to the applicable regulatory agencies, annual reports submitted by parks departments to the public, summaries of water quality data, land use data, and updated information on BMP performance.

The Advisory Group will evaluate progress in plan implementation against the milestones set forth in Table 6.38. These milestones reflect the schedule for plan implementation given in later in this chapter. Based upon its evaluation, the Advisory Group will make a determination as to whether plan implementation is proceeding in accordance with the schedule. Based upon this determination it will provide advice to organizations implementing the plan regarding implementation strategies.

As part of its review process the Advisory Group will examine the plan and efforts to implement it to determine whether any adjustments or modifications in plan recommendations or priorities are warranted. The issues that should be addressed in this review include, but are not limited to:

- Whether conditions within the watershed have changed in ways that require adjustment of the plan
- Whether public priorities with respect to the focus areas of the plan have changed
- Whether the regulatory environment with respect to the focus areas of the plan has changed
- The degree and extent of progress made in implementing recommended actions
- Whether recommended practices are performing as anticipated
- Whether the elements and priorities of the plan should remain unchanged or need modification
- Whether new plan elements are needed
- Whether applicable funding programs and levels of funding have changed

The review should pay particular attention to two issues: BMP depreciation and legacy phosphorus.

As discussed earlier in this chapter, BMPs can become less efficient over time due to factors such natural variability, lack of proper maintenance, and changing weather patterns.[11] Because of this assessment of the performance of practices will be an important consideration in evaluating progress toward meeting the goals of this plan.

Legacy phosphorus consists of phosphorus that is retained in the watershed. Sources of legacy phosphorus include phosphorus stored in sediments in stream- and pond-beds, streambanks, and floodplains; phosphorus contained in aquatic plants and algae, and phosphorus that has accumulated in soils and groundwater. This stored phosphorus can be released into surface water at a later time. The release of legacy phosphorus may obscure the effects of reduced phosphorus loadings, creating time lags between reductions of loadings and improvement of water quality. As discussed in Chapter 4 of this report, limited sediment chemistry data suggest that a considerable amount of legacy phosphorus may have accumulated in sediments in stream channels and the Mill Pond in the Oak Creek watershed. Thus, it is likely that there will be a delay between reductions of phosphorus loading to waterbodies of the watershed and responses including reductions of instream total phosphorus concentrations and biological responses such as chlorophyll-*a* concentrations and fish, macroinvertebrate, and benthic diatom indices. The presence of legacy phosphorus in the watershed is a factor that will need to be considered when evaluating progress toward meeting water quality standards and the goals of this plan.

It is recommended that any adjustments to the plan be documented through a memorandum that would be sent to the groups represented on the Advisory Group. Since the Advisory Group currently includes or could be expanded to include the major stakeholders and likely implementers, this should provide notice of the changes to the groups who need it most. **It is also recommended to make this memorandum available to the public by posting it on the Environmental Services page of the County's website and the Oak Creek Watershed Restoration Plan page of the Commission's Website and by including it as an appendix to the County's subsequent update of its land and water resource management plan.**

6.10 PLAN IMPLEMENTATION

While the recommended plan is designed to achieve the goals and management objectives related to the focus areas presented in Chapter 5, the plan is not complete in a practical sense until the steps required to

[11] *D.A. Meals and S.A. Dressing 2015,* op. cit.

implement the plan—that is, to convert the plan into action policies and programs—are specified. This section provides that information and is intended as a guide for use in implementing the plan. It outlines the actions that must be taken by the various levels and agencies of government in concert with private sector organizations to fully carry out this recommended watershed restoration plan.. Those units and agencies of government that have adoption and implementation powers applicable to the plan are identified; necessary or desirable formal plan adoption actions are specified; and specific implementation actions are recommended for each of the units and agencies of government with respect to recommendations addressing the focus areas; and the coordinated roles of the public and private sectors are described.

This watershed restoration plan can be implemented in three principal ways: 1) inventory, or the collection, analysis, and dissemination of basic planning data on a uniform, areawide basis; 2) implementation of general recommendations designed to guide management activities in the watershed; and 3) implementation of specific projects designed to meet the management objectives established for this watershed restoration plan.

A great deal can be achieved in guiding watershed development into a more desirable pattern through the simple task of collecting, analyzing, and disseminating basic planning and engineering data on a continuing, uniform, areawide basis. Experience within the Southeastern Wisconsin Region has shown that, if this important inventory function is properly carried out, the resulting information will be used and acted upon by local, State, and Federal agencies of government; nongovernmental organizations; and private entities. A wealth of definitive information about the Oak Creek watershed, including natural and manmade features, hydrology and hydraulics, instream conditions, habitat, recreational access and opportunities, and water quality problems was assembled under this planning effort. The use of this information base in arriving at development decisions on a day-to-day basis by the public and private interests involved contributes substantially toward implementation of the recommended plan.

The general recommendations provided in this plan are intended to guide management activities in the watershed. Unless otherwise indicated, general recommendations are intended to be broadly applicable over the entire watershed. These recommendations provide guidance for the management of water resources within the watershed with respect to a variety of general and specific factors and issues that contribute to the problems related to each of the four focus areas that this plan addresses.

The specific projects recommended in this plan represent actions that could be taken to partially implement the general recommendations given in this plan. Implementation of these projects will contribute to meeting the management objectives related to the focus areas established in Chapter 5.

Plan Adoption

Upon completion of the Oak Creek watershed restoration plan the Commission will transmit a copy of the plan to all local legislative bodies within the watershed and to all of the existing Federal, State, areawide, and local units and agencies of government that have potential plan implementation functions.

A copy will be transmitted to the WDNR with a request that the Department review the plan, find it consistent with the nine key elements required by the USEPA for watershed restoration plans, and forward it to USEPA for review.

Adoption of the watershed restoration plan by the local legislative bodies and the existing local, areawide, State, and Federal level agencies concerned is recommended and is considered highly desirable to assure a common understanding among the several governmental levels and to enable their staffs to program the necessary implementation work. In addition, formal plan adoption may also be required for some State and Federal financial aid eligibility. A model resolution for adoption of the Oak Creek watershed restoration plan is included in Appendix W. Adoption of the recommended watershed restoration plan by any unit or agency of government pertains only to the statutory duties and functions of the adopting agencies. Such adoption does not and cannot in any way preempt or commit action by another unit or agency of government acting within its own area of functional and geographic jurisdiction.

Upon adoption of the plan by a unit or agency of government, it is recommended that the policymaking body of the unit or agency direct its staff to review in detail the elements of the watershed restoration plan. Once such review is completed, the staff can propose to the policymaking body for its consideration and approval the steps necessary to fully integrate the watershed plan elements into the plans and programs of the unit or agency of government.

Responsible Parties and Other Plan Implementation Organizations

Although the Regional Planning Commission can promote and encourage the implementation of this watershed restoration plan in various ways, the advisory role of the Commission makes actual implementation of the recommended plan dependent upon action by local, areawide, State, and Federal agencies of government and private organizations with an interest in improving conditions related to the

plan's four focus areas. Examination of the various public agencies that are available to implement elements of the recommended plan reveals an array of departments, commissions, committees, boards, and districts at all levels of government. These agencies range from general-purpose local units of government such as counties, cities, villages, and towns, to special-purpose districts, such as metropolitan sewerage districts. These agencies also include State regulatory bodies, such as the WDNR; and Federal agencies that provide financial and technical assistance for plan implementation, such as the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).

Because of the many and varied public agencies in existence, it becomes important to identify those agencies having the legal authority and financial capability to most effectively implement the recommended watershed restoration plan elements. Accordingly, those agencies whose actions will have a significant effect, either directly or indirectly, upon the successful implementation of the recommended plan and whose full cooperation in plan implementation will be essential are listed and discussed below. The agencies are, for convenience, listed by level of government; however, interdependence between the various levels, as well as between agencies of government, and the need for close intergovernmental cooperation, is essential to the successful implementation of the plan recommendations.

Numerous private and nonprofit organizations can play an important role in implementing recommendations of this watershed restoration plan. These organizations include local chapters of larger national or regional organizations as well as smaller, community-based groups. The roles that these organizations can play in plan implementation and examples of such groups are also described in this section.

Local-Level Agencies

Several County and municipal agencies have missions and powers that are important to the implementation of this watershed restoration plan. Statutory provisions exist for the creation at the County and municipal level of the following agencies having planning and plan implementation powers, including police powers and acquisition, condemnation (eminent domain), and construction (tax appropriation) powers, important to watershed restoration plan implementation.

Milwaukee County Parks

Milwaukee County Parks conduct land management activities that are important for the implementation of this watershed restoration plan. As shown on Map 4.46 in Chapter 4 of this report, County parks, parkways and open space sites comprise a substantial portion of the riparian lands along the mainstem of Oak Creek

and some of its tributary streams. These park and open space sites provide riparian buffers, habitat for wildlife, and corridors for recreational activities, including access to surface waters. As discussed in Chapter 2 of this report, the County has developed restoration and management plans for several of these sites, elements of which have been incorporated into this watershed restoration plan. The management and restoration of these lands gives this department a major role in plan implementation.

County Land and Water Conservation Committees

County land and water conservation committees are responsible for land conservation programs within the County and are also responsible for implementing the State's soil and water resource management program. In Milwaukee County, the members of the Milwaukee County Board Parks, Energy & Environment Committee serve as the Milwaukee County Land Conservation Committee. This committee reports to the County Board. Sections 92.07 and 92.10 of the *Wisconsin Statutes* authorize the land and water conservation committees to have a broad range of powers and duties. These powers and duties include:

- Development and adoption of standards and specifications for management practices to control erosion, sedimentation, and nonpoint sources of water pollution

- Distribution and allocation of available Federal and State cost-sharing funds relating to soil and water conservation

- Presentation of research and educational information programs relating to soil and water conservation

- Conduct of programs designed to prevent flood damage, drainage, irrigation, groundwater, and surface water problems

- Provision of financial, technical, and other assistance to landowners

- Acquisition of land and other interests and property, machinery, equipment, and supplies required to carry out various land conservation programs

- Construction, improvement, operation, and maintenance of structures needed for land conservation, flood prevention, and nonpoint source pollution control

- Preparation of a long-range natural resource conservation plan for the County, including an erosion control plan and program

County land and water conservation committee activities are closely supervised by the County board and are subject to the fiscal resources made available by the board. Day-to-day administration of the programs overseen by the County land conservation committee is performed by the counties' land conservation departments or divisions. In Milwaukee County, the Environmental Services unit of the County's Division of Architecture, Engineering & Environmental Services serves as the County's land conservation department. This department acts through partnerships with local farmers, landowners, businesses, and State and Federal agencies, to address soil and water conservation issues. In addition, this watershed restoration plan specifically assigns the task of monitoring implementation of plan recommendations to the Environmental Services unit. The County land conservation committee and Environmental Services unit will have important responsibilities in the implementation of this watershed restoration plan.

Municipal Planning Agencies

Municipal planning agencies include city plan commissions created pursuant to Section 62.23(1) of the *Wisconsin Statutes*. Such agencies are important to integrating recommendations of this plan into local plans and ordinances and to implementation at the local level.

Stormwater Drainage Districts

The management of stormwater runoff is an important element in the implementation of this watershed restoration plan. Wisconsin Act 53, which was enacted on December 19, 1997, amended and expanded Section 66.0821 of the *Wisconsin Statutes* to specifically grant municipalities the legal authority to assess service charges to users of a stormwater and surface water sewerage system. This legislation granted municipalities essential authorities for the establishment of stormwater utilities. All of the communities in the Oak Creek watershed have established stormwater utilities, a general stormwater fund, or a stormwater fee program.

Area-Wide Agencies

Statutory provisions exist for the creation of the following areawide agencies having both general and specific planning and plan implementation powers potentially applicable to the implementation of this watershed restoration plan.

Milwaukee Metropolitan Sewerage District

The MMSD is a special-purpose unit of government directed by an appointed Commission. In the Oak Creek watershed, the MMSD includes all of the municipalities except for the City of South Milwaukee. The District has the authority to levy taxes to fund its capital improvement programs and operation and maintenance of its facilities.

The District has a number of important responsibilities in the area of water resources management, including the collection, transmission, storage, and treatment of domestic, industrial, and other sanitary sewage generated in the District and its contract service areas and the provision of watercourse management programs for most of the major streams within the District. This latter responsibility includes development and implementation of flood mitigation programs for portions of the mainstem of the Oak Creek and several tributary streams. The District also conducts several programs that are relevant to the implementation of this plan, including its water quality monitoring program, its Greenseams program, and its green infrastructure programs.

Southeastern Wisconsin Regional Planning Commission

The Regional Planning Commission has no statutory plan implementation powers. However, in its role as a coordinating agency for planning and development activities within the Southeastern Wisconsin Region, the Commission can influence and support plan implementation through the community planning assistance services which it renders to its constituent counties and municipalities, and through review and comment of Federal and State grant-in-aid applications, wastewater facility plan reviews, and sanitary sewer extensions.

State-Level Agencies

The following State agencies have either general or specific planning authority and hold certain plan implementation powers important to the implementation of this watershed restoration plan.

Wisconsin Department of Natural Resources

The WDNR has broad authority and responsibility in the areas of natural resources protection, water quality control, and water regulation. The WDNR has the obligation to develop long-range, statewide conservation and water resource plans. In addition, it has the authority to designate sites to protect, develop, and regulate the use of State parks, forests, fish, game, lakes, streams, certain plant life, and other outdoor resources; and to acquire conservation and scenic easements.

In its role of designating sites to protect the natural resources of the State, the WDNR can play an important part in implementing and funding the stream rehabilitation, prairie and wetland restoration, riparian buffer, and recreational use and access components of the Oak Creek watershed restoration plan. Implementation of these components may be accomplished as a whole, or in part, through creation of a State Project Area within which the WDNR could acquire, develop, and manage properties. Section 23.09(2)(d) of the *Wisconsin Statues* lists purposes for which the State may acquire lands through purchase, lease, or gift. The listed purposes that may be applicable to the recommended plan components include: State forests, State recreation areas, State natural areas, streambank protection, wildlife habitat areas and fisheries, and any other purpose for which gift lands are suitable, as determined by the WDNR.

Chapter NR 1 of the *Wisconsin Administrative Code* establishes priorities for WDNR acquisition of recreational lands. The categories that are applicable to recommended components of this watershed restoration plan, in descending priority, are:

- Land to protect rare and threatened natural resources; to protect genetic and biological diversity; and to protect, manage, or restore critical fish and wildlife habitat

- Water-based resources that include land important to protect and improve the quality of the State's surface and groundwater and land for recreation and management along streams, rivers, lakes, and flowages

- Lands to accommodate broad, natural resource-based outdoor recreation and State recreation trails

- Land within 40 miles of Wisconsin's 12 largest cities[12]

A proposed State Project Area is evaluated by the WDNR through preparation of a feasibility study, following which the Project Area may be approved or rejected by the Natural Resources Board and the Governor.

The responsibility for water pollution control in Wisconsin is centered in the WDNR. The basic authority and accompanying responsibilities relating to the water pollution control function of the WDNR are set forth in

[12] *All portions of the Oak Creek watershed are within 40 miles of one or more of the Cities of Kenosha, Milwaukee, Racine, Waukesha, and West Allis—all of which are among the 12 largest cities in the State.*

Chapter 281 of the *Wisconsin Statutes*. Under that chapter, the WDNR is given broad authority regarding the following:

- Preparing water use objectives and supporting water quality standards
- Protecting water quality through abatement of nonpoint source pollution from construction site erosion, agricultural runoff, and nonagricultural (urban) runoff
- Protecting wetlands through enforcement of water quality standards
- Protecting navigable waters, including authorizing municipal shoreland zoning regulations
- Regulating groundwater withdrawals from high-capacity wells to ensure that operation of such wells do not adversely affect a public water supply, or regulating withdrawals when high-capacity wells are located in a groundwater protection area, which is defined as an area within 1,200 feet of an outstanding or exceptional resource water or Class I, II, or III trout streams[13]
- Conserving and managing water resources through regulation of withdrawals from waters of the State
- Reviewing and approving plans and specifications for components of sanitary sewerage systems
- Reviewing and approving the creation of joint sewerage systems
- Regulating the servicing of septic tanks, soil absorption fields, holding tanks, grease interceptors, privies, and other components of private sewage systems
- Regulating the disposal of septage in municipal sewerage systems

[13] *Section 281.34(5)(b)1 requires that an "environmental impact report under s. 23.11(5) must be prepared for a proposed high capacity well located in a groundwater protection area."*

- Performing "activities to clean up or to restore the environment in an area that is in or adjacent to Lake Michigan or Lake Superior or a tributary of Lake Michigan or Lake Superior if the activities are included in a remedial action plan that is approved by the department" (Section 281.83(1))

- Administering a financial assistance program for the construction of pollution prevention and abatement facilities

Each of the above authorities is important to implementation of the recommended watershed restoration plan. The loans and grants available through the financial assistance program are particularly relevant, including those related to:

- Local water quality planning

- Facilities planning, engineering design, and construction of point source pollution abatement facilities

- Nonpoint source water pollution abatement "for the implementation of measures to meet nonpoint source water pollution abatement needs identified in areawide water quality management plans" (Section 281.65(1)(a))

- Lake management planning

- River protection

Under Chapter 283 of the *Statutes*, the WDNR is given broad authority to establish and carry out the Wisconsin Pollutant Discharge Elimination System (WPDES) program in accordance with the policy guidelines set forth by the U.S. Congress under the Federal Water Pollution Control Act Amendments of 1972 and 1987. This legislation establishes a waste discharge permit system and provides that no permit may be issued by the WDNR for any discharge from a point source of pollution which is in conflict with any areawide wastewater treatment and water quality management plan approved by the WDNR. This legislation and accompanying procedures comprise the primary enforcement tool of the WDNR in achieving the established water use objectives and supporting water quality standards.

The WDNR has the obligation to establish standards for floodplain and shoreland zoning and the authority to adopt, in the absence of satisfactory local action, shoreland and floodplain zoning ordinances. The WDNR also has authority to regulate the following: water diversions, shoreland grading, dredging, encroachments, and deposits related to navigable waters; the construction of neighboring ponds, lagoons, waterways, stream improvements, and pierhead and bulkhead lines; the construction, maintenance, and abandonment of dams; water levels of navigable lakes and streams; and lake and stream improvements, including the removal of certain lakebed materials. The WDNR also makes cost-share monies available for a number of activities, including dam removal, river protection, land and water conservation and stewardship activities, stormwater and runoff management, lake planning and protection, recreational trail development, and aquatic invasive species control. With such broad authority for the protection of the natural resources of the State and Region, the WDNR will be extremely important to the implementation of nearly all of the major elements of this watershed restoration plan.

Wisconsin Department of Administration

The Wisconsin Department of Administration's Federally-approved Coastal Zone Management Program for the Great Lakes was established in 1978 under the Federal Coastal Zone Management Act and has been revised over time. The program has identified wetlands protection, habitat restoration, public access, nonpoint source pollution control, coastal resource and community planning, historic preservation projects, and Great Lakes education projects as current priorities. The program also provides assistance to local governments in the management and protection of shorelands, wetlands, and floodplains through zoning and permitting.

Wisconsin Department of Agriculture, Trade and Consumer Protection

Under the Wisconsin Soil and Water Conservation Law, State-level soil and water conservation responsibilities have been placed under the Wisconsin Department of Agriculture, Trade and Consumer Protection's (DATCP) authority. Within that Department, the law created a seven-member advisory Land and Water Conservation Board. The Land and Water Conservation Board reviews and comments on rules relating to soil and water conservation, administers the State's Farmland Preservation Program, reviews all County erosion control plans and the annual County and long-range County land and water conservation plans, and generally advises the Secretary of DATCP and the University of Wisconsin on matters relating to soil and water conservation. DATCP also makes cost-share monies available for land and water resource management activities such as installation of agricultural best management practices. The DATCP rules require the preparation of county land and water conservation plans and provide for partial funding of the

administration and implementation of such county plans. The Department will have important responsibilities relative to implementation of this watershed restoration plan.

Wisconsin Department of Safety and Professional Services

The Wisconsin Department of Safety and Professional Services has responsibility for regulation of construction erosion control and private onsite wastewater treatment systems under Chapters SPS 360, "Erosion Control, Sediment Control and Storm Water Management," and SPS 383, "Private Onsite Wastewater Treatment Systems," of the *Wisconsin Administrative Code*. Department authority for construction site erosion control extends to issuing permits for single- and two-family residential building sites and commercial sites. This Department also sets minimum standards for the design, installation, and maintenance of sanitation devices and systems that are alternative to water-carried waste plumbing fixtures and drain systems in Chapter SPS 391, "Sanitation," of the *Wisconsin Administrative Code*. The Department also provides funding for the rehabilitation and replacement of private onsite wastewater treatment systems through Chapter 387, "Private Onsite Wastewater Treatment System Replacement or Rehabilitation Financial Assistance Program," of the *Wisconsin Administrative Code*.

Wisconsin Department of Transportation

The Wisconsin Department of Transportation has important responsibilities related to this plan regarding 1) nonpoint source pollution abatement related to highway construction and maintenance, 2) constructing stream crossings that permit passage of fish and other aquatic organisms, 3) minimizing disturbance of existing natural stream channels and restoring disturbed stream channel reaches, and 4) management of roadside vegetation.

University of Wisconsin-Madison Division of Extension

A University of Wisconsin-Madison Division of Extension (UWEX) office is located within each county. Although the UWEX has no statutory plan implementation powers, it can aid communities in solving environmental problems by providing educational and informational programs to the general public, and by offering advice to local decision-makers and community leaders. The UWEX carries out these responsibilities by conducting meetings, tours, and consultations, and by providing newsletters, bulletins, and research information. In addition, the UWEX, along with the WDNR, sponsors citizen science programs such as the Water Action Volunteers Program (WAV), the Wisconsin Citizen Lakes Monitoring Program, and the Wisconsin First Detector Network. These sponsorships give the UWEX a role in implementing the recommendations of this plan that are related to water quality monitoring.

Federal-Level Agencies

The following Federal agencies administer aid and assistance programs that may be applicable to implementation of this watershed restoration plan. Funding from such programs may be used for land acquisition, construction of specific facilities, and other management activities.

U.S. Environmental Protection Agency

The USEPA administers water quality management planning grants and sanitary sewerage facility construction grants. In addition, this agency is responsible for the ultimate achievement and enforcement of water quality standards for all interstate waters, should the States not adequately enforce such standards. In this respect, the USEPA has delegated authority over the National Pollutant Discharge Elimination Systems permit issuance process whereby the WDNR issues discharge permits under both State and Federal authorities. Under guidelines promulgated by the USEPA, areawide water quality management and sanitary sewerage facilities plans must be prepared as prerequisites to the receipt of Federal capital grants in support of sewerage works construction.

The USEPA also administers grant funding for nonpoint source pollution control activities. The 1987 amendments to the Federal Clean Water Act established the Section 319 Nonpoint Source Management Program. Under this program, states, territories, and tribes receive grant money that supports a wide variety of activities, including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of specific nonpoint source implementation projects.

U.S Department of Agriculture, Farm Services Agency

The USDA Farm Services Agency (FSA) administers the programs of the Federal Farm Bill that provide grants to rural landowners in partial support of carrying out approved land and water conservation practices. Grants from this program could be used for implementation of some watershed restoration plan recommendations.

U.S Department of Agriculture, Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS) provides financial and technical assistance to agricultural operators and landowners to install conservation practices. NRCS administers resource conservation and development projects and watershed projects under Federal Public Law 566 and provides technical and financial assistance to landowners through the county land conservation committees. Such assistance may include the planning and construction of measures for land treatment, agricultural water

management, flood prevention, and public fish, wildlife, and recreational development. NRCS also conducts detailed soil surveys and provides interpretations as a guide to utilizing soil survey data in local planning and development. Certain programs administered by this agency, including those providing partial funding for land conservation practices, can contribute to implementation of the land management and treatment measures recommended under this watershed restoration plan.

U.S Department of Interior, Geological Survey

The USGS conducts continuing programs on water resource appraisal and monitoring. The programs of the USGS are essential to the implementation of the watershed restoration plan recommendations to maintain the existing stream gaging and water quality monitoring capabilities and to expand the water quality monitoring network in the watershed.

U.S Department of Interior, Fish and Wildlife Service

The U.S. Fish and Wildlife Service has the mission of conserving, protecting, and enhancing fish, wildlife, and plants and their habitats. Thus, the Service would have a role in implementation of the instream and riparian habitat measures recommended under this watershed restoration plan.

U.S Department of Transportation

The U.S. Department of Transportation, Federal Highway Administration, administers all Federal aid programs working through the Wisconsin Department of Transportation. Thus, this agency has nonpoint source pollution abatement responsibilities with regard to setting standards for highway construction and maintenance.

U.S. Army Corps of Engineers

The Corps of Engineers administers a regulatory program relating to the discharge of dredge and fill materials into the waters of the United States and adjacent wetlands. This program is administered pursuant to Section 404 of the Federal Water Pollution Control Act as amended in 1972. Under various programs, the Corps can also study, design, and construct projects such as emergency streambank and shoreline works to protect public infrastructure, restore degraded ecosystems, and address flooding.

Private Organizations

Organizations such as the Root-Pike Watershed Initiative Network (Root-Pike WIN) and the Southeastern Wisconsin Watersheds Trust (Sweet Water) have a broad focus on protecting, restoring, and sustaining the ecosystems of several adjacent watersheds to the Oak Creek watershed. These groups can have direct roles

in plan implementation through considering the interrelationship between plan recommendations and their respective programs to improve conditions of their watersheds.

Land trusts and conservancies, such as the Milwaukee Area Land Conservancy, purchase, or obtain conservation easements for, environmentally valuable lands through member contributions, land or easement donations, and grants obtained from other sources. These organizations can play a significant part in plan implementation through coordination of their land acquisition and easement programs with the recommendations of this plan.

Other environmental organizations may have roles in implementing specific recommendations. For example, 1000 Friends of Wisconsin assisted several municipalities in southeastern Wisconsin in auditing, revising, and prioritizing municipal codes and ordinances that prohibit or inhibit more widespread use of green infrastructure. More recently, Clean Wisconsin has been working with the participating municipalities to update municipal ordinances and codes.

Youth conservation corps, such as the Milwaukee Community Service Corps, the Wisconsin Youth Conservation Corps, and the Great Lakes Community Conservation Corps, which provide young adults with hands-on job training opportunities may be able to assist with implementation of some recommendations such as invasive species removal, removal of small-scale aquatic organism passage impediments, and small-scale streambank stabilization projects.

The Friends of the Mill Pond & Oak Creek Watercourse, Inc. has been active in controlling litter and debris along the Mill Pond and the mainstem of Oak Creek. There is potential for park friends' groups associated with County and municipal parks located in the watershed to conduct similar activities. Through these activities, these groups can help to implement some of this plan's habitat-related recommendations.

Several organizations also conduct activities to remove invasive plant species from riparian and upland areas in the Oak Creek watershed. The Southeastern Wisconsin Invasive Species Consortium provides technical support and some funding for invasive species management. Other groups that have conducted invasive species management activities in the watershed include the Park People of Milwaukee County and the Friends of Grant Park. Through the continuation of activities to manage invasive species, these groups can help to implement some of this plan's habitat-related recommendations.

In Wisconsin, homeowners' associations (HOAs) and condominium associations are generally organized as nonprofit corporations. HOAs and condominium associations may have responsibilities for implementation of some recommendations of this plan. The primary purposes of these associations include management and maintenance of common elements within a residential development or condominium and protection of property values. As part of management of common elements, an HOA or condominium association may have responsibilities for the maintenance of stormwater management practices within the development. This responsibility is usually determined during the planning and construction process.

Nature centers in nearby watersheds such as Wehr Nature Center and the Urban Ecology Center can support plan implementation through their educational programs. In addition, citizen-based monitoring programs, such as the WAV Program, generally require local coordinators and sponsors in order to operate in an area. This need creates a potential for these centers, or other groups, to support implementation of this watershed restoration plan through involvement in water quality monitoring.

Schedule

An implementation schedule is an important plan element which 1) provides coordination of implementation by indicating when particular management measures should be done relative to other management measures, and 2) organizes the implementation of projects by allowing a reasonable amount of time for the development of the leadership, partnerships, capacity, and funding sources required for project implementation.

Table 6.39 presents a schedule for the implementation of general recommendations of the Oak Creek watershed restoration plan.

Several comments should be made on the timeline set forth in Table 6.39. First, some of the dates set forth for completion of implementation of particular plan elements reflect regulatory requirements that impact upon those elements. For example, the dates given for implementation of the changes to municipal separate storm sewer system (MS4) illicit discharge detection and elimination (IDDE) procedures recommended in this chapter are the anticipated dates of reissuance of the communities' MS4 discharge permits under the Wisconsin Pollutant Discharge Elimination System program. This reflects the fact that the recommended changes in IDDE procedures will require changes in these permits. Similarly, the date given to complete the recommended sediment core sampling reflects the need to move closer to a preferred alternative for the Mill Pond and dam to resolve the non-functional sluice gate issue of concern Second, some of the dates set forth for the completion of other recommended plan elements reflect implementation schedules given in

other plans. For example, the schedule for implementation of green infrastructure practices in the portion of the watershed that is in the MMSD service area is based on the schedule given in the MMSD green infrastructure plan.

With respect to the specific projects recommended in Table 6.1, each project is given a priority rating of "high," "medium," or "low." The Oak Creek watershed restoration plan envisions that at least 35 percent of the high-priority projects will be initiated within the first five years of plan implementation. It envisions and additional 15 percent of high-priority projects will be completed during each of the next five 5-year periods with implementation of high-priority projects being completed by the end of 2051. For medium- and low-priority project , it is envisioned that 65 percent of them will be completed by the end of 2051 with the balance being completed time after this date.

In addition to the schedule given in Table 6.39, a schedule for implementation of education actions recommended as part of the information and education element of this watershed restoration plan was previously presented in Table 6.20.

The purpose of these implementation schedules is to provide guidance for the implementation of the Oak Creek watershed restoration plan. As the plan is implemented, it will be important to take a flexible approach to the application of this schedule. One reason for this is that implementation of many of the recommendations provided in this plan require opportunities which may or may not present themselves within the time frames envisioned in the schedule. For example, recommendations that require the acquisition of land or easements for implementation need the opportunity to purchase lands or easements from landowners who are willing to sell. Similarly, the ability to install best management practices on private land is dependent upon the cooperation and participation of landowners. There may also be opportunities to achieve cost savings by implementing recommended projects in concert with, or as part of other, unrelated projects. Finally, it is important to note that the availability of funding is constantly changing. Opportunities to fund particular types of projects may be short-lived. Since these opportunities may not always be available, it is important to capitalize on them whenever possible. Because of this, it will be important to take a flexible rather than a rigid approach to the application of the implementation schedule.

Maintaining and Revising this Plan

Watershed restoration efforts are processes that can span decades. Even as restoration proceeds, conditions in the watershed can change in ways that can affect the restoration process. Because of this, it is important that a plan such as this one be treated as a living document that will adapt to these changing conditions.

Implementation of this plan should include maintenance of the plan, including periodic review of plan goals, objectives, and elements and adjustment of them to changing conditions in the watershed.

The maintenance of the Oak Creek watershed restoration plan will include three components. The first component consists of monitoring the implementation of plan recommendations. The process for doing this was previously described in the section on tracking implementation of plan recommendations. This monitoring will provide information for evaluating the state of implementation, which is an important consideration for determining whether adjustments to the plan's recommendations or schedule are warranted.

The second component consists of the annual review and evaluation of progress to be conducted by the Oak Creek Watershed Plan Advisory Group. This process was previously described in the section on evaluating the state of plan implementation and success. During its review, the Advisory Group will determine whether any adjustments or modifications in plan recommendations or priorities are warranted. Adjustments suggested by the Advisory Group will be documented and available in a timely manner to guide organizations implementing plan recommendations.

The third component consists of periodic updating of the plan and renewal of the finding that it is consistent with the nine key elements that USEPA considers important for watershed plans. In Wisconsin, a finding that a watershed plan is consistent with the nine key elements generally expires after a fixed period. While there have been some exceptions,[14] most nine key element plans in the State have been approved for 10 years. Given the size of the Oak Creek watershed and the limited funding currently available, it is unlikely that all of the recommendations of this plan will be implemented within 10 years. In particular, it is unlikely that projects designed to achieve all of the recommended reductions in nonpoint source pollutions loads needed to meet water quality standards will be implemented within 10 years. Full implementation of this plan is expected to take 20 years or more. Because of this it is expected that the Oak Creek watershed restoration plan will need to be updated, revised, and reapproved prior to its expiration.

[14] *For example, the plan for the Fredonia-Newburg portion of the Milwaukee River watershed was approved for a period of 20 years and the plan for the Pike River was approved for 35 years.*

While the WDNR has not issued guidance for the updating and renewal of nine key element plans, Department staff have indicated issues that they feel such an update should address.[15] They have indicated that these plans can be renewed the year of or after their expiration date. Part of the renewal process should include meeting with WDNR staff to discuss the status of the expiring or expired plan. Issues that an update should focus on include:

- Whether plan goals and objectives were met and reasons that any goals and objectives were not met
- Whether plan goals need to change to reflect new watershed conditions
- Whether plan milestones were achieved and reasons why any milestones were not achieved
- Evaluation of plan milestones to determine whether any should be repeated or whether new milestones are needed
- Whether there are other existing plans that apply to the watershed, including
    - Descriptions of such plans and the milestones they contain
    - A summary report on progress that has been made to meet the existing plan goals
- An updated inventory of watershed conditions, including but not limited to
    - Causes and sources of pollution
    - Discussion of recently adopted TMDLs applying to the watershed
    - Discussion of recent changes in impaired waters listings applying to the watershed
    - The status of MS4 permits applying to the watershed including incorporation of TMDLs and new or revised conditions into the permits

[15] *Andrew D. Craig, WDNR staff, "RE: 9KE plan – 10 year renewal questions – WDNR response," electronic mail message to Laura K. Herrick, SEWRPC staff, December 7, 2020.*

- Revised pollutant load modeling to reflect practices that have been adopted over the plan schedule

- Water quality monitoring results

6.11 REQUIRED TECHNICAL AND FINANCIAL ASSISTANCE

It is important for the units of government, agencies, and private organizations working within the Oak Creek watershed to effectively utilize all available sources of financial and technical assistance for the timely implementation of the recommended plan. In addition to utilizing current tax revenue sources, such as property taxes, fees, and State-shared taxes, the local units of government in the watershed can also make use of revenue sources, such as borrowing, special taxes and special assessments, areawide assessments, contributions in aid of construction, impact fees, establishment of stormwater utilities, State and Federal grants, grants from foundations, and gifts. In addition to their regular resources, private organizations working in the watershed can also make use of State and Federal grants, grants from foundations, and gifts.

Various types of technical and financial assistance useful in plan implementation are also available from county, State, and Federal agencies. Examples of the types of assistance available include possible State and Federal cost-share funding for nonpoint source pollution control and habitat projects; technical advice on land water management practices provided by the USDA NRCS staff and county land conservation staffs; and education, advisory, and review services offered by University of Wisconsin-Madison Division of Extension and SEWRPC.

Cost Analysis

The capital costs of the general recommendations in this plan are given in this chapter. These costs are summarized in Table 6.40. The estimated capital cost of the Oak Creek watershed restoration plan through 2031 ranges between about $150 million and $162 million. This is given as a range because the costs of addressing the Mill Pond dam and Mill Pond will depend on which alternative Milwaukee County selects. Estimated costs for implementation of the MMSD green infrastructure plan for the portion of the watershed that is located within MMSD's service area, water quality and other monitoring, information and educational programming, and implementation of the City of South Milwaukee urban forestry plan are given through year 2031. The cost summary in Table 6.40 also includes capital costs for the specific projects recommended in Table 6.1.

The estimated costs of individual recommended specific projects are given in Table 6.1. A summary of the project capital costs by class of project used in the prioritization is given in Table 6.41. The total capital cost associated with the 51 high-priority projects for which costs were available is estimated at about $23.7 million. The total capital cost of 228 additional medium- and low-priority projects is estimated at about $33.4 million. Table 6.1 includes 38 high-priority and 89 medium- and low-priority projects for which sufficient information was unavailable to develop costs. Costs for these projects will need to be developed through additional planning or preliminary engineering.

The costs given in Tables 6.1, 6.40, and 6.41 are estimated and will need to be refined during preliminary engineering and project development. All costs are expressed in 2019 dollars.

Grant and Loan Programs

The identification of potential funding sources, including sources other than solely local-level sources, is an integral part of the implementation of a successful plan. The following description of funding sources includes those that appear to be applicable as of the year 2021. Funding programs and opportunities are constantly changing. Accordingly, the involved local staffs will need to continue to track the availability and status of potential funding sources and programs. This list is intended to facilitate implementation of the activities set forth in the recommended plan. Some of the programs described herein may not be available under all envisioned conditions for a variety of reasons, including local eligibility requirements or lack of funds in Federal or State budgets at a given time. Nonetheless, the list of sources and programs should provide a starting point to identify possible funding opportunities for implementing the watershed restoration plan recommendations. Note that Table 6.42 provides a website address and/or staff contact information for each program. This information should be used to find additional program information as well as the program's grant application process and requirements.

Numerous grant and local programs are offered through both public and private sources for many aspects of plan implantation. Table 6.42 summarizes many of the major grant and assistance programs available to implementation organizations such as the County, municipalities, State and local agencies, and nongovernmental organizations under the areas of wildlife and fish habitat preservation, water quality, soil protection and enhancement, land acquisition for park and open spaces, flood mitigation, and other areas such as education and sustainable development.

Captain Planet Foundation Small Grants Program

The Captain Planet Foundation (CPF) provides funding to support hands-on environmental projects designed to encourage innovative initiatives that inspire and empower children and youth to work at creating environmental solutions in their homes, schools, and communities. CPF grants are intended to:

- Empower youth by providing hands-on environmental stewardship opportunities
- Inspire youth and communities to become agents of change for their communities
- Serve as a catalyst for education that uses the environment as a context for science, technology, engineering, and mathematics (STEM) learning

As described below, CPF offers material and monetary support.

Material Support Program

CPF provides material support through its ecoSTEM Resource Kits. These kits provide material and activity supplies organized by environmental themes such as Renewable Energy, Water Quality, PolliNation, and Earth Soil & Decomposition. Additionally, ecoSTEM Kits provide a class sets of materials that can be used and reused to carry out investigations, engineering design challenges, citizen science projects, and stewardship projects. Grant application cycle is open from the beginning of September through the beginning of January.

Monetary Support

CPF provides monetary support through two grant programs: ecoTech Grants and ecoSolutions Grant.

Funding through ecoTech Grants is offered for programs that engage children in inquiry-based, STEM-related projects that leverage technology and/or use of nature-based designs to address environmental concerns in local communities. Grant applications are available in two cycles annually (September 15 through January 15 and March 15 through July 15) with a cash award amount of $2,500.

Funding through ecoSolution Grants provides support for youth-led environmental projects with cash grants ranging between $500-$2,500 during two annual cycles: September 15 through January 15 and March 15 through July 15.

Organizations exempt from federal taxation under the IRS Section 501 are eligible for monetary support as are those that have a fiscal sponsor that is exempt. This includes most schools and nonprofit organizations. Nonprofit organizations must also maintain an annual operating budget of less than $3 million to qualify.

Charles Stewart Mott Foundation

The Charles Stewart Mott Foundation (C.S. Mott Foundation) is a private grantmaking organization established in Flint, Michigan. The C.S. Mott Foundation supports efforts that promote a just, equitable, and sustainable society. The Foundation has four major grant programs: Civil Society Program, Education Program, Environment Program and Flint Area Program. The Environment Program seeks to protect communities and the ecosystems upon which they depend on. This program has four subgrant categories, two of which are relevant for funding projects recommended by this plan: "Addressing the Freshwater Challenge" and "Special Initiatives". Interested organizations must submit a letter of inquiry describing the purpose and objectives, general methodology, and total cost of the proposed project.[16]

Addressing the Freshwater Challenge

The goal of this grant program is to secure sustainable levels of clean water for people and the environment in the Great Lakes basin through strengthening the environmental community and informing sound public policies. The C.S. Mott Foundation seeks effective nongovernmental organizations and policies dedicated to long-term conservation of freshwater ecosystems.

Special Initiatives

The goal of the Special Initiatives grant program is to respond to unique opportunities to advance environmental protection in the U.S. and internationally that go beyond the Environment Program's major objectives.

Clif Bar Family Foundation

Clif Bar Family Foundation Small Grants are awarded for general organizational support or to fund specific projects. Grants average approximately $7,000 with priority given to applicants who:

- Address the funding priorities from a holistic approach
    - Protect Earth's beauty and bounty

[16] *Jeff Alexander, Jessica Jones, Laurie Posner, Sarah Schuch,* Charles Stewart Mott Foundation Annual Report of 2019, *2020.*

- Create a robust, healthy food system
- Increase opportunities for outdoor activity
- Reduce environmental health hazards
- Build stronger communities

- Operate with clearly defined objectives
- Demonstrate strong community ties and operate at the community level
- Promote positive change through both the projects and their implementation process

Eligible grant applicants must be a 501 (c)3 organization. Application deadlines are February 1, June 1, and October 1. Grants awarded during a particular cycle will be announced at the beginning of the following cycle.

Cornell Douglas Foundation

The Cornell Douglas Foundation is a private, nonprofit organization that provides small grants to organizations that advocate for environmental health and justice, watershed protection, land conservation, and encourage environmental stewardship and sustainability. The average grant amount given is between $15,000 to $50,000.

Doris Duke Charitable Foundation

As described below, the Doris Duke Charitable Foundation's Environment Conservation Program provides several grant opportunities to individuals and nonprofit organizations seeking to improve and enhance conservation and wildlife habitat. Grants are awarded through invited proposals. Interested individuals or organizations must submit a letter of inquiry prior to grant proposal. The foundation generally awards multi-year grants that range from $100,000 to $1 million. Funding opportunities may also be available through organizations administering re-granting programs supported by the foundation. Because the foundation does not make direct grants for land acquisition projects, land funds are distributed through re-granting competitions administered by regional conservation organizations.

Land Conservation in a Time of Climate Change

The Doris Duke Foundation supports three critical land conservation activities supported by nonprofit organizations and environmental government agencies:

- Identifying resilient landscapes
- Protecting resilient landscapes
- Managing, restoring and adapting conserved lands to impacts of climate change

Wildlife and Energy Development

The continuing shift from carbon-based energy sources to renewable energy sources has increased the amount of funding needed to support renewable energy facilities. Because of this shift, the Foundation seeks efforts to ensure that renewable-energy facilities and infrastructure are built in ways and places that do not destroy or fragment wildlife habitat. Preserving intact landscapes through means such as conserving tree canopy within communities has multiple benefits including reducing greenhouse gas emissions, preserving wildlife habitat, and creating more livable, equitable communities. Funding priorities include projects that:

- Promote low-impact renewable energy development
- Minimize impacts of inappropriate bioenergy solutions
- Promote equitable urban forestry

Strengthening the Conservation Field

The Doris Duke Foundation's Strengthening the Conservation Field program supports efforts that increase public funding toward conservation as well as organizations focused on land protection. In addition, this program supports initiatives focused on increasing diversity, equity, and inclusion in the conservation field. Funding priorities include projects that:

- Diversify the conservation field and associated Programs:
    - Doris Duke Conservation Scholars Program

- Building an Inclusive Conservation Movement Program
- Diversity, Equity and Inclusion Capacity Building Program

- Increase public conservation funding
- Build the capacity of the land trust community
- Build a collaborative landscape conservation community

Freshwater Future

Freshwater Future is watershed-wide organization that supports community-based groups and actions to protect and restore the Great Lakes land and water resources, including advocacy efforts that promote clean drinking water and protection of the rivers, lakes, shorelines, wetlands, and groundwater within the Great Lakes Basin. This group's grant programs are described below.

Project Grants Program:

This program provides financial support for activities led by community groups working to promote river, lake, shoreline, wetland, groundwater, and drinking water protection in the Great Lakes Basin through grassroots advocacy efforts. Grant application deadlines are generally in spring and fall with an award between $500 to $5,000.

Special Opportunity Grants Program:

Special Opportunity Grants are "emergency grants" for projects working to protect drinking water, shorelines, inland lakes, rivers, groundwater, and wetlands that may not coincide with the application timeline or funding period of the Project Grant Program. Applications for grants of up to $500 are accepted until funds are depleted for the year.

Fund for Lake Michigan

The Fund for Lake Michigan was established in conjunction with the resolution of disputes concerning the We Energies Oak Creek Power Plant and Elm Road Generating Station. The agreement establishing the Fund for Lake Michigan provides for payments of $4 million each year from 2011 through 2035 to fund projects to improve the health of Lake Michigan. The Fund for Lake Michigan provides grants to nonprofit organizations and local government agencies for projects that will enhance the ecological health of the

nearshore and coastal areas and rivers of southeastern Wisconsin through habitat preservation and restoration and for projects that improve the quality of the water flowing into Lake Michigan through reductions of pollutants, including toxins and nutrients. Examples of projects funded include habitat restoration projects, including restoration of woodlands, wetlands, beaches, instream and streambank sites, and brownfields; installation of riparian buffers, green infrastructure, and best management practices; removal of dams; development of watershed restoration plans; collection of water quality data in support of planning efforts; and small grant programs run by local watershed groups.

The Fund for Lake Michigan accepts grant pre-proposal applications on a rolling basis throughout the year. Grant decisions are made four times a year during quarterly meetings in March, June, September, and December. Each quarter The Fund for Lake Michigan awards between $750,000 to $1 million for accepted projects.

Great Lakes Commission

Funding for the Great Lakes Commission's Great Lakes Sediment and Nutrient Reduction Program (GLSNRP) is provided by the NRCS under the Great Lakes Restoration Initiative (GLRI).

Eligible applicants include local and state governments and nonprofit organizations. Grant application proposals must include nutrient and sediment reduction activities associated with one of three project types: 1) agricultural non-point; 2) stormwater; and 3) Great Lakes shoreline or streambanks. Applicants will be asked to identify the primary project type with the application. Projects are selected on a competitive basis. The maximum funding per project is $200,000 with a 25 percent match requirement. It should be noted that funds may be used for both technical and financial assistance; however, grant money cannot be used to fund technical assistance to implement Farm Bill cost-share programs.

Great Lakes Fishery Trust

The Great Lakes Fishery Trust (GLFT) was created in May 1996 as compensation to the residents of Michigan for the lost use and enjoyment of the fishery resources of Lake Michigan caused by the operation of the Ludington Pumped Storage Plant, located in Ludington, Michigan. The GLFT provides funding to nonprofit organizations, educational institutions, and government agencies to enhance, protect, and rehabilitate Great Lakes fishery resources. In 2021, The GLFT Board of Trustees set aside funding for grants in the following categories: Great Lakes Stewardship, Ecosystem Health and Sustainable Fish Populations, and Special Projects. GLFT provides funding up to $1.3 million for ecological and biological research and up to

$500,000 for habitat protection and restoration. Note- the GLFT has an evaluation process for funding criteria associated to pre-proposal eligibility on their website.

Great Lakes Stewardship

The Great Lakes Stewardship request for proposals is released every other year beginning in 2021. This grant focuses on increasing awareness and understanding of the ecology of the Great Lakes so that citizens can be advocates for strategies that support long-term sustainability of the Great Lakes fishery and become stewards of the Great Lakes. This includes projects that:

- Build an understanding at the watershed level, and promote related actions on Great Lakes issues including:
    - Protecting biological diversity
    - Sustaining commercial and recreational fisheries
    - Controlling non-native nuisance species
    - Reducing pollution
- Promote environmental stewardship through direct experiences with natural resources
- Promote awareness of, and access to, existing Great Lakes education programs and resources

Ecosystem Health and Sustainable Fish Populations

The Ecosystem Health and Sustainable Fish Populations (EHSFP) grant supports the restoration and maintenance of the biological integrity of the Lake Michigan fish community. Currently, the GLFT is accepting proposals for the following funding themes under EHSFP:

- Ecological and Biological Fisheries Research to Inform Management
- Habitat Protection and Restoration

Special Projects

The GLFT considers proposals for special case or special project grants. To be considered for a special project grant, the proposed activity must generally fall outside of GLFT grant category and be nominated by a board member who is willing to support the proposal.

Great Lakes Protection Fund

The Great Lakes Protection Fund is a private, nonprofit corporation founded in 1989 by the Governors of the Great Lakes states. It is a permanent environmental endowment that supports collaborative actions to improve the health of the Great Lakes ecosystem. The Fund finances projects that advance the goals of the Great Lakes Toxic Substances Control Agreement and the Great Lakes Water Quality Agreement, notably restoring and maintaining the chemical, physical, and biological integrity of the Great Lakes basin ecosystem.

The Fund provides support to projects that create, test, and deploy new ways of improving the physical, chemical, and biological health of the basin ecosystem. Its investments reflect the nine priority areas the Great Lake's Governors have identified to guide government efforts to protect and restore the Great Lakes. These shared priorities are to:

- Ensure the sustainable use of 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 nonnative 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 the Great Lakes

The Fund can support specific projects through grants, loans, program-related investments, or other financial mechanisms. Nonprofit organizations, for-profit businesses, government agencies, and individuals are eligible to apply for project support. Applications for support are made by first discussing the potential project with Fund staff, followed by submission of a pre-proposal. Based upon the pre-proposal an applicant may be invited to submit a full proposal.

James E. Dutton Foundation

The James E. Dutton Foundation is a 501(c)(3) charitable private foundation established in 2005. The Foundation makes grants to organizations for programs that benefit wildlife, animal causes, the environment, and natural resources. The Foundation provides support for endeavors that provide care for wildlife and animals; provide animal rescue and/or shelter; enhance wildlife populations through habitat conservation, improvement, and/or restoration; promote sound land management; increase public awareness; and educate the public. The Foundation also provides assistance to organizations or programs that support individuals with their goals of caring for or enjoying wildlife, animals, and the outdoors; educating the public; preserving natural resources; and giving people the opportunity to experience animals, wildlife, and the outdoors. Projects funded in the past include wetland restorations, stream restorations, provision of trail markers at parks, and educational programs.

Grant requests should be submitted to the Foundation in writing and must include a description of the requesting organization and its mission. The request should also include a detailed description of the project or program for which the grant is being requested, along with the grant budget and schedule.

The Joyce Foundation

The Joyce Foundation is a charitable foundation based in Chicago, Illinois. It distributes about $45 million in grants each year. Its mission is to improve the quality of life, promote safe and healthy communities, and

build a just society in the Great Lakes region. Throughout the year, funding is provided for many projects under the Foundation's Environment Program.

The Environment Program addresses three critical long-term environmental challenges: climate change, safety and accessibility of drinking water, and the health of the Great Lakes. Subsequently, the Joyce Foundation has two main environmental grant categories: "Climate Solutions" and "Great Lakes and Drinking Water" with the latter being most relevant to the Oak Creek watershed planning efforts.

Great Lakes and Drinking Water

The Great Lakes and Drinking Water focus area seeks to accelerate actions to protect the region's freshwater, upgrade water infrastructure, and improve access to safe, affordable drinking water. This focus area includes two initiatives:

- Addressing major threats to the health of the Great Lakes by:
    - Supporting efforts to reduce polluted runoff in rural and urban areas
    - Improving water infrastructure performance, management, and funding
    - Preventing the introduction and spread of aquatic invasive species
    - Preventing unsustainable diversion from the Great Lakes by enforcing the Great Lakes Compact
    - Preventing groundwater depletion
- Making certain that the next generation has access to safe, affordable drinking water by:
    - Supporting equitable water policy
    - Ensuring safe water systems and infrastructure
    - Providing affordable water services for everyone

- Focusing on efforts to develop and support utility, municipal, state, and federal policies that reduce the risk of lead exposure in drinking water

- Ensuring high quality, affordable water services

Because of its competitive application process, the Foundation encourages new applicants to send an email outlining the proposed project before submitting a letter of interest. Grant proposals are considered at the Foundation's Board of Directors meetings in April, July, and December.

Milwaukee Metropolitan Sewerage District (MMSD)

In 2017, MMSD created the Fresh Coast Resource Center (FCRC) to assist homeowners, businesses, nonprofits, and government agencies in protecting water resources. The FCRC provides communities with the education and tools needed to create successful green infrastructure projects such as rain barrels, rain gardens, porous pavement, bioswales, green roofs, and natural landscaping. The FCRC can also assist communities by making them aware of available funding opportunities. MMSD and FCRC programs supporting water quality are listed below.

Fresh Coast Guardians Resource Center- Design Services

Qualified nonprofit organizations can apply to the Fresh Coast Guardians-Design Services program in which a professional engineer provides a green infrastructure construction and maintenance plan specific to the organization's needs. This program is ongoing and makes awards up to $15,000.

Green Infrastructure Partnership Program

MMSD's Green Infrastructure Partnership Program provides funding to increase the application of natural stormwater management practices that capture, store, or filter rainwater. This program reimburses costs for eligible green infrastructure expenses including costs of materials, construction, and signage. Partners receive incentive funding for the installation of practices such as constructed wetlands, native landscaping, porous pavement, rain barrels, cisterns, green alleys, green streets, stormwater trees, bioswales, greenways, rain gardens, and green roofs. Some applicants may wish to apply for Signature Project Status to receive up to 50 percent in matching funds for eligible costs. Funding can be awarded to public or government agencies, nongovernmental organizations, and private property owners for projects located in the MMSD service area. Applications must be submitted by the property owner. Applications are due early spring of each year.

Natural Resources Foundation of Wisconsin

The Natural Resources Foundation of Wisconsin funds projects that have a significant and positive impact on Wisconsin's lands, waters, and wildlife. The Foundation provides grant funding to help cover the costs of on-the-ground conservation work including but not limited to habitat restoration, water quality monitoring, trail building, and rare plant preservation.[17] Foundation grant programs that may fund implementation of recommendations of the Oak Creek watershed restoration plan are described in the following sections.

C.D. Besadny Conservation Fund

The C.D. Besadny Conservation Fund was established to invest in grassroots conservation and education projects that benefit Wisconsin's lands, waters, and wildlife. Grants typically range from $500 to $2,000. Projects must benefit Wisconsin's natural resources or people and may not exceed $10,000. A one-to-one match is required. Match may include in-kind support such as volunteer hours or donated materials.

The Go Outside Fund

The Go Outside Fund provides support that helps connect youth to outdoor, nature-based learning experiences. Teachers or partner organizations may apply for funding to cover costs that facilitate getting kids outside and hands-on with nature, such as purchasing field supplies, or paying for transportation, substitute teachers, or educator costs. Grants between $100 and $500 are available.

The Norma and Stanley DeBoer Quiet Trails Fund

The Norma and Stanley DeBoer Quiet Trails Fund provides funding to support the creation and maintenance of walking, hiking, and skiing trails in Wisconsin. Grants range from $500 to $1,000.

The Teachers Outdoor Environmental Education Fund

The Teachers Outdoor Environmental Education Fund was established to provide meaningful outdoor environmental educational learning experiences for public school students. The fund provides grants of up to $1,000 for public elementary and secondary school teachers for outdoor environmental education projects. Examples of eligible projects include:

- Restoring native plants and removing invasive species at school forests

[17] *See website for detailed information regarding the Natural Resources Foundation of Wisconsin www.wisconservation.org.*

- Planting butterfly gardens to learn about native plants and pollinators
- Learning how to use GPS and geocaching
- Forestry management
- Overnight outdoor education camps
- Infrastructure improvements to school forests or wetlands to improve student access
- Student monitoring of stream water quality
- Conducting citizen science projects such as frog and toad monitoring

The grant requires a one-to-one match, which may consist of in-kind support such as volunteer hours or donated materials.

Wisconsin Rare Plant Preservation Fund

The Wisconsin Rare Plant Preservation Fund provides grants to support projects that protect the State's rare plants and lichens through monitoring, inventorying, and preservation. Grants range from $500 to $1,000. Preference is given to projects addressing species listed on the WDNR's Natural Heritage Working List and to projects that demonstrate matching funds. Projects involving invasive species removal, gardening, or education are not eligible for funding.

National Fish and Wildlife Foundation

The National Fish and Wildlife Foundation (NFWF) is a nonprofit organization created by the U.S. Congress to protect and restore the Nation's fish, wildlife, plants, and critical ecosystem habitats. The Foundation works with Federal agencies and corporate and foundation partners offering a number of conservation initiatives. Through these initiatives, the Foundation provides funding on a competitive basis to support projects for wildlife and habitat conservation that include the following opportunities.

Acres for America

Walmart has worked with the NFWF to establish Acres for America, a commitment to purchase and preserve one acre of wildlife habitat for every acre of land developed by the company. The program protects critical

habitat for birds, fish, plants, and wildlife, and includes providing funding for urban conservation efforts. The program has helped to permanently protect over 1.49 million acres and connect more than 10 million acres of public and private conservation lands across the country. Funding priorities include:

- Providing access for people to enjoy the outdoors
- Conserving critical habitats for birds, fish, plants, and wildlife
- Connecting existing protected lands to unify wild places and protect migration routes
- Ensuring the future of rural economies that depend on forestry, ranching, and recreation

Eligible applicants include nonprofit 501(c) organizations, state government agencies, local governments, municipal governments, Tribal governments and organizations, and educational institutions. Approximately $3.5 million will be available to support projects in 2021. All grant awards require a one-to-one match of cash or contributed goods and services. Federal funds may be considered as match. Due to the competitive nature of this program, successful Acres for America projects typically have matching funds at a 5 to 1 ratio or greater. Grant applications are typically announced in March, with pre-proposals due in April.

Bring Back the Natives

Bring Back the Natives (BBN) program is a partnership between U.S. Fish and Wildlife Service and U.S. Forest Service that seeks to restore, protect, and enhance native fish species of conservation concern nationwide. BBN supports projects that conserve aquatic ecosystems, increase in-stream flows, and build partnerships that benefit native fish species throughout the United States. Up to $500,000 in funding is available through a competitive pre-proposal grant application process. This program focuses on four key strategies: restoring connectivity, restoring riparian and instream habitat and water quality, invasive species management, and innovation. Within the Great Lakes Region, projects that benefit native fishes, including lake sturgeon, northern pike and eastern brook trout are priorities for funding. The program also provides grants to projects that support the National Fish Habitat Action Plan.

Five Star and Urban Waters Restoration Program

Major funding for the Five Star and Urban Waters Restoration grant program is provided by the USEPA, the U.S. Forest Service, the U.S. Fish and Wildlife Service, Southern Company, FedEx, BNSF Railway, Shell Oil Company, and PG&E. This program seeks to develop community capacity to sustain local natural resources

for future generations by providing financial assistance to diverse local partnerships for wetland, forest, riparian, and coastal habitat restoration; stormwater management; outreach; and stewardship with a particular focus on water quality, watersheds, and the habitats they support.

Each Five Star and Urban Waters project must incorporate four of the main fundamental elements that tie together sustainable community-based conservation projects. These elements include:

- Conducting on-the-ground activities such as wetland, river, or coastal habitat restoration and/or targeted green infrastructure creation and monitoring

- Uniting community partners to achieve ecological and educational outcomes

- Integrating education, outreach, and training into the restoration project through broad community engagement activities or participation and integration with K-12 environmental curriculum

- Defining measurable ecological, educational, and community benefits

It should be noted that the Five Star and Urban Waters Restoration program has separate programs related to different funders. Each funder has set specific requirements for projects supported by their program. NFWF matches applications to all funding sources applicable to that project's activities, location, and type.

National Coastal Resilience Fund

In partnership with the National Oceanic and Atmospheric Administration (NOAA), Shell Oil Company, TransRe, the USEPA, and AT&T, the National Coastal Resilience Fund invests in projects that plan for, design, build, and monitor the restoration or expansion of natural features such as coastal marshes and wetlands, dune and beach systems, oyster and coral reefs, forests, coastal rivers, and barrier islands that minimize the impacts of storms, flooding, and other naturally occurring events on nearby coastal communities through its National Coastal Resilience program. The National Coastal Resilience program aims to:

- Benefit coastal communities by reducing the impact of coastal flooding and associated threats to property and key assets, such as hospitals and emergency routes

- Benefit coastal communities by improving water quality and recreational opportunities

- Benefit fish and wildlife by enhancing the ecological integrity and functionality of coastal and inland ecosystems

Current funding priorities include community capacity building and planning to support the development of prioritized coastal resilience strategies and projects, site assessment and preliminary design, final design and permitting, and implementation of restoration projects and associated monitoring. While the amount of support awarded will vary depending on the scope of the project and the nature of the work proposed, the NFWF anticipates that it will issue average awards of $250,000 for capacity building, planning, site assessment, and preliminary design, $350,00 for final design and permitting, and $1,000,000 to $5,000,000 for restoration and monitoring.

Resilient Communities Program

In 2017, Wells Fargo and NFWF launched the Resilient Communities Program, designed to prepare for future environmental challenges by enhancing communities to plan and implement resiliency projects and improve natural ecosystems by investing in green infrastructure and other measures. Specific funding priorities for this program include:

- High-impact resiliency adaptations to help communities prepare for fire in the U.S West, floods and droughts in the Midwest, and sea-level rise on the East coast. Grants in this category will range from $200,000 to $500,000.

- Community demonstration and capacity-building projects that help communities understand environmental risks and opportunities to organize and take actions to improve local resiliency by enhancing natural buffers and system functions. These projects will range from $100,000 to $250,000 and should address multiple communities.

- Scalable, nature-based resilience solutions benefitting affordable housing and/or small businesses in communities vulnerable to impacts from natural disasters. Grants in this category will range from $100,000 to $500,000.

Grants are offered once a year to support the above listed projects in states and communities associated with Wells Fargo operations. It is expected that supported projects will leverage other public and private sources of funding to help achieve project objectives.

Sustain Our Great Lakes Program

Administered by NFWF, the Sustain Our Great Lakes (SOGL) grant program is a bi-national (Canada and United States), public–private partnership that supports restoration in the Great Lakes basin. This program receives funding and other support from ArcelorMittal, the Careus Foundation, the Crown Family, MMSD, the Walder Foundation, the USEPA, the U.S. Fish and Wildlife Service, the USDA Forest Service, NOAA, and the USDA Natural Resources Conservation Service. The goal of this program is to restore and enhance fish, wildlife, and habitat in the Great Lakes basin by leveraging funding, building conservation capacity, and focusing partners and resources toward vital ecological issues. A significant portion of program funding is provided by the GLRI.

SOGL achieves its mission primarily by awarding grants for on-the-ground habitat restoration. The program offers funding annually with awards ranging from $25,000 to $1.5 million. Eligible recipients include nonprofit organizations; state, tribal and local governments; and educational institutions. Funding priorities for this program include restoring and enhancing stream and riparian habitat, restoring and enhancing coastal wetland habitat, expanding green stormwater infrastructure in Great Lakes communities, maintaining and enhancing the benefits of habitat restoration through invasive species control, and restoring and preserving natural areas and biodiversity in Wisconsin's Lake Michigan watershed.

Southeastern Wisconsin Invasive Species Consortium, Inc.

The Southeastern Wisconsin Invasive Species Consortium, Inc. (SEWISC) periodically has funds available to support projects designed to lessen the impacts of invasive species in southeastern Wisconsin. SEWISC assistance funds are most often designated for on-the-ground invasive species control work and must be used in the eight-county SEWISC region. Grant funds may be used to accomplish a specific project or to support an ongoing program; however, preference is given to projects that demonstrate a long-term commitment to invasive species control, especially continued control of the particular invasive species populations targeted by the project. Depending on the source of the funding, individuals, established nonprofit organizations, community and civic groups, private businesses, or units of government may be eligible to receive funds. SEWISC provides grant assistance of up to $2,000 with a required match that equals at least 25 percent of the total project budget. In-kind services such as volunteer labor can be used for this match. When funds become available, SEWISC posts notice on their website and makes announcements via their newsletter and electronic mail lists.

Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water) Mini-Grant Program

The Sweet Water Mini-Grant program supports local, nonprofit efforts to improve water quality, restore habitat, promote conservation, and advance public education concerning water issues in the Greater Milwaukee watersheds, including the Oak Creek watershed. A special focus of this program is the use of green infrastructure practices. The program provides grants ranging from $1,000 to $5,000 to established nonprofit organizations, community groups, and civic groups for projects and activities that advance the objectives of achieving healthy and sustainable water resources. Projects should also advance the following goals:

- Making measurable progress in improving regional water resources
- Supporting land use practices that improve water quality
- Forging relationships to find and leverage funding
- Implementing cost-effective projects resulting in measurable water quality improvements

Sweet Water announces the opening of application periods for its mini-grant program on its website and through its newsletter and email list.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has several programs that can provide funding and assistance for projects such as aquatic ecosystem protection and restoration, streambank and shoreline restoration to protect public infrastructure, protection and restoration of Great Lakes fisheries and ecosystems, and flood land management. Prior to implementing projects, USACE requires that a feasibility study[18] be conducted to determine whether the project is practical and whether there is enough federal interest in regard to cost-sharing. The latter is necessary because projects are undertaken on a cost-share basis. Several USACE programs may provide assistance for implementing projects recommended in the Oak Creek watershed restoration plan. These programs are described in the following sections.

[18] *A feasibility study formulates alternatives to complete the restoration, evaluates the environmental effects of each alternative, documents the project requirements, and provides a scope and cost estimate for project implementation.*

Aquatic Ecosystem Restoration

USACE aquatic ecosystem restoration and protection projects generally include modification of the hydrology in and along bodies of water, including wetlands and riparian areas. A project is approved for construction only after a detailed investigation determines that the project will improve the quality of the environment and is in the best interest of the public.

USACE will provide 100 percent of the funds for the required feasibility study, up to a maximum of $100,000. Costs of the study that exceed $100,000 must be shared at 50 percent federal share and 50 percent non-federal share. The USACE will provide 65 percent of the cost of project implementation with a federal cost limit of $10 million per project. The local sponsor is required to provide the remaining 35 percent of implementation costs. The non-federal cost-share can consist of contributions of lands, easements, rights-of-way, relocations, and disposal areas necessary for the project.

Emergency Streambank and Shoreline Protection Program

USACE is authorized to construct bank protection projects to protect endangered public works such as highways, highway bridges, municipal water supply systems, and sewage disposal plants, as well as churches, hospitals, schools, for-profit public services, and known cultural sites that are endangered by flood-caused streambank or shoreline erosion. Privately-owned property and facilities are not eligible for protection.

USACE will provide 100 percent of the funds for the required feasibility study, up to maximum of $100,000. Costs of the feasibility study that exceed $100,000 must be shared equally by the federal government and non-federal sponsor. The USACE will provide 65 percent of the cost of project implementation with a federal cost limit is $5 million per project. The local sponsor is required to provide the remaining 35 percent of the implementation costs. The non-federal share can consist of contributions of lands, easements, rights-of-way, relocations, and disposal areas necessary for the project.

Great Lakes Fishery and Ecosystem Restoration Program

The USACE can assist in planning, design, and constructing projects to protect and restore fisheries, ecosystems, and beneficial uses of the Great Lakes.

USACE will provide 100 percent of the funds for the required feasibility study, up to maximum of $100,000. Costs of the feasibility study that exceed $100,000 must be shared with a federal contribution of 65 percent and non-federal contribution of 35 percent. The USACE will provide 65 percent of the cost of project design

and implementation with a federal cost limit of $10 million per project. The non-federal share can consist of contributions of lands, easements, rights-of-way, relocations, and disposal areas, cash, work-in-kind, or any combination thereof.

Small Flood Risk Management Program

USACE is able to construct or improved local flood protection or control works. The projects are tailored to the specific site. Typical structural flood risk management projects may include levees, floodwalls, impoundments, pumping stations, and channel modifications. Non-structural measures include flood proofing, relocation of structures, flood response and preparedness plans, and warning systems. USACE oversees planning, design, and construction of flood risk management projects in close coordination with the project sponsor.

USACE will provide 100 percent of the funds for the required feasibility study, up to a maximum of $100,000. Costs of the feasibility study that exceed $100,000 must be shared equally between the Federal government and the local sponsor. The USACE will provide 65 percent of the cost of design and implementation up to a federal cost limit is $10 million. The local sponsor is required to provide 35 percent of the costs. The non-federal cost-share can consist of contributions of lands, easements, rights-of-way, relocations, and disposal areas necessary for the project.

Snagging and Clearing for Flood Damage Reduction

USACE is authorized to plan for and provide removal of accumulated snags and other debris from waterways and to clear stream channels in the interest of flood control. Each project must be complete within itself, and not part of a larger project. The limited scope of these projects allows for prompt action to eliminate the threat of flooding.

USACE will provide 100 percent of the funds for the required feasibility study, up to maximum of $100,000. Costs of the feasibility study that exceed $100,000 must be shared equally by the federal government and the local sponsor. The USACE will provide 65 percent of the cost of the project up to a federal cost limit is $500,000. The local sponsor is required to provide 35 percent of the costs. The non-federal cost-share of project implementation may include the costs of developing plans and specifications; construction costs; and contribution of lands, easements, rights-of-way, relocations, and disposal areas necessary for the project.

U.S. Department of Agriculture (USDA)

The USDA administers a number of agricultural conservation programs to assist private landowners and producers with natural resource concerns. The primary agricultural conservation agencies within the USDA are the Natural Resources Conservation Service (NRCS), which provides technical assistance and administers most conservation programs, and the Farm Service Agency (FSA), which administers the Conservation Reserve Program (CRP). Currently, the NRCS and FSA administer over 20 programs and subprograms that are directly or indirectly available to landowners and producers. In addition, agricultural conservation programs involve a large range of partners, including other federal agencies, state and local governments, and private organizations, among others, who provide funds, expertise, and other forms of assistance to further conservation efforts.

Farm Service Agency (FSA)

The Farm Services Agency (FSA) administers domestic commodity price and income support, farm loan, disaster assistance, and conservation cost-share programs for USDA. These programs work to address a large number of agriculture-related conservation issues including protecting drinking water, reducing soil erosion, preserving wildlife habitat, and aiding farmers whose farms are damaged by natural disasters. Several FSA programs that may provide funds or assistance for efforts in the Oak Creek watershed are described below.

Conservation Reserve Program

The Conservation Reserve Program (CRP) is a voluntary program for agricultural producers. It encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as a prairie-compatible, noninvasive forage mix; wildlife plantings; trees; filter strips; or riparian buffers. Farmers receive an annual rental payment for the 10- to 15-year term of their contract based on the agriculture rental value of the land. CRP also provides up to 50 percent costs of establishing vegetative cover. CRP's goals are to reduce soil erosion, protect the nation's ability to produce food and fiber, reduce sedimentation in streams and lakes, improve water quality, establish wildlife habitat, and enhance forest and wetland resources. FSA administers the program while NRCS provides technical assistance. NRCS works with landowners to develop their application, and to plan, design, and install the conservation practices on the land.

The CLEAR30 Program is a CRP pilot subprogram that provides cost-share funds for long-term maintenance of selected BMPs for protecting water quality. CLEAR30 is available for some acres currently enrolled in CRP and requires that the landowner enter into a 30-year contract. Practices eligible for cost-share under

CLEAR30 include grass waterways, contour grass strips, prairie strips, filter strips, riparian buffers, wetland restoration practices, and similar water quality practices. Landowners with expiring continuous CRP contracts for fields with eligible practices may enroll in CLEAR30 during the last year of their existing contract. Participants receive three annual rental payments, at rates similar to those calculated under general CRP a rental rate enhancement of 27.5 percent to account for inflation. The program requires that land be maintained in accordance with an approved conservation plan. Compatible economic uses such as hunting, fishing, managed timber harvest, or periodic haying or grazing are allowed if they are included in the conservation plan. States located within the Great Lakes and Chesapeake Bay areas are currently eligible.

The Farmable Wetland Program (FWP) is a CRP subprogram designed to restore previously farmed wetlands and wetland buffers to improve both vegetation quality and water flow. FWP is a voluntary program. Participants agree to restore the wetlands, establish plant cover, and to not use enrolled land for commercial purposes. In return they receive annual rental payments. Applications for FWP are accepted throughout the year with contracts lasting between 10 to 15 years. Eligible land must have been used for agricultural purposes for three of the past 10 crop years and can include man-made wetlands used to process water flow for crop drainage, areas used for aqua farming purposes, or areas used for prairie wetland overflow purposes.

Emergency Conservation Program

NRCS' Emergency Conservation Program (ECP) provides emergency funding and technical assistance to producers to rehabilitate farmland damaged by natural disasters including floods, droughts, and wildfires through activities such as removing debris, restoring fences and conservation structures, and implementing emergency water conservation measures. Upon application, the FSA County Committee inspects the damage to determine if land is eligible. For land to qualify for ECP funds, the damage from the natural disaster or severe drought must create new conservation problems that if not dealt with would further damage the land, significantly affect the land's productive capacity, represent damage from a natural disaster unusual for the area, and/or would be too costly to repair and to return the land to agricultural production without Federal assistance. Conservation problems that existed before the disaster or severe drought are ineligible for ECP assistance. Funding for the ECP is determined by Congress. Up to 75 percent of the cost to implement emergency conservation practices can be provided; however, the final amount is determined by the committee reviewing the application. Qualified limited resource producers may earn up to 90 percent cost-share. The FSA County Committee is able to approve applications up to $50,000 while $50,001 to $100,000 requires state committee approval. Amounts over $100,000 require the approval of the national FSA office.

U.S. Forest Service (USFS)

The Community Forest and Open Space Conservation Program

The U.S. Forest Service Community Forest and Open Space Conservation Program (Community Forest Program) offers communities the opportunity to acquire and conserve forests that provide public access and recreational opportunities, protect vital water supplies and wildlife habitat, serve as demonstration sites for private forest landowners, and provide economic benefits from timber and non-timber products. Under this program, community forests can be owned by local governments, tribal governments, and qualified nonprofit entities. Land that is not held in trust by the Federal Government; that is threatened with conversion to non-forest use; that provides defined community benefits; and that is at least five acres in size, suitable to sustain natural vegetation, and at least 75 percent forested is eligible for funding for acquisition. The program provides up to 50 percent of project costs and requires a 50 percent non-federal match. Public access is required for Community Forest Program projects. The Forest Service publishes an annual request for applications for the Community Forest Program in the Federal Register.

Natural Resources Conservation Service (NRCS)

The USDA's NRCS agency develops and implements voluntary soil and water conservation programs in cooperation with landowners, agricultural operators, developers, and other users of land. It works in cooperation with community planning agencies; regional resource groups; and Federal, State, and local government agencies. NRCS programs provide assistance in controlling agricultural pollution, improving the environment, and developing rural communities. NRCS programs can provide assistance for preserving, protecting, and restoring wetlands; improving wildlife habitat, conserving water; preserving, maintaining and improving habitat for migratory waterfowl and other wildlife; and encouraging good forestry management through the development, management, and protection of non-industrial private forest lands. Several NRCS programs that may provide funds or assistance for efforts in the Oak Creek watershed are described below.

Agricultural Conservation Easement Program

The Agricultural Conservation Easement Program (ACEP) helps landowners, land trusts, and other entities protect, restore, and enhance wetlands, grasslands, and working farms and ranches through conservation easements. ACEP provides financial and technical assistance through the two types of easement programs described below.

The Agricultural Land Easement program helps state and local governments, American Indian tribes, and non-governmental organizations protect working agricultural lands and limit nonagricultural uses of the

land. In the case of working farms, the program helps farmers and ranchers keep their land in agriculture. The NRCS may contribute up to 50 percent of the fair market value of the agricultural land easement. When protecting grasslands of special environmental significance, the NRCS may contribute up to 75 percent of the fair market value of the agricultural land easement.

The Wetlands Reserve Easements program helps to restore, protect, and enhance enrolled wetlands. The NRCS provides technical and financial assistance directly to private landowners and Indian tribes to restore, protect, and enhance wetlands through the purchase of wetland reserve easements. NRCS may enroll eligible land through three types of easements. For permanent easements, NRCS pays 100 percent of the easement value for purchase of the easement and 75 to 100 percent of the restoration costs. for 30-year easements, NRCS pays 50 to 75 percent of the easement value for the purchase of the easement and 50 to 75 percent of the restoration costs. For term easements, NRCS pays 50 to 75 percent of the easement value for the purchase of the easement and 50 to 75 percent of the restoration costs.

Conservation Stewardship Program

The Conservation Stewardship Program (CSP) helps producers and ranchers maintain and improve their existing conservation systems and adopt additional conservation activities to address priority resources concerns, such as water quality or soil erosion. Participants earn CSP payments for conservation performance, with higher payments being made for higher performance. CSP contracts are for five years. Successfully fulfilling the initial contract allows the opportunity to compete for an additional five-year term. To qualify for contract renewal, the participant must agree to meet or exceed two additional priority resource concerns or to adopt or improve conservation activities to achieve higher levels of conservation on two existing priority resource concerns. Contract payments are based upon the existing level of conservation on the land uses included in the contract, an NRCS assessment of the existing stewardship at the time of enrollment and implementing additional conservation activities.

The 2018 Farm Bill the created Grassland Conservation Initiative (GCI), a new initiative under the CSP that assists producers in protecting grazing land uses; conserving and improving soil, water and wildlife resources; and achieving related conservation values by conserving eligible land through grassland conservation contracts. Eligible lands are limited to cropland for which base acres have been maintained under FSA's Agricultural Risk Coverage and Price Loss Coverage programs and were planted to grass or pasture, including idle or fallow, during a specific period. Enrolled acreage must be managed consistently with a grassland conservation plan. Producers will have a single opportunity to enroll eligible land in a five-year contract.

Emergency Watershed Protection Program

The Emergency Watershed Protection Program (EWP) was established by Congress to respond to emergencies created by natural disasters and to take emergency measures to safeguard lives and property after a natural occurrence has caused a sudden impairment of a watershed. Hazards include floods and the products of erosion created by floods, fire, windstorms, or other natural disasters. Local entities such as city, county, state, and tribal governments sponsor Emergency Watershed Protection projects. Sponsors are responsible for 25 percent of the construction costs, which can be direct cash expenditures or in-kind materials or services. NRCS provides financial assistance up to 75 percent of the construction costs for installing eligible emergency measures to protect lives and property. The NRCS works with the sponsors to identify watershed impairments that threaten life and/or property such as significant infrastructure such as dwellings, office buildings, utilities, bridges and roads. Funds from the program cannot be used to address problems or remedy conditions that existed before the disaster or event. Through the Floodplain Easement portion of the program, the NRCS may purchase easements on any floodplain lands that have a history of repeated flooding.

Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP) is a voluntary conservation program that supports agriculture and environmental quality as compatible goals. Through EQIP, producers and landowners may receive financial and technical help with structural and management conservation practices on agricultural land. EQIP offers contracts through the NRCS for conservation practice implementation for periods ranging from one to 10 years, and it pays up to 75 percent of the costs of eligible conservation practices. Incentive payments and cost-share payments may also be made to encourage a farmer to adopt land management practices such as nutrient management, manure management, integrated pest management, or wildlife habitat management. EQIP requires that farmers have or develop a conservation plan for the acreage affected by the EQIP practices. Conservation practices must meet NRCS technical standards.

The Conservation Innovative Grant Program (CIG) is a competitive EQIP subprogram associated with the 2018 Farm Bill. This grant program supports the development of new tools, approaches, practices, and technologies to further natural resource conservation on private lands. Through creative problem solving and innovation, CIG addresses water quality, air quality, soil health, and wildlife habitat challenges while improving agricultural operations. Eligible applicants include accepted state or local governments, federally recognized American Indian tribes, non-governmental organizations, and individuals.

Regional Conservation Partnership Program

The Regional Conservation Partnership Program (RCPP) promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners. NRCS helps producers through partnership agreements and RCPP conservation program contracts. The program encourages partners to join in efforts with producers to increase the restoration and sustainable use of soil, water, wildlife, and related natural resources on regional or watershed scales. Eligible partners include agricultural or silvicultural producer associations, farmer cooperatives or other groups of producers, state or local governments, American Indian tribes, municipal water treatment entities, water and irrigation districts, conservation-driven non-governmental organizations, and institutions of higher education. Eligible participants may enter into conservation program contracts or easement agreements under the framework of a partnership agreement.

Watershed Protection and Flood Prevention Program

The Watershed Protection and Flood Prevention Program provides assistance to federal, state, local, and tribal governments and agencies to protect and restore watersheds up to 250,000 acres in area. Eligible projects include those related to erosion and sediment control, watershed protection, flood prevention, water quality improvements, water management, and fish and wildlife habitat enhancement. The program provides technical and financial assistance to local landowners or project sponsors, builds partnerships, and requires local and state funding contributions. Project sponsors can propose land treatment or structural solutions. An approved watershed plan must be in place prior to initiation of any corrective land treatment or structural solution.

U.S. Environmental Protection Agency (USEPA)

USEPA's mission is to protect human health and the environment. USEPA has several programs that provide grants to state environmental programs, local units of government, nonprofit organizations, and educational institutions. USEPA programs that may provide assistance in implementing the Oak Creek watershed restoration plan are described below.

<u>Environmental Education Grants</u>

The Environmental Education (EE) grants program supports education projects that promote environmental awareness and stewardship and help provide people with the skills to take responsible actions to protect the environment. This grant program provides financial support for projects that design, demonstrate, or distribute environmental education practices, methods, or techniques. Projects must address at least one USEPA educational priority and one USEPA environmental priority. Recent educational priorities have

included projects that educate students of any age or train their educators about environmental issues related to agriculture in rural, suburban, and urban settings; projects that increase public understanding of the benefits of participation in environmental or conservation stewardship through community collaboration; and projects that educate students about environmental and conservation issues for the purpose of encouraging interest in careers in environmental fields. Recent environmental priorities have included ensuring air quality, ensuring clean and safe water, ensuring safety of chemicals, revitalizing land, and preventing contamination. Eligible organizations include local education agencies, state education or environmental agencies, colleges and universities, nonprofit organizations with tax-exempt status under Section 501(c)(3) of the Internal Revenue Code, noncommercial educational broadcasting entities, and tribal education agencies. EE grants require a non-federal match consisting of 25 percent of the total cost of the project.

Environmental Justice Small Grants Program

The EPA's Environmental Justice Small Grant Program provides financial assistance to community-based organizations that work on local solutions that address local environmental or public health issues. The primary purpose of proposed projects should be to develop a comprehensive understanding of environmental and public health issues, identify ways to address these issues at the local level, and educate and empower the community. The long-term goals of the program are to help build the capacity of the affected community and create self-sustaining, community-based partnerships that will continue to improve local environments in the future. Funds from this program can be used to support nonprofit organizations with activities that address environmental justice concerns, including but not limited to: increasing awareness of and lessening impacts from stormwater; actively addressing harmful air particles that affect the health and well-being of residents; building capacity of community leaders, adults, and youth through health data collection activities and watershed education; promoting the connection of health issues to environmental quality through comprehensive outreach and education; reducing pesticide exposure and improving health of farm workers by training health care providers about pesticide exposure; monitoring farm workers' working conditions; and encouraging healthy, environmentally friendly alternatives to industrially produced agriculture.

Incorporated nonprofit organizations and Federally recognized Native American tribal governments are eligible to apply. Applicants must be located within the state, territory, commonwealth, or tribe in which the proposed project will be located. In addition, an eligible applicant must be able to demonstrate that it has

worked directly with the affected community.[19] Project grants are awarded for a one-year project period. Grants range from $20,000 to $50,000, with an average grant of $30,000. The program has no matching fund requirements.

Great Lakes Program (i.e., Great Lakes Restoration Initiative)

The Great Lakes Restoration Initiative (GLRI) builds on the prior efforts of Federal, State, and local agencies, Indian tribes, businesses, public interest groups, interested residents and others to restore and protect the Great Lakes. Initiated by the USEPA, the GLRI is a multi-agency Federal effort that targets significant environmental problems affecting the Great Lakes. The program priorities and goals for years 2020–2024 include five focus areas: Toxic Substances and Areas of Concern; Invasive Species; Nonpoint Source Pollution Impacts on Nearshore Health; Habitat and Wildlife Protection and Restoration; and Accountability, Education, Monitoring, Evaluation, Communication, and Partnerships. Grant opportunities for restoration projects are available, primarily through the USEPA. Specifically, the EPA and its partner agencies agree on program and project priorities to implement the GLRI Action Plan. The EPA then appropriates money, which in turn provides funding to other federal government agencies. Those agencies, and the EPA, use that money to fund restoration projects, which the federal agencies themselves, or other entities such as states, tribes, local governments, universities, or nongovernmental organizations then complete.

U.S. Federal Emergency Management Agency

Several Federal Emergency Management Agency (FEMA) programs provide funding for flood and urban stormwater flooding mitigation activities. In the State of Wisconsin, these programs are administered through the Wisconsin Department of Military Affairs, Division of Emergency Management (WDEM). These programs are described below.

Building Resilient Infrastructure and Communities

The Building Resilient Infrastructure and Communities (BRIC) is a new FEMA pre-disaster hazard mitigation program that replaced the Pre-Disaster Mitigation program. The BRIC program assists states, local communities, tribes, and territories participating in hazard mitigation projects that reduce the risks faced by disasters and natural hazards including capability- and capacity-building, encouraging and enabling innovation, promoting partnerships, enabling large projects, maintaining flexibility, and providing consistency. Projects eligible under BRIC must:

[19] *An "affected community" for the purposes of this assistance program is a community that is disproportionately impacted by environmental harms and risks and has a local environmental and public health issue that is identified in the proposal.*

- Be cost-effective
- Reduce or eliminate risk and damage from future natural hazards
- Meet either of the two latest International Building Codes (i.e., 2015 or 2018)
- Align with the applicable hazard mitigation plan
- Meet all environmental and historic preservation (EHP) requirements

Eligible applicants include states, territories, and Tribal governments. These entities can submit applications on behalf of sub-applicants such as local units of government and state and tribal agencies. BRIC grants require a non-federal share of 25 percent of the project costs.

Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program (HMGP) can provide up to 75 percent of the costs of certain natural hazard mitigation projects. In the case of flood mitigation, projects can include floodproofing, acquisition and relocation, or demolition of flood-prone properties, elevation of structures in compliance with NFIP standards, and other flood control measures, where identified as cost-effective. To be eligible for mitigation activities with FEMA funding, structures must be insured under the NFIP. The HMGP requires a non-federal match of 25 percent of project costs. In Wisconsin half of this match is provided by the Wisconsin Division of Emergency Management (WDEM) HMGP funds become available only after a Presidential disaster declaration has been issued within the State. Applications must be submitted to WEM within 60 days of the declaration. Eligible projects must be included as part of the grantee's all-hazard mitigation plan and must meet cost-benefit criteria established by FEMA. HMGP funds can be used on private property for eligible projects. The HMGP gives priority to properties identified by FEMA as repetitive-loss properties.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) oversees several programs that provide funding and technical support for the conservation, protection, and enhancement of fish and wildlife and their habitat.

National Fish Passage Program

The National Fish Passage Program provides financial and technical assistance in support of fish passage projects. This Program works to restore rivers and conserve aquatic resources by removing or bypassing

barriers, including obsolete and dangerous dams, ultimately eliminating public safety hazards, and restoring river ecosystems. The program also works with transportation agencies and others to improve road stream crossings so that the streams can flow naturally beneath them.

The National Fish Passage Program partners with individuals; nonprofit organizations; national organizations such as Trout Unlimited, The Nature Conservancy, and American Rivers; cities and towns; local government agencies; regional or state fish and wildlife departments; other federal agencies; and tribes.

Grant proposals are accepted year-round; however, the funding cycle for Fish Passage projects begins each year in the fall with funding generally becoming available the following spring. Funding is administered through Regional and local Fish and Wildlife Conservation Offices. On average the program contributes about $70,000 per project. There is no upper limit to project funding. The National Fish Passage Program has flexibility on matching funds from project to project but attempts to achieve a 50 percent match from federal or non-federal sources.

Partners for Fish and Wildlife Program

The Partners for Fish and Wildlife (PFW) Program is a voluntary, incentive-based program that provides direct technical assistance and financial assistance in the form of cooperative agreements to private landowners to restore and conserve fish and wildlife habitat. Locally based field biologists work one-on-one with private landowners and other partners to plan, implement, and monitor their projects. Any privately owned land is potentially eligible for restoration, including working farms and recreation lands. Program priorities in the Midwest include the restoration of wetlands, grasslands, forests, and stream corridors. Prior to implementation of habitat projects, the program requires that the landowner and project biologist sign an agreement that specifies the work to be done and financial contributions. The minimum length of the agreement is 10 years. There is no minimum cost-share requirement. Cost-share may be provided as in-kind services or cash and the landowner must maintain the restoration project throughout the agreement period. Funds for individual projects are limited to $25,000.

Wisconsin Board of Commissioners of Public Lands

The Board of Commissioners of Public Lands (BCPL) provides loans to municipalities and school districts for public purpose projects including economic development, local infrastructure, capital equipment and vehicles, building repairs and improvements, and refinancing existing liabilities to reduce future borrowing costs.

Wisconsin Citizen-Based Monitoring Partnership Program

Since 2004, the Wisconsin Department of Natural Resources and the Wisconsin Citizen-Based Monitoring Network have sought to expand citizen and volunteer participation in natural resource monitoring by providing funding and assistance with high-priority projects. Qualifying projects include monitoring of aquatic and terrestrial species; natural communities; and environmental components such as water, weather, and soil. Eligible projects include those that:

- Have direct, substantial citizen involvement or are relevant to the conduct of citizen-based projects
- Are specifically intended for Wisconsin and, in most cases, carried out in Wisconsin
- Address priority Wisconsin natural resource monitoring needs or issues
- Are current with all deliverables for past Partnership Program projects

Requests for proposals are issued in the spring of each year. In recent years, a total of $100,000 has been available annually for projects throughout the State, with a maximum of $5,000 per project.

Wisconsin Coastal Management Program

The Wisconsin Department of Administration, Bureau of Intergovernmental Relations administers the Wisconsin Coastal Management Program (WCMP) for the 15 Wisconsin coastal counties. The program provides funds to local governments and other entities for implementing initiatives related to managing coastal zones in the State. The program offers approximately $1.5 million annually in WCMP Grants. Current priorities include projects related to wetland protection, habitat restoration, public access, land acquisition, nonpoint source pollution control, land use and community planning, natural hazards, and Great Lakes education. The program also aids local governments in managing and protecting shorelands, wetlands, and floodplains through zoning and permitting. Eligible applicants include local units of government, State agencies, colleges and universities, school districts, regional planning commissions serving coastal areas, tribal units of government, and private nonprofit organizations. Applicants requesting more than $100,000 should contact the WCMP. WCMP Grant projects totaling $60,000 or less require a 50 percent match. Projects with a total budget larger than $60,000 require a 60 percent match. Match may be in-kind, cash, or a combination of the two. Request for proposals for year 2022 to 2023 will be announced August 2021.

Wisconsin Conservation & Education Foundation

Wisconsin Conservation & Education Foundation (WCEF) is a 501 (c) (3) nonprofit organization that provides grants to various conservation and natural resources focused organizations and individuals within Wisconsin. These are grants are used to promote public education to enhance natural resources, environmental stewardship, and outdoor heritage through publications, events, and projects.

Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP)

Clean Sweep Program

The Wisconsin Clean Sweep grant program provides reimbursement to communities that collect and dispose of household hazardous wastes, agricultural pesticides, and prescription drugs. Eligible grant recipients can include counties, towns, villages, cities, tribes, sanitary and sewerage districts, or regional planning commissions. Grants can support collection and disposal of these products. Additionally, prescription drug grants can be used to buy drop boxes. Businesses that generate very small quantities of hazardous waste may also use these collections. Note that collections may be one-day events or may be year-round sites.

Nutrient Management Farmer Education Program

Wisconsin DATCP provides nutrient management farmer education (NMFE) grants to local organizations to teach farmers to develop their own nutrient management plans. This program offers two funding options: Tier 1 funding which provides producers with nutrient management plan writing, soil testing, and training courses with funds up to $20,000 and Tier 2 funding which provides nutrient management training, education, and support costs of up to $2,500 in grant funding. Grant applications are accepted beginning on January 31st and are due on April 15th.

Soil and Water Resource Management Program

DATCP administers Wisconsin's soil and water resource management program (SWRM) under the provisions of Chapter 92 of the *Wisconsin Statutes* and Chapter ATCP 50 of the *Wisconsin Administrative Code*. The SWRM grant program supports locally led conservation efforts. Awarding grant funds to counties pays for conservation staff and provides landowner cost-sharing to implement their LWRMP. The current version of Chapter ATCP 50, revised in February 2018, relates specifically to agricultural programs and establishes requirements and/or standards for:

- Soil and water conservation on farms

- County soil and water programs, including land and water resource management plans
- Grants to counties to support county conservation staff
- Cost-share grants to landowners for implementing conservation practices
- Design certifications by soil and water professionals
- Local regulations and ordinances
- Cost-share practice eligibility and design, construction, and maintenance

Wisconsin Department of Natural Resources (WDNR)

The WDNR administers several grant and loan programs that support efforts by local governments, private organizations, and private landowners to protect public health, the environment, and outdoor recreation. Several WDNR programs that may provide funds or assistance for efforts in the Oak Creek watershed are described below.

Clean Water Fund Program

The Clean Water Fund Program (CWFP) provides financial assistance to municipalities for the planning, design, and construction of projects to control and treat urban stormwater runoff. Eligible applicants include counties, cities, villages, towns, town sanitary districts, public inland lake protection and rehabilitation districts, and metropolitan sewerage districts. Eligible projects must relate to either a WPDES permit, a performance standard, or a plan approved by the WDNR. The primary purpose of an eligible urban runoff project must be to improve water quality. Eligible projects include:

- Construct municipal wastewater facilities
- Control nonpoint sources of pollution
- Build decentralized wastewater treatment systems
- Create green infrastructure projects

- Protect estuaries

- Fund other water quality projects

The program provides loans at an interest rate of 65 percent of the current market rate. The CWFP also has a Small Loan Program that provides interest rate subsidies to municipalities that have a loan from the State Trust Fund Loan Program for the planning, design, and construction of urban runoff projects with total estimated costs of $1 million or less.

County Conservation Aids

The County Conservation Aids program provides financial assistance to counties to enhance county fish and wildlife programs. Funds are provided as cost-share for fish and wildlife habitat projects. Eligible projects include development of structures, utilities, facilities, or landscaping necessary for outdoor recreation use of an area; implementation of specific activities to restore or enhance fish or wildlife habitat, natural communities, or shorelines; the placement of fish or wildlife into their natural environment to improve population numbers; and repair or refurbishment of structures, fixtures, or substrates to functional conditions in a routine, scheduled, or anticipated fashion.

Dam Removal Grant Program

The Dam Removal Grant Program provides reimbursement for 100 percent of eligible project costs up to a maximum of $50,000 to remove a dam. Applications are accepted on a continual basis. Counties, cities, villages, towns, tribes, public inland lake protection and rehabilitation districts, and private dam owners can apply for grant funds to remove a dam they own. Any person can apply to receive funds to remove an abandoned dam if they have obtained legal access to the property on which the dam is located. Awards are made on a first come first served basis until all of the funding is obligated.

Knowles-Nelson Stewardship Program

Local units of government are eligible to apply for funding through four stewardship grant programs and two related federal programs administered by the WDNR. The WDNR programs include the Aids for the Acquisition and Development of Local Parks, the Urban Green Space, the Urban Rivers, and the Acquisition of Development Rights programs. The WDNR also administers the Federal Land and Water Conservation Fund and Recreational Trails Act programs. These programs provide 50 percent matching grants to cities, villages, towns, counties, public inland lake protection and rehabilitation districts, and qualified nonprofit conservation organizations. Eligible activities include acquiring land; development and renovation projects

for nature-based outdoor recreation; developing, maintaining, and restoring trails; river habitat restoration projects that serve public recreation or resource conservation purposes; and purchasing land for noncommercial gardening in urban areas. The administrative rules for the program are set forth in Chapter NR 50 and NR 51 of the *Wisconsin Administrative Code*. The annual application deadline is May 1.

Qualified nonprofit organizations are eligible for funding through eight stewardship grant programs. Eligible activities include the acquisition of land or easements to conserve wildlife habitat, preserve native natural communities and habitat for rare plant and animal species, protect streambanks, complete the State Trail system, develop local parks, protect agricultural or forest lands that provide or enhance nature-based outdoor recreation, provide open natural space within or near urban areas, and restore or preserve the character of urban riverways.

Land and Water Conservation Fund Program

The WDNR administers the Federal Land and Water Conservation Fund (LWCF) program which supports land acquisition and development of high-quality outdoor recreation amenities in local communities. In addition, projects that provide outdoor recreation facilities that are not exclusively nature-based, such as active sports facilities, are eligible for LWCF grants. The program provides grants to local units of government and school districts that cover 50 percent of the costs of eligible projects. LWCF funding priorities include projects that:

- Meet the needs of urban areas
- Provide recreation opportunities for diverse populations
- Acquire land in areas with limited outdoor recreation facilities
- Provide multi-use and multi-season facilities
- Enhance or preserve natural beauty
- Are proposed by applicants which have financial resources to adequately maintain and operate the project

Municipal Dam Grant Program

The Municipal Dam grant program provides a cost-sharing opportunity for eligible engineering and construction costs for dam maintenance, repair, modification, or abandonment and removal up to a maximum of $400,000. Funding sources outside the applicant's own resources can be used toward the local match for this grant. Applicants must have an engineer's inspection order or directive and a dam failure analysis sufficient to identify the hazard potential based on the current development in the hydraulic shadow downstream of the dam. Dam repair/reconstruction/modification project grant awards cover:

- 50 percent of the first $400,000 of eligible project costs
- 25 percent of the next $800,000 of eligible project costs
- Dam abandonment and removal project grant awards will cover 100 percent of the first $400,000 of eligible project costs

Cities, towns, villages, counties, tribes, and public inland lake protection and rehabilitation districts (i.e., lake districts) may apply for grants to conduct dam maintenance, repair, modification or abandonment and removal on dams that they own.

Municipal Flood Control Grant Program

Under Chapter NR 199, "Municipal Flood Control Grants," of the *Wisconsin Administrative Code,* municipalities, including cities, villages, towns, and metropolitan sewerage districts are eligible for cost-sharing grants from the State for projects to minimize flooding and flood-related damages. Projects may include acquisition and removal of structures; floodproofing of structures; riparian restoration projects, including removal of dams and other artificial obstructions, restoration of fish and native plant habitat, erosion control, and streambank restoration projects; acquiring vacant land to create open-space flood storage areas; constructing structures for collecting, retaining, storing, and transmitting stormwater and groundwater for flood control; and preparing flood insurance studies and other flood mapping projects. Municipalities and metropolitan sewerage districts are eligible for up to 70 percent State cost-share funding for eligible projects and have to provide at least a 30 percent local match.

Recreational Trails Program

In Wisconsin, the WDNR administers this federal program. Municipal governments, counties, school districts, and organizations incorporated under Section 181.32 of the *Wisconsin Statutes* whose primary

purpose is promoting, encouraging, or engaging in outdoor trails activities are eligible to receive reimbursement for the development and maintenance of recreational trails and trail-related facilities for both motorized and non-motorized recreational trail uses. Eligible sponsors may be reimbursed for up to 50 percent of project costs. Funds from this program may be used in conjunction with funds from the state snowmobile or ATV grant programs and Knowles-Nelson Stewardship development projects. Eligible projects include development and rehabilitation of existing trails, development and rehabilitation of trailside and trailhead facilities and trail linkages, construction of new trails, and acquisition of land and easements for recreational trails or recreational trail corridors.

Surface Water Grants

The surface water grant program provides cost-sharing grants for surface water protection and restoration. Funding is available for education, ecological assessments, planning, implementation, and aquatic invasive species prevention and control. This program supports surface water management at any stage: from organization capacity development to project implementation. Funds can be used for a wide variety of projects related to surface water under one of two general categories: education and planning projects that help communities understand surface water conditions, determine management goals, and develop strategic management plans and management projects that protect and improve water quality and aquatic habitat and prevent and control aquatic invasive species (AIS). Some projects require an approved recommendation in a management plan to be eligible for funding.

Eligible applicants include counties, municipalities, and other local units of government; lake districts; natural resource agencies; tribal governing bodies; accredited colleges, universities, and technical schools; and town sanitary districts. Most grants are required to be cost-shared. All planning grants provide a 67 percent cost-share, while most management grants provide a cost-share of 75 percent. Wetland restoration incentives provide 100 percent cost-share.[20] Funding caps for specific project types and other information about this program is available in guidance from the WDNR.[21]

Targeted Runoff Management Grant Program

The Targeted Runoff Management (TRM) Grant Program provides technical and financial assistance to local governments for managing nonpoint source pollution. Grants reimburse project costs for agricultural or

[20] *dnr.wi.gov.*

[21] *Wisconsin Department of Natural Resources,* Surface Water Grant Program Applicant Guide and Program Guidance, *August 26, 2020.*

urban runoff management practices in targeted, critical areas with surface water or groundwater quality concerns. Cities, villages, towns, counties, regional planning commissions, tribal governments, lake districts, metropolitan sewerage districts, and sanitary districts are eligible to apply for funding under this program. The program provides up to 70 percent of eligible costs and requires at least 30 percent local match.

The TRM program provides assistance for four types of projects. Grants for large-scale TMDL projects provide support to agricultural projects designed to meet USEPA-approved TMDLs. Costs eligible for reimbursement include construction of structural BMPs, implementation of non-structural cropping practices, and some staffing costs for planning and installing management practices. Grants for large-scale non-TMDL projects provide support to agricultural projects implementing State agricultural performance standards and prohibitions. The areas addressed by these projects must be between eight and 39 square miles. Costs eligible for reimbursement include construction of structural BMPs, implementation of non-structural cropping practices, and some staffing costs for planning and installing management practices. Grants for small-scale TMDL projects provide support to agricultural and urban nonpoint source control designed to meet USEPA-approved TMDLs. Eligible costs include construction of structural BMPs and acquisition of land or land rights needed to support the practices. Grants for small-scale non-TMDL projects support agricultural projects implementing State agricultural performance standards and prohibitions. Funding for large-scale projects is limited to $600,000 and funding for small-scale projects is limited to $225,000.

Urban Nonpoint Source and Storm Water Management Grant Program

The Urban Nonpoint Source and Storm Water Management Grant Program provides cost-share funds for planning or construction activities for controlling nonpoint source pollution from urban areas. Projects funded by this program are site-specific, serve areas smaller in size than a sub-watershed, and target high priority problems. Eligible applicants include cities, villages, towns, counties, regional planning commissions, and special purpose districts such as lake districts, sewerage districts, and sanitary districts. In addition, an "urban project area" must meet at least one of the following criteria:

- The area has a residential population density of at least 1,000 people per square mile
- The area has a commercial land use
- The area is a portion of a privately-owned industrial site not covered by a WPDES permit issued under Chapter NR 216 of the *Wisconsin Administrative Code*

- The area is a municipally owned industrial site

The maximum cost-share rate available for planning grants is 70 percent of eligible costs. The cap on the total State share for planning projects is $85,000. The maximum cost-share rate available for construction grants are 50 percent of eligible costs, with a total State share for a construction project of $150,000 and a potential grant of an additional $50,000 for land acquisition, where needed. Planning grants can pay for a variety of eligible activities, including stormwater management planning for existing and new development, related information and education activities, ordinance and utility district development, illicit discharge detection and elimination program design, and enforcement. Construction grants can pay for construction of best management practices to control stormwater pollution from existing urban areas, storm sewer rerouting, and streambank and shoreline stabilization. Projects may be eligible for funding whether or not they are designed to meet the performance standards identified in Section NR 151.13 of the *Wisconsin Administrative Code*, but the highest priority in selecting projects under this program is given to projects that implement performance standards and prohibitions contained in Chapter NR 151 or that address waterbodies listed on the Federal Section 303(d) list of impaired waters.

Wisconsin Forest Landowner Grant Program

The Wisconsin Forest Landowner Grant Program (WFLGP) is a cost-share program offered by WDNR. It is designed to assist owners in protecting and enhancing their woodlands. This program reimburses woodland owners up to 50 percent of the cost of eligible practices. Non-industrial private forest landowners in Wisconsin are eligible for WFLGP and must meet the following criteria:

- Own at least 10 contiguous acres of forest but not more than 500 acres within Wisconsin
- Have a forest stewardship plan in place or prepared through the WFLGP program
- WFLGP funding can only be cost-shared for non-commercial practices

Applications can be submitted at any time. Funding is awarded on a first come, first-served basis. Grants are typically awarded on the first days of August, November, February, and May, depending on the funds available and the number of applications.

Wisconsin Wetland Conservation Trust (Wetland Mitigation Program)

The WDNR's Wisconsin Wetland Conservation Trust (WWCT) program sells wetland credits to permittees needing to offset authorized wetland impacts. As of December 1, 2020, the WWCT has allocated $18 million to 14 different mitigation projects and completed over 500 acres of construction. Eligible applicants include public agencies, municipalities, private landowners, environmental consultants, nonprofit conservation organizations, Wisconsin tribes, or any entity registered with the Wisconsin Department of Financial Institutions. Projects must be protected by a conservation easement and remain as a mitigation site in perpetuity. In regard to the Oak Creek watershed restoration plan, the service area for this program is the "Southwestern Lake Michigan" area. Prospective applicants are encouraged to discuss potential projects with WWCT staff prior to submitting an application.

Wisconsin Department of Safety and Professional Services

Wisconsin Fund

The Wisconsin Fund for Private Onsite Wastewater Treatment System (POWTS) Replacement or Rehabilitation Financial Assistance Program provides financial assistance for the replacement or rehabilitation of failing POWTS serving homeowners or small commercial business. Applicants must meet specified income limits. In addition, the failing system serving the residence or business must have been constructed prior to July 1, 1978. Septic systems that fail by discharging to surface water, groundwater, or zones of seasonally saturated soils receive funding priority. The maximum grant award is $7,000.

Chapter 6

PLAN RECOMMENDATIONS

TABLES

Table 6.20
Information and Education (I&E) Element Matrix for the Oak Creek Watershed Restoration Plan

Education Action[a]	Target Audience	Communication Vehicles	Schedule	Lead (Supporting) Organizations	Outcomes, Implementation Goals, Behavior Changes	Estimated Cost
(A) Educate elected officials about the completed plan and encourage them to: 1. Adopt the plan 2. Amend municipal, codes, ordinances, and comprehensive plans to recognize recommendations in the plan	Elected officials	Distribute copies of the plan and the brochure summarizing the plan Schedule meetings and presentations on the plan and its recommendations as requested Include elected officials in presentations on stormwater best management practices	Late 2021-2023	Milwaukee County, RPW, SWWT, (SEWRPC), (WDNR), (MMSD)	5 meetings, presentations, and workshops between late 2021 and mid-2022 Knowledge of the components and recommendations in the plan Adoption of plan by the County and municipalities by 2022 Revisions to municipal codes and ordnances	I&E to elected officials and municipal staffs $10,000 (200 hours) Printed copies of plan and brochure $1,000
(B) Provide the watershed plan to the general public and news media, inform and educate them about water pollution; the hazards of and management of yard debris, pet waste, fertilizers, and yard chemicals as they relate to stormwater runoff and groundwater contamination; green infrastructure such as rain barrels and rain gardens; nonnative and invasive species; and recreational opportunities in the watershed Encourage the public to include appropriate plan recommendations in their activities and to request assistance	General public News media	Publish and distribute a brochure summarizing the plan Make copies of the plan, summary brochure and related materials available on the SEWRPC website Post links to the plan and related materials on the Root-Pike WIN, SWWT, WDNR, municipal and other websites Announce the plan and activities related to plan implementation through municipal, SEWRPC, Root-Pike WIN, and SWWT websites, social media, newsletters, and multimedia. Update the websites on an ongoing basis Issue news releases announcing the plan, its recommendations, and implementation activities Provide media interviews, photo opportunities and tours Maintain and expand the Respect Our Waters multimedia and community outreach campaign Maintain Fresh Coast Resource Center and website	Fall 2021 and at intervals marking implementation progress, major initiatives, photo opportunities, events, and other newsworthy developments Beginning 2021 and continuing through 2031, present periodically at the Clean Rivers, Clean Lake conference Beginning 2022 and continuing through 2031, workshops addressing topics related to action items B through I	Watershed municipalities, MMSD, RPW, SWWT, (Milwaukee County), (SEWRPC), (SEWISC)	Ten news releases issued between fall 2021 and 2031 Ten news stories aired between fall 2021 and 2031 200 brochures distributed by email or downloaded between fall 2021 and 2027 16 presentations and workshops from 2022 through 2031	Cost includes items B through I, which would be accomplished through a coordinated, multi-purpose program which would include the communication vehicles for each of those action items, and which share outcomes, except where additional outcomes are noted for an action item Staff activities $25,000 (500 hours)

Table 6.20 (Continued)

Education Action[a]	Target Audience	Communication Vehicles	Schedule	Lead (Supporting) Organizations	Outcomes, Implementation Goals, Behavior Changes	Estimated Cost
(C) Provide information on technical assistance and funding assistance to nongovernmental organizations that have the capabilities to implement expanded water quality monitoring, restoration, and other recommended management actions. Encourage them to: 1. Include the recommendations in their activities and proposals for funding and assistance 2. Coordinate their monitoring programs with existing MMSD, WDNR, and USGS programs	Nongovernmental organizations	Distribute letters, copies of the plan, and plan summary brochure Schedule meetings and tours on the plan and its recommendations Publish and distribute online and print materials on the plan on an ongoing basis	Fall 2021 through 2031	UWEX, WDNR, (RPW), (SWWT), (SEWRPC), (SEWISC), (WCBMN)	Shared outcomes listed under Action B above[a] Eight monitoring locations added Knowledge of components and recommendations of the plan	Included in Action B above
(D) Provide information and education to private landowners and businesses, including property, lawn maintenance, and golf course managers, about the watershed plan; impact and management of lawn chemicals; benefits of buffers and long-rooted native vegetation; green infrastructure; and technical and funding assistance. Encourage them to adopt the recommended management actions	Private landowners Businesses Property managers	Publish and distribute online and print material related to these topics Provide demonstration sites Provide presentations, workshops, and tours	Fall 2021 through 2031	Watershed municipalities, RPW, SWWT, (MMSD), (Milwaukee County), (SEWRPC), (WDNR)	Shared outcomes listed under Action B above[a] 15 projects initiated Knowledge of components and recommendations of the plan	Included in Action B above
(E) Provide information regarding plan recommendations to developers, engineers, and landscapers. Encourage them to adopt the recommended management actions and include them in their proposals	Developers Engineers Landscapers	Publish and distribute online and print material related to these topics Provide demonstration sites Provide presentations, workshops, and tours	Fall 2021 through 2031	Watershed municipalities, RPW, SWWT, (MMSD), (Milwaukee County), (SEWRPC), (WDNR)	Shared outcomes listed under Action B above[a] Knowledge of components and recommendations of the plan	Included in Action B above
(F) Provide information on technical and funding assistance for riparian buffers and stream rehabilitation to County and municipal staffs, riparian property owners, and landscapers. Encourage them to adopt the recommended management actions and include them in their activities and proposals	County and municipal staffs Riparian property owners Landscapers	Publish and distribute online and print material related to these topics Provide demonstration sites Provide presentations, workshops, and tours Distribute SEWRPC "Managing the Water's Edge" riparian buffer brochure	Fall 2021 through 2031	Milwaukee County Environmental Services, RPW, SWWT, (MMSD), (SEWRPC), (WDNR)	Shared outcomes listed under Action B above[a] Knowledge of components and recommendations of the plan One demonstration site	Included in Action B above
(G) Provide homeowner, condominium, and business associations with the knowledge needed to properly maintain their stormwater management practices	Homeowner associations Condominium associations Business associations	Publish and distribute online and print material related to these topics Provide demonstration sites Provide presentations, workshops, and tours	Fall 2021 through 2031	Watershed municipalities, RPW, SWWT, (MMSD), (Milwaukee County), (WDNR)	Shared outcomes listed under Action B above[a] Knowledge of components and recommendations of the plan One demonstration site	Included in Action B above

Table 6.20 (Continued)

Education Action[a]	Target Audience	Communication Vehicles	Schedule	Lead (Supporting) Organizations	Outcomes, Implementation Goals, Behavior Changes	Estimated Cost
(H) Provide information to the general public regarding trails and other recreational opportunities in the Oak Creek watershed.	General Public	Maintain website showing park and trail maps and other recreational information	Fall 2021 through 2031	Milwaukee County Parks, (watershed municipalities)	Shared outcomes listed under Action B above[a]	Included in Action B above
(I) Provide information and education assistance to County and municipal staffs and potential grant recipients regarding educational signs, kiosks, and multimedia	County and municipal staffs Potential grant recipients	Provide presentations, workshops, tours Provide technical assistance and information about financial assistance	Fall 2021 through 2031	RPW, SWWT, (SEWRPC), (WDNR)	Shared outcomes listed under Action B above[a] Seven projects initiated	Included in Action B above
(J) Provide information and education to County and municipal staffs, private applicators, businesses, and homeowners regarding the application of chemical deicers to roads, parking lots, driveways, and sidewalks	County and municipal staffs Private applicators Businesses Homeowners	Provide presentations and workshops Publish online and print materials	2022 through 2031	Milwaukee Riverkeeper, Wisconsin Salt Wise, (MMSD), (WDNR), (RPW), (SWWT), (watershed municipalities)	20 presentations and workshops[b]	$50,000[b]
(K) Measure information and education activities and outcomes	--	Stakeholders report information about their information and education activities Survey of households to collect information on residents' knowledge of watersheds, water quality, yard care impacts, and other issues.	2022 through 2031	RPW, SWWT, Milwaukee County Environmental Services	Conduct survey in 2027	$20,000
(L) Evaluate and adjust information and education element	--	Evaluation conducted at annual meeting of Oak Creek watershed plan advisory committee	Annually, 2022 through 2031	Milwaukee County Environmental Services, Oak Creek watershed advisory committee, (SEWRPC)	Make necessary adjustments to information and education element to achieve its goals	--

Note: Acronyms indicate the following:

MMSD = Milwaukee Metropolitan Sewerage District
RPW = Root-Pike Watershed Initiative Network
SEWRPC = Southeastern Wisconsin Regional Planning Commission
SEWISC = Southeastern Wisconsin Invasive Species Consortium
SWWT =Southeastern Wisconsin Watersheds Trust, Inc.
UWEX = University of Wisconsin-Madison Division of Extension
WCBMN = Wisconsin Citizen Based Monitoring Network
WDNR = Wisconsin Department of Natural Resources

[a] *The information and education program components described under the "Outcomes" section of Action B would be designed to reach multiple project stakeholders and plan implementation organizations. Thus, presentations, workshops, and educational materials would be designed to meet the interests of the general public, as well as the targeted entities identified under Actions B through I.*

[b] *Programs are available and costs apply to multiple watersheds in the greater Milwaukee watersheds.*

Source: SEWRPC

Table 6.21
High Priority Riparian Buffer Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
MOC-23	Milwaukee County Parks Oak Creek Parkway Management Section 8	Shallow wetland design and installation of five acres; reforestation of 65.9 acres; rapid response invasive species management of 42.5 acres; floristic survey and wildlife inventory of 70.9 acres; survey and posting of property line	Habitat, Water Quality	Estimated annual pollutant load reductions of 107,400 pounds TSS, 40.1 pounds total phosphorus	478,500	Milwaukee County
MOC-31	Milwaukee County Parks Oak Creek Parkway Management Section 10	Rapid response invasive species management of 68.2 acres; forest stand improvement including supplemental canopy and understory planting of 7.3 acres; grassland management of 14 acres; grassland restoration of 19.7 acres; floristic survey and wildlife inventory of 65.3 acres	Habitat, Water Quality	Estimated annual pollutant load reductions of 40,180 pounds TSS, 7.3 pounds total phosphorus	331,700	Milwaukee County
MDD-01	Milwaukee County Parks Oak Creek Parkway Management Section 9	Reforestation of 35.2 acres; rapid response invasive species management of 92.4 acres; forest stand improvement including supplemental canopy and understory planting of 27.8 acres; floristic surveys and wildlife inventory of 120.6 acres; survey and posting of property lines	Habitat, Water Quality	Estimated annual pollutant load reductions of 98,810 pounds TSS, 7.3 pounds total phosphorus	492,700	Milwaukee County
UOC-04	Milwaukee County Parks Oak Creek Parkway Management Section 12	Rapid response invasive species management on 179.7 acres; forest stand improvement including supplemental canopy and understory planting of 65.4 acres; grassland management of 4 acres; grassland restoration of 3 acres; reforestation of 53.8 acres; floristic surveys and wildlife inventories of 200.6 acres; survey and posting of property lines	Habitat, Water Quality	Estimated annual pollutant load reductions of 50,970 pounds TSS, 27.4 pounds total phosphorus	899,700	Milwaukee County

Table 6.21 (Continued)

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
DAT-10	Milwaukee County Parks Barloga Woods Management Unit Number 6	Invasive species control; invasive species monitoring and select control; reforestation of 18 acres; wildlife monitoring	Habitat, Water Quality	Estimated annual pollutant load reductions of 32,040 pounds TSS, 12.0 pounds total phosphorus	61,700	Milwaukee County

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on size of buffer created and total load reductions of total suspended solids (TSS) and total phosphorus.*

[c] *Costs are given in 2019 dollars.*

Source: SEWRPC

#258120 – CAPR-330 Table 6.22 - Channel Priorities
300-4010
JEB/LKH/mid
6/18/21. 7/21/21

Table 6.22
High Priority Stream Channel Restoration Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
MOC-61	S. Howell Avenue bridge crossing of Oak Creek	Explore opportunities to improve fish passage under the bridge by improving water depths	Habitat	Improved quality of the fishery, increased connectivity	--[d]	Milwaukee County
RAT-01	Bridge crossing of Rawson Avenue Tributary at 7600 S. 6th Street	As part of bridge replacement, consider removing concrete from adjacent stream channel	Habitat, Stormwater and Flooding	Improved habitat, restore connection with groundwater	400,000	City of Oak Creek

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on severity of passage impediment and potential to increase connectivity.*

[c] *Costs are given in 2019 dollars.*

[d] *Cost to be assigned during project development.*

Source: SEWRPC

#257964 – CAPR-330 Table 6.23 - Dam Priorities
300-4010
JEB/LKH/mid
6/7/21, 7/21/21

Table 6.23
High Priority Mill Pond and Dam Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
LMP-01	Oak Creek Mill Pond	Repair Oak Creek Mill Pond Sluice Gate if it is determined not to pursue dam removal	Stormwater and Flooding, Water Quality	Allows operation of sluice gate, lowering of pond water levels, and some sediment passage through Mill Pond	343,000	Milwaukee County
LMP-04	Oak Creek Mill Pond and vicinity	Conduct sediment core sampling and chemical analysis in the Mill Pond Project area	Water Quality	Allows determination of level of contamination of pond sediments and options for sediment removal	49,000	Milwaukee County

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on steps necessary to comply with repair order issued by the Wisconsin Department of Natural Resources and to refine alternatives for Mill Pond and dam.*

[c] *Costs are given in 2019 dollars.*

Source: SEWRPC

#257953 – CAPR-330 Table 6.24 - Debris Jam Priorities
300-4010
JEB/LKH/mid
6/4/21, 7/21/21

Table 6.24
High Priority Debris Jam Modification Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)	Responsible Party
LMP-09	Oak Creek upstream of Mill Pond between the third and fourth Parkway crossing	Remove debris jam and sediment accumulations from main channel of Oak Creek and elevate channel invert of newly formed channel that is in close proximity to the Parkway road[c]	Habitat	Removes passage impediment, increases connectivity within Oak Creek; eliminates threat to Parkway road	--[d]	Milwaukee County
LMP-16	Oak Creek in Oak Creek Parkway north of Cherry Street (extended)	Remove or modify large woody debris jam	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	Milwaukee County
LMP-18	Oak Creek in Oak Creek Parkway upstream of Chicago Avenue and south of Walnut Street (extended)	Remove or modify large woody debris jam	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	Milwaukee County and City of South Milwaukee
LOC-29	Oak Creek about 630 feet downstream of S. Pennsylvania Avenue	Remove or modify large woody debris jam	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	Milwaukee County and City of South Milwaukee
LOC-37	Oak Creek about 520 feet upstream from S. Pennsylvania Avenue	Remove or modify large woody debris jam	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	Milwaukee County and City of Oak Creek
LOC-48	Oak Creek about 650 feet downstream of the confluence with the Mitchell Field Drainage Ditch	Remove or modify large woody debris jam	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	Milwaukee County and City of Oak Creek

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on severity of passage impediment and potential to increase connectivity.*

[c] *Implementation of this project would also result in implementation of projects LMP-05, LMP-06, and LMP-07.*

[d] *Cost to be assigned during project development.*

Source: SEWRPC

#258124 – CAPR-330 Table 6.25 - Flood Relief Priorities
300-4010
JEB/LKH/mid
6/21/21, 7/21/21

Table 6.25
High Priority Flood Relief Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
GPR-04	Sanitary lift station near downstream-most crossing of the Oak Creek Parkway	Complete construction of designed lift station	Stormwater and flooding	Protection of infrastructure, flood relief	4,800,000	City of South Milwaukee
LMP-41	College Avenue-Union Pacific Railroad underpass	Addition of 10 large capacity stormwater inlets to improve stormwater drainage	Stormwater and flooding	Reduction of stormwater-related flooding	115,000	City of Cudahy

Note: Prioritization based on shovel-ready nature of projects.

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on shovel-ready nature of projects.*

[c] *Costs are given in 2019 dollars.*

Source: SEWRPC

Table 6.26
High Priority Floodplain Reconnection Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
LMF-23	Mitchell Field Drainage Ditch from about 1,000 feet upstream from the confluence with Oak Creek to E. College Avenue	Stream channel and riparian restoration of about 8,500 feet of channel	Habitat, Water Quality, Stormwater and Flooding	Reconnects this stream with the floodplain	4,250,000 to 11,560,000[d]	Milwaukee County, City of Oak Creek, MMSD, Private Landowners
MOC-04	Oak Creek through Abendschein Park from E. Drexel Avenue to the Union Pacific Railroad crossing downstream of E. Forest Hill Avenue	Stream channel and riparian restoration of about 3,800 feet of channel	Habitat, Water Quality, Stormwater and Flooding	Reconnects this stream with the floodplain	1,900,000 to 5,168,000[d]	City of Oak Creek and MMSD
MOC-19	Oak Creek from the Union Pacific Railway crossing downstream of E. Forest Hill Avenue to about 2,800 feet downstream of S. Shepard Avenue	Stream channel and riparian restoration of about 9,500 feet of channel and 320 acres of publicly owned adjacent land	Habitat, Water Quality, Stormwater and Flooding	Reconnects this stream with the floodplain	4,750,000 to 12,920,000[d]	Milwaukee County
MOC-37	Oak Creek from Oak Creek East Middle School to about 1,880 feet downstream	Stream channel and riparian restoration of about 1,800 feet of channel	Habitat, Water Quality, Stormwater and Flooding	Reconnects this stream with the floodplain	900,000 to 2,448,000[d]	Oak Creek School District and others

Note: Floodplain reconnection actions for the projects listed above could be broken into smaller reaches.

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on length of disconnected stream reach, degree of channel incision, and potential for incorporating other recommended projects.*

[c] *Costs are given in 2019 dollars.*

[d] *Depending on the features incorporated, the estimated capital costs range between $500 and $1,360 per linear foot.*

Source: SEWRPC

Table 6.27
High Priority Illicit Discharge Detection and Elimination Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location[c]	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)	Responsible Party
GPR-03	Oak Creek by Oak Creek Parkway north of Marquette Avenue (extended), Outfall Sequence Number 10	Investigate and remedy source of human contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	City of South Milwaukee
GPR-16	Oak Creek downstream of 6th Avenue, Outfall Sequence Number 21	Investigate and remedy source of canine contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	City of South Milwaukee
GPR-17	Oak Creek downstream of Mill Road, Outfall Sequence Number 22	Investigate and remedy source of human contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	City of South Milwaukee
LMP-03	Oak Creek Mill Pond off Oak Creek Parkway, Outfall Sequence Number 27	Investigate and remedy source of human contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	City of South Milwaukee
LOC-01	Oak Creek upstream of 15th Avenue, Outfall Sequence Number 72	Investigate and remedy source of human contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	City of South Milwaukee
LOC-05	Oak Creek at Cherry Street (extended), Outfall Sequence Number 81	Investigate and remedy source of canine contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	Milwaukee County
LOC-09	Oak Creek at Chestnut Street (extended), Outfall Sequence Number 86	Investigate and remedy source of canine contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	City of South Milwaukee
LOC-25	Oak Creek between 16th Avenue (extended) and 17th Avenue (extended), Outfall Sequence Number 115	Investigate and remedy source of canine contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	City of South Milwaukee
OCH-05	Oak Creek at Martinton Drive (extended), Outfall Sequence Number 295	Investigate and remedy source of canine contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	City of Franklin
RAT-02	Tributary to Rawson Avenue Tributary to North Branch of Oak Creek south of Rawson Avenue, Outfall Sequence Number 218	Investigate and remedy source of human contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	City of Oak Creek

Table 6.27 (Continued)

Identification Number (see Maps 6.1-6.13)	Location[c]	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)	Responsible Party
RAT-03	Tributary to Rawson Avenue Tributary to North Branch of Oak Creek south of Rawson Avenue, Outfall Sequence Number 223	Investigate and remedy source of human contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	Unknown
RAT-04	Tributary to Rawson Avenue Tributary to North Branch of Oak Creek south of Rawson Avenue, Outfall Sequence Number 224	Investigate and remedy source of human contamination to outfall	Water Quality, Recreational Use	Reduce loads of fecal indicator bacteria and pathogens to surface waters	--[d]	Unknown

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on documented source of contamination (human versus canine), size of outfall, mean concentration of* E. coli, *and mean copy numbers of Bacteroides and Lachnospiraceae.*

[c] *Outfall sequence numbers are given in Appendix O.*

[d] *Costs to be assigned during project development.*

Source: SEWRPC

Table 6.28
High Priority Land Restoration Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
LMP-44	Milwaukee County Parks Rawson Woods Management Unit 2	Vegetation survey; invasive species control; invasive species monitoring and select control; reforestation and inter-seeding of native plants on 20.2 acres; wildlife monitoring	Habitat	Improved habitat and recreational value. Potential educational opportunities	67,600	Milwaukee County
LOC-14	Milwaukee County Parks Rawson Woods Management Unit 1	Invasive species monitoring and select control and reforestation with native tree and shrub species on 1.9 acres	Habitat	Improved habitat and recreational value. Potential educational opportunities	1,700	Milwaukee County
DAT-04	Milwaukee County Parks Falk Park Management Unit 7	Vegetation survey; invasive species control; invasive species monitoring and select control on 16.8 acres; reforestation on 8.4 acres; wildlife monitoring	Habitat	Improved habitat and recreational value. Potential educational opportunities	19,900	Milwaukee County
DAT-07	Milwaukee County Parks Barloga Woods Management Unit 3	Vegetation survey; invasive species control; invasive species monitoring and select control on 33.8 acres; inter-seeding with native plants on 10 acres; reforestation on 1 acre; wildlife monitoring	Habitat	Improved habitat and recreational value. Potential educational opportunities	120,000	Milwaukee County
DAT-09	Milwaukee County Parks Barloga Woods Management Unit 5	Vegetation survey; invasive species control; invasive species monitoring and select control on 23.4 acres; inter-seeding with native plants on 10 acres; reforestation on 1 acre; wildlife monitoring	Habitat	Improved habitat and recreational value. Potential educational opportunities	88,500	Milwaukee County
RAT-06	Milwaukee County Parks Falk Park Management Unit 2	Vegetation survey; invasive species control; invasive species monitoring and select control; allowing succession to hardwood forest on 6.4 acres; wildlife monitoring	Habitat	Improved habitat and recreational value. Potential educational opportunities	6,200	Milwaukee County

Table 6.28 (Continued)

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
RAT-08	Milwaukee County Parks Falk Park Management Unit 4	Vegetation survey; invasive species control; invasive species monitoring and select control on 83 acres; reforestation of understory on 5 acres; forest stand improvement of 8.3 acres; wildlife monitoring	Habitat	Improved habitat and recreational value. Potential educational opportunities	92,900	Milwaukee County

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on area reforested.*

[c] *Costs are given in 2019 dollars.*

Source: SEWRPC

#257980 – CAPR-330 Table 6.29 - Outfall Priorities
300-4010
JEB/LKH/mid
6/9/21, 7/21/21

Table 6.29
High Priority Outfall Repair Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location[c]	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[d]	Responsible Party
GPR-07	Right bank of Oak Creek upstream of first Oak Creek Parkway crossing	Repair or replace failing portion of 24-inch RCP outfall (sequence number 14 in Appendix O)	Water Quality, Habitat	Preventing further damage to sewer infrastructure. Habitat and water quality improvements	4,000	Unknown
LMP-13	Right bank of Oak Creek upstream of N. Chicago Avenue	Repair or replace failing portion of 18-inch RCP outfall (sequence number 37 in Appendix O)	Water Quality, Habitat	Preventing further damage to sewer infrastructure. Habitat and water quality improvements	2,900	Milwaukee County
LMP-35	Left bank of Oak Creek downstream from 15th Avenue and across from South Milwaukee High School	Repair or replace failing portion of 27-inch CMP outfall (sequence number 60 in Appendix O)	Water Quality, Habitat	Preventing further damage to sewer infrastructure. Habitat and water quality improvements	4,000	Unknown
LMP-38	Right bank of Oak Creek downstream from 15th Avenue and across from South Milwaukee High School	Repair or replace failing portion of 24-inch CMP outfall (sequence number 62 in Appendix O)	Water Quality, Habitat	Preventing further damage to sewer infrastructure. Habitat and water quality improvements	3,700	Unknown
LOC-13	Left bank of Oak Creek at Maple Street (extended)	Repair or replace failing portion of 15-inch CMP outfall (sequence number 92 in Appendix O)	Water Quality, Habitat	Preventing further damage to sewer infrastructure. Habitat and water quality improvements	2,200	Milwaukee County
UOC-18	Left bank of Oak Creek under the southbound lanes of IH-94	Repair or replace failing portion of 27-inch RCP outfall (sequence number 271 in Appendix O)	Water Quality, Habitat	Preventing further damage to sewer infrastructure. Habitat and water quality improvements	4,000	Unknown
LNB-27	Right bank of North Branch of Oak Creek downstream of W. Drexel Avenue	Repair or replace failing portion of 36-inch RCP outfall (sequence number 192 in Appendix O)	Water Quality, Habitat	Preventing further damage to sewer infrastructure. Habitat and water quality improvements	5,000	City of Oak Creek
UNB-43	Downstream of W. Grange Avenue where North Branch of Oak Creek daylights in Copernicus Park	Repair or replace falling portion of outfall	Water Quality, Habitat	Preventing further damage to sewer infrastructure. Habitat and water quality improvements	--[e]	City of Milwaukee

Note: CMP indicates corrugated metal pipe, RCP indicates reinforced concrete pipe.

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on degree of outfall degradation and outfall size.*

[c] *Right and left bank are defined when looking downstream.*

[d] *Costs are given in 2019 dollars.*

[e] *Cost to be developed during project development.*

Source: SEWRPC

Table 6.30
High Priority Aquatic Organism Passage Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
LOC-15	Oak Creek at E. Rawson Avenue and 16th Avenue Crossing Culvert	Improve fish passage opportunities through triple cell culvert by retrofitting upstream channel to direct flow into two of the cells during lower flows, installing strategically placed cobble and bolder substrates within the culvert, and installing grade control downstream of culvert	Habitat	Removes passage impediment, improves connectivity within Oak Creek	--[d]	City of South Milwaukee
MOC-29	Oak Creek immediately downstream of the S. Nicholson Road bridge	Existing placement of rock across channel may obstruct passage for some fish species. Rearrange excess rubble to allow for better passage	Habitat	Improves passage, increases connectivity within Oak Creek	--[d]	Milwaukee County
UOC-07	Private farm road crossing of Oak Creek upstream of Canadian Pacific Railway	Outlet of culvert is completely submerged? by downstream ponding and concrete surrounding culvert is failing. Assess interest of landowner to remove culverts and stabilize adjacent streambank. If the farm road is still needed, replace culverts with an appropriately sized culvert or bridge	Habitat	Removes passage impediment, connects North Branch of Oak Creek to Oak Creek	--[d]	Private Landowner
UOC-15	Abandoned farm road crossing of Oak Creek downstream of S. 13th Street	Remove abandoned and failing wooden and steel crossing structure and rearrange rock rubble to improve fish passage	Habitat	Improves passage, increases connectivity within Oak Creek	--[d]	Milwaukee County or Amazon
UOC-30	31st Street culvert crossing of Oak Creek	Retrofit channel at culvert inlet to direct flow during fair weather conditions into one cell and allow flow into the second cell when needed during high flows	Habitat	Improves passage, increases connectivity within Oak Creek	--[d]	City of Franklin
UOC-40	35th Street culvert crossing of Oak Creek	Seal culvert wall joints; add grade control downstream to provide sufficient water depths through the culvert, add strategically placed cobble and boulder substates along both interior walls of the culvert; rearrange rock placement downstream of the culvert	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	City of Franklin

Table 6.30 (Continued)

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
LNB-03	North Branch of Oak Creek channel downstream of Canadian Pacific Railway crossing for about 400 feet	Channel bed erosion downstream of the culvert has caused about a 4-foot drop from the culvert to the downstream channel. Retrofit the downstream channel bed with a rock ramp with a slope of 1.5 percent	Habitat	Removes passage impediment, connects North Branch of Oak Creek to Oak Creek	387,500	Canadian Pacific Railway, Milwaukee County, Watershed partners
UNB-23	Abandoned private crossing on North Branch of Oak Creek downstream of W. College Avenue	Remove collapsing steel structure and stabilize the streambanks to prevent erosion	Habitat	Removes passage impediment, removes safety hazard, improves connectivity in North Branch of Oak Creek	--[d]	Private landowner
UNB-30	S. 20th Street culvert crossing of North Branch of Oak Creek	Remove accumulated debris at upstream end and within culverts	Habitat	Removes passage impediment, improves connectivity in North Branch of Oak Creek	--[d]	City of Milwaukee or Milwaukee County

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on severity of passage impediment and potential to increase connectivity.*

[c] *Costs given in 2019 dollars.*

[d] *Costs to be assigned during project development.*

Source: SEWRPC

Table 6.31
High Priority Urban Stormwater Management Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[c]	Responsible Party
LOC-04	Oak Creek Parkway from the entrance to Grant Park Beach to E. Rawson Avenue	Pilot Project – Install two-foot wide pervious pavement strips in the parking lanes adjacent to the curbs on both sides of the road along the parkway to treat runoff originating on the road[d]	Water Quality, Stormwater and Flooding	Average annual pollutant load reductions of 8,113 pounds TSS and 23.9 pounds total phosphorus	860,000	City of South Milwaukee
LOC-19	Alleyway between 15th Avenue on the west, 13th Avenue on the east, Madison Avenue on the north, and Michigan Avenue on the south	Pilot Project – Install a two-foot-wide strip of pervious pavement along the center of the alley to treat runoff originating in the alley	Water Quality, Stormwater and Flooding	Average annual pollutant load reductions of 186 pounds TSS and 0.5 pounds total phosphorus	34,000	City of South Milwaukee
UOC-21	Love's Travel Stop & Country Stores parking lot west of S. 20th Street and north of Oak Creek	Install bioretention, bioswale, or other appropriate green infrastructure to treat runoff from truck stop that currently flows directly to Oak Creek through the outfalls cited in projects UOC-20 and UOC-22	Water Quality	Decreased pollutant loading	--[e]	Unknown
LMF-06	Sub-basin M5-7f east of the intersection of S. Clement Avenue and E. Montana Avenue	Install 1.02-acre wet retention pond WQ-25	Water Quality	Average annual pollutant load reduction of 32,981 pounds TSS	200,700	City of Oak Creek
LMF-25	Sub-basin M2-2f south of E. College Avenue adjacent to the Mitchell Field Drainage Ditch	Install 0.47-acre wet retention pond WQ-23	Water Quality	Average annual pollutant load reduction of 20,404 pounds TSS	104,400	City of Oak Creek
LNB-29	Boulevard median of W. Drexel Avenue from S. 10th Street east to the crossing of the North Branch of Oak Creek	Pilot Project – Installation of bioswales in about 630 feet of W. Drexel Avenue to treat 50 percent of the boulevard runoff (1.0 acre)	Water Quality	Average annual pollutant load reductions of 432 pounds TSS, 0.8 pounds total phosphorus, 0.02 trillion cells of fecal coliform bacteria	38,000	City of Oak Creek

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Prioritization based on total cost, , total load reduction of total suspended solids (TSS), and cost-effectiveness of load reduction of total suspended solids.*

[c] *Costs are given in 2019 dollars.*

[d] *This project could be completed in phases or could be done for only a portion of the parkway.*

[e] *Cost to be assigned during project development.*

[f] *Subbasin designation follows the City of Oak Creek's nomenclature.*

Source: SEWRPC

Table 6.32
Other High Priority Projects for the Oak Creek Watershed Restoration Plan[a]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[b]	Responsible Party
OCW-02	Watershed-wide	Develop and implement written dry-weather screening procedures for MS4 outfalls	Water Quality	Improved illicit discharge detection and elimination procedures, reduced loadings of pollutants and pathogens	--[c]	MS4 communities and Milwaukee County
OCW-03	Watershed-wide	Develop and implement written procedures for investigating and responding to suspected or known illicit discharges into MS4	Water Quality	Improved illicit discharge detection and elimination procedures, reduced loadings of pollutants and pathogens	--[c]	MS4 communities and Milwaukee County
OCW-04	Watershed-wide	Develop and implement a system for tracking and completing long-term inspections, maintenance, and enforcement of all public and private post-construction stormwater BMPs	Water Quality	Maintains performance of stormwater BMPs	--[c]	MS4 communities and Milwaukee County
OCW-05	Watershed-wide	Develop and implement a written salt application or salt reduction strategy	Water Quality	Reductions in chloride loadings	--[c]	MS4 communities and Milwaukee County
OCW-06	Watershed-wide	Annually calibrate deicing and anti-icing equipment	Water Quality	Reductions in chloride loadings	--[c]	MS4 communities, Milwaukee County, and MMIA
OCW-07	Watershed-wide	Develop action benchmarks for bacteria for illicit discharge detection and elimination screening	Water Quality	Reductions in fecal indicator bacteria and pathogen loadings	--[c]	MS4 communities and Milwaukee County
OCW-08	Watershed-wide	Develop an inventory and map of potential sources of fecal indicator bacteria for MS4	Water Quality	Reductions in fecal indicator bacteria and pathogen loadings	--[c]	MS4 communities and Milwaukee County
OCW-09	Watershed-wide	Develop a fecal indicator bacteria elimination plan for MS4	Water Quality	Reductions in fecal indicator bacteria and pathogen loadings	--[c]	MS4 communities and Milwaukee County
UOC-01	Area surrounding the confluence of the North Branch of Oak Creek and the mainstem of Oak Creek	Conduct a detailed survey of the mainstem of Oak Creek from S. 13th Street to S. Howell Avenue and the North Branch of Oak Creek from W. Puetz Road to its confluence with the mainstem	Habitat, Water Quality, Stormwater and Flooding	Address low flows, sedimentation, degraded habitat, and associated problems in this reach	20,000	Wisconsin Department of Transportation, Milwaukee County, City of Oak Creek, Canadian Pacific Railroad

Table 6.32 (Continued)

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)[b]	Responsible Party
UOC-02	Area surrounding the confluence of the North Branch	Conduct a feasibility study to explore options to address impairments resulting from the channel modifications related to the W. Ryan Road and S. Howell Avenue expansion projects in the early 1970s	Habitat, Water Quality, Stormwater and Flooding	Address low flows, sedimentation, degraded habitat, and associated problems in this reach	70,000	Wisconsin Department of Transportation, Milwaukee County, City of Oak Creek, Canadian Pacific Railroad
LNB-06	North Branch of Oak Creek railroad culvert crossing 0.1 mile upstream from the confluence with Oak Creek	Conduct a detailed inspection and structural integrity analysis of the Canadian Pacific Railway culvert crossing of the North Branch of Oak Creek	Habitat Stormwater and Flooding	Protect infrastructure and public safety	25,000	Canadian Pacific Railway
LNB-07	North Branch of Oak Creek railroad culvert crossing 0.1 mile upstream from the confluence with Oak Creek	If the inspection called for in LNB-06 shows that the structure is still serviceable, action should be taken to protect the culvert bedding and foundation from further undermining and to halt flow of water under the culvert	Habitat Stormwater and Flooding	Protect infrastructure and public safety	470,400	Canadian Pacific Railway

Note: Prioritization based on severity of passage impediment and potential to increase connectivity.

[a] *Table 6.1 provides more details on the priority projects.*

[b] *Costs are given in 2019 dollars.*

[c] *Cost to be assigned during project development.*

Source: SEWRPC

Table 6.33
Stream Water Quality Monitoring Stations in the Oak Creek Watershed: 2015-2019

Sampling Station	River Mile[a]	Water Temperature	Water Chemistry	Stream Flow	Bacteria	Biological	Ongoing[b]
Milwaukee Metropolitan Sewerage District							
Oak Creek at Ryan Road	10.1	Y	Y	N	Y	N	Y
Oak Creek at STH 38	9.2	Y	Y	N	Y	N	Y
Oak Creek at E. Forest Hill Avenue	6.3	Y	Y	N	Y	N	Y
Oak Creek at Pennsylvania Avenue	4.7	Y	Y	N	Y	N	Y
Oak Creek at 15th Avenue	2.8	Y	Y	N	Y	Y[c]	Y
Oak Creek at Parkway East of STH 32[d]	1.0	Y	Y	N	Y	N	Y
Oak Creek at Parkway East of Lake Drive	0.3	Y	Y	N	Y	N	Y
Milwaukee Riverkeeper							
Oak Creek east of S. 13th Street	10.6	Y	Y	N	N	N	N
Oak Creek at 15th Avenue	2.8	Y	Y	N	N	N	N
North Branch of Oak Creek along 6th Street	4.1	Y	Y	N	N	N	N
North Branch of Oak Creek 200 feet upstream of Puetz Road	1.0	Y	Y	N	N	N	N
Mitchell Field Drainage Ditch south of Rawson Avenue	0.6	Y	Y	N	N	N	N
Mitchell Field Drainage Ditch at Railroad Tracks	0.1	Y	Y	N	N	N	N
Southland Creek at 13th Street	0.5	Y	Y	N	N	N	N
Unnamed Creek No. 5 at S. Wake Forest Drive	0.1	Y	Y	N	N	N	N
City of Racine Public Health Department							
Oak Creek at Southwood Drive	12.8	Y	Y	N	Y	N	N
Oak Creek at CTH V	10.7	Y	Y	N	Y	N	N
Oak Creek at Oak Leaf Trail near STH 38	9.2	Y	Y	N	Y	N	N
Oak Creek at S. Nicholson Road	7.4	Y	Y	N	Y	N	N
Oak Creek at Drexel Avenue	5.6	Y	Y	N	Y	N	N
Oak Creek at Pennsylvania Avenue	4.7	Y	Y	N	Y	N	N
Oak Creek at 15th Avenue	2.8	Y	Y	N	Y	N	N
Oak Creek Parkway upstream of Mill Pond	1.2	Y	Y	N	Y	N	N
Oak Creek Mill Pond	1.1	Y	Y	N	Y	N	N
Oak Creek at the Falls	1.0	Y	Y	N	Y	N	N
Oak Creek at Hawthorne Avenue	0.3	Y	Y	N	Y	N	N
Oak Creek Mouth	0.1	Y	Y	N	Y	N	N
North Branch of Oak Creek at S. 6th Street	3.9	Y	Y	N	Y	N	N
North Branch of Oak Creek at Weatherly Drive	1.8	Y	Y	N	Y	N	N
Mitchell Field Drainage Ditch at College Avenue	1.8	Y	Y	N	Y	N	N
Mitchell Field Drainage Ditch at Rawson Avenue	0.8	Y	Y	N	Y	N	N
Unnamed Creek No. 5 at Willow Drive	0.3	Y	Y	N	Y	N	N
Southeastern Wisconsin Regional Planning Commission							
Oak Creek at W. Ryan Road	12.5	Y	N	N	N	N	N
Oak Creek at S. 13th Street	10.7	Y	N	N	N	N	N
Oak Creek at STH 38	9.2	Y	N	N	N	N	N
Oak Creek at Puetz Road	6.8	Y	N	N	N	N	N
Oak Creek at Drexel Avenue	5.6	Y	N	N	N	N	N
Oak Creek at Pennsylvania Avenue	4.7	Y	N	N	N	N	N
Oak Creek at Chestnut Street	3.5	Y	N	N	N	N	N
Oak Creek at 15th Avenue	2.8	Y	Y	N	N	N	Y
Oak Creek at Parkway upstream of Mill Pond	1.2	Y	N	N	N	N	N
Oak Creek at Parkway upstream of Mill Pond-Obstructed Channel	1.2	Y	N	N	N	N	N

Table 6.33 (Continued)

Sampling Station	River Mile[a]	Water Temperature	Water Chemistry	Stream Flow	Bacteria	Biological	Ongoing[b]
Oak Creek at Parkway upstream of Mill Pond-New Channel	1.2	Y	N	N	N	N	N
Oak Creek Mill Pond upstream Channel	1.1	Y	N	N	N	N	N
Oak Creek Mill Pond North Lobe	1.1	Y	N	N	N	N	N
Oak Creek Mill Pond South Lobe	1.1	Y	N	N	N	N	N
Oak Creek Below Dam	1.0	Y	N	N	N	N	N
Oak Creek Mouth	0.1	Y	N	N	N	N	N
North Branch of Oak Creek at Maitland Park	5.3	Y	N	N	N	N	N
North Branch of Oak Creek at S. 6th Street	3.9	Y	N	N	N	N	N
North Branch of Oak Creek at Marquette Avenue	3.0	Y	N	N	N	N	N
North Branch of Oak Creek at Wildwood Drive	2.0	Y	N	N	N	N	N
North Branch of Oak Creek at Puetz Road	0.9	Y	N	N	N	N	N
North Branch of Oak Creek near Confluence with Oak Creek	0.1	Y	N	N	N	N	N
Mitchell Field Drainage Ditch at College Avenue	1.8	Y	N	N	N	N	N
Mitchell Field Drainage Ditch at Rawson Avenue	0.8	Y	N	N	N	N	N
Southland Creek at S. 13th Street	0.5	Y	N	N	N	N	N
Unnamed Creek 5 at Willow Drive	0.3	Y	N	N	N	N	N
Unnamed Tributary to North Branch of Oak Creek at S. 13th Street	0.8	Y	N	N	N	N	N
Unnamed Tributary to Oak Creek near Puetz Road	0.1	Y	N	N	N	N	N
U.S. Geological Survey							
Oak Creek at 15th Avenue	2.8	N	N	Y	N	Y[c]	Y
Mitchell Field Drainage Ditch at College Avenue	1.8	N	Y	N	N	N	Y
Wisconsin Department of Natural Resources							
Oak Creek at Ryan Road	12.5	Y	Y	N	N	Y	Y
Oak Creek at 13th Street	10.6	Y	Y	N	N	Y	Y
Oak Creek at Puetz Road	6.8	Y	Y	N	N	Y	Y
Oak Creek at Pennsylvania Avenue	4.7	Y	Y	N	N	Y	Y
Oak Creek at 15th Avenue	2.8	Y	Y	N	N	Y	Y
Oak Creek at Beach Bridge	0.1	Y	Y	N	N	Y	Y
North Branch of Oak Creek Along 6th Street	4.1	Y	Y	N	N	Y	Y
North Branch of Oak Creek 200 feet upstream of Puetz Road	1.0	Y	Y	N	N	N	Y
North Branch of Oak Creek at Puetz Road	0.9	Y	Y	N	N	Y	Y
Mitchell Field Drainage Ditch at College Avenue	1.8	N	Y	N	N	N	Y
Mitchell Field Drainage Ditch at Rawson Avenue	0.8	Y	Y	N	N	Y	Y

[a] *River mile is measured as the distance upstream from the confluence with the waterbody into which a stream flows.*

[b] *Ongoing indicates that it is anticipated that monitoring will continue to be conducted at this station during and/or beyond 2021.*

[c] *Biological sampling was conducted at this station under a joint project between the Milwaukee Metropolitan Sewerage District and the U.S. Geological Survey.*

[d] *The station name is historical. The station is located near the outlet to the Mill Pond.*

Source: SEWRPC

Table 6.34
Recommended Water Quality Monitoring Stations in the Oak Creek Watershed

Waterbody	Existing Stations to Be Retained[a]				Water Quality Stations to Be Added	Potential Station Locations[b]
	MMSD Water Quality	USGS Stream Gage	USGS Water Quality	WDNR Biology		
Oak Creek Mainstem	7	1	--	6	0	--
College Avenue Tributary	--	--	--	--	1	W. Pelton Drive, S. 13th Street
North Branch of Oak Creek	--	--	--	2	2	Weatherly Drive, Marquette Avenue
Mitchell Field Drainage Ditch	--	--	1	1	1	Rawson Avenue
Oak Creek Drainage Ditches	--	--	--	--	1	E. Puetz Road S. Pennsylvania Avenue
Rawson Avenue Tributary	--	--	--	--	1	S. 10th Street, S. 13th Street
Southland Creek	--	--	--	--	1	S. 13th Street
Unnamed Creek 5	--	--	--	--	1	Willow Drive, S. Wake Forest Drive

[a] *Some existing MMSD water quality sampling stations are located at the same site as the USGS stream gage or WDNR biology stations.*

[b] *Listing of sites for potential sampling stations is based upon examination of maps and locations where sampling has been conducted in the past. While the availability of historical data is an important consideration in selecting sampling station location, accessibility and safety should also be considered in the choice of sampling sites, especially if monitoring is to be done by volunteers. The final choice of sampling locations should be based upon field reconnaissance.*

Source: SEWRPC

#252504 – Table 6.35 – Water Quality Constituents
300-4010
JEB/LKH /mid
2/21/20, 6/21/21

Table 6.35
Tiered List of Chemical and Related Water Quality Constituents for Monitoring

Tier 1			
Dissolved oxygen	pH	Suspended solids, total	Water Temperature
E. coli	Specific Conductance	Turbidity	Water Transparency
Tier 2			
5-day biochemical oxygen demand	Chloride	Chlorophyll-*a*	Ethylene glycol[a]
Phosphorus, total	Propylene glycol[a]		
Tier 3			
Alkalinity, total	Hardness	Magnesium, total	Nitrite-nitrogen[b,d]
Ammonia-nitrogen[b,c]	Kjeldahl nitrogen, total[b]	Nitrate-nitrogen[b,d]	Phosphorus, total dissolved
Calcium, total			
Tier 4			
20-day biochemical oxygen demand	Copper, total[e]	Organic carbon, total	Solids, total
Arsenic, total	Inorganic carbon, total	Organic carbon, total dissolved	Solids, total dissolved
Cadmium, total[e]	Lead, total[e]	Selenium, total	Solids, total volatile
Carbon, total	Nickel, total[e]	Silica, total dissolved	Zinc, total[e]
Chromium, total[e]	Mercury, total	Silver, total	
Tier 5			
Acenaphthene	Fluorene	2,2′,4,5′,6-pentachlorbiphenyl	PCB-1242
Acenaphthylene	Indeno-[1,2,3-c,d]-pyrene	3,3′,4,4′,5-pentachlorobiphenyl	PCB-1248
Anthracene	Naphthalene	2,2′,3,4,5,5′-hexachlorobiphenyl	PCB-1254
Benz-[a]-anthracene	Phenanthrene	2,2′,4,4′,5,6′-hexachlorobiphenyl	PCB-1260
Benzo-[a]-pyrene	Pyrene	3,3′,4,4′,5,5′-hexachlorobiphenyl	Perfluorobutane sulfonic acid (PFBS)
Benzo-[b]-fluoranthene	2,3-dichlorobiphenyl	2,2′,3,3′,4,4′,6′-heptachlorobiphenyl	Perfluoroheptanoic acid (PFHpA)
Benzo-[g,h,i]-perylene	2,4,5-trichlorobiphenyl	2,2′,3,3′,4,5,5′,6′-octachlorobiphenyl	Perfluorohexane sulfonic acid (PFHxS)
Benzo-[k]-fluoranthene	3,3′,5-trichlorobiphenyl	2,2′,3,3′,4,5,6,6′-octachlorobiphenyl	Perfluorononanoic acid (PFNA)
Chrysene	2,2′,4,4′-tetrachlorobiphenyl	PCB-1016	Perfluorooctane sulfonic acid (PFOS)
Dibenzo-[a,h]-anthrcene	3,3′,4,5′-tetrachlorobiphenyl	PCB-1221	Perfluorooctanoic acid (PFOA)
Fluoanthene	2,2′,3′,4,6-pentachlorbiphenyl	PCB-1232	

[a] *Ethylene glycol and propylene glycol are major components of deicing and anti-icing fluids. It is recommended that monitoring conducted at sites along the Mitchell Field Drainage include these compounds.*

[b] *In order to fully characterize nutrient conditions related to nitrogen, ammonia, total Kjeldahl nitrogen, nitrate, and nitrite should be collected together.*

[c] *The toxicity of ammonia to aquatic organisms is dependent upon ambient temperature and pH. Because of this, always sampling for water temperature and pH when ammonia samples are collected would aid in the interpretation of ammonia concentration data.*

[d] *Some monitoring programs sample for and report a combined concentration of nitrate plus nitrite.*

[e] *The toxicity of cadmium, chromium, copper, lead, nickel, and zinc to aquatic organisms is dependent on the hardness of the water. Because of this, always sampling for hardness when samples are collected for any of these metals would aid in the interpretation of the metal concentration data.*

Source: SEWRPC

#252487 – CAPR-330 Table 6.36 – Water Quality Analyses
300-4010
JEB/LKH/mid
2/20/20, 6/21/21

Table 6.36
Studies Presenting Analyses of Water Quality in the Oak Creek Watershed

Study	Period of Record Examined	Sources of Water Quality Data	Water Quality Indicators Analyzed	Comments
SEWRPC Technical Report No. 4, *Water Quality and Flow of Streams in Southeastern Wisconsin,* April 1967	1964	SEWRPC, USGS	Water chemistry, stream flow	Initial regional benchmark study
SEWRPC Technical Report No. 17, *Water Quality of Lakes and Streams in Southeastern Wisconsin: 1964-1975,* June 1978	1964-1975	SEWRPC, USGS, WDNR	Water chemistry, stream flow, bacteria	Study supporting development of regional water quality management plan (SEWRPC PR-30)
SEWRPC Planning Report No. 36, *A Comprehensive Plan for the Oak Creek Watershed,* August 1986	1952-1983	SEWRPC, USGS, WDNR	Water chemistry, stream flow, bacteria, macroinvertebrates	Comprehensive watershed plan
SEWRPC Memorandum Report No. 93, *A Regional Water Quality Management Plan Update for Southeastern Wisconsin: An Update and Status Report,* March 1995	1976-1993	USGS, WDNR	Water chemistry, stream flow, bacteria, macroinvertebrates, toxicology	Update and status report on regional water quality management plan
Wisconsin Department of Natural Resources, *The State of the Root-Pike River Basin,* WDNR PUBL WT-700-2002, May 2002	Not specified	WDNR	Assessment of use impairments	WDNR basin plan for Root-Pike Basin
SEWRPC Technical Report No. 39, *Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds,* November 2007	1976-2001	MMSD, USGS, WDNR	Water chemistry, stream flow, bacteria, fisheries, macroinvertebrates, toxicology	Study supporting development of RWQMPU (SEWRPC PR-50)
Wisconsin Department of Natural Resources, *Oak Creek Frontal Lake Michigan TWA WQM Plan 2017,* EGAD 3200-2017-11, 2017	2015	WDNR	Fisheries, macroinvertebrates	WDNR targeted watershed assessment water quality management plan
SEWRPC Community Assistance Planning Report No. 330, *A Restoration Plan for the Oak Creek Watershed,* 2021	1952-2016	MMSD, MKER, RHD, SEWRPC, USGS, WDNR	Water chemistry, stream flow, bacteria, fisheries, macroinvertebrates, toxicology	Nine key element watershed restoration plan

Note:

MMSD = Milwaukee Metropolitan Sewerage District
MKER = Milwaukee Riverkeeper
RHD = City of Racine Public Health Department
SEWRPC = Southeastern Wisconsin Regional Planning Commission
USGS = U.S. Geological Survey
WDNR = Wisconsin Department of Natural Resources

Source: SEWRPC

Table 6.37
Capital and Annual Operations and Maintenance Costs Associated with the Water Quality Monitoring Recommendations of the Oak Creek Watershed Restoration Plan

Recommendation	Capital Cost (dollars)	Annual Operations and Maintenance Cost (dollars)
Costs to Maintain Existing Monitoring System		
Existing USGS Stream Gage (one gage)	--	11,100
MMIA/USGS Monitoring (one sampling station)	--	37,000
MMSD Oak Creek Survey (seven sampling stations)	--	48,000
MMSD/USGS Toxicity Testing and Biological Monitoring (one sampling station)	--	6,700[a]
WDNR Biological Monitoring	--	1,750[b]
Milwaukee County Parks Vegetation and Floristic Surveys	--	44,600
Milwaukee County Parks Wildlife Monitoring	--	28,300
Milwaukee County Parks Invasive Species Monitoring[c]	--	5,900
Subtotal	--	183,350
Costs to Expand Existing Monitoring System		
Establishing Additional Stream Monitoring Stations (eight sampling stations)	2,400[d]	640[e]
Mussel Survey	--	1,000[f]
Continuous Dissolved Oxygen Monitoring (one sampling station)	1,500[g]	50[h]
Sediment Sampling for PAHs (two sampling stations)	--	2,360[i]
PFAS Sampling (two sampling stations)	--	3,800[j]
Emergent Pollutant Sampling (one sampling station)	--	4,030[k]
Sediment Phosphorus and Cyanobacteria Sampling (one sampling stations)	--	2,730[l]
Subtotal	3,900	14,590
Total	3,900	197,940

Note: Costs are given in 2019 dollars.

[a] *The cost of this monitoring is about $20,000 per season. The cost listed assumes that monitoring is conducted every third year.*

[b] *The cost of this monitoring is $7,000 for a season on monitoring. The cost listed assumes monitoring is conducted every fourth year. The annual cost would be $1,400 if monitoring is conducted every fifth year.*

[c] *This cost includes some select control of invasive species conducted as part of the monitoring effort.*

[d] *The cost is based on the assumption that monitoring at these stations will be conducted through the University of Wisconsin-Madison Division of Extension/Wisconsin Department of Natural Resources Water Action Volunteers program. It represents the cost of eight monitoring kits for WAV Level 1 monitoring..*

[e] *The cost is based on the assumption that monitoring at these stations will be conducted through the University of Wisconsin-Madison Division of Extension/Wisconsin Department of Natural Resources Water Action Volunteers program and that each station is sampled for total phosphorus for one summer every five years.*

[f] *The cost of this monitoring is about $10,000 per season. The cost listed assumes that monitoring is conducted every tenth year.*

[g] *The capital cost is based on the cost of a data logger for dissolved oxygen and associated software and equipment.*

[h] *Operation and maintenance cost is based on the cost of calibration solution for dissolved oxygen data logger. It is assumed that the logger will be deployed and recovered as part of other monitoring activities.*

[i] *This element is part of a proposed Phase VI to the MMSD/USGS Corridor Study. Costs assume that sampling is conducted three times over a 10-year period at two locations in the Oak Creek watershed. As of June 2021, MMSD and USGS have not chosen the number or locations of monitoring stations in the Oak Creek watershed.*

[j] *This would be a three-year study proposed as part of a potential Phase VI to the MMSD/USGS Corridor Study at a cost of about $9,490 per site. Costs assume that sampling is conducted at two locations in the Oak Creek watershed. As of June 2021, MMSD and USGS have not chosen the number or locations of monitoring stations in the Oak Creek watershed. Annual costs are spread over five years.*

Table 6.37 (Continued)

[k] *This would be a three-year study at a cost of about $20,140 per site. Annual costs are spread over five years.*

[l] *This would be a three-year study proposed as part of a potential Phase VI to the MMSD/USGS Corridor Study at a cost of about $13,650 per site. Costs assume that sampling is conducted at one location in the Oak Creek watershed. As of June 2021, MMSD and USGS have not chosen the number or locations of monitoring stations in the Oak Creek watershed. Annual costs are spread over five years.*

Source: U.S. Geological Survey, Wisconsin Department of Natural Resources, University of Wisconsin-Madison Division of Extension, Milwaukee Metropolitan Sewerage District, Milwaukee Mitchell International Airport, Milwaukee Riverkeeper, and SEWRPC

Table 6.38
Implementation Milestones for the Oak Creek Watershed Restoration Plan

Category	Action	Milestones
Specific Projects Listed in Table 6.1	High Priority Projects (90 projects)	35 percent of projects initiated by the end of 2026 50 percent of projects completed by the end of 2031 65 percent of projects completed by the end of 2036 75 percent of projects completed by the end of 2041 90 percent of projects completed by the end of 2046 100 percent of projects completed by the end of 2051
	Medium and Low Priority Projects (316 projects)	5 percent of projects initiated by the end of 2026 15 percent of projects completed by the end of 2031 30 percent of projects completed by the end of 2036 40 percent of projects completed by the end of 2041 50 percent of projects completed by the end of 2046 65 percent of projects completed by the end of 2051 100 percent of projects completed after 2051
Water Quality: Urban Nonpoint Source Pollution Control	1. MS4 Illicit Discharge Detection and Elimination Program Modifications	Modifications completed by all seven MS4s by the end of 2026
	2. Development and Implementation of BMP Maintenance Tracking Systems	Systems implemented by all seven MS4s by the end of 2026
	3. Iron-Enhanced BMP Pilot Projects	1 project installed by the end of 2026 3 projects installed by the end of 2031
Water Quality: Green Infrastructure Installation	1. MMSD Green Infrastructure Plan Implementation[a]	48 percent of recommended practices by the end of 2026 77 percent of recommended practices by the end of 2031 100 percent of recommended practices by the end of 2035
	2. City of South Milwaukee Urban Forestry Plan Implementation	200 dead or diseased tree removed and 625 tree plantings by the end of 2031 400 dead or diseased tree removed and 1,250 tree plantings by the end of 2031
	3. Development and Implementation of Green Infrastructure Tracking System	Full implementation by all six municipalities in the watershed by the end of 2026
Water Quality: Reducing Concentrations of Fecal Indicator Bacteria and Pathogens	1. Mycoremediation Pilot Projects	1 project installed by the end of 2031 3 projects installed by the end of 2036
Water Quality: Reducing Chloride Concentrations	1. Developing Winter Road Management Plans, Salt Application Strategies, or Salt Reduction Strategies	Plans or strategies completed and implemented by all seven MS4s by the end of 2031
Water Quality: Toxic Substances and Emerging Pollutants	1. Enact Ordinances Banning the Use of Coal-Tar Pavement Sealants	Ordinances enacted by all six municipalities in the watershed by the end of 2026
Habitat: Maintaining and Reestablishing Natural Surface Water Hydrology	1. Rain Garden Installation at Public Schools	1 rain garden installed at each public school in the watershed by the end of 2026
	2. Rain Barrel Installation at Public Schools	1 rain barrel installed at each public school in the watershed by the end of 2026
	3. Restoration of Milwaukee County Leased Agricultural Land to Forest, Grassland, or Wetland Conditions[b]	25 percent of leased agricultural lands restored by the end of 2026 100 percent of the leased agricultural lands restored by the end of 2031

Table 6.38

Category	Action	Milestones
Habitat: Protecting, Maintaining, Expanding, and Restoring Riparian Buffers[b]	1. Establish 75-foot Minimum Width Buffers Along Streams	Achieve the minimum buffer along 75 percent of stream length in the watershed by the end of 2026
Habitat: Invasive and Nonnative Species Management	1. Implementation of Guidelines in SEWISC Right of Way Invasive Species Management Plan	Implementation by Milwaukee County and all six municipalities in the watershed by the end of 2026
Habitat: Restoring Degraded Stream Channels	1. Improve floodplain functionality for stream channels that are disconnected from their floodplains but confined by urban development[b]	1 project area addressed by the end of 2028 3 project areas addressed by the end of 2036 All project areas addressed by the end of 2041
Habitat: Remove or Modify Passage Impediments	1. Conduct Fish Passage Assessments for All Unassessed Stream Crossings in the Watershed[b]	All remaining crossings assessed by the end of 2026
	2. Develop Plans to Replace or Modify Identified Fish Passage Impediments[b]	Develop plans for all Tier 1 impediments excluding the Mill Pond dam by the end of 2026 Develop plans for all Tier 2 impediments by the end of 2031 Develop plans for all Tier 3 impediments by the end of 2036
	3. Address Major Woody Debris Jams that Constitute Passage Barriers[b]	Assess all major debris jams by the end of 2024 Selectively remove small sections of all debris jams found to be complete passage barriers by the end of 2026
Habitat: Address Streambank and Streambed Erosion[b]	1. Conduct Streambank Stability Surveys on Streams in the Watershed that Have Not Been Assessed	Assess all remaining streams by the end of 2026
	2. Conduct Survey of Outfalls That Were Not Assessed to Confirm Location, Dimensions, Materials, and Condition	Assess all remaining outfalls by the end of 2026
Mill Pond and Dam	1. Core Sampling and Analysis of Mill Pond Sediment	Complete sampling and analysis by the end of 2023
Monitoring	1. Stream Water Quality Monitoring Stations	Install 8 additional stations by the end of 2026
	2. Dissolved Oxygen Monitoring in the Mitchell Field Drainage Ditch	Install 1 data logger by the end of 2026
	3. Biological Monitoring	Conduct 1 fish and macroinvertebrate survey by the end of 2026 Conduct 2 fish and macroinvertebrate surveys by the end of 2031
	4. Mussel Survey	1 mussel survey by the end of 2026
	5. Collation and analysis of monitoring data	One report by the end of 2031
Plan adoption	1. Adoption of plan by local units of government	Adoption or endorsement by Milwaukee County and all 6 municipalities by the end of 2024

[a] *The implementation timeline for the MMSD green infrastructure plan is given in Table 6.10. Elements constituting full implementation are given in Table 6.9.*

[b] *Some actions in this category are also addressed by specific projects in Table 6.1.*

Source: SEWRPC

Table 6.39
Implementation Schedule for General Recommendations of the Oak Creek Watershed Restoration Plan

Recommendation	Level of Implementation	Date to Complete Implementation	Comments
Water Quality: Urban Nonpoint Source Pollution Control Measures			
General Recommendations	--	Ongoing	There are also specific project recommendations that address these
MS4 IDDE Program Modifications[a]	Full	2026	Because implementation of this recommendation will require changes to the communities' MS4 discharge permits, it is anticipated that implementation will occur as part of the regular reissuance of the permits
Development of BMP maintenance tracking systems	Full	2026	
Iron-enhanced BMP Pilot Projects	1 project 3 projects	2026 2031	
Water Quality: Green Infrastructure Installation			
Implementation of MMSD Green Infrastructure Plan	48 percent 77 percent 100 percent	2026 2031 2035	Implementation schedule for MMSD green infrastructure plan is given in Table 6.10
Municipal Code Audit for City of South Milwaukee	--	2026	
Implementation of South Milwaukee Urban Forestry Plan	400 removals, 1,250 plantings	2031	
Develop and Implement Green Infrastructure Tracking System	Full	2026	
Water Quality: Rural Nonpoint Source Control Measures			
Install Practices to Reduce Soil Loss from Crop Land to Reduce Erosion Rates to Less than "T"	Full	2026	
Nutrient Management Plans	Full	2026	
Convert 10 Percent of Marginal Cropland to Wetland and Prairie	Full	2035	There are also specific projects that address this
Implement Expanded Private Onsite Wastewater Treatment System Programs	Full	2036	
Water Quality: Actions to Reduce Concentrations of Fecal Indicator Bacteria and Pathogens			
Reduce Impacts of Nuisance Waterfowl	--	As needed	Address as water quality problems are documented
Reduce Impacts of Pet Waste	--	As needed	Address as water quality problems are documented
Mycoremediation Pilot Projects	1 project 3 projects	2026 2031	
Water Quality: Actions to Reduce Chloride Concentrations			
General recommendation	--	Ongoing	
Develop and update winter road management plans, salt application strategies, or salt reduction strategies	Initial development Update	2026 Ongoing	
Water Quality: Point Source Control Measures			
General Recommendations	--	Ongoing	
Water Quality: Actions to Address Toxic Substances and Emerging Pollutants			
Household Hazardous Waste Collection Programs	--	Ongoing	

Table 6.39 (Continued)

Recommendation	Level of Implementation	Date to Complete Implementation	Comments
Unused Medication Collection Programs	--	Ongoing	
Enact Ordinances Banning Use of Coal-Tar Pavement Sealants[b]	Full	2026	
PFAS Investigations at MMIA	Full	2021[c]	Any follow-up investigations should be completed in accordance with the schedule set by the WDNR
Habitat: Actions to Maintain and Reestablish Natural Surface Water Hydrology			
Protect, restore, and enhance natural landscape elements to reduce magnitude of flashiness in stream flow	--	Ongoing	There are also specific projects that address this
Implement measures to promote stormwater storage and infiltration in existing and planned urban areas	--	Ongoing and as development occurs	There are also specific projects that address this
Implement at least one rain garden and one rain barrel at all public schools within the watershed	Full	2026	Funding for more extensive "greening" projects of schoolyards in the watershed should also be pursued
Reduce unnecessary drainage tile systems and retrofit need systems	--	Ongoing and as development occurs	There are also specific projects that address this
Restore leased agricultural fields owned by Milwaukee County Parks to forest, grassland, or wetland habitats	25 percent Full	2026 2031	There are also specific projects that address this
Restore marginal crop and pasture lands, farmed wetlands, and potentially restorable wetlands (particularly as areas are converted from ag to urban uses)	--	Ongoing and as development occurs	There are also specific projects that address this
Habitat: Actions to Protect Areas of High Groundwater Recharge			
Control new development in areas with the best remaining groundwater recharge potential	--	Ongoing	--
Implement mitigation measures to reduce impacts of any future urban development on groundwater recharge quantity and quality	--	Ongoing and as development occurs	--
Reduce impact of existing urban development on groundwater recharge quantity and quality	--	Ongoing	--
Implement pollution reduction measures in agricultural and other areas such as golf courses that are located in areas of high groundwater recharge	--	Ongoing	--
Habitat: Actions to Protect, Restore, Expand, and Connect Riparian Buffers			
Manage and/or restore the quality of existing riparian buffers	--	Ongoing	There are also specific projects that address this
Protect and preserve all existing riparian buffers with priority given to buffers considered to be vulnerable to urban development	--	Ongoing	There are also specific projects that address this
Expand existing or establish new riparian buffers	75-ft minimum width 1,000-ft optimum width	2026 Ongoing	There are also specific projects that address this
Establish connections between riparian buffer areas for continuity between habitat types	--	Ongoing	There are also specific projects that address this

Table 6.39 (Continued)

Recommendation	Level of Implementation	Date to Complete Implementation	Comments
Habitat: Actions to Preserve, Restore, Expand, and Connect Wildlife Habitat			
Pursue funding to continue the implementation of Milwaukee County DPRC ecological restoration and management plans	--	Ongoing	There are also specific projects that address this
Preserve and expand wildlife habitat through protection and establishment of riparian buffers as outlined above	--	Ongoing	There are also specific projects that address this
Reduce habitat fragmentation by preserving and enhancing connections between riparian buffers, open space, CSHS, and natural areas	--	Ongoing and as development occurs	There are also specific projects that address this
Implement BMPs aimed at maintaining and enhancing wildlife habitat including voluntary, educational and technical assistance, and incentive-based programs	--	Ongoing	--
Habitat: Actions to Control and Manage Invasive and Nonnative Species			
Pursue funding to continue the implementation of inventory, monitoring, and control of invasive species populations as outlined in Milwaukee County DPRC ecological restoration and management plans	--	Ongoing	There are also specific projects that address this
Continue to update the County's ecological restoration and management plans as conditions change	--	Ongoing	These plans are generally developed for ten-year periods and should be updated as the planning period is expiring
Conduct invasive species work days in parks and natural areas utilizing volunteers, partner organizations, and contractors in addition to governmental staff	4 work days annually	2026	--
Remove and/or manage invasive species using accepted management methods	--	Ongoing	There are also specific projects that address this
Continue and expand current monitoring for invasive species in the watershed	--	Ongoing	There are also specific projects that address this
Continue educational activities for the public related to nonnative and invasive species and control thereof	--	Ongoing	--
Municipal roadway managers should implement guidelines outlined in SEWISC Right of Way Invasive Species Management Plan	Full	2026	--
Habitat: Actions to Restore Degraded Stream Channels and Reestablish Connections Between Streams, Floodplains, and Adjacent Wetlands			
Install natural channel design elements such as meanders, grade control, and/or constructed riffles	--	As needed	There are also specific projects that address this
Restore connections between streams and their functional floodplains and adjacent wetlands	--	As needed	There are also specific projects that address this
Improve floodplain functionality for stream channels that are disconnected from their floodplain but confined by urban development with a two-stage channel design retrofit, where possible	1 project area 3 project areas All project areas	2028 2036 2041	There are also specific projects that address this

Table 6.39 (Continued)

Recommendation	Level of Implementation	Date to Complete Implementation	Comments
Consider regenerative stormwater conveyance restoration design for degraded headwater streams	1 project area All project areas	2031 2036	There are also specific projects that address this
Habitat: Actions to Remove or Modify Impediments to Aquatic Organism Passage			
Conduct fish passage assessments for all remaining unassessed stream crossings in the watershed	Full	2024	There are also specific projects that address this
Develop plans to replace, retrofit, or modify identified fish passage impediments	Tier 1 (not including dam) Tier 2 Tier 3	2026 2031 2036	There are also specific projects that address this
Assess all major woody debris jams within the watershed to determine fish passage barriers	Full	2024	There are also specific projects that address this
Selective removal of small sections of woody debris for those large debris jams fount to be complete fish passage barriers	Full	2026	There are also specific projects that address this
Conduct periodic surveys to reassess accumulation of coarse woody debris to determine fish passage barriers; Selectively remove those considered barriers or accumulations at road crossings	--	Ongoing	--
Conduct periodic thinning of deceased ash trees within riparian lands adjacent to streams	--	Ongoing	--
Habitat: Actions to Address Streambank and Streambed Erosion			
Stabilize actively eroding streambanks that have been identified using design and implementation to ensure that the stream is reconnected to its floodplain whenever practicable	50 percent of high priority sites 100 percent of high priority sites	2026 2031	There are also specific projects that address this
Conduct streambank stability surveys on streams in the watershed that have not been assessed	Full	2026	--
Replace, repair, or retrofit outfalls identified as poor or failing condition	50 percent of high priority sites 100 percent of high priority sites	2026 2031	There are also specific projects that address this
Conduct surveys of outfalls that were not assessed to confirm location, dimensions, materials, and condition	Full	2026	--
Habitat: Actions to Reduce or Mitigate the Negative Physical, Chemical, and Biological Impacts Associated with Climate Change			
Implement actions to restore or simulate natural processes to slow down, detain, and treat runoff	--	Ongoing	There are also specific projects that address this
Consider planning for flooding impacts beyond the 1-percent-annual-probability-(100-year recurrence interval) event	--	Ongoing	--
Consider strengthening floodplain regulations and expanding planned Primary Environmental Corridors	Full	2026	--
Implement actions to promote stream shading, increase stormwater infiltration, maintain groundwater recharge, and improve access to cool water habitat	--	Ongoing	There are also specific projects that address this

Table 6.39 (Continued)

Recommendation	Level of Implementation	Date to Complete Implementation	Comments
Develop response plans for addressing new areas of invasive species infestations and for newly occurring invasive species when they are found	--	Ongoing	--
Habitat: Actions to Reduce Trash and Debris Within the Stream Channels and Riparian Areas			
Plan and organize annual or semi-annual stream cleanup days utilizing community volunteers and partner organizations	Full	2023	--
Conduct surveys and geolocate large trash items along streams that were not surveyed by Commission staff	Full	2023	--
Periodically reassess and geolocate large trash items along streams of the watershed to measure progress and provide targeted areas for future cleanup	--	Ongoing	--
Place and maintain additional trash receptacles along trails, parkways, and in parks	Full	2024	--
Watershed communities should hold free large trash pick-up days multiple times each year	Full	2023	--
Watershed communities should focus efforts on publicizing electronic recycling options for residents	Full	2022	--
Watershed communities should expand efforts to publicize hazardous waste disposal programs available to residents	Full	2022	--
Recreational Access and Use			
Additions to Oak Leaf Trail	Full	2041	--
Flooding and Stormwater Runoff			
Voluntarily acquire and remove remaining insurable structures from the regulatory floodplain	--	As opportunities arise	--
Evaluate opportunities to address road crossings impacted by flood elevations	--	Ongoing	--
Evaluate areas of stream flooding and opportunities to reduce flood impacts to public infrastructure and private property	--	Ongoing	--
Evaluate areas of stormwater flooding and opportunities to reduce flood impacts to public infrastructure and private property	--	Ongoing	--
Mill Pond and Mill Pond Dam			
Complete core sampling and analysis of Mill Pond sediment	Full	2023	--
Specific Projects Listed in Table 6.1			
High-Priority Projects	35 percent of projects initiated	2026	--
(90 projects)	50 percent of projects completed	2031	--
	65 percent of projects completed	2036	--
	75 percent of projects completed	2041	--
	90 percent of projects completed	2046	--
	100 percent of projects completed	2051	--

Table 6.39 (Continued)

Recommendation	Level of Implementation	Date to Complete Implementation	Comments
Medium- and Low-Priority Projects	5 percent of projects initiated	2026	--
(316 projects)	15 percent of projects completed	2031	--
	30 percent of projects completed	2036	--
	40 percent of projects competed	2041	--
	50 percent of projects completed	2046	--
	95 percent of projects completed	2051	--
	100 percent of projects completed	After 2051	--
Monitoring Recommendations			
Continuation of Existing Monitoring Network	--	Ongoing	--
Installation of Additional Sampling Stations	Full	2026	--
Mussel Survey	--	2026	It is recommended that mussel surveys be conducted at 10-year intervals
Collation and Analysis of Monitoring Data	--	2031	It is recommended that monitoring data be collated, analyzed, and made available at 10-year intervals
Information and Education Plan			
Information and Education Plan	--	Ongoing	Schedule is given in Table 6.20

Note: Some recommended actions apply to multiple management categories but are only listed once in this table. Those recommendations are discussed in all of the sections that they apply to within the text.

[a] *This recommendation has been implemented for the MS4 communities in the watershed that are permitted under the Menomonee River Watershed-Based MS4 permit. In the Oak Creek watershed, these communities include Milwaukee County and the Cities of Greenfield and Milwaukee.*

[b] *The Cities of Franklin, Greenfield, Milwaukee, and Oak Creek have implemented this recommendation.*

[c] *It is anticipated that the investigations should be completed during summer or fall of 2021. This does not include any follow up that may be required by the WDNR.*

Source: SEWRPC

#258129 – CAPR-330 Table 6.40 - Cost Summary
300-4010
JEB/LKH/mid
6/21/21, 7/26/21

Table 6.40
Summary of Estimated Capital Costs for the Oak Creek Watershed Restoration Plan

Title	Cost (dollars)[a]
MMSD Green Infrastructure Plan through 2031[b]	616,300,000
City of South Milwaukee Urban Forestry Plan through 2031	917,000
Specific Projects in Table 6.1	65,971,300
Recreational Access and Use Recommendations	3,120,000
Monitoring Recommendations through 2031	2,012,700
Information and Education Element through 2031	106,000
Mill Pond and Dam Element[c]	542,000-12,410,000
Total	688,969,000-700,837,000

[a] *All costs are given in 2019 dollars.*

[b] *The capital cost of full implementation of the MMSD green infrastructure plan for the portions of the Oak Creek watershed that are located within the MMSD service area through 2035 is estimated as $856,028,000.*

[c] *The capital costs related to the Mill Pond and Dam are dependent upon the management alternative selected by Milwaukee County for implementation.*

Source: Milwaukee Metropolitan Sewerage District, City of South Milwaukee, SEWRPC

Table 6.41
Summary of Estimated Capital Costs for Projects in Table 6.1

Title	Number of Projects	Cost (dollars)
Aquatic Organism Passage Projects		
High Priority Projects with Costs	0	--
High Priority Projects for which Costs will be Assigned During Project Development	9	--
Other Projects with Costs	0	--
Other Projects for which Costs will be Assigned During Project Development	19	--
Subtotal	28	--
Debris Jam Modification and Removal Projects		
High Priority Projects with Costs	0	--
High Priority Projects for which Costs will be Assigned During Project Development	6	--
Other Projects with Costs	0	--
Other Projects for which Costs will be Assigned During Project Development	33	--
Subtotal	39	--
Flood Relief Projects		
High Priority Projects with Costs	2	4,915,000
High Priority Projects for which Costs will be Assigned During Project Development	0	--
Other Projects with Costs	5	1,454,400
Other Projects for which Costs will be Assigned During Project Development	8	--
Subtotal	15	6,369,400
Floodplain Reconnection Projects		
High Priority Projects with Costs	4	21,948,000[a]
High Priority Projects for which Costs will be Assigned During Project Development	0	--
Other Projects with Costs	9	20,134,500[a]
Other Projects for which Costs will be Assigned During Project Development	0	--
Subtotal	13	42,082,500[a]
Illicit Discharge Detection and Elimination Projects		
High Priority Projects with Costs	0	--
High Priority Projects for which Costs will be Assigned During Project Development	12	--
Other Projects with Costs	0	--
Other Projects for which Costs will be Assigned During Project Development	0	--
Subtotal	12	--
Land Restoration Projects		
High Priority Projects with Costs	7	396,800
High Priority Projects for which Costs will be Assigned During Project Development	0	--
Other Projects with Costs	13	1,014,700
Other Projects for which Costs will be Assigned During Project Development	6	--
Subtotal	26	1,411,500
Mill Pond and Mill Pond Dam Projects		
High Priority Projects with Costs	1	49,000
High Priority Projects for which Costs will be Assigned During Project Development	0	--
Other Projects with Costs	2	570,500[b]
Other Projects for which Costs will be Assigned During Project Development	0	--
Subtotal	3	619,500[b]
Outfall Repair Projects		
High Priority Projects with Costs	7	28,800
High Priority Projects for which Costs will be Assigned During Project Development	1	--
Other Projects with Costs	37	93,700
Other Projects for which Costs will be Assigned During Project Development	0	--
Subtotal	45	122,500

Table 6.41 (Continued)

Recreational Access Projects		
High Priority Projects with Costs	0	--
High Priority Projects for which Costs will be Assigned During Project Development	0	--
Other Projects with Costs	0	--
Other Projects for which Costs will be Assigned During Project Development	2	--
Subtotal	2	--
Riparian Buffer Expansion Projects		
High Priority Projects with Costs	5	2,264,300
High Priority Projects for which Costs will be Assigned During Project Development	0	--
Other Projects with Costs	17	2,627,300
Other Projects for which Costs will be Assigned During Project Development	3	--
Subtotal	25	4,891600
Stream Channel Restoration Projects		
High Priority Projects with Costs	1	400,000
High Priority Projects for which Costs will be Assigned During Project Development	1	--
Other Projects with Costs	0	--
Other Projects for which Costs will be Assigned During Project Development	8	--
Subtotal	10	400,000
Streambank Stabilization and Protection Projects		
High Priority Projects with Costs	15	855,100
High Priority Projects for which Costs will be Assigned During Project Development	0	--
Other Projects with Costs	132	3,556,600
Other Projects for which Costs will be Assigned During Project Development	0	--
Subtotal	149	4,411,700
Urban Stormwater Management Projects		
High Priority Projects with Costs	5	1,237,100
High Priority Projects for which Costs will be Assigned During Project Development	1	--
Other Projects with Costs	12	3,946,600
Other Projects for which Costs will be Assigned During Project Development	0	--
Subtotal	18	5,183,700
Miscellaneous Projects		
High Priority Projects with Costs	4	585,400
High Priority Projects for which Costs will be Assigned During Project Development	8	--
Other Projects with Costs	1	10,500
Other Projects for which Costs will be Assigned During Project Development	10	--
Subtotal	23	595,900
Totals		
High Priority Projects with Costs	51	32,679,500
High Priority Projects for which Costs will be Assigned During Project Development	38	--
Other Projects with Costs	228	33,408,800
Other Projects for which Costs will be Assigned During Project Development	89	--
Total	406	66,088,300

Note: Costs are in 2019 dollars.

[a] *Depending on features incorporated, estimated capital costs range between $500 and $1,360 per linear foot. For the purposes of the cost analysis, the median value of $930 per linear foot was assumed.*

[b] *The cost of the sediment transport study in project LMP-02 ranges between $10,000 and $75,000, depending on the particular analysis methods chosen. For the purposes of the cost analysis, the median value of $42,500 was assumed*

Source: SEWRPC

Table 6.42
Potential Funding Programs to Implement Recommendations of the Oak Creek Watershed Restoration Plan

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
1	Captain Planet Foundation (CPF)	Small Grants Program (i.e., "ecoTech" and "ecoSolution" grants)	U.S.-based schools and nonprofit organizations with an annual operating budget of less than $3 million	1. Projects that provide hands-on environmental opportunities for youth 2. Projects that use the environment for applied and STEM learning 3. Projects that have real environmental outcomes 4. Projects that inspire youth and communities to participate in environmental stewardship activities	Grants range between $500 and $2,500	Two cycles: 1. September 15 through January 15 2. March 15 through July 15	info@captainplanetfdn.org (404) 522-4270
2	Charles Stewart Mott Foundation	Environmental Program (i.e., "Addressing the Freshwater Challenge" and "Special Initiatives")	Nonprofit conservation and environmental organizations	1. Projects that seek to strengthen the environmental community 2. Projects that implement effective public policies related to water conservation in the Great Lakes region	Grants - no maximum given	None	mott.org email: info@mott.org (800) 238-5651
3	Clif Bar Family Foundation	Clif Bar Family Foundation Small Grants	Nonprofit organizations	Projects that use a holistic approach toward: 1. Creating healthy food systems 2. Increasing outdoor activity 3. Reducing environmental health hazards 4. Building stronger communities	Average assistance of $7,000 provided	February 1 June 1 October 1	clifbarfamilyfoundation.org email: familyfoundation@clifbar.com (510) 596-6383
4	Cornell Douglas Foundation	Cornell Douglas Foundation	Environmental organizations	Funding areas include: 1. Environmental health and justice 2. Land conservation 3. Sustainability of resources 4. Watershed protection 5. Financial literacy for elementary and high school students	Grants range between $15,000 and $50,000	Announced by Foundation	cornelldouglas.org (301) 229-3008 email: cdf@cornelldouglas.org

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
5	Doris Duke Charitable Foundation	Environment Program	Nonprofit organizations	Projects that focus on: 1. Land conservation 2. Wildlife and energy development 3. Enhancing conservation	Multi-year grants averaging from $100,000 to $1 million	None	Ddcf.org Program Director for the Environment: (212) 974-7000 Email: env@ddcf.org
6	Freshwater Future	Project Grant Program and Special Opportunity Grants (i.e., "Emergency Grant") Program	Community or nonprofit organizations	Projects that promote river, lake, shoreline, wetland, groundwater, and drinking water protection in the Great Lakes basin	Grants range between $500 and $5,000	Spring and Fall grant application cycles Special Opportunity grants available until funds run out	freshwaterfuture.org (231) 348-8200
7	Fund for Lake Michigan	Fund for Lake Michigan	Community or nonprofit organizations	Projects that: 1. Enhance the ecological health of nearshore coastal areas and rivers 2. Improve water quality flowing into Lake Michigan	Each quarter total grants range between $750,000 and $1 million	Pre-proposals accepted throughout the year Grant decisions made quarterly: March, June, September, and December	fundforlakemichigan.org Program Officer: Casey Eggleston (608) 334-7788
8	Great Lakes Commission	Great Lakes Sediment and Nutrient Reduction Program	Local and state governments and nonprofit organizations	Nutrient and sediment reduction projects that: 1. Support nutrient and sediment erosion control 2. Enhance stormwater runoff BMPs 3. Promote nutrient management planning 4. Improve restoration or protection of Great Lakes shoreline and riparian corridors	Assists up to $200,000 with a 25 percent match required	April 16	glc.org Program Manager: Nicole Zacharda (734) 396-6084 nzacharda@glc.org
9	Great Lakes Fishery Trust (GLFT)	Great Lakes Fishery Trust	Nonprofit organizations, educational institutions, and government agencies	Projects associated with the following grant categories: 1. "Ecosystem Health and Sustainable Fish Populations" 2. "Great Lakes Stewardship" 3. "Special Projects"	Up to $1.3 million for ecological and biological research Up to $500,000 for habitat protection and restoration	Announced by grant program on website	glft.org (517) 371-7468

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
10	Great Lakes Protection Fund	Great Lakes Protection Fund	State and local units of government, nonprofit organizations, for-profit businesses, and individuals	Projects intended to: 1. Improve the health of the Great Lakes 2. Promote the interdependence of healthy ecological and economic systems 3. Support innovative and creative ideas	Awards the total cost of accepted projects	None	Glpf.org (847) 425-8150 Discuss a project idea: startaconverstaion@glpf.org To submit a pre-proposal: Preproposal@glpf.org Contact staff member: info@glpf.org
11	James E. Dutton Foundation	James E. Dutton Foundation	Organizations or individuals working on projects that benefit wildlife, animal causes, environmental preservation, and outdoor education	Support efforts for wildlife or animal rescue; enhancement of habitat conservation; responsible land management, increased public awareness of conservation and the environment	Awards the total cost of accepted projects	None	jameseduttonfoundation.org email: silvercreek.fenske@gmail.com (414) 640-0523
12	The Joyce Foundation	Environment Program (i.e., "The Great Lakes and Drinking Water" Program)	Nonprofit organizations, educational institutions, and government agencies	Efforts that will: 1. Improve water infrastructure 2. Prevent unsustainable diversions from the Great Lakes 3. Prevent groundwater depletion 4. Reduce polluted runoff in rural and urban areas 5. Prevent the introduction and spread of aquatic invasive species 6. Support equitable water policy 7. Ensure safe water systems and infrastructure	Awards the total cost of accepted projects	Grant proposals considered in April, July, and December	joycefdn.org email: info@joycefdn.org (312) 782-2464
13	Milwaukee Metropolitan Sewerage District (MMSD)- Fresh Coast Guardians Resource Center	Fresh Coast Guardians—Green Infrastructure Design Services	Nonprofit organizations, businesses, homeowners, and government agencies	Green infrastructure design projects that will ultimately improve the health of Lake Michigan	Up to $15,000	Open enrollment period	freshcoastguardians.com (441) 225-2222

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
14	Milwaukee Metropolitan Sewerage District	Green Infrastructure Partnership Program	Government agencies, nongovernmental organizations, private property owners within eligible municipalities	Installation of green infrastructure practices	Varies depending on project	Proposals due annually in early spring	www.mmsd.com/about-us/news/green-infrastructure-partnership-program-2021 (441) 225-2222 Manager of Sustainability: Bre Plier bplier@mmsd.com
15	Natural Resources Foundation of Wisconsin	C.D. Besadny Conservation Fund	Public charities; federal, state, or local units of government; Indian tribes; and accredited schools, colleges, or universities	Grassroots conservation and education projects that benefit Wisconsin's lands, waters, and wildlife	Grants range from $500 to $2,000	September 1	www.wisconservation.org/grants/cd-besadny-conservation-grants/ Director of Conservation Programs: Caitlin Williamson Caitlin.Williamson@Wisconservation.org (608) 409-3109
16	Natural Resources Foundation of Wisconsin	The Go Outside Fund	Public charities, federal, state, or local units of government, Indian tribes; or accredited schools, colleges, or universities	Projects that engage children in significant outdoor, nature-based learning activities	Grants range from $100 to $500	Quarterly: March 31 June 30 September 30 December 31	www.wisconservation.org/grants/go-outside-fund/ Director of Conservation Programs: Caitlin Williamson Caitlin.Williamson@Wisconservation.org (608) 409-3109
17	Natural Resources Foundation of Wisconsin	The Norma and Stanley DeBoer Quiet Trails Fund	Public charities, federal, state, or local units of government, Indian tribes; or an accredited schools, colleges, or universities	1. Creating and maintaining public walking, hiking, or skiing trails 2. Increasing access for people with disabilities 3. Identification of trail locations and signage 4. Surveying 5. Purchasing trail materials 6. Construction 7. Trail maintenance	Grants range from $500 to $1,000	March 1	www.wisconservation.org/grants/quiet-trails-fund/ Director of Conservation Programs: Caitlin Williamson Caitlin.Williamson@Wisconservation.org (608) 409-3109
18	Natural Resources Foundation of Wisconsin	The Teachers Outdoor Environmental Education Fund	K-12 Wisconsin public school teachers	1. Projects that demonstrate a clear connection to classroom learning and standards 2. Projects that have a significant component of outdoor activity	Up to $1,000	May 1	wisconservation.org/grants/teachers-outdoor-environmental-education-fund/ Director of Conservation Programs: Caitlin Williamson Caitlin.Williamson@Wisconservation.org (608) 409-3109
19	Natural Resources Foundation of Wisconsin	Wisconsin Rare Plant Preservation Fund	Public charities, federal, state, or local units of government, Indian tribes; or an accredited schools, colleges, or universities	Projects that protect Wisconsin's rare plants and lichens through monitoring, inventorying, and preservation	$500-$1,000	February 1	wisconservation.org/grants/rare-plant-preservation-fund/ Director of Conservation Programs: Caitlin Williamson Caitlin.Williamson@Wisconservation.org (608) 409-3109

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
20	National Fish and Wildlife Foundation (NFWF)	Acres for America	State, local, municipal, and tribal governments and nonprofit organizations	1. Conserve critical habitats for birds, fish, plants, and wildlife 2. Connect existing protected lands and protect migration routes 3. Provide access to the outdoors 4. Ensure the future of local economies that depend on forestry, ranching and recreation	About $3.5 million total will be available in 2021	Grant pre-proposals due April 15	nfwf.org/programs/acres-america Conservation Programs Coordinator: Kimberly Shriner Kimberly.Shriner@nfwf.org
21	National Fish and Wildlife Foundation	Bring Back the Natives	Local, state, federal, and tribal governments and agencies; special districts such as conservation districts, planning districts, utility districts; nonprofit organizations; schools; and universities	Supports projects that conserve aquatic ecosystems such as: 1. Restoring connectivity 2. Restoring riparian and instream habitat and water quality 3. Invasive species management 4. Innovative approaches to fish conservation	Awards totaling $500,000 available in competitive grant proposals	None	nfwf.org/programs/bring-back-natives Water Investments Coordinator: Hannah Karlan Hannah.Karlan@nfwf.org
22	National Fish and Wildlife Foundation	Five Star and Urban Waters Restoration Program	Nonprofit organizations, state government agencies, local governments, municipal governments, Indian tribes and educational institutions	Project priorities include: 1. On-the-ground projects that restore and create wetlands, coastal, or riparian areas 2. Environmental outreach, education, and training 3. Community partnership projects that involve five or more partners (public or private entities) 4. Measure results in specific, measurable ecological, educational and community benefits	Grant assistance between $20,000 and $50,000	January 28	nfwf.org/programs/five-star-and-urban-waters-restoration-grant-program Community Stewardship Program Coordinator: Carrie Clingan Carrie.Clingan@nfwf.org
23	National Fish and Wildlife Foundation	National Coastal Resilience Fund	Coastal communities	Projects that restore, increase, and strengthen natural infrastructure to protect coastal communities while improving habitat for fish and wildlife	Varies depending on project scope and work proposed	Pre-proposals April 7	nfwf.org/programs/national-coastal-resilience-fund

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
24	National Fish and Wildlife Foundation	Resilient Communities Program	Nonprofit organizations, tribes, and local, state, and federal government agencies	Projects that include: 1. Adaptation through conservation 2. Community capacity-building that helps communities understand environmental risks 3. Scalable, nature-based resilience solutions benefiting affordable housing and/or small businesses	Grants range from $100,000 to $500,000 depending on project	Announced on website	nfwf.org/programs/resilient-communities-program Community Stewardship Program Coordinator: Carrie Clingan Carrie.Clingan@nfwf.org
25	National Fish and Wildlife Foundation	Sustain Our Great Lakes Program	Nonprofit organizations, state government agencies, local governments, Indian tribes, and educational institutions.	Project priorities include: 1. Restore and enhance stream and riparian habitat 2. Restore and enhance coastal wetland habitat 3. Expand green stormwater infrastructure in Great Lakes communities 4. Maintain and enhance benefits of habitat restoration through invasive species control 5. Restore and preserve natural areas and biodiversity in Wisconsin's Lake Michigan watershed	Grants range between $25,000 and $1.5 million	April 20	nfwf.org/programs/sustain-our-great-lakes-program Great Lakes Programs Senior Manager: Traci Giefer Traci.Giefer@nfwf.org
26	Southeastern Wisconsin Invasive Species Consortium (SEWISC)	SEWISC Assistance Program	Individuals, nonprofit organizations, community and civic groups, private businesses, and units of government	Projects to lessen the impacts of invasive species in southeastern Wisconsin	Up to $2,000 provided in grant money with a required 25 percent match of the project budget	Announced on SEWISC website	sewisc.org
27	Southeastern Wisconsin Watersheds Trust (Sweet Water)	Sweet Water Mini-Grant Program	Nonprofit organizations, civic groups, and community groups within the greater Milwaukee watersheds	Projects that improve water quality, restore habitat, promote conservation and advance public education concerning water issues	Grants range between $1,000 to $5,000	Announced on website	swwtwater.org (414) 382-1766 Executive Director: Jake Fincher fincher@swwtwater.org Watershed Coordination Manager: Kristin Schoenecker kristin@swwtwater.org

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
28	U.S. Army Corps of Engineers (USACE)	Aquatic Ecosystem Restoration Program	State and local units of government	Modification of hydrology in and along water bodies	Planning costs after $100,000 is 50 percent cost-shared. Design and implementation are cost-shared 65 percent federal and 35 percent non-federal	None	CELRC_Planning_Econ@usace.army.mil (312) 846-5580
29	U.S. Army Corps of Engineers	Emergency Streambank and Shoreline Protection Program	State and local units of government	Streambank or shoreline erosion projects that will help protect public buildings and infrastructure	Planning costs after $100,000 require 50 percent local cost-share. Implementation costs are shared at 65 percent federal and 35 percent non-federal contributions	None	CELRC_Planning_Econ@usace.army.mil (312) 846-5580
30	U.S. Army Corps of Engineers	Great Lakes Fishery and Ecosystem Restoration Program	State and local units of government, public agencies, private interests, nonprofit organizations	Projects to protect and/or restore the fishery, ecosystems and beneficial uses of the Great Lakes	Planning costs after $100,000 is cost-shared at 65 percent federal and 35 percent non-federal. Implementation is cost-shared at 65 percent federal and 35 percent non-federal	None	CELRC_Planning_Econ@usace.army.mil (312) 846-5580
31	U.S. Army Corps of Engineers	Small Flood Risk Management Program	State and local units of government	Construct site-specific flood protection projects or improvement of flood control works	Planning costs after the first $100,000 is 50 percent cost-shared. Implementation is cost-shared at 65 percent federal and 35 percent non-federal	None	CELRC_Planning_Econ@usace.army.mil (312) 846-5580
32	U.S. Army Corps of Engineers	Snagging and Clearing for Flood Damage Reduction	State and local units of government	Removal of accumulated snags and debris from stream channels to prevent flooding	Planning costs after the first $100,000 is 50 percent cost-shared. Implementation is cost-shared at 65 percent federal and 35 percent non-federal	None	CELRC_Planning_Econ@usace.army.mil (312) 846-5580
33	U.S. Department of Agriculture-Farm Services Agency (FSA)	Conservation Reserve Program (CRP)	Landowner or producer of the land for at least 12 months	1. Wildlife habitat improvement projects 2. Water quality improvement projects that reduce erosion, runoff, and leaching 3. Projects that will continue to benefit the land 4. Air quality improvement projects such as reducing wind erosion	Annual rental payments and 50 percent cost-share assistance	January 4 through February 12	fsa.usda.gov/programs-and-services/conservation-programs/ Local Farm Service Agency Office: fsa.uniongrove@usda.gov
34	U.S. Department of Agriculture-Farm Services Agency	Emergency Conservation Program (ECP)	Agricultural producers and ranchers	Practices that would recover and improve existing conservation practice(s) damaged by a natural disaster or severe drought	Assists up to 75 percent of approved restoration costs	None	fsa.usda.gov/programs-and-services/conservation-programs/ Local Farm Service Agency Office: fsa.uniongrove@usda.gov

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
35	U.S. Department of Agriculture-Forest Service	Community Forest Program	Tribal entities, local governments, and qualified conservation nonprofit organizations	Projects aimed to acquire and establish forests that will provide community and economic benefits through active forest management, clean water, wildlife habitat, educational opportunities, and public access for recreation	Program pays up to 50 percent of project costs and requires a 50 percent non-federal match	Announced annually by the U.S. Forest Service	fs.usda.gov/managing-land/private-land/community-forest Eastern Region Forest Legacy Program: Kirston Buczak kirston.buczak@usda.gov (414) 297-3609
36	U.S. Department of Agriculture-Natural Resources Conservation Service (NRCS)	Agricultural Conservation Easement Program: *Agricultural Lands*	Eligible lands for agricultural easements include cropland, rangeland, grassland, pastureland and non-industrial private forest	Projects that protect working agricultural lands	Assists up to 75 percent of the easement value depending on environmental significance of the land	None	nrcs.usda.gov Local NRCS Office Contact: Brandi Richter Brandi.richter@wi.usda.gov (262) 747-3010
37	U.S. Department of Agriculture-Natural Resources Conservation Service	Agricultural Conservation Easement Program: *Wetlands Reserve*	Eligible lands include farmed or converted wetland that can be restored	Projects that restore, protect, and enhance wetlands	Assists 50 to 100 percent of the restoration costs and easement value	None	nrcs.usda.gov Local NRCS Office Contact: Brandi Richter Brandi.richter@wi.usda.gov (262) 747-3010
38	U.S. Department of Agriculture-Natural Resources Conservation Service	Conservation Stewardship Program (CSP)	Tribal entities, agricultural producers, ranchers, and private non-industrial forests	Maintain, improve, or expand conservation practices on agricultural lands	Assistance is based on conservation practices	None	nrcs.usda.gov Local NRCS Office Contact: Brandi Richter Brandi.richter@wi.usda.gov (262) 747-3010
39	U.S. Department of Agriculture-Natural Resources Conservation Service	Emergency Watershed Protection Program (EWP)	Public and private landowners after natural disaster Eligible sponsors include cities, counties, towns, conservation districts, or any federally-recognized Native American tribe or tribal organization	Projects that will: 1. Remove debris from stream channels, road culverts, and bridges 2. Reshape and protect eroded streambanks 3. Correct damaged or destroyed drainage facilities 4. Establish vegetative cover on critically eroding lands 5. Repair levees and structures 6. Repair conservation practices	Up to 75 percent provided in assistance	None	nrcs.usda.gov Local NRCS Office Contact: Brandi Richter Brandi.richter@wi.usda.gov (262) 747-3010
40	U.S. Department of Agriculture-Natural Resources Conservation Service	Environmental Quality Incentives Program (EQIP)	Tribal, agricultural producers, and private non-industrial forests, and degraded wetlands	Projects that will enhance wildlife habitat, soil, and water quality on working agricultural lands and forests	Up to $450,000 based on conservation practices	None	nrcs.usda.gov Local NRCS Office Contact: Brandi Richter Brandi.richter@wi.usda.gov (262) 747-3010

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
41	U.S. Department of Agriculture-Natural Resources Conservation Service	Regional Conservation Partnership Program (RCPP)	Landowners and agricultural producers, state, local, or tribal governments, nonprofits, and higher education	Conservation practices that will increase the restoration and sustainable use of soil, water, wildlife, and related natural resources on regional or watershed scales	Annual assistance of $300 million per year nationally	None	nrcs.usda.gov Local NRCS Office Contact: Brandi Richter Brandi.richter@wi.usda.gov (262) 747-3010
42	U.S. Department of Agriculture-Natural Resources Conservation Service	Watershed Protection and Flood Protection Program	Federal, state, and local government agencies, and tribal governments	Plans that will address: 1. The protection and restoration of watersheds from erosion, floodwater, and sediment impacts 2. Enhancement of water and land conservation practice 3. Economic impacts related to natural resources	Financial and technical assistance provided	None	nrcs.usda.gov Local NRCS Office Contact: Brandi Richter Brandi.richter@wi.usda.gov (262) 747-3010
43	U.S. Environmental Protection Agency (USEPA)	Environment-al Education Grants (EE)	Local educational institutions, environmental agencies, and nonprofit organizations	Projects that address one or more of the following: 1. Improving air quality 2. Clean and safe water 3. Safety of chemicals 4. Land revitalization	75 percent cost-share provided for a Federal total of $50,000 to $100,000	None	epa.gov/education/grants EPA Region 5: (312) 353-4293
44	U.S. Environmental Protection Agency	Environment-al Justice Small Grants Program	Incorporated nonprofit organizations —including, but not limited to, environmental justice networks, faith-based organizations, and tribal organizations	Community-driven projects that engage, educate, and empower communities to better understand local environmental and public health issues and develop strategies for addressing those issues	Up to $75,000 depending on availability of funds	None	epa.gov/environmentaljustice/environmental-justice-small-grants-program Office of Environmental Justice: (202) 564-2515 EPA Region 5: (312) 353-4293
45	U.S. Environmental Protection Agency	Great Lakes Restoration Initiative Program (GLRI)	States, tribes, local governments, universities, and nongovernmental organizations in the Great Lakes region	Projects associated with: 1. Toxic substances and Areas of Concern (AOC) 2. Invasive species 3. Nonpoint source pollution impacts on nearshore health 4. Habitats and species restoration 5. Foundations for future restoration actions	After EPA and its partner agency agree on program and project, the EPA will appropriate the money to provide funding	Dependent on partner Federal agency	epa.gov/great-lakes-funding Michael Russ Russ.michael@epa.gov

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
46	U.S. Federal Emergency Management Agency (FEMA)	Building Resilient Infrastructure and Communities (BRIC)	Applicants: states, territories, and Tribal governments Sub-applicants: local and tribal governments and state and tribal agencies	Funds may be used for: 1. Capability- and capacity-building activities 2. Hazard mitigation projects 3. Management costs	FEMA will distribute up to $500 million with 25 percent local match required States distribute up to $600,000 per applicant	Announced on FEMA website	fema.gov/grants/mitigation/building-resilient-infrastructure-communities Wisconsin Division of Emergency Management dma.wi.gov/DMA/wem/mitigation/hma
47	U.S. Federal Emergency Management Agency	Hazard Mitigation Grant Program (HMGP)	State agencies and participating NFIP communities	1. Floodproofing 2. Relocation 3. Elevation of structures 4. Property acquisition	75 percent federal cost-share assistance, 12.5 percent state match, and 12.5 percent local match	Within 60 days of a Presidential disaster declaration	fema.gov/grants/mitigation/hazard-mitigation Wisconsin Division of Emergency Management dma.wi.gov/DMA/wem/mitigation/hma
48	U.S. Fish and Wildlife Service (USFWS)	National Fish Passage Program	Individuals, nonprofit or national organizations, and local governments	Projects that: 1. Restore fish passage 2. Develop community infrastructure resilience 3. Rebuild fish populations 4. Improve recreational and commercial fisheries 5. Restore free flowing waters	On average the program contributes about $70,000 per project. There is no upper limit to project funding. Generally, a 50 percent match is required from federal or non-federal sources	Announced on USFWS website	fws.gov/fisheries/fish-passage.html National Fish Passage and Aquatic Habitat Coordinator: Dr. Michael Bailey michael_bailey@fws.gov Regional Fish Passage Coordinator: Jessica Hogrefe jessica_hogrefe@fws.gov
49	U.S. Fish and Wildlife Service	Partners for Fish and Wildlife Program	Private landowners	Priority projects include: 1. Livestock fencing 2. Alternate water supply/construction 3. Streambank stabilization 4. Restoration of in-stream aquatic habitat planting 5. Prescribed burning 6. Native grass and forb planting 7. Wetland restoration 8. Riparian reforestation	Reimbursement of project expenses Cost-share varies, maximum project award of $25,000	September 30	fws.gov/partners/ USFWS State Coordinator: Kurt Waterstradt Kurt_Waterstradt@fws.gov (608) 221-1206
50	Wisconsin Board of Commissioners of Public Lands	State Trust Fund Loan Program	Municipalities and school districts	Any public purpose including infrastructure	Loans at competitive rates	Ongoing	bcpl.wisconsin.gov Richard Sneider: (608) 261-8001 Richard.sneider@wi.gov
51	Wisconsin Citizen-Based Monitoring Network	Wisconsin Citizen-Based Monitoring Partnership Program	Local units of government, lake districts and associations, school districts, river management organizations, colleges, universities, technical schools, nonprofit conservation organizations	Citizen-based monitoring of aquatic and terrestrial species, natural communities and environmental components such as water, soil, and air	Up to $5,000 per project in assistance	Spring application cycle announced by WDNR	wiatri.net dnr.wisconsin.gov Water Resources Management Specialist: Rachel Sabre Rachel.Sabre@Wisconsin.gov (262) 574-2133

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
52	Wisconsin Coastal Management Program (WCMP)	Coastal Management Grant Program	Local governments, state agencies, colleges and universities, school districts, planning commissions serving coastal areas, tribal governments, and nonprofit organizations	Primary projects include: 1. Coastal wetland protection and habitat protection 2. Nonpoint source pollution control 3. Coastal resource and community planning 4. Great Lakes education 5. Public access and historic preservation projects	50 percent state match for projects with budgets of $60,000 or less; 40 percent state match for projects with budgets greater than $60,000	Periodic application announcement on website	doa.wi.gov/Pages/LocalGovtsGrants/CoastalManagement.aspx Staff contact: coastal@wisconsin.gov WCMP Program Manager: Michael Friis (608) 267-7982 Michael.friis@wisconsin.gov
53	Wisconsin Conservation & Education Foundation	Wisconsin Conservation & Education Foundation	Environmental and natural resources organizations, Wisconsin educators, and individuals	Projects that promote public education to enhance natural resources, environmental stewardship, and outdoor heritage through publications and events	Provides grant money through individual donations and the annual fundraiser banquet, which on average, brings in $20,000	None	wiconservationfoundation.org
54	Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP)	Clean Sweep Program	Counties, towns, villages, cities, tribes, sanitary and sewerage districts, or regional planning commissions	Collection and disposal of household hazardous wastes, agricultural pesticides, and prescription drugs	Grant program provides reimbursement	Announced on webpage	datcp.wi.gov/Pages/Programs_Services/CleanSweep.aspx Clean Sweep Program Coordinators: Monica Sipes (608) 224-4536 Sally Ballweg (608) 224-4522
55	Wisconsin Department of Agriculture, Trade and Consumer Protection	Nutrient Management Farmer Education Grants (NFME)	Local organizations	1. Providing nutrient management training, plan writing, soil testing, and training 2. Offer nutrient management training, education, and support	Provides assistance between $2,500 to $20,000	April 15	datcp.wi.gov/Pages/Programs_Services/NMFEGrants.aspx Contact: Mark Witecha (608) 224.4605 Markj.witecha@wisconsin.gov
56	Wisconsin Department of Agriculture, Trade and Consumer Protection	Soil and Water Resource Management Program	County conservation and resource management officials	1. Soil and water conservation on farms 2. Land and water resource management plans 3. Support of county conservation staff 4. Cost-share grants to landowners to implement conservation practices 5. Certifying designs by soil and water professionals	Pays for conservation staff and provides landowner cost-sharing to implement conservation practices	Ongoing	datcp.wi.gov Kim Carlson: kim.carlson@wisconsin.gov (608) 224-4610 Susan Mockert: susan.mockert@wisconsin.gov (608) 224-4648
57	Wisconsin Department of Natural Resources (WDNR)	Clean Water Fund Program (CWFP)	Municipalities, town sanitary districts, lake protection and rehabilitation districts, and metropolitan sewerage districts	Projects to control and treat urban stormwater runoff	Loans at an interest rate of 65 percent of the current market rate	Loan terms may not exceed 20 years	dnr.wisconsin.gov/aid/EIF.html

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
58	Wisconsin Department of Natural Resources	County Conservation Aids (CCA)	County and tribal governments	1. Aquatic habitat development 2. Aquatic vegetation management 3. Lake and stream rehabilitation and improvement	50 percent state cost-share	October 1	dnr.wisconsin.gov/aid/CountyConservation.html CCA Grant Program Manager: Beth Norquist (715) 839-3751 Elizabeth.Norquist@Wisconsin.gov
59	Wisconsin Department of Natural Resources	Dam Removal Grant Program	Counties, cities, villages, towns, lake districts, and private dam owners	1. Dam removal planning 2. Dam removal 3. Restoration of impoundment	State covers 100 percent of project costs up to $50,000	Ongoing	dnr.wisconsin.gov/aid/DamRemoval.html State Dam Safety Engineer: Tanya Lourigan (608) 444-2089 Dam Grant Program Manager: Wendy Peich (608) 264-9207
60	Wisconsin Department of Natural Resources	Knowles-Nelson Stewardship Program	Local units of governments and qualified nonprofit organizations	1. Acquisition of land and easements for conservation and recreation 2. Developing and improving recreational facilities 3. Streambank protection 4. Restoring fish and wildlife habitat	50 percent cost-share assistance provided	May 1	dnr.wisconsin.gov/topic/Stewardship WDNR Regional Grant Specialist: Sara Debruijn (414) 263-8704 Sara.debruijn@wisconsin.gov
61	Wisconsin Department of Natural Resources	Land and Water Conservation Fund Program	State agencies and local units of government	1. Planning for acquisition of parks 2. Land acquisition for parks and open space 3. Supporting facilities that enhance recreational opportunities	50 percent cost-share assistance provided	May 1	dnr.wisconsin.gov/aid/LCWF.html WDNR Regional Grant Specialist: Sara Debruijn (414) 263-8704 Sara.debruijn@wisconsin.gov gov
62	Wisconsin Department of Natural Resources	Municipal Dam Grant Program	Cities, towns, villages, counties, tribes, and lake districts	1. Dam maintenance 2. Dam repair 3. Dam modification or abandonment 4. Dam removal	For repair the State covers 50 percent of the first $400,000; 25 percent of the next $800,000; and for removal the State covers 100 percent of the first $400,000	Announced online	dnr.wisconsin.gov/aid/DamMunicipal.html State Dam Safety Engineer: Tanya Lourigan (608) 444-2089 Dam Grant Program Manager: Wendy Peich (608) 264-9207

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
63	Wisconsin Department of Natural Resources	Municipal Flood Control Grants	Cities, villages, towns, tribes, and metropolitan sewerage districts	1. Structure and land acquisition 2. Structure floodproofing 3. Riparian restoration 4. Flood storage 5. Stormwater storage/detention 6. Flood mapping	State grant covers up to 70 percent of eligible costs	March of even-numbered years	dnr.wisconsin.gov/aid/MunFloodControl.html Elizabeth Kuisis Financial Assistance Specialist (608)-400-3005
64	Wisconsin Department of Natural Resources	Recreational Trails Program	Municipal governments, state and federal agencies, and incorporated organizations	1. Maintenance and restoration of existing trails 2. Development or rehabilitation of trailside and trailhead facilities 3. Construction of new trails 4. Land acquisition for trails	State grant covers up to 50 percent of eligible project costs	May 1	dnr.wisconsin.gov/aid/RTP.html Bobbi Winebar Wisconsin Department of Natural Resources 2984 Shawano Avenue Green Bay, WI 54313 (920) 461-2595
65	Wisconsin Department of Natural Resources	Surface Water Grants Program	Counties, municipalities, other local unites of government, lake districts, natural resource agencies, tribal governing agencies, higher educational institutions, town sanitary districts, and eligible organizations	1. Surface water education, planning, and restoration 2. Comprehensive Lake and watershed management planning 3. Aquatic invasive species prevention and control 4. Land acquisition	Planning grants may be awarded for up to 67 percent of total project costs, management grants cost-share of up to 75 percent, wetland restoration up to 100 percent cost share	November 1	dnr.wisconsin.gov/aid/SurfaceWater.html Grant Program Manager: Laura MacFarland (715) 499-0309 Regional Lake, Streams, or AIS biologist: Chrissy Kozik (414) 897-5776 Christine.Kozik@wisconsin.gov
66	Wisconsin Department of Natural Resources	Targeted Runoff Management Grant Program	Cities, villages, towns, counties, regional planning commissions, tribal governments and special purpose lake, sewerage and sanitary districts	1. Construction of structural BMPs 2. Implementation of nonstructural cropping practices 3. Implementation of State agricultural performance standards	State grant covers up to 70 percent of eligible costs. Funding is limited to $600,000 for large-scale projects and $225,000 for small-scale projects	May 15	dnr.wisconsin.gov/aid/TargetedRunoff.html Nonpoint Source Program Grant Manager: Corinne Johnson (608) 267-9385 Regional Nonpoint Source Coordinator: Jesse Bennett (414) 458.0448 Jessiah.Bennett@wisconsin.gov

Table 6.42 (Continued)

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
67	Wisconsin Department of Natural Resources	Urban Nonpoint Source and Storm Water Management Grant Program	Cities, villages, towns, counties, regional planning commissions, tribal governments, and lake, sewage or sanitary districts	1. Stormwater Planning 2. Education and Information activities 3. Ordinance development and enforcement 4. Training 5. Construction of structural stormwater BMPs 6. Storm sewer rerouting and removal 7. Streambank stabilization	Planning grants – cost share up to 70 percent and reimbursement amount cannot exceed $85,000 Construction grants – cost share up to 50 percent and reimbursement amount cannot exceed $150,000	April 15	dnr.wisconsin.gov/aid/UrbanRunoff.html Nonpoint Source Program Grant Manager: Corinne Johnson (608) 267-9385
68	Wisconsin Department of Natural Resources	Wisconsin Forest Landowner Grant Program	Private non-industrial forest landowners	1. Stewardship plan preparation 2. Tree planting 3. Forest health improvement 4. Soil and water protection and improvement 5. Wetland and riparian protection 6. Wildlife habitat enhancement 7. Threatened and endangered resource maintenance and enhancement	Reimburses up to 50 percent of cost of eligible practices	Grants awarded on August 1st, November 1st, February 1st, and May 1st depending on funds available and the number of applications	dnr.wisconsin.gov/aid/ForestLandowner.html Program Manager Kristin Lambert (608) 212-0320
69	Wisconsin Department of Natural Resources	Wisconsin Wetland Conservation Trust	Wetland impacts requiring mitigation within the same watershed as the impact	Wetland restoration projects that align with other federal funding opportunities (i.e., USFWS Partners for Fish and Wildlife Habitat, Fish Passage Program, or Fish Habitat Partnership)	Sale of wetland credits	December 31	dnr.wisconsin.gov/topic/Wetlands/wwct James Brodzeller (608) 574-0573 James.brodzeller@wisconsin.gov
70	Wisconsin Department of Safety and Professional Services	Wisconsin Fund–Private Onsite Wastewater Treatment System Replacement or Rehabilitation Financial Assistance Program	Owners of principal residences and small businesses who meet income limits	Replacement or rehabilitation of failing onsite wastewater treatment systems that were built before July 1, 1978	Maximum grant award of $7,000	January 31	dsps.wi.gov/Pages/Programs/WisconsinFund/Default.aspx DSPS Division of Industry Services: Tanya Herranz Tanya.Herranz@wi.gov (608) 266-6796

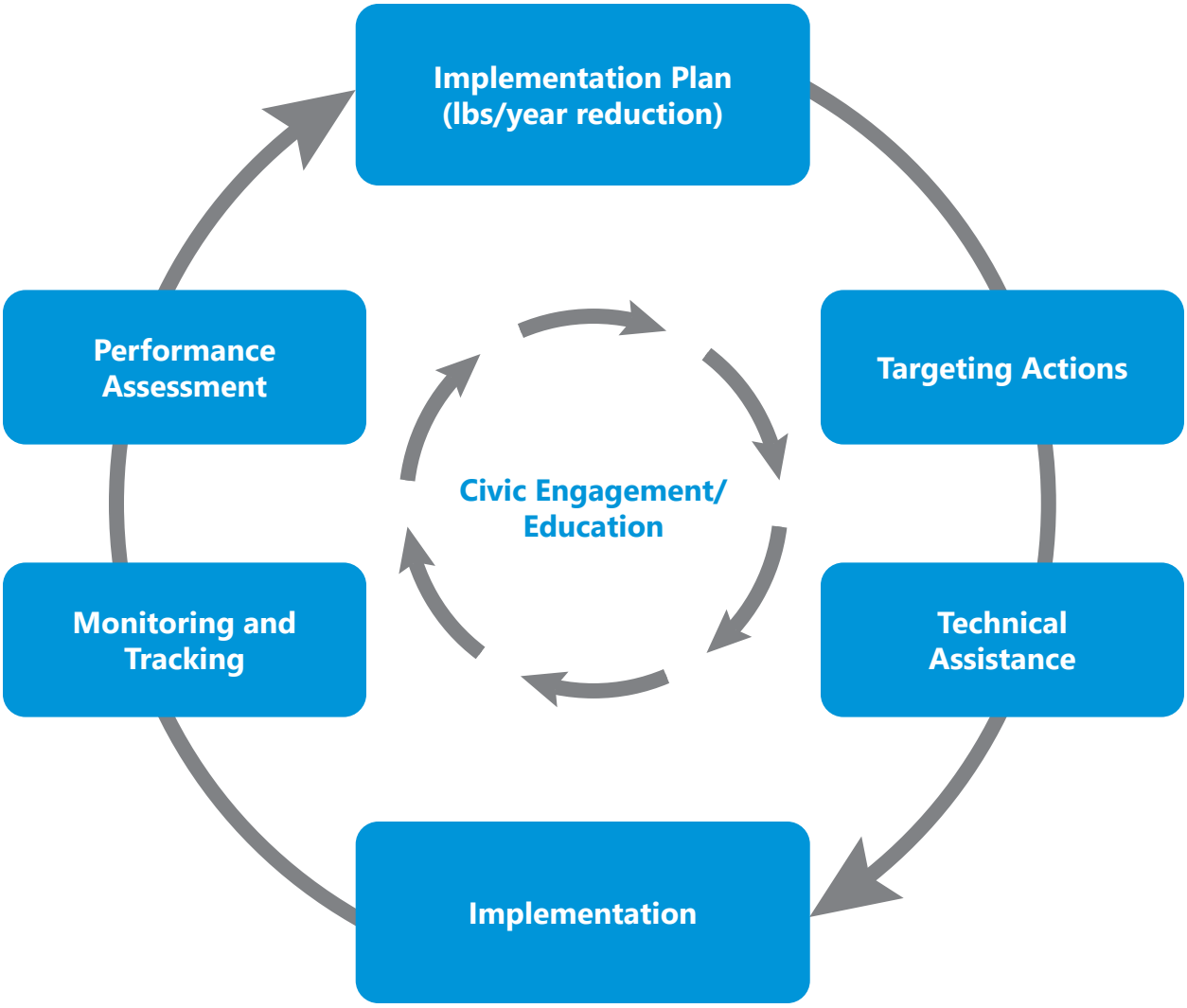
Source: SEWRPC

Chapter 6

PLAN RECOMMENDATIONS

FIGURES

Figure 6.29
Adaptive Approach to Management



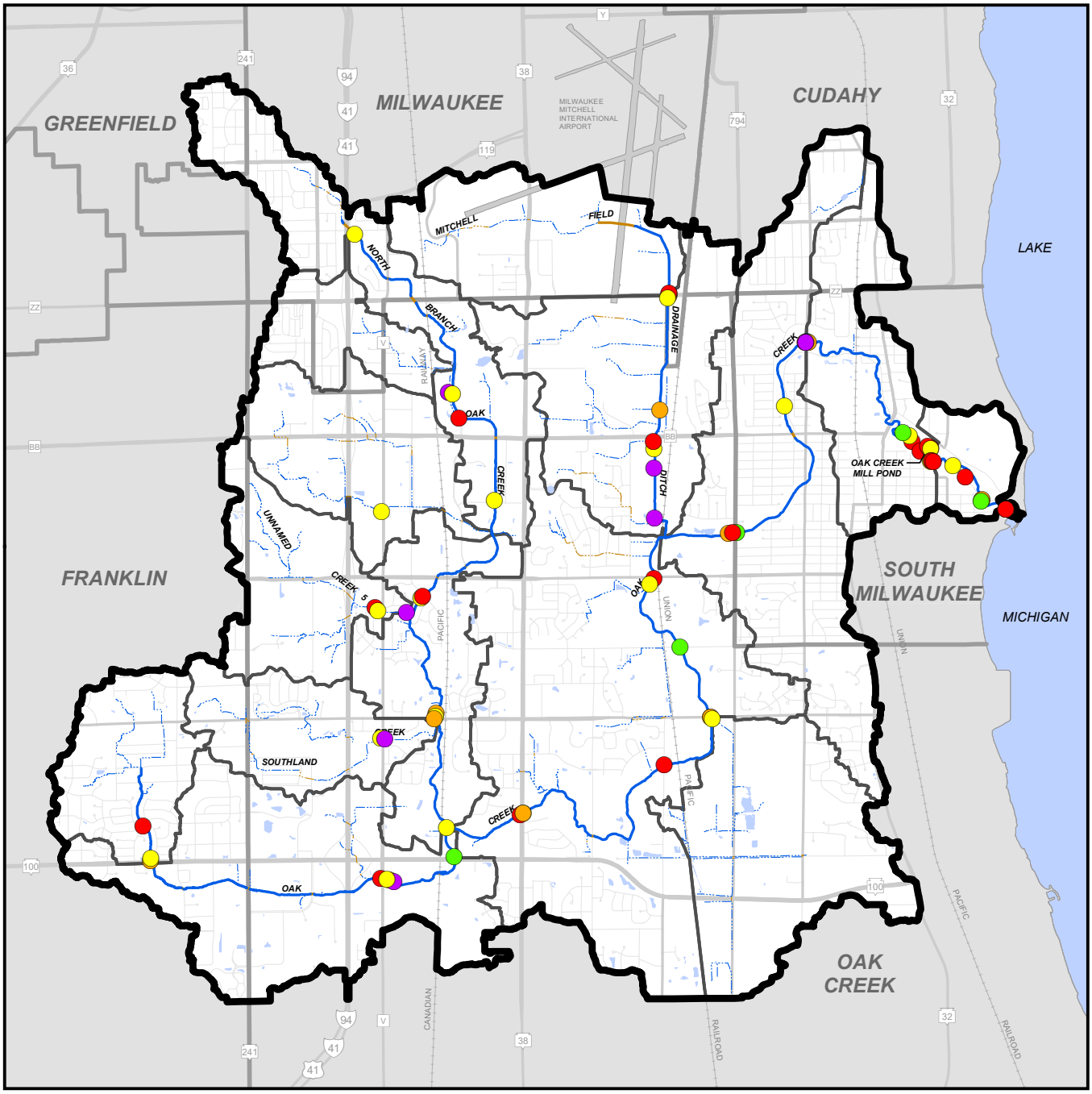
Source: Adapted from the Implementation Plan for Lake St. Croix Nutrient Total Maximum Daily Load and SEWRPC

Chapter 6

PLAN RECOMMENDATIONS

MAPS

Map 6.36
Water Quality Monitoring in the Oak Creek Watershed: 2015 - 2019



- CITY OF RACINE PUBLIC HEALTH DEPARTMENT
- MILWAUKEE METROPOLITAN SEWERAGE DISTRICT
- SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
- U.S. GEOLOGICAL SURVEY
- WISCONSIN DEPARTMENT OF NATURAL RESOURCES
- WISCONSIN DEPARTMENT OF NATURAL RESOURCES AND MILWAUKEE RIVERKEEPER

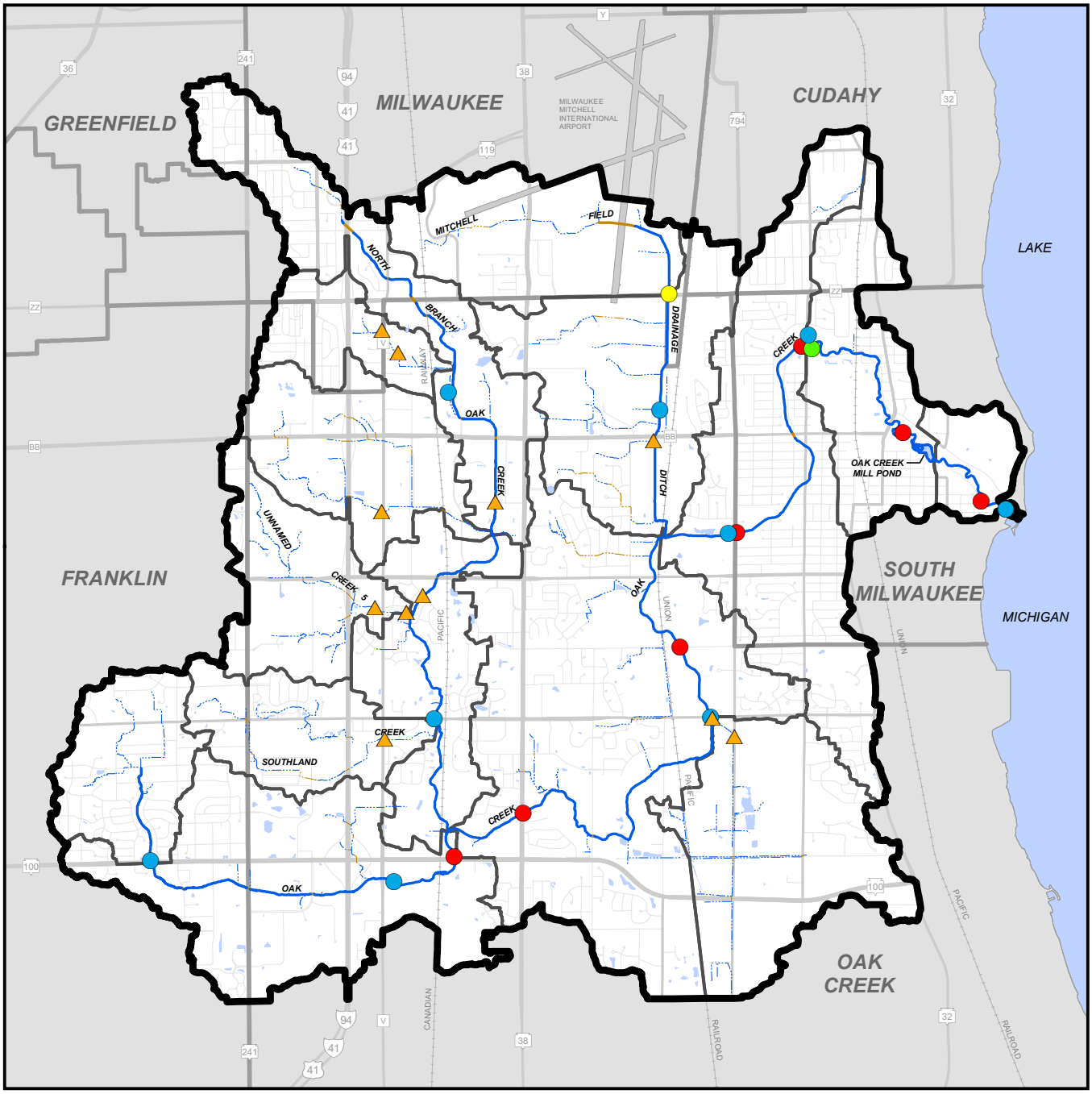
- OAK CREEK WATERSHED BOUNDARY
- ASSESSMENT AREA BOUNDARIES (SEE MAP 3.2 FOR ASSESSMENT AREA NAMES)
- PERENNIAL STREAM
- PERENNIAL STREAM (ENCLOSED)
- INTERMITTENT STREAM
- INTERMITTENT STREAM (ENCLOSED)
- SURFACE WATER

N

0 0.25 0.5 1 Miles

Source: SEWRPC

Map 6.37
Recommended Water Quality Monitoring Stations for the Oak Creek Watershed



- MMSD WATER QUALITY
- USGS STREAM GAGE
- USGS WATER QUALITY
- WDNR BIOLOGY
- POTENTIAL STATION

- OAK CREEK WATERSHED BOUNDARY
- ASSESSMENT AREA BOUNDARIES (SEE MAP 3.2 FOR ASSESSMENT AREA NAMES)
- PERENNIAL STREAM
- PERENNIAL STREAM (ENCLOSED)
- INTERMITTENT STREAM
- INTERMITTENT STREAM (ENCLOSED)
- SURFACE WATER

N

0 0.25 0.5 1 Miles

Source: SEWRPC