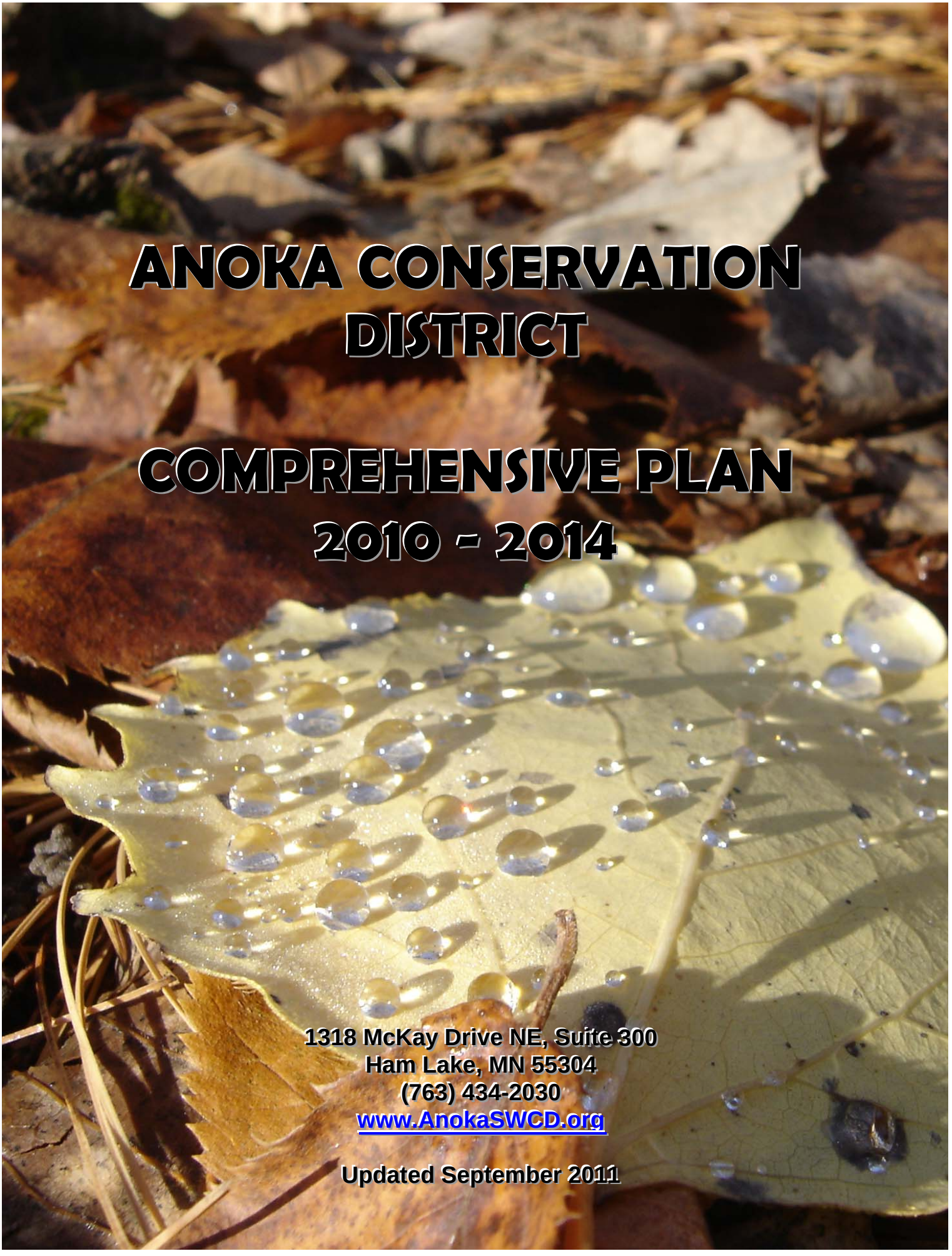

ANOKA CONSERVATION DISTRICT

COMPREHENSIVE PLAN 2010 - 2014

1318 McKay Drive NE, Suite 300
Ham Lake, MN 55304
(763) 434-2030
www.AnokaSWCD.org

Updated September 2011

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About this Plan

The Anoka Soil and Water Conservation District (Anoka Conservation District) has prepared its comprehensive plan in accordance with requirements of the Minnesota Board of Water and Soil Resources. The plan must be filed with the U.S. Department of Agriculture for the district to received assistance from the Natural Resources Conservation Service. The plan provides a framework for overall natural resource management priorities in Anoka County. Future annual work plans will be developed with specific tasks to address the priorities and goals within this Comprehensive Plan. The Anoka Conservation District Comprehensive Plan promotes inter-agency cooperation and coordination for the preservation and conservation of the natural resource base in Anoka County. The planning process was initiated during a tour of stormwater retrofit practices in Anoka County attended by our local, state and federal agency partners. Their input was solicited and became valuable during the planning process.

The plan contains the following:

- Anoka natural resource setting,
- Resource conservation emerging issues, priorities and strategies,
- Anoka Conservation District mission, guiding principles, authorities, structure and policies,
- Adjustments in authorities or programs,
- Programs and workload,
- Staffing requirements,
- Resource priorities,
- Resource conditions,
- Existing resource management efforts,
- Future strategies and programs,
- Budgetary needs,
- Cost share program requirements, and an
- Appendix with
    - Cooperation with other government agencies.
    - Cost share projects
    - Rain garden projects
    - Research, monitoring and inventories, and
    - Soils information.

Anoka County Natural Resource Setting

Anoka County's natural resource base supports a rapidly growing population of over 300,000 people in an area of 273,450 acres. Approximately 50% of the county is densely or moderately urbanized with homes and places to work. The remaining portion of the county supports scattered agriculture and open space, including extensive county and city park systems and vast areas of state wildlife management areas.

Anoka County is largely within the Anoka Sand Plain, a large expanse of permeable sandy soils interspersed with large wetland complexes. Many of the wetlands have been converted to sod and vegetable farms with the addition of extensive ditch systems. More recently, drained peatlands have given way to residential development. The dry sandy soils have low fertility and little water holding capacity and so are only suitable for a few crops. They are ideal for development however, requiring very little investment to be made suitable for roads and structures. As a result, the sandy uplands have been under heavy development pressure.

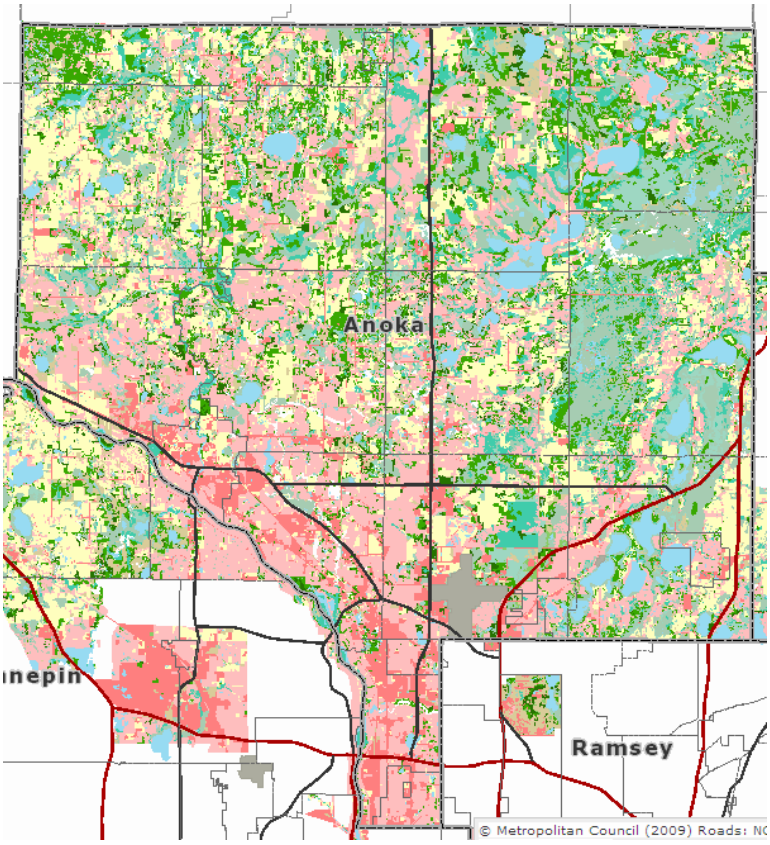
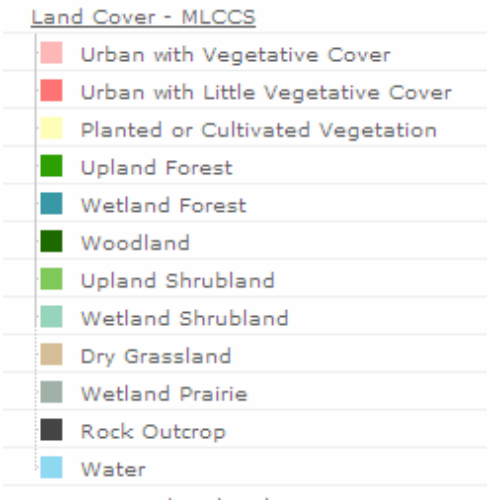


Table 1: Anoka County Landuse

Landuse	Acreage	Percent
Agriculture	68435	25.0
Residential	122386	44.8
Commercial	7515	2.7
Industrial	6250	2.2
Water	8,870	3.2
Other	59994	21.9
Total	**273,450**	**100.0**

Anoka County GIS, December 2009



The Anoka Sand Plain is also characterized by a high groundwater table, typically within three to eight feet of the surface. This high water table is due to a combination of shallow topography and highly permeable sandy soils. Wetlands form where groundwater levels are near or just

above the surface. Areas where exposed groundwater is many feet deep result in a landscape dotted with shallow lakes. Many of the lakes are connected to each other with streams, creating chains of lakes. As shallow groundwater levels fluctuate so do the water levels in the lakes, streams and wetlands that dominate the landscape.

The Anoka Sand Plain takes on regional importance when considering that it is widely considered to be the recharge area for many of the deeper aquifers that supply drinking water to communities throughout the Twin Cities Metro Area. Mismanagement of Anoka County's water resources will not only diminish the quality of life of every Anoka County resident, but also compromise the availability of abundant clean drinking water for the entire metropolitan area.

Resource Conservation

Natural resource management occurs in a very dynamic setting. Landuse, regulatory standards and agencies, financial and technical capacities of local, state and federal resource managers, personnel, priorities and goals are in a constant state of change. Additionally, the resources themselves change in terms of their quality, quantity and distribution. Emerging issues promise to further complicate the natural resource management setting.

Emerging Issues

Climate change is speculative and does not benefit from consensus. What is known is that the composition of the gases in the atmosphere are changing and it seems to coincide with the industrial revolution and the reliance on fossil fuel burning to supply the world's energy needs. How this change in composition will ultimately influence weather patterns, ocean currents, precipitation regimes and vegetation is uncertain, but it warrants mention and consideration during planning efforts. Agencies must be prepared to adapt to changes that do occur and make appropriate adjustments to programs to reduce or alleviate the resulting problems.

Groundwater supplies in Minnesota have not been an issue of concern in past planning efforts. Recent projections indicate that areas of Anoka County may experience drinking water shortages in the next twenty years. As surficial groundwater is depleted, we can anticipate shallow domestic wells drying up, wetlands being converted to non-wetland, stream base flows being compromised, shallow lakes becoming wetlands, recreational lakes becoming smaller, shallower and experiencing water quality problems, and vegetation transitioning to more drought tolerant species. Anoka County is the recharge area for many of the deeper aquifers relied upon by the Twin Cities and surrounding suburbs to the south for commercial and domestic water supplies. Overuse in those communities will result in lowering water tables in Anoka County. Efforts to conserve water and increase infiltration should be considered during planning efforts and project design.

Infiltration and groundwater quality protection can be in conflict with each other. Under the direction of the MN Pollution Control Agency, many municipalities continue to have source water protection strategies that prohibit the infiltration of stormwater in effort to protect shallow groundwater from contamination. Several stormwater constituents such as nitrates, chlorides, pathogens, and heavy metals are not adequately filtered by the sandy soils of the Anoka Sand Plain. The ultimate decision will be between having ground water supplies that are adequate but require treatment before consumption, or inadequate water supplies that do not need to be treated; historic strategies err in favor of the latter.

Priorities/ Strategies

The Anoka Conservation District Board of Supervisors identified five priority resource areas during the comprehensive planning process.

1. Water Quality
    - Maintain high quality surface waters
    - Improve impaired surface waters
    - Participate in local planning for preserving clean drinking water
2. Water Quantity
    - Minimize long term depletion of the surficial aquifer
    - Establish practices for water reclamation
3. Natural Habitats
    - Provide leadership in open space planning and protection
    - Address invasive species in high quality natural areas
    - Promote open space protection during the development process
    - Meet annually with P&Z commissions regarding development review process
    - Ensure there is an entity able to accept and manage easements on high priority parcels
4. Wetlands
    - Prevent wetland loss and degradation by enforcing the WCA and recognizing the importance of wetland quality as well as quantity
5. Soils
    - Maintain and enhance the quality of soil
    - Promote sound agricultural practices through conservation planning

Anoka Conservation District

Since its formation in 1946 at the request of Anoka County residents, Anoka Conservation District has worked with public and private landowners to address natural resource management challenges. The focus has changed over the years from agricultural erosion related problems to issues related primarily to urban development. Grassed waterways and shelterbelts have given way to greenway corridors, streambank stabilization and rain gardens.

Programs and services have been developed to address the changing issues in Anoka County. An extensive monitoring program conducted by our Water Resource Specialist records hydrology and water chemistry data on over one hundred sites throughout the county. These data are made available through an interactive data access tool on one of the two websites developed by the Anoka Conservation District (AnokaNaturalResources.com and AnokaSWCD.org). Landowners are assisted by our Conservation Technician with the design and installation of projects to improve water quality, reduce flooding, and attract wildlife, while our Wetland Specialist assists them with compliance with complex wetland laws. Two Landscape Restoration Specialists shared throughout the eleven county metro area through a program developed by Anoka Conservation District have designed and installed hundreds of rain gardens, shoreland restorations, habitat enhancements, and stormwater retrofit Best Management Practices over the last nine years. This program was recently expanded with Clean Water Fund revenue to provide assessments in high priority subwatersheds to identify optimal BMP design and location to maximize the benefits from each project. All staff engage in educational efforts that are integral to all conservation programs and services, each of which are designed to achieve our mission.

Mission

We conserve and enhance the natural resources of Anoka County.
We do this by;

- informing and assisting landowners and local government in natural resource management,
- promoting stewardship practices for soil and water conservation, and
- conducting research and monitoring.

Guiding Principles

- Focus on long term resource sustainability.
- Make fair and ethical decisions.
- Promote cost effective and efficient resource management.
- Partner with both public and private sectors.
- Maintain highly qualified, knowledgeable staff.
- Keep natural resources issues visible in Anoka County.
- Respond to opportunities and changing needs.
- Develop diverse programs, partners and funding sources.
- Utilize education and outreach in addition to technical and financial assistance to affect natural resource stewardship.

Authorization and Jurisdiction of Conservation Districts

Soil and Water Conservation Policy

Soil and Water Conservation Districts are authorized under Minnesota Statutes Chapter 103C known as the Soil and Water Conservation District Law. Soil and water conservation policy reads as follows (103C.005)

> *Maintaining and enhancing the quality of soil and water for the environmental and economic benefits they produce, preventing degradation, and restoring degraded soil and water resources of this state contribute greatly to the health, safety, economic well-being, and general welfare of this state and its citizens. Land occupiers have the responsibility to implement practices that conserve the soil and water resources of the state. Soil and water conservation measures implemented on private lands in this state provide benefits to the general public by reducing erosion, sedimentation, siltation, water pollution, and damages caused by floods. The soil and water conservation policy of the state is to encourage land occupiers to conserve soil, water, and the natural resources they support through the implementation of practices that:*
>
> *(1) control or prevent erosion, sedimentation, siltation, and related pollution in order to preserve natural resources;*
>
> *(2) ensure continued soil productivity;*
>
> *(3) protect water quality;*
>
> *(4) prevent impairment of dams and reservoirs;*
>
> *(5) reduce damages caused by floods;*
>
> *(6) preserve wildlife;*
>
> *(7) protect the tax base; and*
>
> *(8) protect public lands and waters.*

Soil and Water Conservation District Authority

In order to carry out its mission, ACD has several powers granted in law. The following paraphrases those authorities.
SWCDs may;

- Conduct resource surveys and demonstration projects,
- Carry out soil and water conservation measures on any lands in the district with the consent of the landowner,
- Cooperate or enter into agreements with any governmental agency or individual landowner for the purpose of carrying on a program of erosion prevention and control,
- Purchase or accept property and income and provide equipment and supplies that will help to bring about conservation practices,

- Construct, install, improve, maintain, and operate such structures and works as may be necessary for proper performance of the district,
- Develop a comprehensive and annual plan for the conservation of soil and water resources. These plans are required for the district to receive state grant funds,
- Assume land by purchase, lease or otherwise to improve, maintain, operate, and administer any soil and water conservation project undertaken by federal or state government,
- Sue or be sued,
- Require compensation or contributions for goods and services provided,
- Make application or enter into an agreement with any designated authority for federal assistance,
- Perform any other acts necessary to secure and use federal aid,
- Acquire land, easements, or rights-of-way needed in connection with works of improvement installed with federal assistance,
- Use necessary funds to provide membership in state and national associations that pertain to district operations, and is authorized to participate and appropriate necessary funds to defray expenses of district representatives for meetings of such groups,
- Procure necessary insurance,
- Publish any information related to the activities of the district,
- Provide advice to or consult with county or municipal representatives, and
- Present an annual budget to the board of county commissioners.

Organizational Structure

Supervisors

The Anoka Conservation District has a board of supervisors with a variety of expertise elected to four year terms. The Board of Supervisors determines the priorities and goals for the districts and charges the staff with developing the programs and services necessary to address those priorities. Although they are elected at-large, each supervisor represents a specific geographic area.

Currently serving are:

District 1 Karla Komec Term Expires 12/31/12	Member	352 Swan Lake Lane NW Cedar, MN 55011 763/434-3467
District 2 Jim Lindahl Term Expires 12/31/12	Member	17275 Tulip St. NW Andover, MN 55304 763/753-3449
District 3 Sandra DeLaForest Term Expires 12/31/11	V Chair	12859 Zilla St NW Coon Rapids, MN 55448 763/712-1191
District 4 Mary Jo Truchon Term Expires 12/31/11	Chair	12917 Buchanan St NE Blaine, MN 55434 763/757-3084
District 5 Vici L. Nass Term Expires 12/31/12	Treasurer	23340 Isetta St NE E. Bethel, MN 55005 651/462-3923

Meetings and Committees

Regular board meetings of the ACD are generally held on the third Monday of each month. A yearly meeting schedule is posted on ACD's official website, www.AnokaSWCD.org and in the office of the ACD. Regular board meetings and committee meetings are held at the District office in Ham Lake unless otherwise noted.

ACD supervisors also serve on committees to analyze detailed information on issues requiring intensive review prior to full board action. Some committees are internal and others function on a metro or statewide level. Supervisors choose to participate in committee meetings to offer personal expertise in the area of discussion or to gain more knowledge of the subject matter. Committees provide recommendations to the full board of supervisors.

Internal Committees

Internal committees are comprised of three supervisors but are not authorized to take action on behalf of the full board. Their function is to consider complex topics in greater detail and provide a recommendation for action to the full board. The ACD has three internal committees.

Finance Committee

The finance committee reviews the District's finances and prepares annual budgets. The finance committee ensures that the District operates within its financial means and reviews all equipment purchases and personnel changes to ensure that they fall within the District approved budget.

Operations Committee

The operations committee reviews issues related to the programs and services of the District and provides additional guidance to staff on projects and procedures. The operations committee is also responsible to review and formulate policy recommendations.

Personnel Committee

The personnel committee is responsible to review and make recommendations to the full board on all personnel management issues of the District including but not limited to employee recruitment, compensation, benefits, evaluations, discipline and dismissal.

External Committees

There are also several external committees that supervisors take part in. Supervisors that take part in external committees are expected to represent the interests of the District during the meetings and events and report back to the District on the activities of the organization. During the preparation of this comprehensive plan, District Supervisors were involved in the following groups:

- Metro Conservation Districts
- Metropolitan Association of Conservation Districts
- Rice Creek Watershed District Citizens Advisory Committee
- Coon Creek Watershed District Citizens Advisory Committee
- MASWCD Committees (Awards, Education)

Policies

From time to time, the Board of Supervisors adopts policies to clarify district operations and natural resource management principles. ACD policies are reviewed and approved annually and are maintained as separate documents or are incorporated into employee, supervisor, or operational handbooks as appropriate. The following list is a compilation of current policies related to natural resource management.

- The Board has determined that excavation and deposition of soil in a wetland can qualify for the wildlife habitat exemption provided: it is beneficial to wildlife, it creates diversity complimentary to the existing ecosystem, the soil forms an island isolated from upland, and excavations have undulating bottoms and sinuous shorelines.
- The Board may recommend extension for compliance with restoration orders when the applicant submits a written explanation of the reason for delay.
- The Board has determined that wetland delineations will not be performed or accepted when soils are frozen or snow cover makes analysis impossible.

Adjustments in ACD Authorities and/or Programs

Resolutions to initiate the programs and services described in this plan will be prepared as appropriate. ACD's statutorily derived authorities are sufficient to implement this plan. With a stable funding source, this plan could be enhanced with a timeline for implementation.

Programs and Workload

The District offers a number of programs related to our mission. We continually evaluate new programs and services to achieve our mission, pursuing those most beneficial given staff and funding limitations. The workload for each of the District's programs varies from year to year as does the funding available to implement them.

Each year the District projects staffing needs during the annual planning process. Below is the staffing projection from the 2009 annual plan.

Program	FTE	Objective Addressed
General Admin/Vacation/Holiday	1.350	NH, WQl, D, PLS, PP
Geologic Atlas	.750	WQl
Wetlands (WCA)	.700	NH, WQl, D
WCA Enforcement	.330	NH, WQl, D
Watershed Assess for Retrofit	.300	WQl, D, PLS, PP
Web Site	.300	NH, WQl ,PP
Promotion	.250	NH, WQl, D, PLS, PP
Education/Outreach	.250	NH, WQl, D, PLS, PP
Landscape Restoration	.250	HN, WQl , PLS
SRWMO Planning Assistance	.250	NH, WQl, D, PLS, PP
Cost Share	.250	NH, WQl, PLS
Lake Water Quality Monitoring	.169	NH, WQl, D, PLS, PP
General Planning	.165	NH, WQl, D, PLS, PP
Biomonitoring of Streams	.135	NH, WQl, D, PLS,
Greenways/Cons. Easements	.135	NH, WQl, D, PLS, PP
Trees Sales	.127	NH, D, PLS
Staff Training	.100	NH, WQl, D, PLS, PP
Landcover Update	.096	NH, PLS
Stream Water Qual. Monitoring	.077	WQl, D, PLS, PP
Lake Level Monitoring	.065	WQl, PLS, PP
Buckthorn Treatment	.038	NH, PLS
Reference Wetland Monitoring	.038	WQl, PP
GIS Assistance	.032	NH, WQl, D, PLS, PP
Water Res. Assess & Invest.	.032	WQl, D, PLS, PP
Wetland Delineation	.032	NH, D, PLS, PP
Observation Well Monitoring	.032	WQl, PP
Stream Hydrology/Discharge	.027	WQl, D, PLS, PP
Plat Reviews	.027	NH, WQl, D, PP
URRWMO Planning Assistance	.019	NH, WQl, D, PLS, PP
Rum River WOMP	.015	WQl, D, PLS, PP
DNR/COE Permit Review	.004	NH, WQl, D, PLS, PP
Rain Gauge Network	.004	WQl, PP
Total	6.349	

Objective Addressed: Natural Habitats (NH) Water Quality (WQl) Development (D) Private Land Stewardship (PLS) Public Policy (PP)

Staffing Requirements

Current staff has 1440 workdays in administrative and technical support to contribute to District goals and objectives. District objectives typically require 1500+ workdays to complete. This is more than current and proposed staff can provide. Workload management requires that programs and services be prioritized, often favoring those that are self funded.

The District employs 9 people with 7.5 full time equivalents although two of those FTEs are shared among the eleven metro counties.

- Chris Lord (District Manager),
- Dennis Rodacker (Wetland Specialist),
- Nate Zwonitzer (Conservation Technician),
- Kathy Berkness (Administrative Assistant),
- Jamie Schurbon (Water Resource Specialist),
- Shawn Tracy (Landscape Restoration Specialist),
- Wade Johnson (Landscape Restoration Specialist),
- Jake Galzki (Assistant District Technician), and
- Michelle Lowe (Data Input Technician).

Partners

There are many entities that invest time and effort to manage natural resources in Anoka County. Effective resource management can only be achieved when these entities work together to share information and coordinate activities. ACD supervisors and staff are committed to interagency cooperation to enhance resource management outcomes. Following are some of our partners.

USDA	Watershed Districts
Nat. Res. Conservation Serv.	Coon Creek
Farm Service Agency	Rice Creek
US Army Corps of Engineers	Area IV Assoc. of SWCD's
US Geologic Survey	Metro Conservation Districts
MN Department of Natural Resources	Water Management Organizations
Forestry	Sunrise
Enforcement	Six Cities
Waters	Lower Rum
Fish and Wildlife	Upper Rum
MN Geologic Survey	Local Municipalities
Met Council	Area Schools
Board of Water and Soil Resources	League of Women Voters
MN Pollution Control Agency	University of MN
MN Assoc. of SWCD's	Non-profit groups
Anoka County	Lake Associations
Extension Service	Coon
Finance and Central Services	Martin
Community Health Env. Services	Linwood
GIS	Crooked
Parks	Fawn
Surveyor's Office	George
Attorney's Office	Crooked

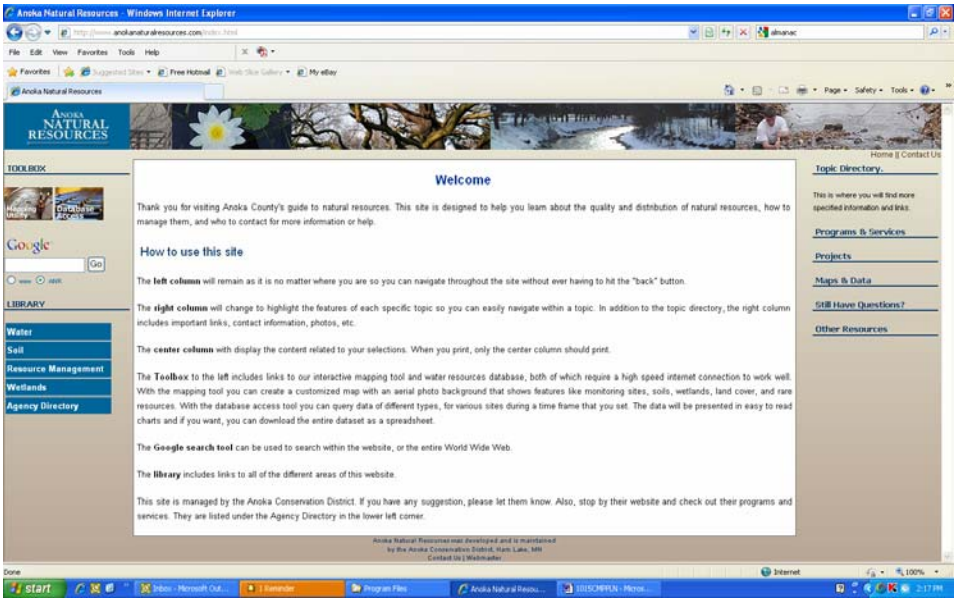
Resource Priorities

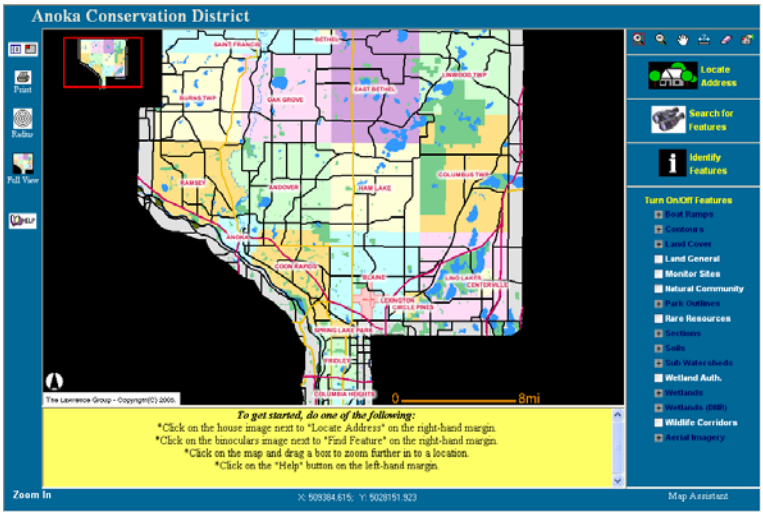
It is not possible for the District to address all issues of degraded natural resource quantity and quality. The following outlined list shows where the district will focus its limited financial and staff resources. This list was developed by the Board of Supervisors with consideration of input from the public and agency staff and officials.

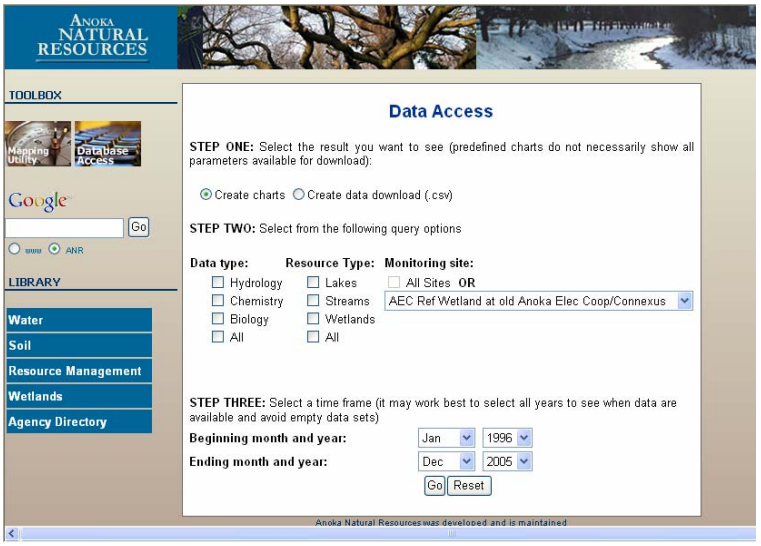
1. Water Quality
    - Maintain high quality surface waters
    - Improve impaired surface waters
    - Participate in local planning for preserving clean drinking water
2. Water Quantity
    - Minimize long term depletion of the surficial aquifer
    - Establish practices for water reclamation
3. Natural Habitats
    - Provide leadership in open space planning and protection
    - Address invasive species in high quality natural areas
    - Promote open space protection during the development process
    - Meet annually with P&Z commissions regarding development review process
    - Ensure there is an entity able to accept and manage easements on high priority parcels
4. Wetlands
    - Prevent wetland loss and degradation by enforcing the WCA and recognizing the importance of wetland quality as well as quantity.
5. Soils
    - Maintain and enhance the quality of soil.
    - Promote sound agricultural practices through conservation planning

Resource Condition

This plan does not include a comprehensive inventory of the natural resources of the county. As an alternative to providing a written inventory, the ACD Board of Supervisor made the decision ten years ago to develop and continually update a website that provides easy access to the same information. www.AnokaNaturalResources.com is a dynamic inventory of Anoka County's natural resources and includes an interactive mapping tool and a database that allows for water quality and hydrology data queries, downloads and charting. For those who appreciate a single written assessment, ACD prepares an annual Anoka Water Almanac to report findings from the many water resource monitoring programs that ACD manages, found on the web at http://www.anokanaturalresources.com/acd/info/2008_almanac.pdf. The purpose of the following text is to provide more context to the planning structure outlined in this document.

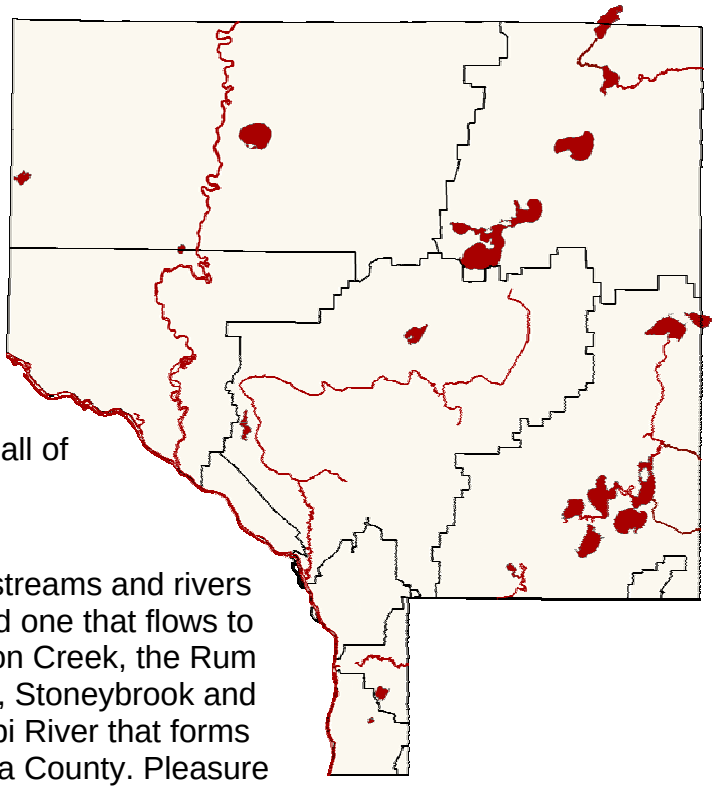






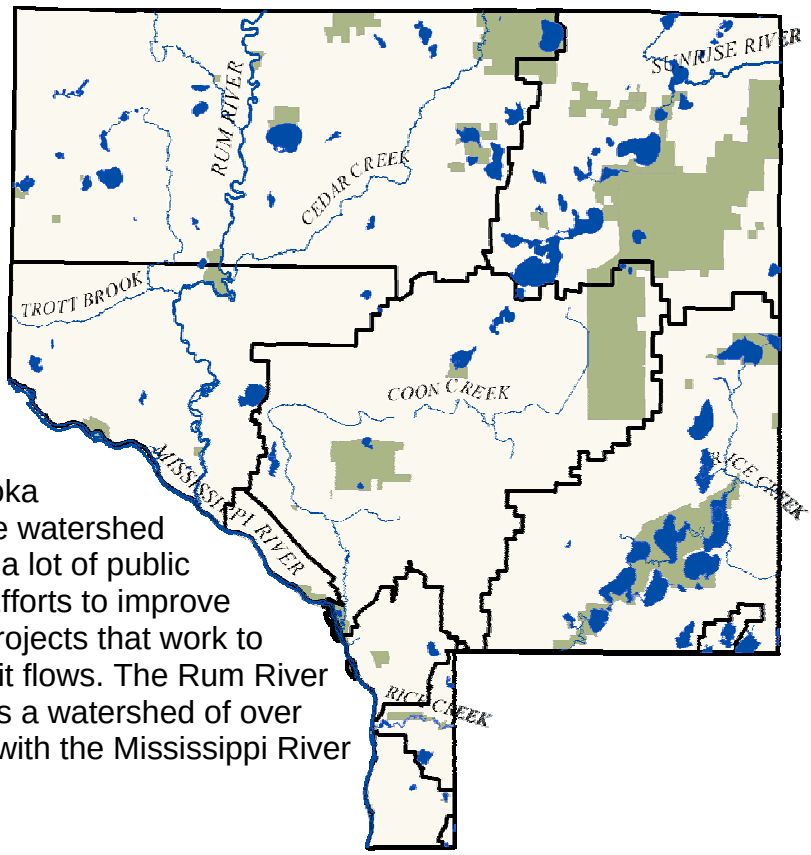
Water Quality

Water quality is among the most important resource concerns. Both surface water and groundwater quality are resource management priorities for ACD. Anoka County listed impaired waters are shown in the following figure. Waters may be listed as impaired for a number or reasons including nutrients, sediment, pathogens, biota, turbidity and heavy metals. Impairments in Anoka County span all of these categories.



Streams/Rivers

In Anoka County there are several streams and rivers that flow to the Mississippi River and one that flows to the St. Croix River. Rice Creek, Coon Creek, the Rum River, Springbrook, Pleasure Creek, Stoneybrook and Glen Creek all flow to the Mississippi River that forms the southwestern boundary of Anoka County. Pleasure Creek, Springbrook, Stoneybrook and Glen Creek are all small tributaries that flow directly into the Mississippi River. They are all in heavily developed watersheds. Coon Creek and Rice Creek are larger watersheds and both have well staffed watershed districts that act as the primary water resource management entity. The Sunrise River flows through Carlos Avery WMA and several lakes in northeastern Anoka County to the St. Croix River. The watershed for Sunrise River is comprised of a lot of public land and is sparsely populated. Efforts to improve the Sunrise River are limited to projects that work to improve the lakes through which it flows. The Rum River begins at Lake Mille Lacs and has a watershed of over one million acres. Its confluence with the Mississippi River is in the City of Anoka.



The Rum River and its tributaries have been identified as ACD's highest priority watershed for several reasons. 1) It currently has good water quality, 2) it provides recreational benefits including fishing, swimming, and canoeing, 3) its watershed comprises over one third of Anoka County, 4) it does not have a watershed district, and 5) its watershed includes areas of dense development, redevelopment and sparse development so there are many opportunities to make positive impacts in the watershed. ACD staff also work in partnership with other governmental units in the county to manage other river and stream resources.

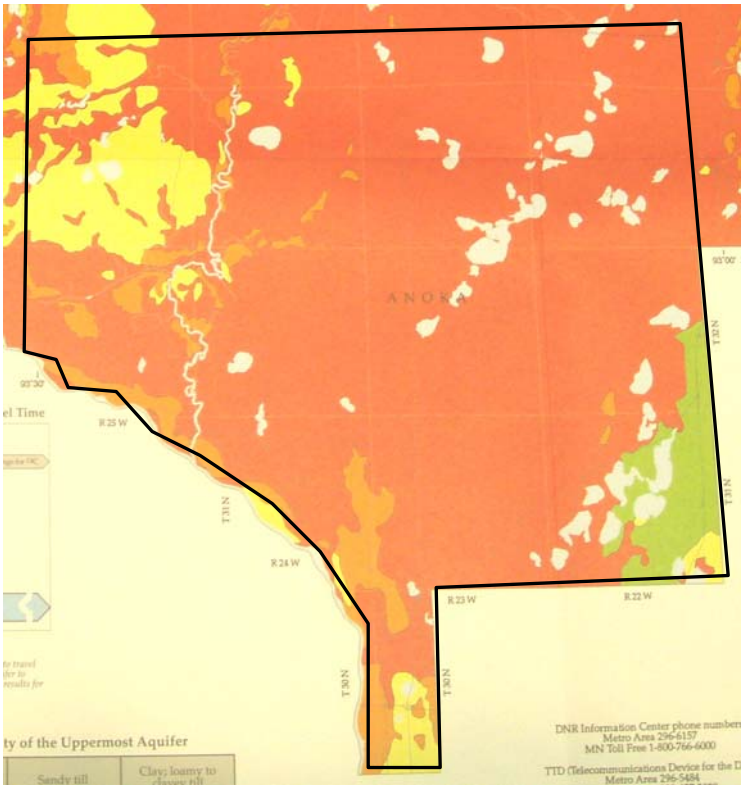
Lakes

Lake water quality is typically measured using three parameters; secchi disk depth, Total Phosphorus, and Chlorophyll-a. An index of these parameters allows us to grade the quality of our lakes, as shown in the table below.

Year→	89	1990	91	92	93	94	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09
Coon	C					C			C	B	A	B	C			C		C		C	
Crooked	C					B	C	B	B	B		B		B	B		B	B-		B	B
East Twin	B						B		A	B	A	A		A			A			A	
Fawn									A	B	A	A	A			A		A		A	
George	A								A	B	A	A		A			B			B	
Ham					A	B		A	A	B		C	C			B	B		B	A	
Laddie					B	B	B			B	B	B	B	B	B	B	B			B	
Linwood	C					C			C	C	C	C	C		C		C		C	C	C
Martin									D	D	C	D	D		D		D		D	D	D
E. Moore						C				C	B	B	C	C	C		C				
W. Moore											B	B	C	C	C		C				
Netta									B	C	A		B		A	A		B+	B+		B
Rogers										C		C			B			D		B	B
Round										B	A	B			A		B		C		C
Sullivan (Sandy)					D	D	D		D	D	D	D	D	F	D	D	D				
Typo					F	F	F		F	F	F	F	F		F		F		F		F

Groundwater

In Anoka County, most of the residents rely on groundwater from either municipal or private wells for drinking water. Groundwater supplies in Anoka County are particularly vulnerable to contamination due to the permeable sandy soils. The following figure prepared by the MN Geologic Survey (MGS) shows those areas of Anoka County that are highly susceptible to contamination in red. In some municipalities, wells have already become contaminated and may no longer be used for drinking water. Municipalities can help protect groundwater using landuse controls.



Groundwater protection through landuse controls is enhanced by the identification of wellhead protection zones in two ways. First, identification of wellhead protection zones can enable resource managers to more quickly narrow in on a pollution source when contamination occurs. Second, wellhead protection zone identification can enhance planning and zoning efforts to minimize the likelihood of contamination by prohibiting high risk activities in sensitive areas. Several municipalities are working together under the umbrella of the County Groundwater Protection Assessment to identify well head protection zones.

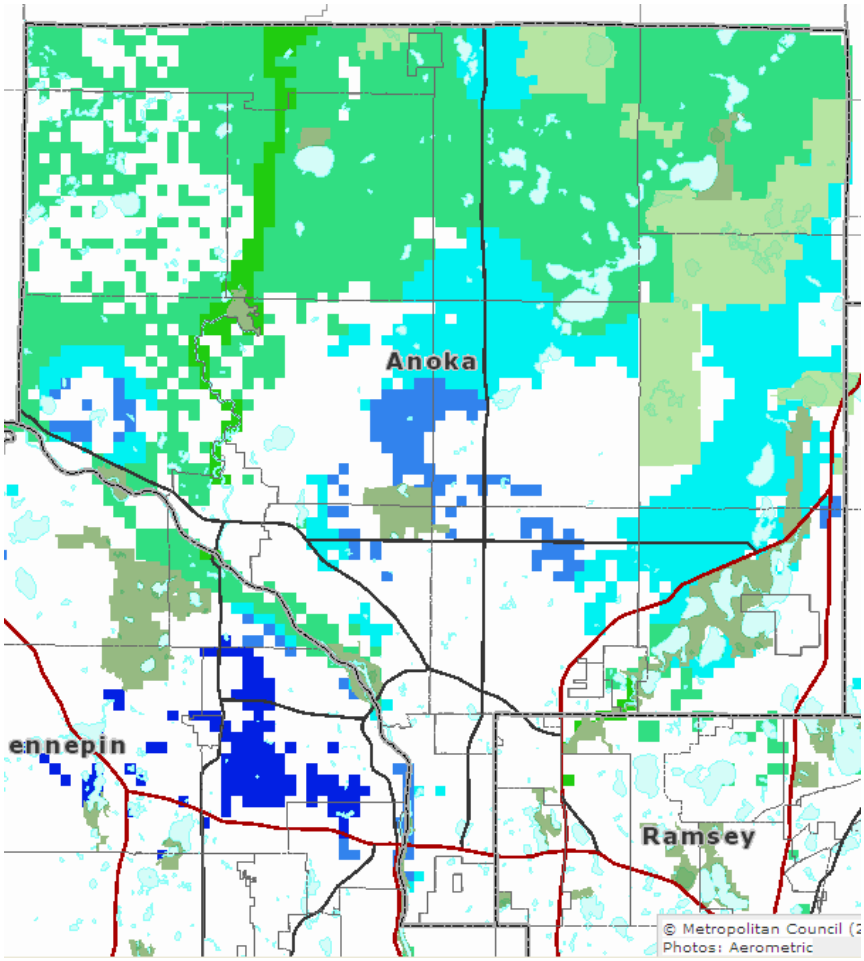
One way to enhance the accuracy of well head protection and groundwater resource management efforts is through the detailed mapping of our geologic and groundwater resources in the form of a county geologic atlas. In 2008 ACD secured funding through many partners throughout the county to conduct the field work necessary to complete a county geologic atlas. The field work was largely completed in 2009 with the identification of 10,000 well locations. Data collected were provided to the MGS and a completed Anoka County Geologic Atlas is anticipated in 2012. The atlas will provide a much more comprehensive picture of Anoka County's ground water and geologic resources, facilitating long term planning.

Water Quantity

Water quantity is a concern for three reasons;

- flooding can cause damage to structures and septic systems and can cause erosion,
- depleted surficial aquifers lower water tables resulting in the drainage of wetlands, reduced lake water levels, reduce stream baseflow, and stress on plant life adapted to historic water levels, and
- shortages in drinking water supplies.

The Metropolitan Council completed a study that concluded several metropolitan communities would experience drinking water shortages between now and 2030. The figure below shows anticipated drawdown where groundwater and surface water is closely connected. This drawdown will dramatically impact surface water elevations.



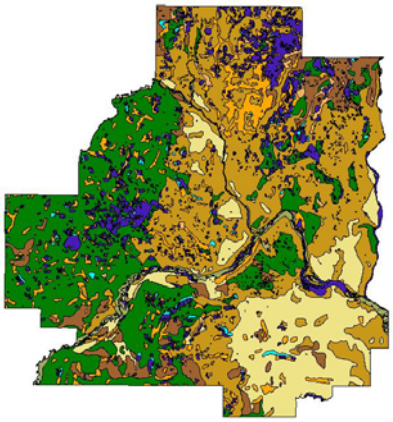
Natural Habitats

Protection and enhancement of natural habitats ranks high with Anoka Conservation District not only because having abundant wildlife improves the quality of life in Anoka County, but because it is one of the least regulated resource concerns. The lack of regulation is resulting in rapid losses of habitat and the wild flora and fauna it supports. More programs are needed to address these losses.

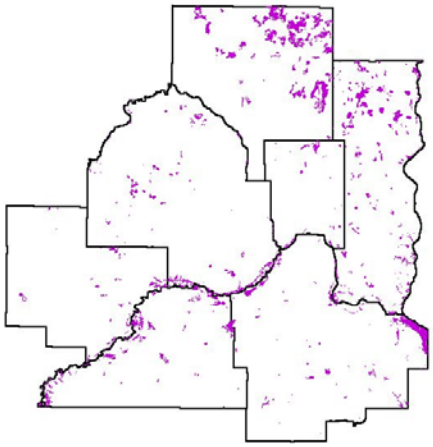
Natural Communities

Anoka County has the highest concentration of MN County Biological Survey mapped natural communities in the metro area. These areas are recognized as pristine ecological systems, existing today in much the same condition as they did prior to European settlement of the area. Preservation of the few remaining natural communities is a high priority for ACD. Preservation of these areas will be pursued and encouraged at the local and state levels.

Presettlement Vegetation

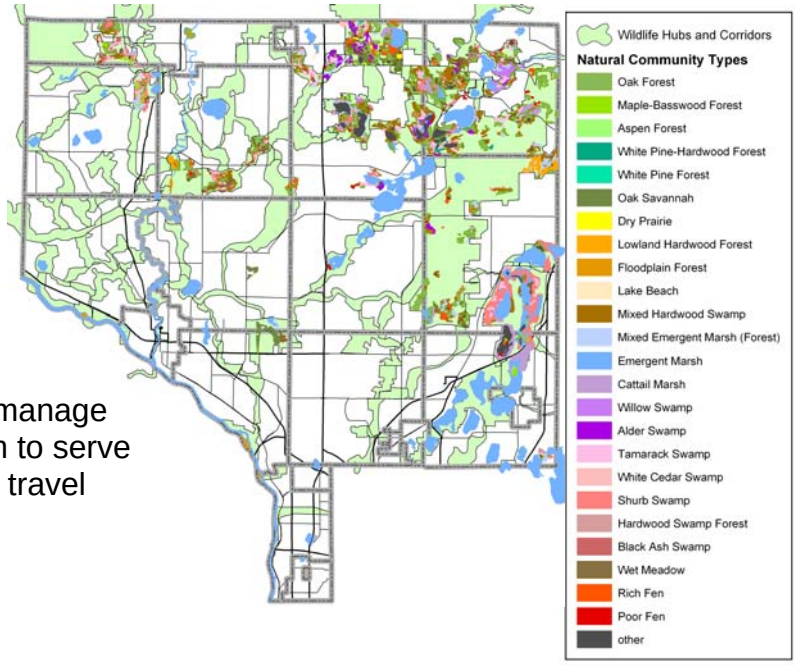


Remaining Natural Communities

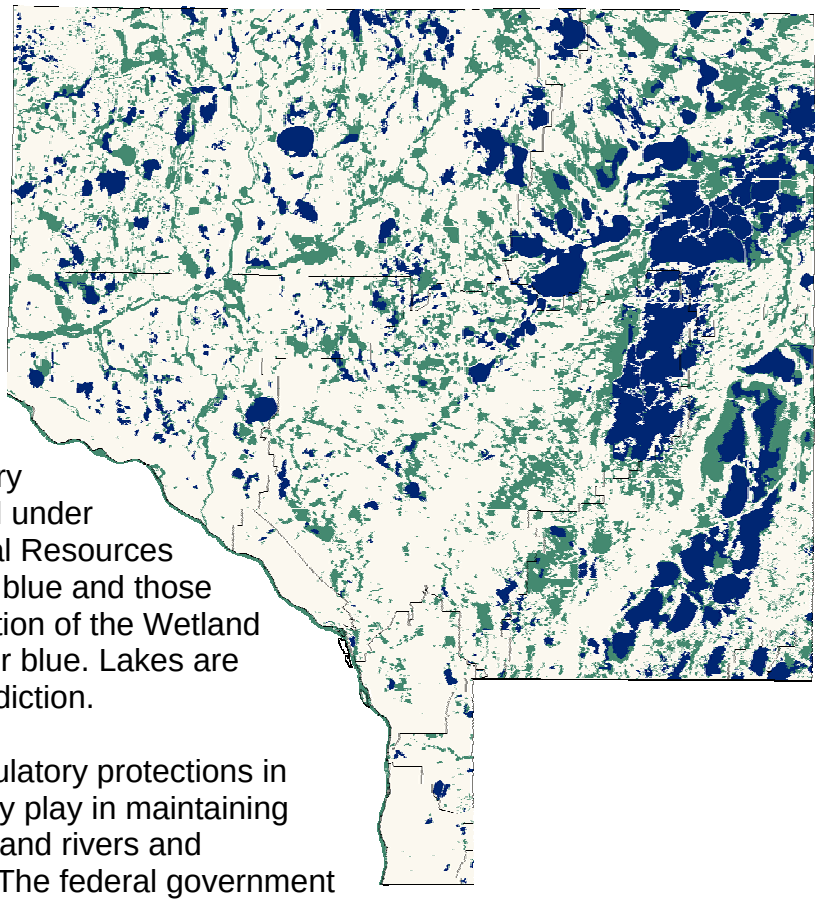


Wildlife Connectivity

ACD developed a wildlife corridor plan as part of the land cover inventory and greenway planning efforts completed from 1999 through 2005. ACD will continue to work with private landowners and local, county, state and federal government programs to help manage lands in a way that allows them to serve as effective wildlife habitat and travel corridors.



Wetlands



Anoka County is rich in wetland resources with nearly 30% of our land area covered in wetland. Anoka County is also unique in the seven county metro area as the only county with more than 50% of it original wetland acreage intact. The figure to the right is the National Wetland Inventory showing wetlands that fall under MN Department of Natural Resources (DNR) jurisdiction in dark blue and those that fall under the jurisdiction of the Wetland Conservation Act in lighter blue. Lakes are included under DNR jurisdiction.

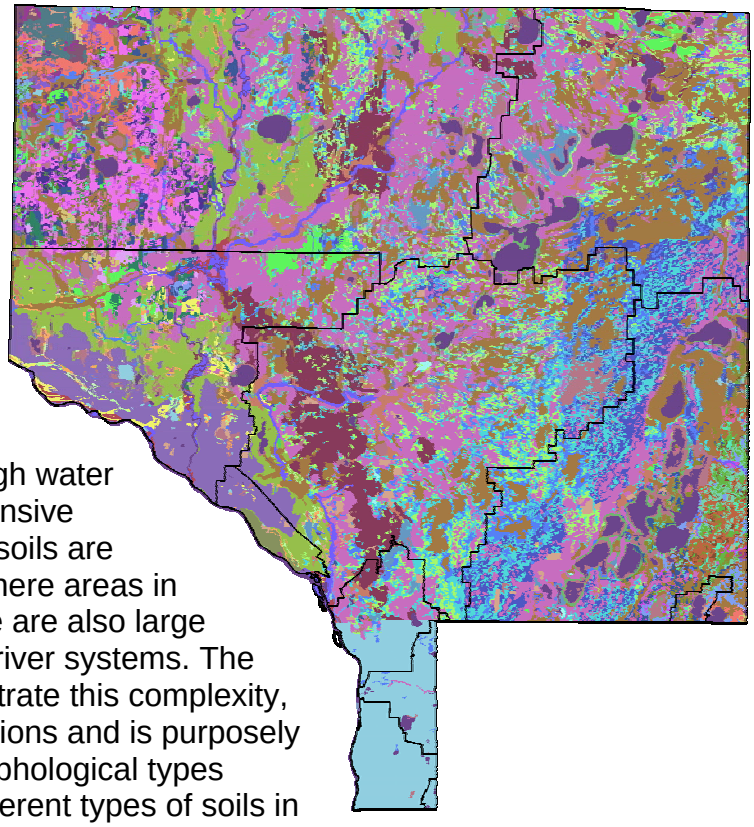
Wetlands have many regulatory protections in recognition of the role they play in maintaining water quality in our lakes and rivers and attenuating flood waters. The federal government regulates wetlands under Section 404 of the Clean Water Act through the US Army Crops of Engineers and through Swampbuster on agricultural lands. The state regulates larger, permanently ponded wetlands through the DNR and the remaining wetlands through local government units under the Wetland Conservation Act of 1991.

Wetlands provide many function and values to Anoka County residents including water quality, flood control, wildlife habitat and open space. Utilizing wetland characteristics to assimilate nutrients, trap sediment, and attenuate flood waters can result in degradation to the wetland's ecology. It is important to balance the quality of the wetland against the benefits it can provide under active use. Wetland quality and position in the landscape are routinely considered by ACD staff when making management recommendations.

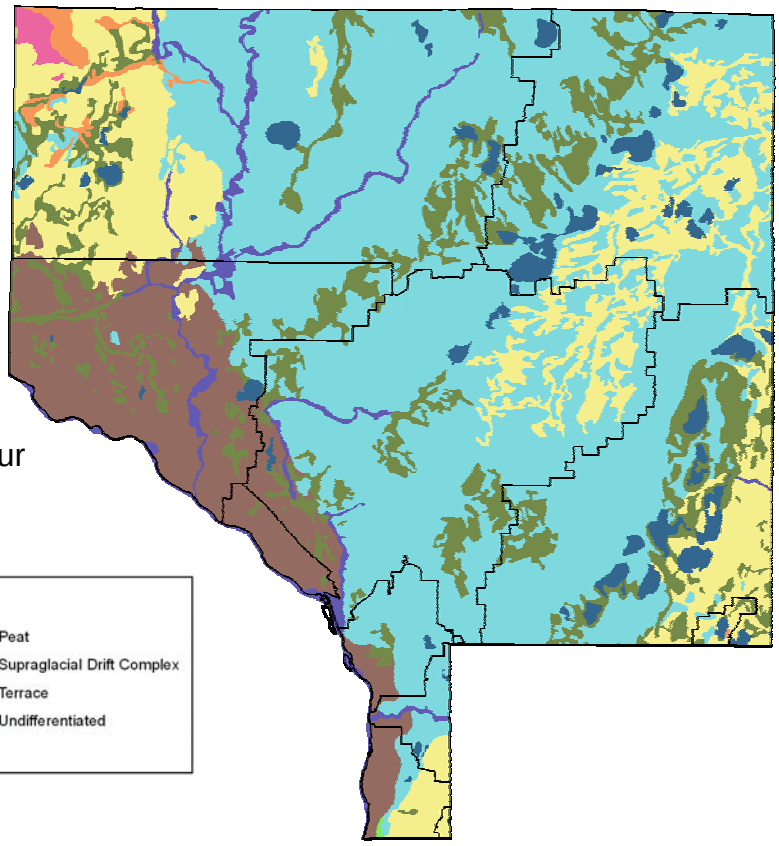
To preserve and enhance wetland functions and values in the county, the ACD supports activities which avoid direct and indirect impacts, restore wetlands for flood control and water quality treatment, provide buffer strips around wetlands basins, replace losses in the same watershed or where most needed, avoid natural community wetlands, and restore wetland plant communities for habitat.

Soils

A clear understanding of soil resources is the basis of sound natural resource management. Soil characteristics influence water flow and water chemistry, determines the composition and abundance of plants that can be grown in an area, and impacts the type of structures that can be built and selection of the most suitable building materials. Although Anoka County is located within the Anoka Sand Plain, which is characterized by flat topography, high water tables, sandy upland soils and expansive peatland in the low lying areas, the soils are surprisingly complex. Not only are there areas in Anoka County of glacial till but there are also large areas of alluvial soils, laid down by river systems. The figure to the right is provided to illustrate this complexity, showing the number of soil associations and is purposely not labeled. Looking at the geomorphological types provides a simpler picture of the different types of soils in Anoka County. Resource planning and management techniques and strategies vary within these areas.



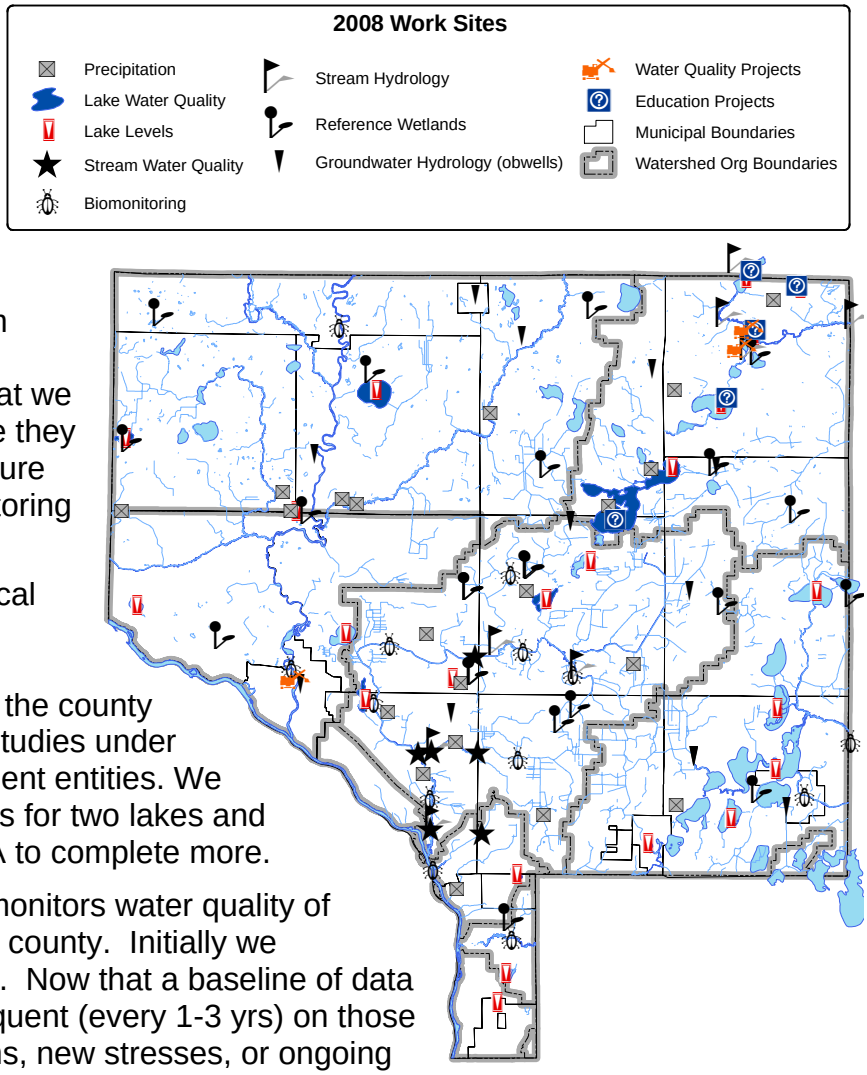
ACD helps landowners to manage soils to reduce erosion for water quality improvement and to establish desirable vegetation. While we promote sound agricultural conservation practices, we rely on the Natural Resources Conservation Service to be the primary point of contact for our agricultural producers.



Existing Resource Management Efforts

Managing Anoka County's water, soil, plant and animal resources to ensure long term sustainability requires an array of programs and services. The following summarizes the efforts of ACD over the last decade. Many of these programs are routine and will be continued while other programs come and go with the changing needs and opportunities in the county.

Monitoring



In order to focus limited financial and technical resources it is important to continually monitor resource quality, quantity and distribution. ACD's extensive water quality and hydrology monitoring program coupled with inventories and diagnostic studies ensures that we are focusing our efforts where they will do the most good. The figure to the right shows 2008 monitoring sites.

ACD conducts routine biological monitoring and chemical monitoring in select areas throughout the watersheds in the county and does special diagnostic studies under contract with water management entities. We have conducted TMDL studies for two lakes and anticipate working with MPCA to complete more.

Lake Water Quality – ACD monitors water quality of most recreational lakes in the county. Initially we monitored all lakes frequently. Now that a baseline of data exists, monitoring is most frequent (every 1-3 yrs) on those lakes with suspected problems, new stresses, or ongoing management. Other lakes are monitored less frequently (every 3-4 yrs).

Stream Quality – A variable number of streams are monitored each year, typically 5-10 sites. Monitoring is done for problem detection and diagnosis of known problems, including TMDL studies.

Biomonitoring of Streams – The stream biological monitoring program is both an educational program and a stream health assessment tool. The biomonitoring program relies upon students, with guidance from their teachers, to conduct the sampling and rudimentary sample sorting as part of their high school ecology curriculum. The program uses benthic (bottom dwelling) macroinvertebrates to

determine stream health. Because of their extended exposure to stream conditions and sensitivity to habitat and water quality, they can serve as good indicators of stream health. Each year there were approximately 500 students from six high schools who monitored six sites under ACD supervision.

Rum River Watershed Outlet Monitoring Program – ACD operates the Metropolitan Council's water quality and quantity monitoring station in the City of Anoka on the Rum River.

Lake Level – Volunteers monitor water levels in 24 lakes. ACD coordinates this effort by installing and surveying lake gauges, providing datasheets, quality checking data, and submitting data to the DNR for their website.

Stream Hydrology/Discharge – A variable number of streams each year have continuous water level monitoring devices. We used to monitor 8-12 sites but have reduced that to 3 sites due to a lack of funds. This monitoring is often paired with water quality studies so pollutant loading calculations and modeling can be done.

Reference Wetland – Wetland regulations are often focused upon determining whether an area is, or is not, a wetland. This is difficult at times because most wetlands are not continually wet. In order to facilitate fair, accurate wetland determinations the ACD monitors 18 wetlands throughout the county that serve as a reference of conditions. Electronic monitoring wells are used to measure subsurface water levels at the wetland edge every four hours up to a depth of 40 inches. This hydrologic information, along with examination of the vegetation and soils, aids in accurate wetland determinations and delineations. These reference wetlands represent several wetland types. Some have been monitored for 10+ years.

Observation Well - The DNR and ACD are interested in understanding Minnesota's groundwater quantity and flow. The DNR maintains a network of groundwater observation wells across the state. The ACD is contracted to take monthly water level readings at 15 wells in Anoka County during March – December. The DNR incorporates these data into a statewide database that aids in groundwater mapping.

Rain Gauge Network – Precipitation can be quite variable across the county. In order to obtain accurate data to pair with other hydrological monitoring programs ACD manages a network of 5 datalogging rain gauges and 15 manual gauges operated by volunteers.

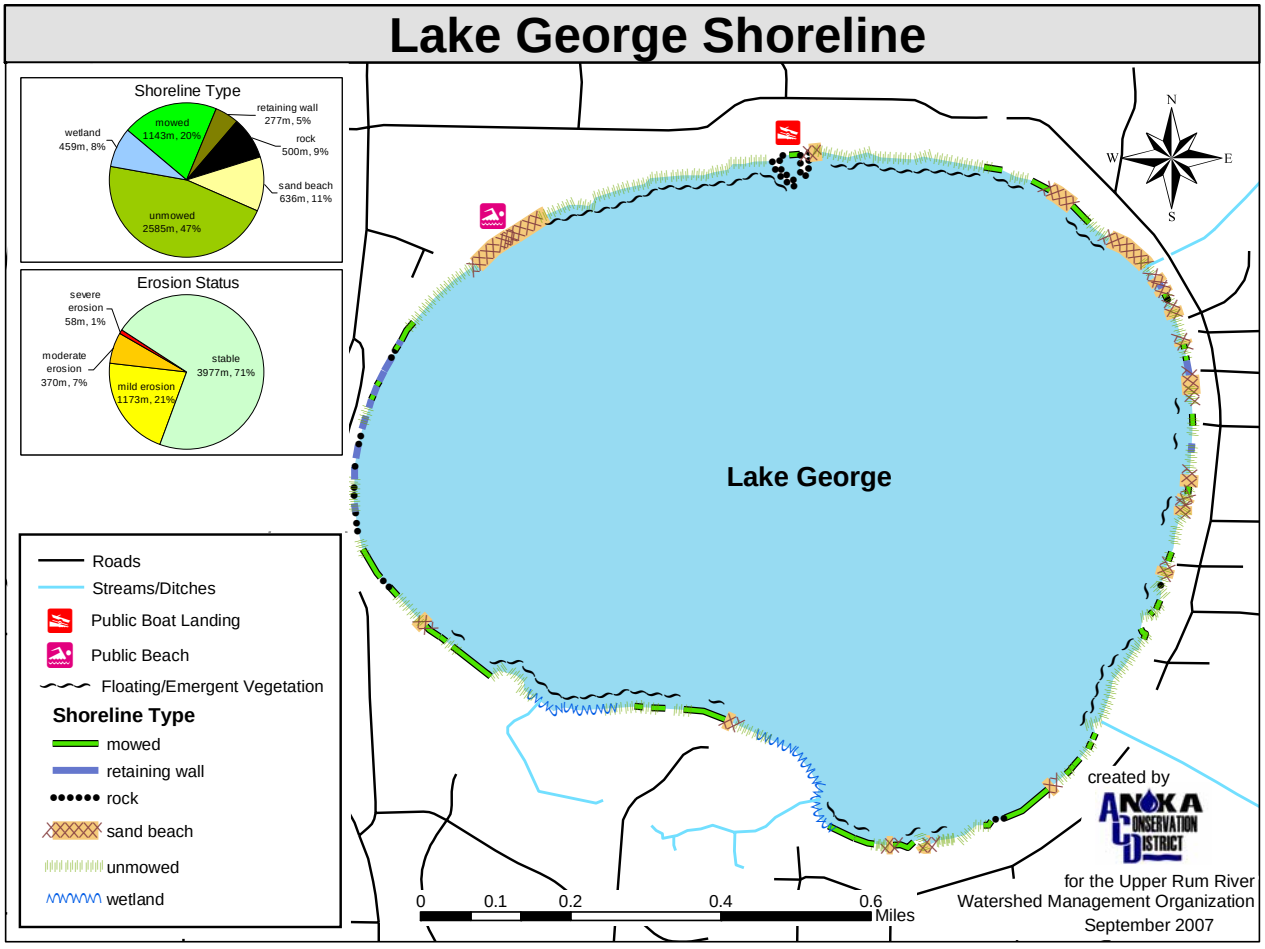
Inventory

Resource inventories are just as important as monitoring. Inventories provide resource information essential to the development of successful conservation projects. ACD is equipped to complete a variety of inventory projects, having many years of aerial photos, GPS equipment, GIS software and the expertise to use them. We engage in some routine inventories and updates while also tackling period 'once in a career' efforts like the geologic atlas.

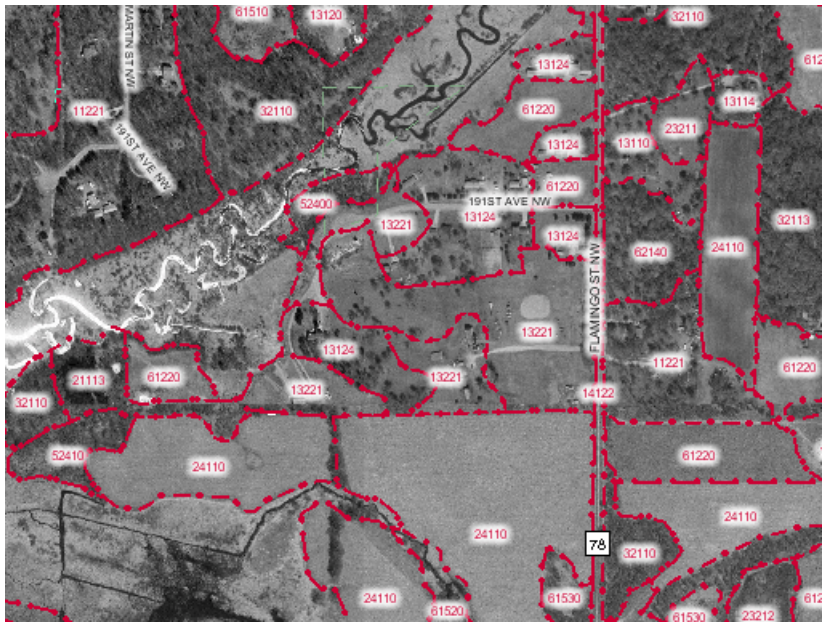
Geologic Atlas – ACD staff facilitated the collection of sufficient local matching funds from each of the water management organizations and watershed districts in the county to partner with the MN Geologic Survey to have a geologic atlas completed for Anoka County. ACD hired and oversaw seasonal staff who identified

the location of 10,000 wells in the county. These data were provided to the MN Geologic Survey. Completion of the atlas is anticipated in 2012.

Shoreland – ACD conducts shoreland inventories on priority water bodies in partnership with water management organizations, watershed districts and lake associations. During the inventory process the condition of the shoreline is documented to identify erosion and adjacent land management practices. The example below is of Lake George. Similar inventories have been completed for the majority of recreational lakes in the county. Follow up education is done with landowners on properties where the shoreline condition could impair water quality in the lake.



Land Cover Update – ACD conducted land cover inventory of the entire county between 1999 and 2005. The earliest inventoried areas are in need of updating since the protocols were improved during the inventory process and land cover has changed in areas due to development. ACD will continue to update the coverage within budgetary and workload constraints.



Selected Land Cover Information
C_NUM=11221 ; C_ALPHA=1.tt.CD.i25.cOA. NOTES=Oak (forest or woodland) with 11- 25% impervious cover
C_NUM=13124 ; C_ALPHA=1.hh.CT.i25.cGS. NOTES=Short grasses and mixed trees with 11-25% impervious cover
C_NUM=13221 ; C_ALPHA=1.hh.CG.i25.cGS. NOTES=Short grasses with 11-25% impervious cover
C_NUM=21113 ; C_ALPHA=2.tt.CC.pUS.cPR. NOTES=Red pine trees on upland soils
C_NUM=24110 ; C_ALPHA=2.ch.RC.pUS. NOTES=Upland soils - cropland
C_NUM=32110 ; C_ALPHA=3.de.UP.nOA. NOTES=Oak forest
C_NUM=52400 ; C_ALPHA=5.de.WC. NOTES=Seasonally flooded deciduous shrubland
C_NUM=52410 ; C_ALPHA=5.de.WC.nAS. NOTES=Alder swamp
C_NUM=61220 ; C_ALPHA=6.ge.MG.nAT. NOTES=Medium-tall grass altered/non-native dominated grassland
C_NUM=61420 ; C_ALPHA=6.ge.WB.nWM. NOTES=Wet meadow

Assessment

Water Resource Diagnostics/ TMDLs – The Water Resource Specialist and Technician work with other state and local agencies to investigate water resources problems such as water quality impairments and hydrological problems. Over the years we have completed diagnostic studies on several tributaries to the Rum River, Sand Creek in the Coon Creek watershed and Pleasure Creek. We are also nearing completion with a TMDL for Typo and Martin Lakes.

Stormwater Retrofit –Building from recently completed Non-Degradation Reports, Stormwater Pollution Prevention Plans and TMDLs, ACD partners with local funding sources to complete subwatershed assessments for priority water bodies. The first two assessments were completed in 2009 on Rice Lake for the Rice Creek Watershed District and on Sand Creek for the Coon Creek Watershed District. The assessments involve the identification of retrofit opportunities throughout the

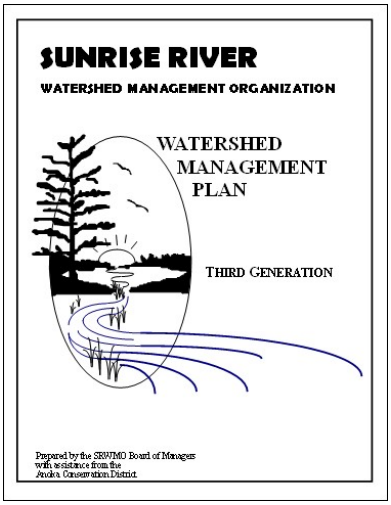
identified subwatershed to improve water quality in the target water body. Specific practices with pollutant load reduction estimates and installation, operation and maintenance cost estimates are provided enabling partners to select and budget for the installation of the most cost effective practices. ACD is in discussion with the City of Blaine and the City of Fridley to complete similar studies in other priority watersheds. This approach was promoted to the legislature in 2009, which resulted in a $1,000,000 allocation for the Metropolitan Landscape Restoration Program. LRP staff are now facilitating the adoption of this process throughout the eleven county metro area. This will continue to be a high priority for many years to come.

Plat Reviews – ACD staff review development proposals in several municipalities and provide comments from a natural resource perspective. In reviewing the development proposal, we provide an assessment of how the development can have the least impact on natural resources while still meeting the community's growth needs and the developer's financial needs. We approach it with the attitude that development is not bad, but it can be done poorly. Municipalities incorporate ACD's comments at their discretion.

Being involved in the development review process enables ACD staff to make progress on several high priority resource problem areas. This process would be significantly enhanced if ACD were to become involved at the sketch plan phase and if more cities utilized the service. Additionally, planning and zoning commission members should receive copies of ACD's comments directly and ACD staff should offer to attend P&Z meetings for higher priority development proposals. The housing market slump has drastically reduced development.

Year	Plats Reviewed	Total Lots	Total Acres
1992	15	222	736
1993	29	542	1694
1994	24	397	1163
1995	34	645	2203
1996	15	216	1006
1997	17	184	626
1998	8	75	362
1999	9	116	496
2000	15	208	858
2001	12	92	489
2002	17	562	1171
2003	18	186	865
2004	23	483	1866
2005	15	157	859
2006	12	90	659
2007	3	39	216
2008	1	7	25
2009	0	0	0

Planning



Water Management – ACD's Water Resource Specialist assists water management organizations with updates or supplements to their water management plans. He also helps develop annual plans of work to ensure progress is made toward the goals outlined in their water management plans. ACD recently completed updates to the Sunrise River Watershed Management Organization's plan and facilitated a technical advisory committee for the Upper Rum River Watershed Management Organization that developed wetland and stormwater management standards, amended them to the WMO Plan and incorporated them into member city ordinances and control measures.

Open Space – ACD has provided several municipalities with planning assistance to encourage the protection of open space during the development process. Nowthen, Andover, East Bethel, Ham Lake and Linwood all benefited from this effort. This was made possible with funding from the Legislative Citizens Commissions on Minnesota Resources. Staffing to continue this service is no longer available. ACD will continue to encourage open space protection as part of the development review process.

Land Protection

Preservation of parcels that are of particular importance for wildlife habitat is a high priority. Efforts to preserve land should be limited to parcels that fall within the identified wildlife corridor network, notwithstanding modifications to the corridor plan.

Conservation Easements – ACD holds conservation easements on two properties in Anoka County; a 55 acre parcel in the City of Nowthen that is being restored to prairie and savanna, and a 200 acre parcel owned by the City of Anoka along the Rum River. Another easement on 43 acres on the south shore of Deer Lake in East Bethel to be co-held with the Minnesota Land Trust should be finalized by mid 2010.

Technical and administrative assistance is provided to landowners interested in donating a conservation easement. Preparation of easement documents and natural resource management plans can be very time consuming and expensive to contract for in the private sector. This expense can be a large deterrent to interested landowners.

Once easements are established, annual inspections and meetings with the landowner are important to ensure that there are no easement violations and that progress is being made on approved management plans. A lack of easement maintenance funding to implement management plans has been identified as an issue that staff needs to address. ACD's policy is to partner with the local municipality so that they can assume the enforcement authority.

Ownership – ACD is able to own property. A landowner in St. Francis donated a conservation easement on 65 acres to the MN Land Trust and the fee title to ACD. ACD will take ownership of the property in 2010.

Conservation Development – Land protection will be encouraged during the development review process when the development is located on an identified wildlife corridor. Local government units have broad authorities to help preserve high priority parcels during the development process. Continuing to work with them to develop plans and procedures to facilitate this will remain a strategy of the ACD.

Recommendation for County – ACD is requested by the Anoka County Board of Commissioners to comment on the resource limitations and suitability for conservation purposes whenever a proposal by the state to purchase land is submitted. ACD reviews each project objectively and recommends only those sites with outstanding resource value either by virtue of location, size or ecological characteristics, be protected through purchase by the state.

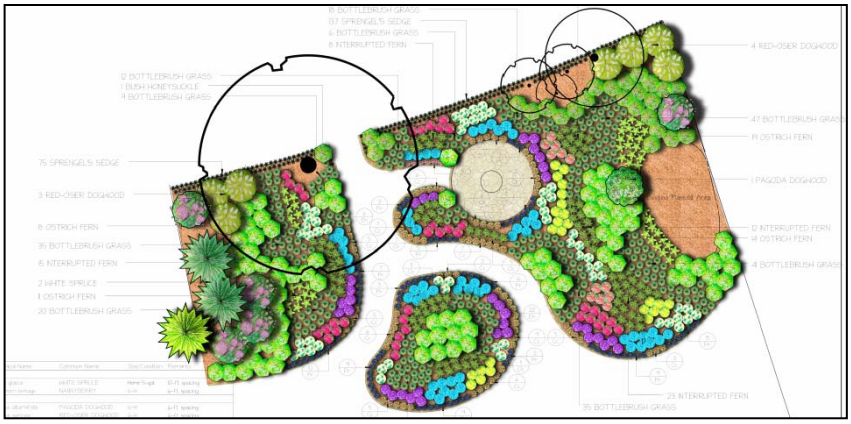
Technical Assistance

While monitoring, inventory, assessments, and planning are important, they achieve nothing unless they result in changes in practices on the ground to improve natural resource quality, quantity and distribution. ACD provides direct technical assistance to facilitate conservation practice implementation.

Water Quality Practices

Consultation with landowners is the first step. The ACD meets with landowners to provide advice about water quality improvement projects. The discussions include consideration of landowner goals, site characteristics, and site limitations, and available financial assistance that may exist. Generally, the types of projects discussed include rain gardens, lakeshore restorations, and erosion correction. Most site consultations include one hour of preparation, one hour on-site, and one hour of follow-up.

Project planning and design may follow the site consultation. While planning and design components will vary by project, this service generally includes a drawing set of existing conditions, construction design plans, planting plan, and cross sections as appropriate. A detailed estimate of labor and materials is also included. The size and complexity of the project will influence assessment and design time. If project scope or complexity is beyond the capacity of ACD staff and requires the services of a professional engineer, ACD can request funding from the Metro Conservation Districts to assist with the cost, but



an increase in landowner fees may be necessary. Landowners may be charged fees for design assistance to limit the amount of speculative technical assistance that does not result in a conservation project.

Installation oversight is crucial, and a service the ACD highly recommends. This includes a preconstruction meeting with the contractor, landowner and permitting authorities along with periodic inspections of the work progress and a final inspection upon completion of the project to ensure proper installation.

Post construction inspections ensure the project is functioning as intended and properly maintained. The number of inspections varies greatly depending on the nature of the project and environmental condition that could influence its success such as drought or flooding.

Project types most often considered include:

Rain leader disconnect rain gardens are used on residential and commercial lots with storm sewer curb and gutter, and are designed to intercept and infiltrate rain water from roof tops, driveways, sidewalks and other impervious surfaces.

Curb cut rain gardens are used in residential and commercial neighborhoods with storm sewer curb and gutter, and are designed to intercept and infiltrate rain water from roadways. Pretreatment chambers designed by ACD make maintenance much easier and improve the rain gardens function.

Lakeshore and riparian plantings involve the establishment of deep rooted native perennial grasses, sedges, wildflowers and/or trees and shrubs above the normal water level with little or no grading.

Lakeshore restoration involves the establishment of deep rooted native perennial grasses, sedges, wildlflowers and/or trees and shrubs including the shallow aquatic zone, transitional zone and upland with little or no grading.

Lakeshore and streambank stabilization includes the treatment of active erosion utilizing bioengineering and/or hard armoring often in combination with a shoreline restoration or buffer planting and typically involves some grading.

Treatment pond modification may also be recommended. ACD will typically call upon the expertise of a consulting engineer if this practice is being considered.

Campus retrofits are larger scale projects such as school grounds, churches, municipal building and business complexes that may include several different practices noted above.

Habitat Improvement – Just as many water quality improvement practices are a benefit to wildlife, many habitat improvement practices also improve water quality, water conservation, flood control and other resource concerns. Including the following services under habitat improvement does not imply that is the only benefit.

Ecosystem restoration varies in scale and type, from 2 acres to 200 acres or more and can involve the restoration of a single ecosystem such as a prairie, savanna, woodland or wetland, or a complex of interconnected ecosystems. Larger scale projects are typical of publicly held lands. Most projects on private property are less than 20 acres in size. Working with landowners to enhance the wildlife value of their property will continue to be a service of the ACD. Ecosystem restoration and enhancement will be done by providing both technical and financial assistance utilizing programs such as Wildlife Habitat Improvement Program, Environmental Quality Incentives Program, Native Buffers Cost Share Program, and Conservation Partners Grants.

Backyard habitat refers to projects less than an acre in size. Backyard habitat enhancement projects focus on attracting wildlife by providing food, water, and shelter but not in a way that could be considered an ecological restoration. Plans vary based upon the wildlife the landowner wishes to attract but can include butterfly gardens, bird houses and feeders, plantings of both native and non-native species (although native species are encouraged) to provide food and shelter, rock and brush piles, and water features.

Invasive species control is often a first step toward ecosystem restoration. The control of invasive species such as Common and Glossy Buckthorn, Tartarian Honeysuckle, Garlic Mustard, Purple Loosestrife, Reed Canary Grass, Spotted Knapweed and several thistle species must be achieved in order to begin the process of reintroducing desirable native species. In some cases it is the only activity needed to preserve an otherwise high quality ecosystem. ACD has undertaken a “buckthorn clean sweep” project, where sparse buckthorn infestations in our highest quality natural areas are being eradicated. In recent years over 1,000 acres have been treated. ACD will pursue funding to continue this effort and dedicate some staff and financial resources in November of each year regardless of outside funding to ensure continuity in this program.

Wetlands – Most of the work done by ACD related to wetlands is due to the Wetland Conservation Act of 1991 (WCA). Some activities are mandated while others are offered to help landowners cope with the complexity of wetland regulation. A full time Wetland Specialist is employed to meet the workload demands of this area.

Since the inception of the WCA, wetland losses have decreased dramatically. ACD staff has helped to better educate Local Government Unit (LGU) employees, officials, and residents on the value of wetlands and how to determine if an area is a wetland. ACD is the clearinghouse for information and answers to most WCA related questions.

WCA compliance can be challenging to those residents undertaking projects who have never dealt with the WCA in the past. ACD helps residents understand how the WCA impacts their project and provides them with the resources necessary to develop a compliant project proposal. ACD also serves as a quality control mechanism to ensure LGUs are fulfilling their obligations under the law. ACD encourages LGUs to utilize escrows and deed restrictions to achieve compliance.

WCA enforcement cases can become extremely prolonged when sufficient staffing isn't available to commit to them in the early stages. New funding through a BWSR grant program enabled ACD to enhanced efforts to enforce the Wetland Conservation Act of 1991 by directing more staff time toward the resolution of violations.

Delineation of wetlands according to the 1987 US COE Manual for Identifying and Delineating Wetlands is an essential skill in enforcing the WCA. ACD periodically provides wetland delineation services for small projects. This helps to maintain the delineation skills of staff, which is critical for the effective implementation of quality control measures for WCA compliance. It also provides residents with a reasonably priced service for very small sites.

Monitoring of replacement wetlands and tracking of replacement wetland monitoring requirements for LGUs are two tasks completed by the ACD Wetland Specialist.

Conservation Plans – Property level conservation plans are important components of many programs. ACD develops conservation plans at many scales with variable natural resource focus areas.

Water appropriations conservation plans are required for most Minnesota Department of Natural Resources water appropriations permits. They are to be developed with, and approved by, the soil and water conservation district. Most often, these plans are similar to water conservation plans already developed for other projects, however some customizing is always necessary.

Conservation easement management plans are required whenever public funds are expended to secure a conservation easement. ACD prepares plans that outline how the property's soil, water and biota will be managed to maintain and improve the ecological functions of the property.

Rural Preserves Property Tax Program conservation plans are required prior to enrollment of certain agricultural parcels into the program. These plans may be

completed by ACD staff but must be approved by ACD in accordance with criteria established by ACD.

GIS Assistance – ACD has expertise in Geographic Information Systems (GIS) technology, which allows for the production of complex maps, and offers these services to improve natural resources management planning and projects.

Financial Assistance

Project Cost Share – Financial assistance in the form of project cost share grants is sometimes available along with our technical services to encourage projects on private lands that will have public benefits of water quality or wildlife habitat. There are several potential sources of funding and ACD works with landowners to help coordinate the application process. Grants, funded mostly by partner agencies but administered by ACD, typically provide 50-75% cost share on materials. Increased funding commitments from WMOs will be sought to increase conservation practice installations.

Watershed Districts and WMOs have cost share funding available for water quality improvement and demonstration projects. ACD partners with Rice Creek Watershed District to administer RCWD's cost share program. Through this partnership, ACD meets with landowners to discuss potential resource management strategies, assists with the development of practice designs and cost estimates, coordinates cost share requests with funding sources, and oversees project installation. RCWD provides the bulk of the cost share funds and ACD and RCWD work together to promote and prioritize project activities. ACD administers small project cost share grants for the Sunrise River, Upper Rum River and Lower Rum River WMOs while Coon Creek Watershed District administers their program internally.

State Cost Share Program funds are available for approved practices provided they are designed by someone with technical approval authority for the particular practice. Many approved practices require design by a licensed engineer.

Clean Water Fund project cost share is available through the allocation to the Metropolitan Landscape Restoration Program made to the Anoka Conservation District. Use of the funds is limited to projects that were identified as the result of a subwatershed level stormwater retrofit assessment. ACD will administer these cost share funds throughout the eleven county metro area.

Engineering Assistance – Funding is available through the Metro Conservation Districts Non-Point Engineering Assistance Program (NPEAP) to contract with consulting engineers for the design of conservation practices, typically to be installed with cost share funds. Applications must be made through ACD for projects in Anoka County.

Local Water Planning – ACD applies for and manages local water planning funds through BWSR's Natural Resources Block Grant. These funds are used to offset the cost of assisting WMOs with the implementation of their water plans. Anoka County receives approximately $11,000 to be shared among the water management entities.

WCA Administration – ACD applies for and distributes funds through BWSR's Natural Resources Block grant to reimburse LGUs a portion of the cost of implementing the WCA. Approximately $72,000 is available for Anoka County LGUs which amounts to approximately 25% of reported expenses.

Administrative Assistance

WMO Reporting – Water management entities are required to submit annual reports of activities and finances to the Board of Water and Soil Resources. ACD prepares annual reports on behalf of three of the four WMOs for a fee.

Program Hosting – ACD hosts the Landscape Restoration Program for the Metro Conservation Districts. The program employs three full time Landscape Restoration Specialists who serve the eleven county metro area. ACD has successfully sought and received funding for the program from the Natural Resources Conservation Service, the Metropolitan Council, and most recently from the MN State Legislature.

Website hosting – The ACD provides space on the "Anoka Natural Resources" website to public sector organizations to post natural resources related information. Web pages for these organizations were created under a grant, which is expended, and therefore creation of web pages for additional organizations is not offered. However, the ACD continues to offer maintenance to existing web pages. ACD currently manages web pages for all of the WMOs in Anoka County.

Products & Equipment

Tree Sales – ACD hosts an annual tree and shrub seedling sale. We typically sell 27,000+ seedlings to 300+ landowners. We sell seedlings in bundles of 25, as our focus is habitat improvement, not individual landscaping trees. The tree sale is an opportunity to provide one-on-one consultations with landowners about habitat improvement. We also provide some native grass and wildflower seed. The addition of online credit card order processing and frequent newspaper articles regarding trees and conservation should boost sales. An evergreen variety pack was added for 2009 and additional variety packs will be considered in the future.

Equipment Rental – ACD has invested in several pieces of equipment that help landowners implement conservation practices. The equipment is available for rent and is used to install ACD coordinated conservation practices. Available equipment includes;

- Kawasaki Mule ATV
- Truax 3' Native Seed Drop Seeder
- 25 Gallon Herbicide Tank and Boom Sprayer
- 52" Pull Behind Brush Mower
- 14" Chain Saw

Safety equipment and training is included with the rental.

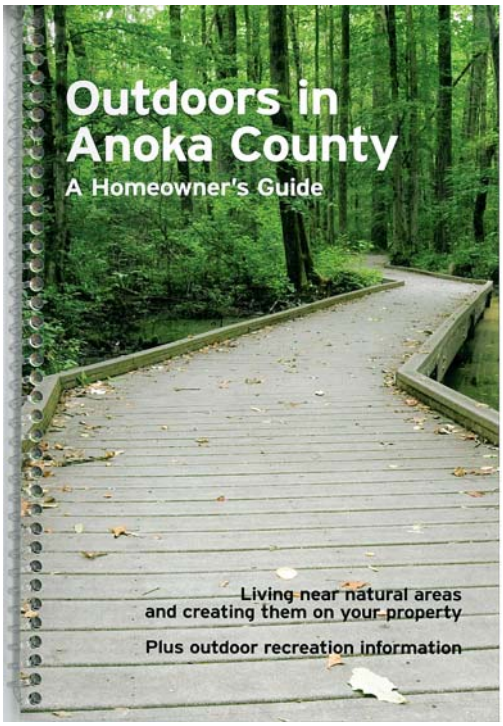
Rain Garden Pretreatment Chamber – ACD staff designed a pretreatment chamber for rain gardens to greatly reduce the time and effort needed to maintain them. We are investigating the possibility of patenting the concept.

Miscellaneous Conservation Materials – Many materials needed for conservation projects are not readily available, or are only available in bulk quantities. This can

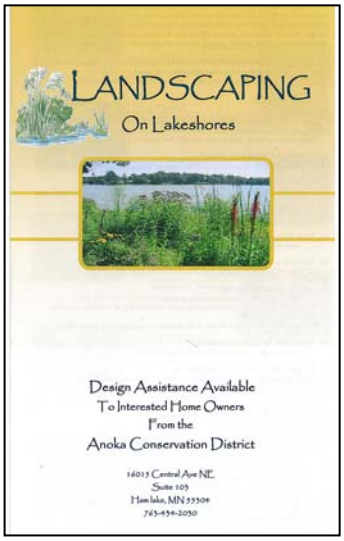
discourage landowners from moving forward with a project. To facilitate project installation ACD has several items on hand and provides them at cost including herbicide, geotextile fabric, biodegradable stakes, duckbill anchors, galvanized steel cable, and horseshoe clips.

Education

Website – ACD manages two websites including one about the ACD (www.AnokaSWCD.org) and one that serves as a general library of natural resources information about the county (www.AnokaNaturalResources.com). Both of these websites feature an online mapping tool and interactive access to water resources data.



Homeowner's Guide – One of our largest and most recent efforts was the booklet "Outdoors in Anoka County: a Homeowners Guide." The guide was developed specifically for landowners living adjacent to high quality natural areas but contains information on topics relevant to every Anoka County resident. The guide includes insights into our high quality natural areas and suggested 'must see' public open spaces. It has tips on landscaping for wildlife, water quality, energy conservation, water conservation, and healthy lawns. It includes information on invasive species and plant diseases common to our area as well as some discussion about wetlands management and regulation. It touches on septic system care, household and yard waste management, and well water concerns. Lastly, it includes a map of Anoka County's park system in hopes of getting people outside, connected and appreciative of the natural resources we share. 4,000 of these booklets are being distributed to homes adjacent to important natural areas.



Brochures – ACD staff develops brochures as a workload management tool. When requests for the same type of information become sufficiently frequent, it pays to invest staff time in the development of a brochure to more effectively convey the information. ACD staff developed a series of conservation brochures including;

- Landscaping on Lakeshores,
- Landscaping for Wildlife,
- Water-Smart: Conserving Water at Home,
- Riverbanks: Restoration and Stabilization
- Rain Gardens: Treating Runoff at the Source, and
- Native Plants: Restoring Habitat in the Metro Area.

We also developed a series of eight brochures on various topics related to wetlands and the Wetland Conservation Act of 1991 including;

- Purchasing and Developing Land,
- What's Regulated and Who Regulates,
- Exemptions,
- Wetland Impact Avoidance & Minimization,
- Wetland Replacement and Appeals,
- Wetland Banking,
- Ditch Maintenance, Pond Excavation & Mining, and
- Violations and Enforcement.

Workshops and Presentations – ACD routinely partners with cities and watershed districts to provide workshops on rain garden design and installation, watersmart practices, landscaping for wildlife, and lakeshore and streambank restoration. Workshops are more interactive than presentations and are intended to enable the audience to learn what is necessary to go home and implement the conservation ideas presented. Our partners are responsible to provide the facilities, promote the workshop and take registration information while ACD staff provides the technical expertise. ACD staff also makes staff available to present information to a number of audiences on a wide variety of topics. Although we have presentations completed on topics ranging from groundwater geology to riparian land stewardship to invasive species control, we always customize the presentation to suit the specific audience and time constraints.

Display/Events – ACD has develop displays for many topics including but not limited to watersmart, rain gardens, landscaping for wildlife, lakeshore and streambank restoration, oak wilt, tree and shrubs sales, native plants, prairies restoration, ground water, and wetlands. This display is used throughout the year at many events and is often staffed by one of ACD resources specialist.s.

News Articles – ACD frequently submits articles to the local newspapers to promote programs and services and to educate the public on topics related the natural resources stewardship.

Tours – In 2009 ACD conducted two tours on stormwater retrofits. They both proved very successful at promoting the concept. ACD intends to utilize tours more frequently in the future to promote conservation concepts to select audiences.

General ACD Operations

General Planning – Effective natural resource management requires both cooperative planning with other agencies, as well as within-agency prioritization. These efforts involve ACD staff, supervisors, other elected officials, and other agencies. Comprehensive planning is completed every five years with annual plans completed each year.

Program Promotion – As ACD pursues new partnerships and funding sources to develop programs and services that address the objectives identified by the Board of Supervisors, their time is recorded as promotion. Promotional activities include speaking at public events, workshops, and other efforts that increase program

visibility. Promotion of district programs and services is also achieved through partnerships and outreach to other agencies and entities that share the same jurisdiction or purpose such as the City of Ramsey's Environmental Policy Board and the Anoka County Board of Commissioners. One way of networking with these groups is through the chambers of commerce and the Anoka County Elected Officials group.

Day at the Capitol – In most years, ACD supervisors and staff spend time visiting with legislators regarding natural resource issues in Anoka County. During the legislative session in particular, ACD will often organize a Day at the Capitol whereby we meet with as many of our elected representatives as possible to promote the highest priority issues for the board.

Staff Training – In order to provide high quality service, the Board of Supervisors is committed to retaining a highly qualify staff. ACD offers staff continuing education opportunities through professional workshops, conferences, and purchase of software, books and other materials.

Stable Funding – ACD receives approximately one third of its budget from the county, one sixth from the state and one half from grants and fees for service. The instability and origin of funding places District programs and priorities at the mercy of external forces, which does not lend itself to addressing the most pressing resource needs of the county. A stable funding source is needed in order for the ACD to have the flexibility and capacity to meet the needs of the public without having to compromise the resource by following limited grant opportunities or bowing to pressures to maximize property tax revenue.

Outreach to LGUs – LGU councils/staff could enhance decision making with improved data and inventories. LGU councils and staff are required to make important decisions that have lasting effects with limited information. The ACD is in a position to collect data and conduct inventories in a cost effective manner and supply that data to LGU's.

LGU councils/staff would benefit from additional understanding of the resource and conservation measures to incorporate and implement them into their planning. Natural resource systems are complex and dynamic. The roles of natural resource complexes to provide for recreation, flood control, water treatment, water conveyance, etc. are poorly understood by many in authority. The ACD is in a position to assist LGU's by attending council meetings to offer clarification as necessary.

LGU councils/staff lack the monetary incentive to place a sustainable resource higher than immediate revenue and a higher tax base in their planning efforts. As long as LGU's growth and stability are largely dependent upon property taxes, their incentive is to develop as much and as quickly as possible. This directly conflicts with much of ACD's positions on resource stewardship and management.

Future Strategies and Programs

The ACD reserves the right to identify programs to pursue during the annual planning process. The Comprehensive Plan outlines resource priorities and programs without commitment to specific years. Because ACD's budget is subject to the control of outside agencies, it is not possible to predetermine a specific time line for tasks. To accommodate grant application requirements, ACD has added a project priorities list to the cost share program requirements sections that will be updated as needed.

The ACD Board of Supervisors has identified five major issues to address in Anoka County in the coming years: water quality, water quantity, natural habitats, wetlands, and soils. There are several means of addressing a given issue. ACD has selected the following general mechanisms: monitor, inventory, assess, plan, protect, assist, fund, administer, sell/rent, and educate.

Mechanism	Water Quality	Water Quantity	Natural Habitats	Wetlands	Soils
Monitor lakes, rivers, groundwater and precipitation utilizing staff and a volunteer network to:					
• Maintain baseline data, establish trends and identify and diagnose the nature of problems in	✓	✓			
• Water quality, water quantity, and biota	✓	✓			
• In high priority water resources.	✓	✓			
Inventory natural resources to ensure staff have updated information necessary to make sound resource management decisions to improve water quality, reduce flooding, prevent loss of top soil, and enhance wildlife habitat. Routine inventory work is needed on:					
• the condition of riparian properties on priority lakes and rivers,	✓	✓	✓		✓
• aquatic and terrestrial invasive species, and			✓	✓	
• wetland replacement sites under the WCA.			✓	✓	
Assess properties to identify management approaches to optimize natural resource quality, quantity and distribution. Assessments vary in scale and scope and include:					
• water resource diagnostic studies and TMDLs typically on a watershed basis to determined the cause of water impairment on high priority water bodies,	✓	✓			

Mechanism	Water Quality	Water Quantity	Natural Habitats	Wetlands	Soils
• stormwater retrofit assessments typically in urbanized settings at the subwatershed or catchment scale that contribute untreated water to high priority water bodies, the purpose of which is to identify the most cost effective practices to improve water quality and reduce flooding, and	✓	✓			
• development plat reviews to provide comments on all aspects of natural resource management including forestry, soils conservation, erosion and sediment control, invasive species, wildlife habitat, and energy conservation; including the expansion of this service to municipalities not currently participating.	✓	✓	✓	✓	✓
<u>Plan</u> for the effective utilization of limited staff and financial resources of the district through the development of;					
• comprehensive plans every five years,	✓	✓	✓	✓	✓
• annual plans each year, and	✓	✓	✓	✓	✓
• mutually beneficial partnerships with other government entities and non-profit organizations.	✓	✓	✓	✓	✓
<u>Plan</u> for the long-term viability of the natural resource base of Anoka County by;					
• identifying and prioritizing natural resource issues and trends in ACD's comprehensive and annual planning processes,	✓	✓	✓	✓	✓
• reviewing and commenting on city and water management comprehensive plans,	✓	✓		✓	
• establishing and updating a greenway network plan that focuses on the protection of remaining natural communities and interconnecting expansive habitat areas,			✓	✓	
• encouraging conservation design development where feasible to establish and maintain the greenway network and to protect high quality ecosystems, and			✓	✓	
• encouraging infiltration of stormwater to maintain and restore surficial groundwater aquifer levels.	✓	✓			
<u>Protect</u> high priorities parcels that contain rare and declining habitats, natural communities identified by the MN County Biological Survey, and/or are located in identified greenway networks by;					
• identifying opportunities for conservation development,	✓		✓	✓	
• acquisition of fee title and conservation easements, and	✓		✓	✓	

Mechanism	Water Quality	Water Quantity	Natural Habitats	Wetlands	Soils
• ensuring there are local entities capable of accepting and managing fee titles and conservation easements.	✓		✓	✓	
Protect water quality in high priority water bodies by prioritizing monitoring, analysis and technical and financial resources in a manner that achieves the most good for the most people on the highest priority resources.;	✓	✓			
Assist landowners and public entities to manage and enhance high priority natural resources by;					
• designing and coordinating installation of conservation practices and ecosystem restorations	✓	✓	✓	✓	✓
• preparing conservation plans for agricultural operations in cooperation with USDA NRCS	✓	✓	✓	✓	✓
• preparing conservation plans for properties enrolled in the Rural Preserve Property Tax Program			✓	✓	✓
• enforcing the Wetland Conservation Act of 1991	✓	✓	✓	✓	
• refining the development review process utilizing minimal impact development design standards	✓	✓	✓	✓	✓
• facilitating the treatment of invasive species			✓	✓	
Fund conservation practices installation and design engineering to address high priority problems in partnership with landowners and public entities.	✓	✓	✓	✓	✓
Fund water management activities and WCA administration through administration of the Natural Resources Block Grant.	✓	✓		✓	
Administer programs and grants in partnership with public entities to achieve efficiencies and leverage limited funding by;					
• preparing annual reports on behalf of water management organizations,	✓	✓		✓	
• hosting websites for several water management organizations,	✓	✓	✓	✓	✓
• applying for grants in partnership with other local governments, and	✓	✓	✓	✓	✓
• hosting the Landscape Restoration Program on behalf of the Metro Conservation Districts.	✓	✓	✓		✓
Sell tree and shrub seedlings and native grass and forb seed at an annual sale for the purpose of habitat creation and restoration.	✓		✓	✓	✓
Rent equipment useful for the implementation of conservation practices.	✓		✓	✓	✓

Mechanism	Water Quality	Water Quantity	Natural Habitats	Wetlands	Soils
Sell supplies at cost that are useful for the implementation of conservation practices.	✓		✓	✓	✓
Sell rain garden pretreatment chambers to enhance the function of curb cut rain gardens and simplify long term maintenance for cooperators.	✓	✓			
Educate the public about natural resource topics dealing with priority issues through varied media types such as; • presentations and workshops, • brochures, • news paper articles, • guidebooks • displays, • cable, • websites, and • events.	✓	✓	✓	✓	✓
Educate local councils and commissions about storm water management, erosion control, water quality, and water quantity as it pertains to recommendations supplied as part of the plat review process.	✓	✓	✓		
Educate lake associations on lake management issues by undertaking cooperative programs to benefits lakes.	✓		✓		
Educate public officials on high priority resource topics through appropriate venues.	✓	✓	✓	✓	✓
Educate landowners with heritage communities about land stewardship and the value of their resource by providing selected properties with a Homeowners Guide.			✓	✓	
Educate policy makers on the importance of infiltration practices to avoid the long term depletion of surficial aquifers.	✓	✓	✓	✓	

Budgetary Needs and Projections

Expenses

Year	Personnel	Operating	Capital	District Projects	Federal Projects	State Projects	Local Projects	Cost Share
1998	129,630	38,657	3,862	26,593	-	48,928	-	10,080
1999	160,470	38,990	22,050	17,823	-	52,847	-	10,080
2000	221,887	44,335	13,429	20,815	55,183	50,538	-	13,965
2001	255,403	49,848	11,743	28,725	85,818	70,063	1,243	20,000
2002	305,817	61,310	37,406	22,655	29,164	25,651	14,018	16,893
2003	327,590	50,590	13,080	30,416	79,563	56,240	19,062	10,540
2004	389,142	52,775	2,801	28,760	81,013	56,241	45,522	14,000
2005	401,939	51,171	8,948	20,941	5,314	54,878	8,629	12,220
2006	410,736	56,909	11,647	21,385	2,928	48,286	21,431	-
2007	456,908	50,616	16,173	30,172	22,733	19,719	13,396	-
2008	445,678	61,373	6,436	46,230	25,447	4,472	11,457	1,248
2009	454,643	53,060	1,499	43,850	13,643	83,420	9,191	-
2010	509,026	55,067	4,175	57,960	-	101,627	20,524	14,000
2011	542,348	53,567	1,200	51,750	-	35,479	27,620	14,000
2012	545,000	51,000	1,600	50,000	-	52,000	30,000	14,000
2013	565,000	54,000	1,600	50,000	-	55,000	25,000	14,000
2014	565,000	52,000	1,600	50,000	-	65,000	27,000	14,000

Revenues

Year	Charges for Services	Interest	Local Grants	County Allotment	County Grants	State General	State Grants	Federal Grants	Cost Share
1998	51,560	5,036	3,963	94,013	12,111	20,201	83,407	-	10,280
1999	56,415	4,990	3,948	98,150	13,543	19,260	81,080	-	10,280
2000	72,045	14,296	18,107	114,640	17,680	22,752	93,432	83,035	13,965
2001	76,700	7,931	15,880	126,000	19,360	24,253	100,682	118,809	20,000
2002	115,959	1,889	39,252	137,500	25,621	24,469	86,292	68,905	19,566
2003	116,962	1,471	42,635	143,233	24,574	25,304	107,077	108,039	12,442
2004	115,376	435	78,465	125,000	56,415	24,039	167,557	130,578	17,500
2005	125,133	620	20,791	138,750	39,975	25,304	139,859	67,240	15,275
2006	135,408	843	11,061	144,000	34,842	25,000	155,755	74,115	-
2007	198,438	209	1,000	140,000	68,183	25,304	80,610	93,231	-
2008	233,034	2,680	1,000	146,500	39,343	21,812	93,239	42,648	1,248
2009	167,102	118	133,969	150,987	34,312	24,579	139,609	-	-
2010	135,537	550	81,123	153,600	30,200	23,000	332,264	-	14,000
2011	140,877	750	83,635	153,600	34,960	20,000	285,020	-	14,000
2012	150,000	1,000	82,000	156,000	18,000	22,000	300,000	-	14,000
2013	150,000	1,250	82,000	160,000	20,000	25,000	310,000	-	14,000
2014	150,000	1,250	82,000	165,000	22,000	25,000	320,000	-	14,000

Cost-Share Program Requirements

ACD's program to assist with the cost of installing conservation practices to achieve the goals of the district consists of several funding sources, each with their own set of requirements. These funding sources change from year to year and so detailed procedures and policies are not included in this document. There are however some general policies that ACD has adopted to facilitate program administration and improve program outcomes.

- The ACD board may act to obligate funds toward a project without fully encumbering those funds within a contract. This serves to reserve funds for projects while other elements of project planning, design and coordination can be finalized.
- On a case by case basis, design and engineering costs may be billed to the landowners/project sponsor/applicant and may be applied toward the cost of installation.
- Investment of public funds into a project will be considered in terms of the benefits received by the public. ACD will consider all public funds going toward a project when determining if the project is worthwhile on a cost-benefit basis, not just those funds invested by or through ACD.
- Public benefits for projects will be measured in terms of the actual benefits to the target receiving water body, not the capacity of a practice to treat water.
- Cost share payments are not to exceed the cost of installation.
- Performance based cost share approaches are encouraged.

Performance Based Cost Share

Performance based cost share is an approach by which public investment into projects is measured by the amount of benefit that results from the project. Funds received by a landowner/project sponsor/applicant are independent of the installation cost of the project but rather are based solely on how much benefit is received. Predetermined rates are developed for benefits over a specific time period. The rates may vary by geographic area, target water body or target benefit. Payments to landowners/project sponsors/applicants, are not to exceed the cost of installation however.

Nature and Extent of High Priority Problems

Cost-share programs are divided into two general categories: agricultural and urban.

Agricultural Problems

High priority erosion problems are defined as: "Erosion from wind and/or water occurring on Class I-IV soil in excess of 2T tons/acre/year of any soil within 300 feet of a stream or 1,000 feet of a water basin designated as a protected water or wetland by the DNR." Areas meeting this description are all located in the northwest part of Anoka County. Wind erosion is also a problem that is accounted for in this analysis.

High priority sedimentation problems are defined as: “All areas within 300 feet of a stream or 1,000 feet of a lake where the erosion rate exceeds 3T tons/acre/year and where the Conservation District can show that sedimentation delivery for a watershed out-letting to these waters exceeds 2T tons/acre/year. The lake or stream must be classified by the DNR as a Protected Water.”

High priority feedlots are defined as: “Those feedlots where the pollution rating (from the Ag. Waste Model) is greater than or equal to one and is discharging pollutants to DNR designated protected waters or wetlands; to shallow soils overlying fractured bedrock; or within 150 feet of a water well.” Feedlots, when improperly located with respect to water resources, and improperly managed to prevent runoff from entering a lake or a stream, can downgrade water quality. There is very little available information on Anoka County feedlots and the information that is available is outdated and no longer reliable.

Agricultural Conservation Measures Needed

Practices being used to control water erosion are: conservation tillage, grassed waterways, contour farming, strip-cropping, diversions, terraces, water and sediment control basins, and critical area plantings.

Practices used to control wind erosion are: conservation tillage, field windbreaks, wind strip-cropping and permanent vegetative cover.

Practices used to control feedlot pollution are: waste management systems, waste storage ponds, waste storage structures, waste utilization plans and diversions.

Urban Problems

With a limited agricultural constituency, ACD has noted significant erosion problems associated with urban and urbanizing land uses. Streambank erosion has been accelerated by more dramatic bounces in stream elevations that last for a longer duration. Lakeshore erosion has been accelerated due to the practice of maintaining a manicured lawn to the waters edge and wind and water erosion have become a greater concern due to mass grading on construction sites.

Ultimately, these all have the potential to degrade surface water quality. Sedimentation is the largest contributor to water quality degradation. Storm sewers are conduits for fertilizers, pesticides, chemicals, solvents, road salt, and other contaminants to open water resources. Any structural, grading or vegetative practice that has the potential to improve and protect water quality, recharge groundwater, or reduce flooding in high priority areas is a potential candidate for cost share.

Urban Conservation Measures Needed

The following conservation practices may be necessary to address high priority erosion, sedimentation, and water quality problems in Anoka County. Innovative methods are encouraged.

1. Temporary construction site erosion and sediment control practices (mulching, silt fences, etc)
2. Grade stabilization structures (check dams, diversion)
3. Streambank and lakeshore protection (rock rip rap, bioengineering)
4. Critical area/slope stabilization (fiber blanket, revegetation)
5. Stormwater conveyance system management (ditch maintenance, pond outlet modifications, and pond maintenance)
6. Model ordinances addressing erosion control, stormwater management, wetland preservation, groundwater protection
7. Reduction of sediment/chemical application to lawns and streets
8. Water conservation measures and stormwater infiltration to recharge groundwater
9. Curb cut rain gardens and other stormwater treatment retrofit practices
10. Inspection and enforcement of existing requirements

Project Priorities

ACD and its partners are continuously working to identify the most cost effective opportunities to improve water quality, reduce discharge to the stormwater conveyance system, recharge groundwater, and improve habitat. Methods used each year to identify worthwhile projects include, but not limited to, lake shore and riverbank inventories, subwatershed stormwater retrofit assessments, site consultations and designs, TMDL implementation planning, water resource investigations, and open space planning.

The following is a list of work products that are completed, underway or planned wherein multiple projects have been identified. All of these work products are for resources of high priority and as such, all projects identified therein are considered high priorities for installation. The most cost-effective projects should be pursued first however.

Lakeshore and Riverbank Inventories

- Lake George
- Martin Lake
- Crooked Lake
- Ham Lake
- Coon Lake
- Linwood Lake
- Fawn Lake
- Typo Lake
- East Twin Lake
- Rum River

Subwatershed Stormwater Retrofit Assessments

- Rice Lake
- Sand Creek
- Woodcrest Creek

- Lower Coon Creek
- Martin Lake
- Golden Lake
- Oak Glen Creek
- Coon Lake

Site Consultations and Designs

- Oak Glen Creek stabilization project

TMDLs and Implementation Plans

- Golden Lake
- Martin and Typo Lakes
- Peltier and Centerville Lakes
- Lake Pepin
- Hardwood Creek
- South Metro Mississippi River

Water Resource Investigations

- Crooked Lake Management Plan

Open Space Planning

- Anoka Nature Preserve Management Plan
- Melanie Kern Easement Management Plan
- Herb Beach Easement Management Plan

Appendix

Anoka Conservation District Cost Share Projects

Year	Location	Description
1990	Burns Township	Diversion
1990	Rice Creek WD	Phase I - Streambank Stabilization and Dam Removal
1992	Coon Creek WD	Streambank Stabilization - Rip Rap
1992	Fridley – RCWD	Streambank Stabilization - Rock Rip Rap
1992	Rice Creek WD	Phase II - Streambank Stabilization and Dam Removal
1994	Cedar Creek	Streambank Stabilization - Grading and Re-vegetation
1994	Coon Creek WD	Streambank Stabilization
1996	Columbia Heights	Grade Stabilization, Outlet Stabilization
1997	Fridley – RCWD	Streambank Stabilization – Rock Rip Rap
1998	Linwood –Martin Lake - Simonson	Lake Shore Stabilization – Rock Rip Rap and Veg. Buffer
1999	Fridley – RCWD	Streambank Stabilization – Rock Rip Rap – Grade Stab.
1999	Fridley- Rice Creek - Woodcrest	Streambank Stabilization – Rock Rip Rap – Gully Stab.
2000	Coon Rapids – Mississippi River - Dam	Streambank Stabilization – Rock Rip Rap – Buffer
2001	Ramsey – Rum River Central Park	Streambank Stablization – Rock Vanes – Bioengineering – Buffer – Root Wads
2001	Fridley – Moore Lake – City Park	Lakeshore Native Plant Buffer
2002	Ramsey – Rum River - River's Bend	Streambank Stabilization – Bolder Armament – Native Plant Buffer
2002	Anoka – Rum River South Park	Stream Native Plant Buffer – Rain Garden
2002	East Bethel - Coon Lake - Aymar	Shoreland Buffer
2003	Anoka – Mississippi River - Chamberlain	Riverbank Stabilization – Cedar Tree Revetment – Native Plant Buffer
2003	Oak Grove – Lake George - Faherty	Shoreland Stabilization – Native Plant Buffer
2003	Ramsey – Mississippi River - Johnson	Riverbank Stabilization – Native Plant Buffer
2004	Linwood – Typo Lake - Molitor	Shoreland Stabilization – Native Plant Buffer
2005	Fridley – Locke Lake - Ficenko	Shoreland Stabilization – Native Plant Buffer
2005	Fridley – Locke Lake – Schultz	Shoreland Stabilization – Native Plant Buffer
2006	East Bethel – Coon Lake – Rogers (Brough)	Shoreland Buffer
2007	Coon Rapids – Crooked Lake - Lindenberg	Shoreland Buffer

Anoka Conservation District Rain Garden Projects

Year	Location	Description
2002	Anoka – Rum River South Park	Boat Landing Parking Area Rain Garden and Riverbank Buffer
2004	Andover - Bickford	Residential Rain Garden
2004	Andover – Barbur	Residential Rain Garden
2004	Andover - Churchich	Residential Rain Garden
2004	Andover - Dietzler	Residential Rain Garden
2004	Andover – Eide	Residential Rain Garden
2004	Coon Rapids – Lach –	Residential Rain Garden & Lakeshore Buffer

	Crooked Lake	
2004	Andover – Thompson	Residential Rain Garden
2005	Ramsey - Glosimodt	Residential Rain Garden
2006	Centerville - Lakso	Residential Rain Garden
2006	Anoka – Mueller	Residential Rain Garden
2006	Blaine – Ochocki	Residential Rain Garden
2006	Blaine – Olsvig	Residential Rain Garden
2006	Columbia Heights - Pham	Residential Rain Garden
2006	Fridley – Reynolds	Residential Rain Garden
2006	Columbia Heights – Rombalski	Residential Rain Garden
2006	Linwood – Searing	Residential Rain Garden
2006	Columbia Heights – Rombalski	Residential Rain Garden
2008	Fridley- Chaudhary	3 Residential Rain Gardens
2008	Circle Pines- Percy	Residential Rain Gardens
2008	Blaine – Early	Residential Rain Garden

Research, Monitoring and Inventories

Activity	Existing	Needed
Lake level monitoring	20 lakes	Existing is adequate
Rain gauges	32 Volunteers	Existing is adequate
Inventory drained wetlands for restoration		SRWMO, Burns, CCWD, RCWD
Land Cover MLCCS	Completed for entire county	Existing is adequate
Groundwater monitoring	14 DNR Observation Wells	1 more well in western part of county
Stream levels/hydrographs	Crest gauges in Coon Creek and continuous gauges in Rum River tributaries and in Sunrise River.	Existing is adequate
Groundwater quality	Scattered studies by Anoka Co. Env. Health and ACD, and MPCA monitoring of superfund sites.	Make sample bottles available
Surface water quality	Studies including current Rum River outlet monitoring, lake monitoring, stream monitoring in Lower Rum River WMO, Sunrise River WMO, and Rice Creek WD, biomonitoring throughout county.	Stream monitoring in Upper Rum River WMO, Six Cities WMO and Coon Creek WD.
Wetlands water levels	15 continuous monitoring gauges throughout county.	Approximately 2 more in southern and western parts of the county

Monitoring and inventory data are not extensively described in this report because all monitoring and inventory data are made available on ACD's website, www.AnokaNaturalResources.com using the mapping utility and the data access tool. ACD also prepares and annual Water Resources Almanac that is distributed to WMOs.

Soil Survey of Anoka County, Mn USDA Sept. 1977

Soils of Anoka County

Alluvial Land	Growton Fine Sandy Loam	Meehan Sand
Anoka Loamy Fine Sand Series	Hayden Fine Sandy Loam Series	Millerville Mucky Peat
Becker Very Fine Sandy Loam	Heyder Fine Sandy Loam Series	Mora Fine Sandy Loam
Blomford Loamy Fine Sand	Hubbard Coarse Sand Series	Nessel fine Sandy Loam
Graham Loamy Fine Sand Series	Isan Sandy Loam	Nowen Sandy Loam
Brickton Silt Loam	Isanti Fine Sandy Loam	Nymore Loamy Sand Series
Cathro Muck	Kingsley Fine Sandy Loam Series	Rifle Series
Chetek Sandy Loam Series	Kratka Loamy Fine Sand	Rondeau Muck
Cut and Fill Land	Lake Beaches	Ronneby fine Sandy Loam
Dalbo Silt Loam	Langola Loamy Sand	Sartell Fine Sand Series
Dickman Sandy Loam Series	Lino Loamy Fine Sand	Seelyeville Muck
Duelm Loamy Coarse Sand	Loamy Wetland	Soderville Fine Sand
Dundas Loam	Lupton Muck	Webster Loam
Emmert Series	Markey Muck	Zimmerman Fine Sand Series
Glencoe Loam	Marsh	

Hydric Soils of Anoka County

Alluvial Land	Kratka Loamy fine Sand	Nowen Sandy Loam
Blomford Loamy Fine Sand	Lake Beaches	Rifle Mucky Peat
Brickton Silt Loam	Loamy Wet Land	Rifle Muck, Woody
Cathro Muck	Lupton Muck	Rifle Soils, Ponded
Dundas Loam	Markey Muck	Rondeau Muck
Glencoe Loam	Marsh	Seelyeville Muck
Isan Sandy Loam	Millerville Mucky Peat	Webster Loam
Isanti Fine Sandy Loam		

Highly Erodible Soils of Anoka County

Chetek Sandy Loam, 6-12% Slope	Heyder Fine Sandy Loam, 18-30% slope
Emmert Gravely Coarse Sandy Loam, 6-12% slope	Heyder Complex, 12-25% slope
Emmert Gravely Coarse Sandy Loam, 12-25% slope	Kingsley Fine Sandy Loam, 12-18% slope
Emmert Complex, 4-12% Slope	Kingsley Fine Sandy Loam, 18-25% slope
Emmert Complex, 12-25% Slope	Nymore Loamy Coarse Sand, 12-25% slope
Hayden Fine Sandy Loam, 6-12% slope	Sartell Fine Sand, 12-24% slope
Hayden Fine Sandy Loam, 12-25% slope	Zimmerman Fine Sand, 12-24% slope
Heyder Fine Sandy Loam, 12-18% slope	

Questionable Highly Erodible Soils

Braham Loamy Fine Sand, 6-18% slope	Kingsley Fine Sandy Loam, 6-12% slope
Heyder Fine Sandy Loam, 6-12% slope	

Zimmerman-Isanti-Lino Association

This soil association is mainly a broad undulating sand plain. The naturally occurring high water table is at or near the surface in most depressed areas. Steeper slopes occur next to drainage ways and large depressions. This association makes up about 50% of the county. It is about 45% Zimmerman, 15% Isanti, 10% Lino and 30% soils of minor extent. Much of this association is well suited to urban development. In some areas, however, a high water table severely limits many uses. The association is moderately well suited to farming and provides sites for recreational facilities. Fertility and available water capacity are low. Main concerns of management are controlling soils blowing, improving fertility, and controlling the level of the water table in low lying areas. Much of this association is used for urban development, with additional areas being urbanized every year. Small acreages are used as rural residences or are farmed. Corn, soybeans, and alfalfa are the crops commonly grown. Many former farm fields are planted to coniferous trees which are harvested as Christmas trees. Truck crops and cultural sod are grown on drained organic soils. Additional acres provide wildlife habitat and sites for recreational facilities.

Rifle-Isanti Association

This soil association is a series of large level bogs and wetlands dominated by organic soils and small sandy island-like features that rise several feet above the level of the surrounding bogs. The water table is high. This association makes up about 17% of the county. It is about 60% Rifle, 20% Isanti, and 20% soils of minor extent. Most of this association is poorly suited to urban, farm and recreational uses. Natural fertility is moderate to low. Available water capacity is low to very high. The chief management need is controlling the level of the water table. Drained organics are largely planted with sod and vegetables but have more recently been converted to uses such as golf courses.

Hubbard-Nymore Association

This soil association is mainly a nearly level to gently sloping outwash plain that is dissected by drainage-ways and pitted by large depressions. Steeper slopes occur next to these large depressions and drainage-ways. This association makes up about 15% of the county. It is about 40% Hubbard, 35% Nymore and 25% soils of minor extent. It is well suited to most urban uses and is moderately well suited to farming and recreation. Fertility and available water capacity are low. The chief management needs are controlling soil blowing, improving fertility, and controlling the level of the water table in low-lying areas. Much of this association is under urban development. Small areas are cultivated. At a few locations, potatoes are grown under irrigation. Poorly drained areas are used for permanent pasture, recreation and wildlife.

Heyder-Kingsley-Hayden Association

This soil association is a gently undulating to steep morainic landscape of short irregular slopes, scattered small lakes, and scattered depression of organic soils. This association makes up 10% of the county. It is about 40% Heyder, 20%

Kingsley, 10% Hayden and 30% soils of minor extent. Much of this association is well suited to urban development. In some areas, however, poor drainage severely limits many uses. The association is well suited to farming and provides recreational facilities. Fertility and available water capacity are medium to high. Main concerns of management are controlling water erosion and the level of the water table in low-lying areas. Much of this association is farmed. A few steep areas and undrained wetland areas are used for recreation and wildlife. Crops commonly grown are corn, soybeans, and alfalfa. Small acreages are used as rural residences. The urban trend is increasing.

Nessel-Dundas-Webster Association

This nearly level to gently sloping soil association is a series of undulating ground moraines. Steeper slopes are adjacent to large bogs and drainage-ways. All slopes are short. The soil association makes up about 5% of the county. It is about 35% Nessel, 15% Dundas, 15% Webster and 35% soils of minor extent. Much of this association is moderately to poorly suited to most urban uses. It is well suited to farming and provides sites for recreational facilities. Fertility is high, and the available water capacity is very high. The chief management needs are controlling the level of the water table in low lying areas, controlling erosion in the more sloping areas, and maintaining fertility. About half of the association is farmed. Commonly grown crops are corn, soybeans, and alfalfa. Some undrained wet areas are used for recreation and wildlife. The increasing urban trend is expected to continue.

Emmert-Kingsley Association

This soil association is a gently undulating to steep morainic landscapes of short irregular slopes and scattered small marshes and depressions of organic soils. This association makes up 3% of the county. It is about 45% Emmert, 30% Kingsley and 25% soils of minor extent. Much of this association is moderately well suited to urban uses and is moderately well-poorly suited to farming and recreational uses. The small areas that are poorly drained are severely limited. Fertility and available water capacity range from very low to high. The chief management needs are controlling water erosion and controlling the level of the water table in low lying areas. A large part of this association is an ordnance de-arming ground. Only a small part is farmed because the soils are steep and droughty. Commonly grown crops are alfalfa, corn silage, and oats. Few areas are used for recreation and wildlife. Small acreages are rural residences. The urban trend continues to increase.

General Soils Association Map