

D. Human Environment

1. Historic Land use

A survey of archaeological resources in the Cottage Grove Ravine was conducted by the City of Cottage Grove, Minnesota between October 1st 1989 and August 31st 1990. A total of 271 acres were subjected to field survey. Two small prehistoric archaeological sites were recorded. A historic findspot and a possible dugout occupation site were also identified (Robert Vogel,1990).

2. Current and future Land Use

Existing and anticipated future land uses of the cities are presented on the land use maps shown in Figures IV-14 and IV-15. ~~The figures indicate that the existing urban centers of Woodbury, Cottage Grove, and Oakdale will continue to develop, while the area to the east and southeast will remain rural for the foreseeable future.~~ Growth is anticipated throughout the watershed. The City of Woodbury completed the Woodbury East AUAR in 2002, this includes development of approximately 1800 acres including residential, commercial/retail, school facilities, and transportation upgrades. The City of St. Paul Park and Grey Cloud Island Township have completed the Rivers Edge AUAR, including 640 acres of mixed use development. This project will include multi-family housing, townhomes, a City Center mixed use, and single family residential. The City of Cottage Grove, in addition to the West Draw Development is planning several redevelopments and is master planning the East Ravine including approximately 3500 acres of commercial/retail, medium to low density residential and mixed use areas. Other growth zones include the I-94 corridor and Highway 61 redevelopment. All of this proposed development will be phased over the next 15 years. The SWWD has been involved in the development and review of the all the AUAR's and anticipates review of individual projects for compliance with the proposed mitigation strategies presented in the AUAR.

The SWWD will work with the Cities of the watershed to develop standards based on existing and future land use to ensure adequate stormwater management/flood control is provided. Particular attention to

IV. Watershed Characteristics and Resources

~~stormwater quantity, quality and resource value, will balance future develop and water resource managment in the watershed. (XX add maps from City comp plans showing phasing)~~

~~The density of development associated with each land use is an indication of the amount of runoff that can be expected from the different areas. Since future development increases the amount of runoff, all hydrologic modeling is based on anticipated development of the watershed. As the land use changes from that assumed here, the hydrologic data should be reviewed and revised as required. The SWWD requires the municipalities to monitor all the planning and land use revisions in their localities to ensure that peak runoff rates defined in Chapter 6 are not exceeded and are kept within the capacities of downstream conveyance facilities.~~

3. Public Utility Service

~~The Cities of Cottage Grove, Woodbury, and Oakdale have municipal sanitary sewer systems that transport their wastewater to facilities for treatment. The local elements of the system are sewer services, laterals, trunks, manholes, lift stations, force mains and all correlated appurtenances associated with the collection and transportation of wastewater.~~

~~Treatment and disposal of wastewater generated by the cities of Woodbury and Oakdale is presently accomplished by the Metropolitan Council Environmental Services (MCES) at the Metro Treatment Plant in St. Paul. Three MCES interceptors serve the northern portion of the watershed. The WONE interceptor collects flow from Oakdale, portions of Lake Elmo, Landfall and northern Woodbury. The Lower Afton and Carver Lake Interceptors serve the remainder of Woodbury.~~

~~The wastewater generated by the city of Cottage Grove is treated at the Cottage Grove Treatment Plant, also operated by the MCES. Cottage Grove is currently the only city served at this plant. Future MCES studies will determine the fate of the Cottage Grove plant. Ultimately, the plant could be upgraded or a new plant constructed in the vicinity to provide regional treatment for the entire watershed.~~

IV. Watershed Characteristics and Resources

The MCES completed installation of the South Washington County interceptor and expansion of the Cottage Grove Wastewater Treatment plant. (insert MCES documentation on capacity and numbers of households)

Maps of the cities' wastewater collection systems are available at the respective cities and must be included in their Local Water Management Plans. The existing land use map shows the current Metropolitan Urban Service Area (MUSA) boundaries within the watershed. The MUSA represents the extent of existing or potential sanitary sewer service area. Accordingly, the MUSA areas basically define the current or near future extent of medium and high density housing and commercial/industrial land uses. The current boundaries are estimated to be adequate through the year 2000.

IV. Watershed Characteristics and Resources

Figure IV-14

IV. Watershed Characteristics and Resources

Figure iv-15

Public Water Supply

The cities of Cottage Grove, Woodbury, ~~and~~ Oakdale, ~~St. Paul Park and Newport~~ have municipal water supply systems in the SWWD area. Each city must include a map of its current water supply system in its Local Water Management Plan. To meet the demands of growth in the watershed several public water supply expansions are planned. The SWWD has participated with Washington County, the City's of Woodbury and Afton, the Washington Conservation District and the Valley Branch Watershed District to evaluate on expansion in the Woodbury East AUAR area. The results of this effort creates a groundwater model for the southern portion of Washington County capable of evaluating future demands on the aquifers for water supply and maintaining sustainability.

(XX add information from LCMR project and Nitrate Study)

~~Cottage Grove, Woodbury, and Oakdale obtain their raw water from deep wells drilled into the Jordan Sandstone Aquifer. The water is pumped directly into the distribution system following chlorination and fluoridation at each well site. There are ten existing wells that currently serve the city of Cottage Grove with a combined capacity of 8400 GPM or 18.7 MGD. Existing storage tanks in Cottage Grove have a total storage capacity of 4.15 million gallons. Woodbury's water supply system contains 10 wells, and has a combined pumping capacity of 10,850 GPM or 24.2 cfs. Water quality samples taken at several wells in Cottage Grove in 1965, 1976, and 1984 show almost no variation.~~

4. Water-based Recreation Areas and Land Ownership

There are ten ~~significant or potentially significant~~ water-based recreation areas in the watershed. ~~They including~~ e a diversity of ~~types of~~ waterbody ~~ies types~~ and a diversity of recreational opportunities. Table IV-4 outlines ~~the basic role of each~~ waterbody classification as well as its location and ownership. The waterbodies are shown in Map XX1 at the back of the report. ~~There are numerous smaller waterbodies in the watershed that also provide recreational benefits and opportunities, but they are usually smaller wetlands and ponds and their primary role is usually aesthetics and wildlife viewing. Several areas contain intermittent streams in the watershed. While the intermittent streams often provide desirable natural areas~~

IV. Watershed Characteristics and Resources

~~along the stream banks, they do not appear to provide consistent aquatic environments and therefore were not included in the inventory of water-based recreation areas.~~

~~Many of the water resources listed in Table IV-4 are in rapidly urbanizing areas of the watershed. These waterbodies will become more important recreational resources in their communities and presumably encounter more recreation-related pressures. The burden to manage the recreational pressures will continue to rest with the cities and the county with coordination and support from the SWWD.~~

Table IV-4. Recreational Status of SWWD Waterbodies

Waterbody	Location	Role/Value	Ownership
Armstrong Lake	Sec. 28/33, Oakdale/Lk Elmo	Currently aesthetics and wildlife viewing. Non-motorized boating possible.	Private LDR farm), Oakdale, Co. Rd. ROW
Wilmes Lake	Sec. 3/10, Woodbury	Aesthetics, wildlife viewing, fishing, limited boating.	Woodbury, Private (MDR, Comm.)
Evergreen Bog - North	Sec. 4/5/8/9, Woodbury	Aesthetics, wildlife viewing.	Private (MDR, HDR Comm.), Woodbury
Markgrafs Lake	Sec. 2, Woodbury	Aesthetics, wildlife viewing, fishing, boating.	Woodbury, Private (farm) Co. Rd. ROW
Powers Lake	Sec. 11, Woodbury	Aesthetics, wildlife viewing, game fishing, boating, swimming.	Woodbury, Private (LDR)
Colby Lake	Sec. 15/22, Woodbury	Aesthetics, wildlife viewing, possible fishing, limited boating.	Woodbury, Private (LDR)
Bailey Lake	Sec.27/34, Woodbury	Aesthetics, wildlife viewing, possible fishing, limited boating	Private (farm, LDR), Woodbury, City Rd. ROW
Gables Lakes	Sec.2, Cottage Grove	Aesthetics, wildlife viewing	Private (farm)
C. Grove Ravine Park Lake	Sec. 22/23/26, Cottage Grove	Aesthetics, wildlife viewing, limited boating, possible fishing.	Washington County
Mississippi River	Sec. 30/32/33/34/35, Cottage Grove	Aesthetics, wildlife viewing, game fishing, boating.	Private (LDR, MDR, Indust.), Railroad ROW

IV. Watershed Characteristics and Resources

Note: LDR=Low Density Residential, MDR=Medium Density Residential, HDR=High Density Residential, ROW = Right-Of-Way, Comm.=Commercial, Indust.=Industrial.

5. Pollution Point Sources

~~Point sources of pollution refer to locations where potentially large amounts of contaminants are discharged into the environment at a single location. As with any watershed, there are many documented and undocumented potential pollution sources. Solid waste disposal areas are important potential sources of pollution. Solid waste disposal areas are important potential sources of pollution, as are sites where improper hazardous waste disposal has occurred.~~

Water pollution point sources such as feedlots; unused, unsealed wells; storage tanks; and permitted wastewater discharges can ~~also~~ contribute to water pollution. These activities are ~~generally~~ regulated and must meet permit conditions and standards. ~~certain base line standards. The F~~feedlot impoundments and permitted wastewater discharges in the SWWD identified by the MPCA are shown on Figure XXIV-16. ~~The feedlot impoundments are designed to provide treatment of farm feedlot runoff. The landfill and open dump areas include old sites that may no longer receive solid waste. Unused, unsealed wells can pose a potentially serious risk for contamination since these wells are a direct connection or conduit to aquifers that are commonly used for drinking water supplies.~~

~~The 3M dump site in Woodbury near its border with Cottage Grove is the only site with monitoring data available. The groundwater surrounding the site has been monitored for organic chemicals since 1966, when the site closed. The clean up of groundwater at the site is being monitored by the MPCA, and monitoring data is available through its office.~~

Abandoned and unsealed wells provide direct conduits for migration of pollutants to the groundwater. The SWWD in conjunction with the Washington County Health and Environmental Land Management department inventory known well locations throughout the watershed. A map of known well locations is presented in Figure XX.

Landfill sites can be potential sources of groundwater impacts. The MPCA maintains a list of sites as well as monitors ongoing investigation and remedial efforts. For further information contact the MPCA at XX.

IV. Watershed Characteristics and Resources

Disposal of household hazardous wastes can be a problem for many residents of the watershed. For lacking knowledge about disposal areas and impacts to downstream waterbodies, residents may dump household hazardous wastes such as used motor oil and lawn chemicals into storm sewers. Citizens should be aware that the Washington County Department of Health, Environment, and Land Management has a program for collection of household hazardous wastes. The county operates a year-round collection site in Oakdale and a summer collection site in Cottage Grove. Residents can contact the county at [651-430-6655](tel:651-430-6655) for more information.

Figure IV-16. Pollution sources.

IV. Watershed Characteristics and Resources

There are no known previously existing permanent sampling stations in the watershed. The only known historical surface water sampling sites were two temporary sampling stations in Cottage Grove at Iverson Avenue and on 80th Street, which were part of a 1980 study. The study, "Quality of Runoff from Small Watersheds in the Twin Cities Metropolitan Area, Minnesota. Hydrologic Data for 1980" was prepared by the U.S. Geological Survey and the Metropolitan Council. The results support and document the widely accepted fact that stormwater from residential areas, especially those under construction, contribute significant amounts of pollution such as sediments, nutrients, and sometimes heavy metals.

The SWWD has installed two water quality monitoring stations in the upper half of the watershed in 1996. The stations are each equipped with flow monitoring devices, automatic samplers, and rain gauges. The monitoring program will establish annual loadings of nutrients and sediments and will periodically check heavy metal concentrations. The sampling sites both present and historic, are shown on Figure IV-16.

6. Status of Shoreland and Floodplain Ordinances

The DNR shoreland ordinance requirements, which restrict land uses and land clearing activities in areas adjacent to lakes, rivers, and streams, vary from community to community. The 1989 revised rule dealing with shoreland ordinances provides specific guidelines for what must be included in the local ordinances. In general terms, the DNR has ranked communities based on need for a shoreland ordinance into four categories. The first two categories were given higher priority and those communities= have been informed that they must update their existing ordinance or adopt a new ordinance that meets the state requirements. The third and fourth level communities are encouraged to adopt a shoreland ordinance but are not being forced to do so at this time.

Floodplain ordinances are also required based on the community's need for such an ordinance. In this case, the federal government has prioritized the need by eliminating some communities that do not have floodprone areas identified on the FIS floodplain maps. Table IV-5 summarizes the status of the shoreland and floodplain ordinances in the cities in the watershed. XX add in SWWD flood storage areas, and Washington County FIS restudy.

**Table IV-5. Status of City Shoreland
and Floodplain Ordinances**

Community	Shoreland Ordinance			Floodplain Ordinance	
	Required	Adopted	DNR Approved	Required	Adopted
Lake Elmo	Yes	Yes	Yes	Yes	Yes
Oakdale	No	No	N/A	No	N/A
Woodbury	Yes	Yes	Pending	No	N/A
Afton	No	Yes	N/A	Yes	Yes
Cottage Grove	No	No*	N/A	Yes	Yes
Grey Cloud Island					
St. Paul Park					
Newport					

*Have adopted a specific ordinance for the Mississippi River shoreland areas.