

**A PRELIMINARY SURVEY OF WETLAND &  
STREAM RESTORATION SITES IN THE CHAGRIN  
RIVER WATERSHED**

**LAKE ERIE PROTECTION FUND  
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## INTRODUCTION

The Chagrin River Watershed Partners, Inc. (CRWP) was formed in 1996 by 16 watershed communities to provide technical advice and assistance to local governments on land use related issues. CRWP works with member communities to address current, and minimize new, flooding, erosion, and water quality problems. Today CRWP serves 28 members including townships, villages, cities, counties, and park districts, approximately 74% of the watershed. These members are listed here and shown on page 2 of the Map Appendix.

The member communities of CRWP recognize the role of wetlands throughout the watershed in flood control, erosion control, and water quality protection. Maintaining these services is important for both the Chagrin River and the Lake Erie watersheds. Minimizing flooding and erosion by maintaining wetland services will reduce loadings of sediment, nutrients, and other urban pollutants to these watersheds.

To maintain the flood control, erosion control, water quality protection, and other wetland services in the Chagrin River watershed, local and state decision makers need information on the extent of existing wetlands in the watershed, and potential wetland mitigation and stream restoration sites. To minimize wetland and stream impacts, decision makers need this information before development activities are proposed. This information is also necessary to ensure mitigation dollars are used for the maximum benefit in the Chagrin River watershed, and to prevent the export of wetland and stream functions from the watershed because candidate mitigation sites could not be found in a timely manner.

## METHODS

The *Preliminary Survey of Wetland & Stream Restoration Sites in the Chagrin River Watershed* (hereafter referred to as the Project) is the first step in CRWP's on-going effort to assist members in cataloging their existing wetland and stream resources, identifying candidate mitigation and restoration sites, and monitoring the cumulative impact of land use changes on the flood control, erosion control, and water quality protection services of the watershed's streams and wetlands. This Project will also assist member communities in responding to federal and state regulatory changes impacting wetland and stream resources. The following tasks were done in developing the Project. Each of these is discussed in this report.

### CRWP 2001 Member Communities

Aurora	Lake County
Bainbridge Township	Lake Metroparks
Bentleyville	Mayfield Heights
Chagrin Falls Township	Mayfield Village
Chagrin Falls	Moreland Hills
Chester Township	Newbury
Cleveland Metroparks	Orange
Cuyahoga County	Pepper Pike
Eastlake	Russell Township
Gates Mills	Solon
Geauga Park District	Waite Hill
Hunting Valley	Wickliffe
Kirtland	Willoughby Hills
Kirtland Hills	Willoughby

- Establishment of a Technical Advisory Committee.
- Review of Decisions Impacting Chagrin River Wetlands and Streams.
- Inventory of Completed and Proposed Projects.
- Survey of Existing Watershed Wetlands.
- Development of Selection Criteria and Identification of Potential Mitigation Sites.

## **ESTABLISHMENT OF A TECHNICAL ADVISORY COMMITTEE**

A Technical Advisory Committee (TAC) was convened to assist in establishing Project methods; alerting CRWP to existing information; reviewing the Project for accuracy and completeness; and ensuring the selection criteria for mitigation and restoration sites was reflective of watershed conditions, past efforts, and the needs of public and non-profit land conservation organizations. The TAC members included:

- **Mick Micacchion:** Wetland Ecologist, Ohio EPA Division of Surface Water.
- **Keith McClintock:** Assistant Director, Geauga Park District.
- **Eddie Deng:** Formally with the Chagrin River Land Conservancy, now with the Cuyahoga Valley National Recreation Area.
- **Louis Marion:** G.I.S Director, Geauga County Auditors Office.
- **Vince Urbanski:** Environmental Planner, Lake Metroparks.
- **Tom Stanley:** Chief of Natural Resources, Cleveland Metroparks.

The TAC reviewed maps and selection criteria developed through the Project and provided comments to CRWP. Due to the schedules of TAC members, CRWP worked with each member individually and relied on different members for a variety of skills including GIS work and map preparation; knowledge of past wetland mitigation and stream restoration projects and potential project sites; and advice on selection criteria for these potential sites.

## **REVIEW OF DECISIONS IMPACTING CHAGRIN RIVER WETLANDS & STREAMS**

Recent court rulings and U.S. Army Corps of Engineers policy changes have significantly altered the landscape of federal and state wetland and stream management mechanisms. These recent actions include:

- ❑ **Tulloch Rule:** Revisions to the Clean Water Act Regulatory Definition of Discharge of Dredged Materials.
- ❑ **ILFA Program:** Changes to the U.S. Army Corps of Engineers In Lieu Fee Arrangement Program.
- ❑ **SWANCC Decision:** Implications of the U.S. Supreme Court decision in *Solid Waste Association of Northern Cook Counties v. United States Army Corps of Engineers*.

Each of these decisions, and their implications for wetland and stream management in the Chagrin River watershed, are briefly discussed below.

**Tulloch Rule:** Section 404 of the Clean Water Act gives the U.S Army of Corps of Engineers (the Corps) the authority to issue permits for the discharge of dredged or fill materials into waters of the U.S. In August, 1993 the U.S. Environmental Protection Agency (U.S. EPA) and the Corps issued a regulation, referred to as the "Tulloch Rule," revising the term *discharge of dredged materials* to include "any addition, including any redeposit, of dredged materials, including excavated material, into waters of the U.S. which is incidental to any activity, including mechanized land clearing, ditching, channelization, and other excavation that destroys or degrades waters of the U.S." The effect of the Tulloch Rule was that activities such as gravel mining from river bottoms could require Corps review under Section 404. A 1998 court decision, however, found that the U.S.EPA and the Corps lacked authority to regulate such activities if these activities were conducted so as to result in only "incidental fallback." Incidental fallback is the excavated material that falls back into substantially the same spot from which it was removed and therefore does not represent a discharge of dredged materials.

In response to this court ruling, the U.S.EPA and the Corps issued rules modifying the definition of discharge of dredged material to clarify the types of activities that are likely to result in discharges that are more than incidental fallback and therefore should be regulated under Section 404. Under these rules, mechanized land clearing, ditching, channelization, in-stream mining, or other earth-moving activities in waters of the U.S. are assumed to result in a discharge of dredged materials, unless project specific evidence shows that the activity results in only incidental fallback. These rules also provide a definition of non-regulable incidental fallback that is consistent with recent court decisions. On January 17, 2001 the Corps and the U.S. EPA issued these rules as *Further Revisions to the Clean Water Act Regulatory Definition of Discharge of Dredged Material*. The new administration placed these rules on hold for 60 days pending review, moving their effective date to April 17, 2001.

If these new rules go into effect, individuals proposing earth-moving activities in waters of the U.S.,

including Chagrin River watershed streams and wetlands, must consult with the Corps to ensure proper permit coverage. To avoid the need for such permit coverage, these individuals must show that their activities will result in only incidental fallback or the returning of dredged materials to virtually the spot from which they were taken. If these new rules are not finalized, the Ohio Environmental Protection Agency (Ohio EPA) and the Corps will lack the authority to regulate the impact of mechanized land clearing, ditching, channelization, in-stream mining, or other earth-moving activities on wetlands and streams. Such an outcome would highlight the need for local decision makers to implement local management programs to minimize the impact of such activities on wetland and stream resources in the Chagrin River watershed.

**ILFA Program:** Since 1997 the Corps Buffalo District has operated an In Lieu Fee Arrangement (ILFA) Program. Though this program, land conservancies, park districts, natural resource agencies, and other land preservation entities were able to use mitigation funds from certain development activities to protect riparian corridors and high quality wetlands through direct land purchases or conservation easements. Approved ILFA recipients in the Chagrin River watershed included the Chagrin River Land Conservancy, the Lake Metroparks, and the Cleveland Metroparks. Under this program, these organizations were able to accumulate the funds necessary to purchase high quality natural areas.

With the issuance of the *Federal Guidance on the Use of In Lieu Fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act*, (Federal ILFA Guidance), by the U.S. Army Corps of Engineers, the Corps Buffalo District has discontinued its ILFA Program. According to the Buffalo District, they ended their program because of the following inconsistencies with the Federal ILFA Guidance:

- ❑ **Emphasis on Preservation-Only Projects:** The Buffalo District's ILFA program allowed development projects impacting relatively low quality wetlands or channelized streams to fulfill mitigation requirements through contributions to ILFA recipients. These entities would then use these funds to acquire properties. The Federal ILFA Guidance requires that such preservation-only projects be the exception, with emphasis placed on the use of mitigation funds for creation and/or restoration projects.
  
- ❑ **Lack of Interagency Review & Public Comment:** The Federal ILFA Guidance requires coordination and review with federal resource agencies as well as public notice and comment. In an effort to maintain the confidentiality required by conservation organizations working with private landowners, the Buffalo District's program did not include these elements.

ILFA recipients in the Chagrin River watershed have not determined how they will respond to these changes in the ILFA program. According to the Buffalo District, these organizations may develop a new ILFA program that corrects the above inconsistencies or they may develop a mitigation bank. Regardless of the options pursued by the Chagrin River Land Conservancy, the Lake Metroparks, and the Cleveland Metroparks, conservation organizations will have to develop other avenues to accumulate the funds

necessary to purchase high quality natural areas. According to CRWP's TAC, changes in the ILFA Program will encourage conservation organizations to shift their focus from preservation to mitigation projects to attract funds. As a result, for-profit, public, and non-profit organizations will be less interested in buying existing wetlands and stream frontage and more interested in purchasing areas that may be restored. This shift emphasizes the need for watershed inventories, such as this Project, to identify potential mitigation and restoration sites and minimize the export of wetland and stream functions.

**SWANCC Decision:** The Solid Waste Authority of Northern Cook County (SWANCC) is a consortium of cities and villages in Cook County, Illinois. The consortium owns an abandoned sand and gravel pit and proposed constructing a nonhazardous solid waste disposal site on the land. The consortium had approval from state and local agencies and sought a Section 404 permit from the Corps. The Corps found migratory birds at the site and denied the permit, determining that the area, while not wetlands, qualified as waters of the United States under the Migratory Bird Rule. SWANCC challenged the Corps jurisdiction over isolated waters such as those on the gravel site under the Migratory Bird Rule and the case progressed to the U.S. Supreme Court (the Court).

In a January 9, 2001 decision, the Court held that the Migratory Bird Rule exceeds the authority granted to the Corps under Section 404 of the Clean Water Act and that the Corps did not have jurisdiction over isolated, nonnavigable, intrastate waters that are not tributary or, in the case of wetlands, not adjacent to navigable waters or their tributaries. The Court's review found that Congress did not intend Section 404 to regulate such isolated waters based solely on their use by migratory birds and that the Clean Water Act does not authorize the Corps to regulate the dredging and filling of isolated ponds and wetlands that are not connected to a navigable body of water.

The Corps and the U.S. EPA are developing their response to the SWANCC decision. The position these agencies take on the meaning of terms such as *tributary* and *adjacency* will influence the impact of SWANCC on wetlands nationwide. In the interim, the Ohio EPA is considering steps to fill the gap in their permitting authority created by the decision. Ohio's wetland permitting authority stems from Sections 401 and 404 of the Clean Water Act. As a result, the limitations placed on these authorities by SWANCC are also placed on Ohio EPA. However, the Agency maintains that state law goes beyond these limitations. According to Ohio EPA, Chapter 6111 of the Ohio Revised Code (ORC) regulates discharges to wetlands by prohibiting the placement of any *sewage, sludge, sludge materials, industrial, or other wastes in a location where they cause pollution of any waters of the state*, and defines *other wastes* to include *dredged or fill material*. The Ohio Administrative Code (OAC) defines *waters of the state* to include any wetlands. This combination of ORC and OAC components requires proposed discharges to any Ohio wetland to receive a permit, regardless of the impact of SWANCC at the federal level. Because SWANCC removes the federal form of this permit, Ohio EPA is proposing state rules to create *state dredge and fill permits* to fill this gap. It is unclear, however, if these rules will be implemented and upheld.

Until the Corps, the U.S.EPA, and the Ohio EPA clarify the management of isolated wetlands in Ohio,

developers are moving forward with unpermitted alterations of wetlands. The Ohio EPA can take enforcement action against these activities but is unclear that the Agency will have the resources to do so. In the end, SWANCC, like changes to the Tulloch Rule and the ILFA Program, highlights the need for local management of lands surrounding wetlands and streams. To support such local control, communities need to inventory their wetland and stream resources, a process aided by this Project. With such information, local decision makers are better equipped to implement land use controls, such as development setbacks, to maintain the flood control, erosion control, and water quality protection services these natural resources provide communities and homeowners.

## **INVENTORY OF COMPLETED & PROPOSED PROJECTS**

Several entities have undertaken, or are planning, wetland mitigation and stream restoration activities in the Chagrin River watershed. This Project catalogs some of these activities.

**George Hess Wetland Mitigation Bank:** The Hess property is 104 acres situated at the former confluence of two streams in the headwaters of the Chagrin River – Klevé Creek and an unnamed tributary referred to as the South Fork. In 1940 Klevé Stream was dammed as it flowed through the Hess property. This impoundment silted in and evolved into a predominately wetland habitat. The dam breached in 1994.

The George Hess Wetland Mitigation Bank Project reestablished approximately 36 acres of the open water/wetland complex by permanently inundating the site. The site will be monitored for 5 years to ensure that the hydrologic regime maintains seasonally appropriate water levels; that at least 75% vegetation cover is maintained with dominant plant species being rated facultative or wetter and no more than 15% Purple Loosestrife or Phragmites; and that water quality is maintained. An additional 10 acres may also be restored if required by local wetland mitigation needs. A conservation easement was placed on 68 acres of the site. This restoration project will provide flood attenuation, sediment control, and wildlife habitat in the Chagrin River watershed by restoring a regionally significant open water/wetland complex. The project will also assist to minimize the impact of increased impervious cover in upstream developments and to moderate downstream flow regime by slowing and storing storm water runoff.

**Lake Metroparks:** Through the ILFA Program and other funding sources, Lake Metroparks has completed, or is considering, the following projects acquiring wetlands, river frontage, and other natural areas in the Chagrin River watershed.

- **Penitentiary Glen Wetland:** Three (3) acres of wetland created in 1997 in the City of Kirtland portion of the Penitentiary Glen Metropark.
- **CEI Property:** Acquisition of 50 acres of land in the City of Willoughby prior to participation in the ILFA Program and 13 acres of frontage along the lower Chagrin in the City of Eastlake in

2000 through the ILFA Program. These areas include former wetlands filled with fly ash through CEI operations. The Metroparks and CRWP are exploring mitigation and stream restoration opportunities in these former wetlands.

- **Allen Property:** Acquisition of 36 acres of forested uplands with 3 perennial streams in 2000 in the City of Kirtland.
- **Oliva Easement:** A linear conservation easement of 34 acres along the East Branch of the Chagrin River in the Village of Kirtland Hills.

**Cleveland Metroparks:** The Cleveland Metroparks has created and restored wetlands and stream reaches throughout its holdings in the Chagrin River watershed, as well as those in the Rocky River and the Cuyahoga River watersheds. These efforts have been funded by ILFA monies and project specific mitigation arrangements. While the majority of this work has not been done in the Chagrin River due to land costs and limited opportunities, the Metroparks is working on several projects in the watershed, including:

- **Pavlich Property:** This project consists of 71 acres in the City of Solon and adjacent to the South Chagrin Reservation. The Metroparks will fund this acquisition through ILFA Program monies collected from wetland impacts in the Chagrin River watershed as well as other Northeast Ohio watersheds. The property includes 6658 linear feet of Sulfur Springs, a Chagrin River tributary, and 1700 linear feet of 2 tributaries to the Springs. The banks of these watercourses include steeply sloped areas as well as small wetlands in its flatter reaches. The Metroparks are doing this project in conjunction with the Chagrin River Land Conservancy and the City of Solon.
- **Jackson Road:** The Metroparks would also like to enlarge a wetland in a former farm field along Jackson and River Roads in the South Chagrin Reservation through creative land contouring. They have not yet found a developer who is both in need of mitigation and willing to take on the significant up-front planning costs and limited mitigation credits the project involves. This same site offers opportunities for stream restoration through bioengineering work along the farm field.

**Geauga Park District:** Like the Lake and Cleveland Metroparks, the Geauga Park District has acquired significant acreage in the Chagrin River watershed that includes both stream frontage and wetlands. Park holdings with stream and wetland components include:

- **West Woods Park:** This newly created park includes 906 acres in Russell and Newbury Townships and protects 55 acres of wetlands and 96,932 linear feet of streams. As a part of the West Woods Park, the Park District is proposing a restoration project for a portion of Silver Creek, a Chagrin River tributary, located in the old lake bed of a dam removed in 1994. This

project is still in its planning stages and has not yet begun.

- ❑ **Spring Brook Sanctuary:** This Park District holding consists of 32 areas along 5522 linear feet of Spring Brook, a tributary to Bass Lake in Munson Township.
- ❑ **The Rookery:** The Rookery's 443 acres in Munson Township is dominated by a great blue heron nesting colony. Approximately 90% of this park is headwater wetlands of the Upper Main Branch of the Chagrin River.
- ❑ **Beaver Creek Preserve:** The preserve includes 81 acres in Munson Township with limited public access. As with the Rookery, a majority of this preserve is headwater wetlands of the Upper Main Branch of the Chagrin River.

**Chagrin River Land Conservancy (CRLC):** This land trust has preserved over 3000 acres on 64 properties in the Chagrin River watershed since its formation in 1987. CRLC's focus on riparian areas and wetlands has been intense and they estimate they have preserved over 100,000 linear feet of stream corridor and hundreds of acres of wetlands. All of the properties are preserved through either conservation easements or ownership. In addition to working with the Cleveland Metroparks and the City of Solon on the Pavlich Property discussed above, CRLC is currently working on several other projects that, when completed, will result in the preservation of additional wetlands and streams. These include:

- ❑ **Bass Lake:** The Bass Lake project area is approximately 600 acres in Munson Township. The 170 acre lake and its surrounding wetlands contribute to the base flow of the Chagrin River. CRLC is working on finalizing the acquisition of this area with several public and private partners.
- ❑ **Woodiebrook:** CRLC is also working on the restoration of 3264 linear feet of Woodiebrook in Bainbridge Township, a stream which has supported 1 of only 2 known populations of native brook trout in Ohio.

**Sand Ridge Country Club:** This site was formerly owned by the Fairmount Minerals Company. Located in Munson Township at the drainage divide of the Cuyahoga and Chagrin Rivers, the owners protected existing high quality wetlands by incorporating them into a golf course design. The wetlands were preserved by granting a conservation easement to the CRLC. The course is one of only 12 in the world certified by the International Audubon Society as meeting its sustainable golf course design principles.

**Greater Cleveland Audubon Society:** The Audubon Society holds two sanctuaries with extensive wetlands in the headwaters of the Aurora Branch - the Blanche Katherine Novak Sanctuary and the Aurora Sanctuary. The Novak property includes 152 acres and the Aurora property is 141 acres. In addition to wetlands, the Aurora Sanctuary includes riparian corridor of an Aurora Branch tributary.

**Village of Chagrin Falls:** The Village has preserved 65 acres of riparian corridor along the Upper Main Branch of the Chagrin River as the Whitesburg Preserve. This acreage includes extensive wetlands and steep slopes. The Village has an on-going wetland restoration effort at the Preserve to control downstream sediment flow after the breach of a dam in the early 1990's. Approximately 115 acres of privately held land in conservation easements extends the protection of the Whitesburg Preserve upstream along the river corridor.

**Mayfield Village:** Working with the Cleveland Metroparks and the Village of Gates Mills, Mayfield Village is seeking funds to restore a small tributary adjacent to the Chagrin River known as the Upper 40 Site. The small stream has been severely impacted by storm water runoff from impervious area throughout the Village.

**City of Solon:** Boulder Creek, a tributary to the Aurora Branch of the Chagrin River, runs through the Hunt Club development in the City of Solon. Portions of the Creek are eroding and threatening properties and structures within the development. The City has developed a bioengineering based stream restoration project for the area but has not yet implemented it due to landowner concerns.

**Geauga County:** As a part of upgrades to the McFarland Waste Water Treatment, the County is proposing to participate in the Watershed Resources Restoration Sponsor Program through the Ohio EPA's Division of Environmental and Financial Assistance. Under this program the County could secure funds to restore and preserve portions of McFarland Creek – a subwatershed that has experienced rapid development in recent years.

## **SURVEY OF EXISTING WATERSHED WETLANDS**

Two (2) databases were produced through this Project. The first, discussed in this section, used available digital data to identify existing wetlands in the watershed. As explained below, this digital data was combined to categorize the watershed based on its potential to contain existing wetlands – high through low wetland potential. With the second database, discussed in the following section, CRWP focused on areas of the watershed likely to have large remaining wetlands, as identified through the first database, and applied a selection criteria to parcels adjacent to these areas to identify potential mitigation sites.

**Database of Existing Watershed Wetlands:** Working with the GIS ArcView capacity of the Chagrin River Land Conservancy, existing digital data indicating the presence of wetlands was collected and overlaid to highlight areas of high wetland potential in the Chagrin River watershed. The results of this analysis are available on page 7 of the Map Appendix (hereafter referred to as the Ranking Map). Short of field surveying the watershed, this method was the best for clarifying the location of the remaining large wetland areas in the Chagrin River watershed. The following digital data was used.

- **Ohio Wetlands Inventory & National Wetlands Inventory:** The Ohio Wetlands Inventory (OWI) is developed and maintained by the Ohio Department of Natural Resources (ODNR), Division of Real Estate and Land Management (RELM). As shown on the map of the OWI for the Chagrin River watershed on page 3 of the Map Appendix, the OWI is generally more inclusive of wetland areas than the National Wetlands Inventory (NWI). The NWI map for the Chagrin River watershed is on page 4 of the Map Appendix. The NWI is developed and maintained by the U.S. Geological Survey (USGS) and is based on USGS 7.5 minute quadrant maps. The NWI is not generally available in digital form, however, digital maps are available for the Chagrin River watershed through a Cleveland Metroparks funded project. Neither the OWI nor the NWI are field verified for the Chagrin River watershed.
- **Soils Data for Cuyahoga, Geauga, Lake & Portage Counties:** Soils data for the 4 counties of the Chagrin River watershed is available from ODNR's RELM. Lake and Geauga Counties have refined their digital soils data beyond that which is available from the State. As a result, the Project used the county data from Lake and Geauga, and ODNR data for Cuyahoga and Portage Counties to highlight areas of hydric soils and non-hydric soils with hydric inclusions. These maps are on pages 5 and 6 of the Map Appendix. Hydric soils and non-hydric soils with hydric inclusions are the soil types associated with wetland areas.
- **Low points as depicted by 2' contours:** A Digital Elevation Model (DEM) was developed to show the absolute low points in the Chagrin River watershed. It was hoped that this would highlight potential areas for kams and kettles formed through glacial activities and therefore indicate high quality wetland areas such as bogs and fens. This data was used to develop the Ranking Map but was not helpful in distinguishing wetland areas and is not included in the Map Appendix.
- **Parcels:** Because a goal of this Project was to apply a selection criteria to highlight specific parcels in the watershed for potential wetland mitigation projects, the maps developed for existing wetlands are parcel based. Parcel information is developed and maintained by each county. As a result, Lake County does not yet have digital parcel data available and the Ranking Map does not include data for Lake County. It is also important to note that this map only shows wetlands on parcels greater than 1 acre.

The OWI, NWI, soils data, and low points information was used to highlight existing wetlands in the watershed based on an overlay of this data as detailed in Table 1. As mentioned above, the Ranking Map showing the results of this overlay is on page 7 of the Map Appendix. In developing the categories in Table 1, CRWP, with the advice of TAC members, assumed that hydric soils were more indicative of wetlands than non-hydric soils with hydric inclusions, and that the OWI was a better indicator of wetland potential than the NWI. The categorization of the watershed into potential for wetlands based on existing data was verified by the fact that known areas of high quality wetlands – the West Woods Park, the Rookery, Bass Lake, and the Hess Wetland Project – all ranked as high wetland potential, as indicated in

red on the Ranking Map.

**Table 1: Existing Wetlands in the Chagrin River Watershed\***

<b>Potential for Existing Wetlands</b>	<b>Data Inputs</b>
Highest potential	Hydric Soils, OWI, NWI & Low Contour Points.
High potential	Non-hydric Soils with Hydric Inclusions, OWI, NWI & Low Contour Points.
Moderately high potential	Hydric Soils, OWI & NWI
Moderate potential	Hydric Soils & OWI
Moderately low potential	Hydric Soils & NWI

\*Shown on the Ranking Map, page 7 of Map Appendix.

**The Status of Watershed Wetlands:** In developing the database on existing watershed wetlands and the Ranking Map, CRWP gained a better understanding of the extent of remaining wetland resources in the Chagrin River watershed and made the following conclusions:

- ❑ **Remaining Wetlands Are Concentrated in Headwater Areas & Along Stream Corridors:** Existing wetlands in the Chagrin River watershed (over 1 acre in size) are concentrated in the headwater areas of the Aurora Branch in the City of Aurora and Mantua Township and along the Upper Main Branch in Munson, Newbury, and Russell Townships. The location of these remaining wetlands reflects the flatter terrain found in headwater areas and along floodplains.
- ❑ **High Quality Wetlands are in Headwater Areas:** The Ranking Map highlights headwater wetland complexes in the Upper Main Branch, including the Bass Lake area in Munson Township and the Hess Project and associated wetlands in Newbury Township, and in the Aurora Branch, including the Novak and Aurora Sanctuaries in the City of Aurora. Natural resource surveys indicate that these areas are high quality wetland complexes providing flood control, erosion control, water quality protection, and habitat services to the watershed. Of particular importance is the contribution of these wetland complexes to the base flow of the upper reaches of the mainstem of the Chagrin River and the Aurora Branch, portions of which are designated as State Scenic Rivers.
- ❑ **Remaining Wetlands are in Unincorporated Areas Experiencing Development Pressures:** Except for those wetlands in the City of Aurora, the areas of wetland concentration in the Chagrin River watershed indicated on the Ranking Map are in the unincorporated areas of Geauga County. While some of these are held by the Geauga Park District or under conservation easement, many are on developable land. Two factors combine to

increase the development pressure on these areas. The first of these is the unincorporated status of communities containing high quality wetlands. Under Ohio law, unincorporated communities are more limited in their ability to control land use than are incorporated communities.

The second factor contributing to development pressures in these areas is anticipated population growth. For example, recent 25 year projections by the Northeast Ohio Areawide Coordinating Agency (NOACA) point to the headwaters of the Aurora Branch, including the City of Aurora and Bainbridge Township, as an area of significant population growth. Without land use management, population growth in these and other communities may threaten remaining wetland resources and degrade preserved wetlands due to changes in storm water runoff and groundwater hydrology. Comprehensive wetland management strategies are needed in these areas to minimize adverse cumulative impacts on these resources and the loss of their flood attenuation and water quality functions.

- **Limited Wetland Areas Remain Outside of Headwaters:** As seen on the Ranking Map, limited wetlands remain along the Aurora Branch as it flows through Bainbridge Township, the City of Solon, and the Village of Bentleyville. The Ranking Map shows a similar pattern along the Main Branch as it flows through the Villages of Chagrin Falls, Gates Mills, and Hunting Valley. This lack of large wetlands in these communities is likely due to historic development trends that have concentrated development in these areas, and the presence of steep slopes through the Chagrin River valley that has prevented the formation of large wetland complexes.
- **Status of Wetland Resources in Lake County is Unclear:** As mentioned above, the lack of digital parcel mapping for Lake County precluded an evaluation of wetland resources in this portion of the watershed on the Ranking Map. However, based on the extent of development in this portion of the watershed, CRWP estimates that most of its wetland resources no longer exist.

## **DEVELOPMENT OF SELECTION CRITERIA & IDENTIFICATION OF POTENTIAL MITIGATION SITES**

With the completion of the Ranking Map, CRWP worked with TAC members to develop a selection criteria for mitigation sites and pilot test this criteria in those areas of the watershed highlighted on the Ranking Map as having significant remaining wetland complexes. The selection criteria and the results of the pilot test are discussed in this section.

**Development of Selection Criteria:** CRWP met with TAC members to develop a selection criteria for potential wetland mitigation sites. With this Project, CRWP built on selection criteria developed elsewhere and tailored those to the topographic and land use conditions of the Chagrin River

watershed. This criteria also had to meet the needs of those public and non-profit entities that have handled wetland mitigation projects in the watershed in the past, including the Cleveland Metroparks, the Lake Metroparks, the Geauga Park District, and the Chagrin River Land Conservancy. Based on these considerations, the following selection criteria was developed and pilot tested.

- ❑ **Presence of Hydric Soils:** Hydric soils or non-hydric soils with hydric inclusions indicate that a site is capable of supporting the hydrology needed to sustain wetland plant communities.
- ❑ **Sufficient Area of Low Slope:** Successful mitigation parcels must be relatively flat with a 4% slope or less to ensure the area is low enough to create or restore wetland hydrology through land contouring or embankments.
- ❑ **Parcel Available:** Parcels must be unbuilt and available for purchase at a reasonable price, or through conservation easement.
- ❑ **Adjacent to Holdings of Public or Non-Profit Land Conservation Organization:** To facilitate a successful mitigation project, TAC members stressed the need for potential sites to be adjacent to the holdings of a public or non-profit land conservation organization. This adjacency is necessary because the site may be incorporated into the acquisition plan of such an organization, justifying the use of mitigation funds and fitting with the organization's larger mandate. The need for adjacency, however, does not preclude the identification of suitable mitigation sites away from existing holdings, provided these sites are of sufficient acreage to appeal to those in need of mitigation opportunities as discussed below.
- ❑ **Sufficient Mitigation Acreage Available:** Successful wetland mitigation sites must include mitigation acreage sufficient to balance the construction and long-term maintenance costs of these projects with the available mitigation credits.

In evaluating potential mitigation sites, each of these criteria was considered. However, the first two selection criteria – the presence of hydric soils and an area of low slopes – tend to control in most cases because these soil and topographic conditions are essential to the successful creation or restoration of wetlands.

**Preliminary Site Identification:** Using this selection criteria, and working with the GIS ArcView capacity of the Geauga County Auditors Office, CRWP examined parcels in portions of Newbury and Russell Townships. These areas were selected to pilot test the criteria because they were identified on the Ranking Map as having high concentrations of existing wetlands adjacent to holdings of a land conservation organization, the Geauga Park District. These areas were also chosen because the Geauga County Auditors Office has an easily accessible public access system for soil and topography data as well as aerial photography. The goal of this portion of the Project was to highlight individual or complexes of parcels that potentially meet the selection criteria. As a result of this evaluation, four areas

were identified.

- **The Rookery, Area 1:** This area consists of 5 parcels totaling 134 acres located south of and adjacent to this Geauga County Park District holding along Cedar Road. The majority of the wetlands existing in this area appear to be undisturbed except in one area where land disturbance is evident through aerial photography. Based on this analysis, this site fits the selection criteria as follows and opportunities exist at this location for a combination of wetland preservation and restoration projects.
  - ✓ Presence of Hydric Soils.
  - ✓ Sufficient Area of Low Slope.
  - × Parcel Available.
  - ✓ Adjacent to Holdings of Land Conservation Organization.
  - ✓ Sufficient Mitigation Acreage Available.
  
- **The Rookery, Area 2:** This area is located southeast of the Rookery on two parcels totaling 191 acres. Wetlands on the larger of the two parcels have been previously altered as a result of construction of the old interurban rail line and past farming activities. Given the size of this parcel, its soil characteristics, and proximity to the Rookery, this site appears to be an excellent location for wetland restoration. Preservation is the likely mitigation strategy for the second parcel. This site fits the selection criteria as follows:
  - ✓ Presence of Hydric Soils.
  - ✓ Sufficient Area of Low Slope.
  - × Parcel Available.
  - × Adjacent to Holdings of Land Conservation Organization.
  - ✓ Sufficient Mitigation Acreage Available.
  
- **The Rookery, Area 3:** This area is located on 3 parcels totaling 203 acres north and east of the Rookery. Currently used as a private golf course, this area does not appear to be a feasible site for mitigation unless the complex of parcels can be purchased as a unit. A large pond in a former gravel pit exists on a portion of the site. This area could be a potential wetland restoration site depending on its depth. This golf course also straddles the Upper Main Branch of the Chagrin River and fairways and greens have been constructed in riparian areas. This encroachment has altered the river banks, raising the possibility for stream restoration projects along this reach of river. This site fits the selection criteria as follows:
  - ✓ Presence of Hydric Soils.
  - ✓ Sufficient Area of Low Slope.
  - × Parcel Available.
  - ✓ Adjacent to Holdings of Land Conservation Organization.

- ✓ Sufficient Mitigation Acreage Available.
- **West Woods Park:** This approximately 297 acre complex of parcels is situated south and southeast of this newly created Geauga Park District holding. These parcels straddle Silver Creek, an important high quality tributary of the Chagrin River. A combination of wetland restoration and preservation as well as stream preservation and restoration projects may possible in parcels adjacent to this holding.
  - ✓ Presence of Hydric Soils.
  - ✓ Sufficient Area of Low Slope.
  - × Parcel Available.
  - ✓ Adjacent to Holdings of Land Conservation Organization.
  - ✓ Sufficient Mitigation Acreage Available.

Further site specific investigations are required to evaluate the feasibility of wetland mitigation and stream restoration at these sites. However, the results of this pilot project indicate that potential mitigation sites exists in the Chagrin River watershed and that further investigation of other areas may reveal additional candidate sites. Its important to note that each of the sites examined in the pilot test were negative for the *parcel available* selection criteria. In this pilot test CRWP looked only at soils, topography, aerial photography, and parcel size and location. Ownership and sale status was not investigated because CRWP did not want to generate any speculative land acquisitions based on the potential mitigation value of these parcels.

## CONCLUSIONS & RECOMMENDATIONS

**Conclusions:** With the completion of the *Preliminary Survey of Wetland and Stream Restoration Sites in the Chagrin River Watershed*, CRWP has enhanced its efforts to assist members in cataloging existing wetland and stream resources; identifying candidate wetland mitigation and stream restoration sites; monitoring the cumulative impacts of land use changes; and responding to a changing federal and state regulatory landscape for wetland and stream resources. It is important to note that the original intent of this Project was to examine wetland mitigation and stream restoration opportunities. However, the selection criteria developed in this pilot test were not sophisticated enough to identify stream restoration needs. CRWP concluded that identifying such needs requires detailed, site specific evaluations, which are beyond the scope of this Project. Consequently, wetland mitigation opportunities were emphasized and from the information gathered in this Project, CRWP made the following conclusions:

- **Remaining Chagrin River Watershed Wetlands are Limited & Face Development Pressure:** The *Status of Watershed Wetlands* on page 12 summarized the Ranking Map of existing wetland resources and highlighted the following:

- Remaining wetlands are concentrated in headwater areas and along stream corridors.
- High quality wetlands are in headwater areas.
- Remaining wetlands are in unincorporated areas experiencing development pressures.
- Limited wetland areas remain outside of headwaters.
- Status of wetland resources in Lake County is unclear.

□ **Wetland Mitigation Opportunities in the Chagrin River Watershed**

**Need to Focus On Preservation and Enhancement:** The results of this Project suggest that the watershed may offer more opportunities for wetland preservation and enhancement and limited opportunities for wetland restoration and creation. This is due to the following reasons:

- Except for the headwaters, watershed wetlands are restricted to areas where steep terrain has limited access and alteration.
- Where wetlands have been altered, they have been for a specific project which has resulted in their permanent alteration. Consequently, there is no opportunity to restore the site.
- Many areas have reverted due to the change of land from active farming to vacant or large lot zoned land use. As a result of succession, some wetland areas have reestablished themselves.

Unfortunately, emphasizing preservation and enhancement is not consistent with current U.S. Army Corps of Engineers mitigation policies as seen in changes to the ILFA Program discussed in this Project. As a result, this Project highlights the need for more flexible mitigation policies to include preservation and enhancement as a mitigation option to minimize the export of wetland functions to those watersheds that provide greater opportunities for restoration and creation. In light of the potential for the export of functions, increased local controls to maintain wetland and stream resources are also recommended.

**Recommendations:** As a result of the completion of this Project, the following recommendations are made:

- **Expand the Pilot Study and Refine Selection Criteria:** The Project documents the need to expand the pilot study to refine the location of potential mitigation and restoration sites, and the selection of priority areas. The study should be expanded to permit a more comprehensive examination of mitigation sites and stream restoration opportunities. While this process can be aided by available digital data collected in this Project, an expanded effort should include ground truthing of each potential site.

- ❑ **Complete a Comprehensive Wetland Inventory:** Such an inventory is needed to document the historic extent of wetland resources in the watershed; the location of remaining wetlands and their functions; and the cumulative impacts on wetland functions of current development. In addition, with predicted future land use changes, it is important to better understand where the highest wetland threats and protection needs are in the watershed.
- ❑ **Secure Additional Funds to Maintain Remaining Wetland & Stream Resources:** Changing mitigation policies heighten the need for additional sources of funding and management tools to ensure that remaining wetland and stream resources are protected. In addition, CRWP needs to adopt a policy regarding wetland and stream protection needs in the watershed to help guide other government and conservation agencies in their management efforts.
- ❑ **Focus Protection Efforts on Critical Wetland & Stream Resources:** Future preservation activities by public and non-profit land conservation organizations should focus on projects that will protect critical wetland and stream resources such as those found in the Bass Lake area, the Newbury complex, and the Aurora Branch headwaters.
- ❑ **Educate Local Decision Makers on Importance of Headwater Wetlands & Steps to Enhance Local Wetland and Stream Management:** CRWP should develop a program to educate public officials and citizens in headwater communities of the importance and benefits of wetland and stream resources. The program should consist of preparation of resource materials and conducting educational forums in conjunction with other public and non-profit natural resource management organizations working in the watershed. CRWP should also work with headwater communities and county governments to enhance local zoning and county subdivision regulations to better protect remaining wetland and stream resources in these headwater areas.

## **SELECTED REFERENCES** (In addition to Project Technical Advisory Committee.)

Denbow, Thomas J. et al., 1996. *Report 379: Guidelines for the Development of Wetland Replacement Areas*. Transportation Research Board, National Research Council, National Academy Press, Washington, DC

*Ohio Wetland Restoration and Mitigation Strategy Blueprint*, September, 1999. Prepared by the Ohio Department of Natural Resources and the Ohio Environmental Protection Agency under a Wetland Grant Program from U.S. Environmental Protection Agency, Region 5.

Dreyfuss-Wells, K. & Tom Denbow, January, 1999. *Critical Areas and Flooding and Erosion Problems Survey: Natural Resources Management in the Chagrin River Watershed*. Prepared by the CRWP for Lake Erie Protection Fund SG 66-97.