

PRIORITY CONCERN:
Ground and Surface Water
Wastewater Treatment
Subsurface Sewage Treatment Systems (SSTS)

PRIORITY CONCERN: Wastewater Treatment Subsurface Sewage Treatment Systems (SSTS)

Water Management Plan Goal:

Prevent and reduce ground and surface water pollution from wastewater with administration of local programs intended to improve decentralized wastewater treatment and reduce wastewater discharges to surface waters.

Priority Concern

Wastewater contains bacteria, pathogens, chemicals, nutrients, and solids. Untreated wastewater is a potential threat to public health and can pollute surface and ground water. The bulk of the County population (77-percent in 2005) lives in one of the eleven municipalities utilizing State-permitted wastewater treatment systems. Most of the remaining population utilizes onsite, subsurface soil treatment systems (SSTS) regulated by State rules and County ordinance. Reducing public health threats and increasing compliance with State rules with installation of onsite wastewater treatment is an ongoing County program and a priority of the *Water Management Plan 2008-2013*.

Priority Concern Assessment

Relative the *Water Management Plan 2008-2013* assessment, wastewater treatment is categorized as either centralized or decentralized wastewater treatment.

Centralized Wastewater Treatment: Centralized wastewater treatment refers to a community wastewater treatment plant (WWTP) and unincorporated areas served by the WWTP. EPA defines these systems as publicly-owned treatment works (POTW).

The bulk of the County population lives (77-percent in 2005) in one of the 11 municipalities. Of the 11 municipalities in the County, eight own and operate their own MPCA-permitted, publicly owned treatment works (POTW) and three are partners with the City of Mankato. The remaining wastewater is generated in lower density, decentralized areas.

Decentralized Wastewater Treatment: Decentralized wastewater treatment can include a variety of treatment types, including subsurface soil treatment systems, package plants and other small facilities serving one or a few businesses or dwellings and located outside of an incorporated municipality. Treatment of wastewater in decentralized areas is the responsibility of the individual property owner. Most property owners utilize subsurface sewage treatment systems.

Subsurface Soil Treatment Systems (SSTS)

SSTS are grouped by their status as either in-compliance, failing to protect ground water, or are considered “imminent public health threat.”

“*Failing system*” means a seepage pit, cesspool, drywell, leaching pit, or other pit, a tank that obviously leaks below the designated operating depth, or any system with less than

the required vertical separation between the bottom of the distribution medium and the saturated soil or bedrock.

“Imminent threat to public health or safety” (IPHT) means situations with the potential to immediately and adversely affect or threaten public health or safety, including ground surface or surface water discharges and sewer back up into a dwelling or other establishment. IPHT are sometimes called straight pipe systems. Straight pipe systems include toilet waste and transports raw or partially settled sewage directly to a lake, stream, drainage system or ground surface.

Through local ordinance consistent with State rules, Blue Earth County regulates SSTS, including the few SSTS located within municipalities. All other wastewater treatment systems are regulated and permitted by the MPCA with the exception of additional EPA regulations for Class V wells. Class V wells are subsurface discharge systems or septic systems most often associated with a business but also include systems serving more than twenty persons. The MDH also regulates and licenses food, beverage and lodging establishments, manufactured home parks, and other public facilities that use decentralized wastewater treatment.

Blue Earth County Program

Blue Earth County’s program is administered by the Environmental Services Department and includes permitting, inspections and enforcement. The County’s program requirements are prescribed by Minnesota Rules, County Code and administrative policy.

Permitting and Inspections

The County has required permits for septic systems for more than 40 years. Permit records have been maintained since 1972. Since 1972 the County has issued more than 5,000 permits for septic systems and holding tanks. Table 6 displays a numeric summary of the septic system permits issued since 1972. There has been a decline in the total number of permits issued in recent years, most notably in 2007. This is due to the decline in number of new dwellings constructed in the unincorporated areas of the County as County land use regulations have limited new subdivisions outside of municipalities. The number of replacement systems constructed with older dwellings has stayed fairly consistent. Table 7 displays a summary of an example year, showing the number of systems installed by watershed and a comparison of new and replacement systems. Existing subdivisions at the edge of Mankato are also being annexed. The number of dwellings “upgraded” due to annexation is not reflected in County data.

The permitting process in Blue Earth County is generally initiated by the contractor who was contacted by the property owner. The contractor contacts the County to arrange for County staff to participate in the field site evaluation. A site and field evaluation involves soil borings and observed soil conditions, a general discussion of the project, property lines and setbacks, well location, use of the property, the intended use of the property and other necessary information for proper sizing and locating tanks and treatment areas.

The contractor then submits design plans and permit application to the County. The Contractor contacts the County when installing the septic system. Inspections are made

at critical times of the installation, including setting the tank, soil preparation (soil scarification), and construction of the soil treatment area. When construction is complete, the contractor submits an “as-built” and final paper work. The County then issues a Certificate of Compliance. The Certificate of Compliance is mailed to the property owner along with an “Owners Guide” produced by the Minnesota Extension Service.

Table 6. Septic System Permit Summary 1972-2007

Year	Number of Permit Records	Year	Number of Permit Records
1972	113	1990	85
1973	117	1991	126
1974	138	1992	176
1975	86	1993	177
1976	100	1994	252
1977	172	1995	240
1978	169	1996	189
1979	86	1997	187
1980	66	1998	217
1981	81	1999	240
1982	66	2000	211
1983	71	2001	220
1984	88	2002	162
1985	90	2003	157
1986	102	2004	188
1987	117	2005	150
1988	85	2006	161
1989	92	2007	127
		Total	5104

Source: Blue Earth County Environmental Services Department

Table 7. Example Year -- Summary of Septic Systems Installed in 2004

Major Watershed	New Systems	Replacement Systems	Total
Blue Earth River	13	11	24
Cannon River	0	1	1
Le Sueur River	43	41	84
Middle Minnesota River	30	36	66
Watonwan River	5	8	13
Total	91	97	188

Source: Blue Earth County Environmental Services Department

Sewage Ordinance Section of the County Code

The County will be updating the local ordinance in accordance with MPCA rules which became effective in February 4, 2008.

Currently the *Sewage Ordinance Section of the County Code* triggers upgrades in SSTS with the following conditions:

- 1) Inspections and enforcement in response to a complaint.
- 2) Requires a compliance inspection at property transfer.
- 3) Defines the required time for upgrades to failing, non-IPHT systems to be five years.

New subdivisions are required, consistent with Minnesota Rules and County Sewage Ordinance, to provide a review of each new lot by a licensed professional to ensure adequate area for a dwelling and two standard SSTS.

Other County Ordinance Code Provisions

The *Shoreland Ordinance Section of the County Code* requires an upgrade of non-compliant systems whenever a “permit of any kind” is required in the shoreland area.

The *Zoning Ordinance Section of the County Code* requires a review of the status of the septic system for each construction permit associated with a dwelling. IPHT must be upgraded. Urban Fringe Overlay Districts are also established in several townships near the City of Mankato and the City of Madison Lake. In Urban Fringe Overlay Districts, no new subdivisions are allowed in order to reduce development pressure and prevent construction of new dwellings with SSTS in areas adjacent to or near access to centralized wastewater treatment systems.

Through land use regulations, the County restricts development in unincorporated areas in order to:

- Reduce the pollution potential associated with on-site wastewater treatment from failing systems and Class V injection systems.
- Reduce the potential for high remediation costs.
- Reduce infrastructure and social costs associated with scattered low density development, including wastewater treatment, stormwater management, road construction and maintenance, schools, and law enforcement.

Education

In addition to the Minnesota Extension Service SSTS system Owners Guide provided to every home owner when a new system is installed, the County also includes general information about SSTS in newsletters and other publications. County staff speak to citizen groups, realtor groups and others from time to time. The County conducts informational meetings with contractors every few years as needed.

Financing SSTS

Through MPCA Clean Water Partnership projects, the County has offered low interest loans for SSTS in several watersheds. The County borrows money from the State and then lends money to the property owner. The property owner makes repayment with their property taxes paid to the County, and the County repays the State. While the MPCA program is efficient and functions well overall, the watershed limitation is problematic as the County program is a regulatory program administered County-wide.

People living outside of the watershed have expressed interest in loans and have been turned away. There is no way of knowing if there will be loans available in their watershed in the future.

Through the MDA, the SWCD administers County-wide low interest loans to rural residents. The SWCD administers the program through local banks. The SWCD accepts applications as part of a larger low interest loan program for farmers to construct land practices and purchase equipment but non-farmers are eligible for the SSTS loan. The SWCD ranks and approves applications, while local banks determine financial eligibility and service the loan.

Class V Injection Wells

Business use of SSTS is a potential source of ground water contamination as soil treatment areas may not be capable of treating the type and quantity of chemicals, nutrients and hazardous substances generated by and used routinely by some businesses and industry. State rules state that on-site systems at industrial and business locations are not considered SSTS but are Class V injection wells and subject to EPA regulation.

Minnesota Rules, Chapter 7080: Industrial wastewater treatment systems receiving nonhazardous wastes and systems serving facilities not classified as dwellings are regulated by the United States Environmental Protection Agency as Class V injection wells under Code of Federal Regulations, title 40, parts 144 and 146. These federal regulations along with this chapter cover systems serving other establishments and systems serving more than 20 persons.

Minnesota Rules, Chapter 7080: Dwelling. "Dwelling" means any building or place used or intended to be used by human occupants as a single-family or multifamily residence with no more than nine bedrooms and producing sewage. Dwelling does not include a single-family or multifamily residence that serves as both a domicile and a place of business if the business increases the volume of sewage above what is normal for a dwelling or if liquid waste generated no longer qualifies as sewage.

The MDH has identified areas with a higher Class V sensitivity. Map 27 displays the MDH information related to Class V Sensitivity. Class V sensitivity relates most significantly to automotive type of waste.

EPA Class V Rule

In 1999, EPA finalized the Underground Injection Control Regulations for Class V Injection Wells, Revisions (FR Vol. 46 No. 234 pp. 68546-68573), known as the Class V Rule, Phase 1. The Class V Rule establishes minimum federal standards for two subtypes of Class V wells: large-capacity cesspools and motor vehicle waste disposal wells.

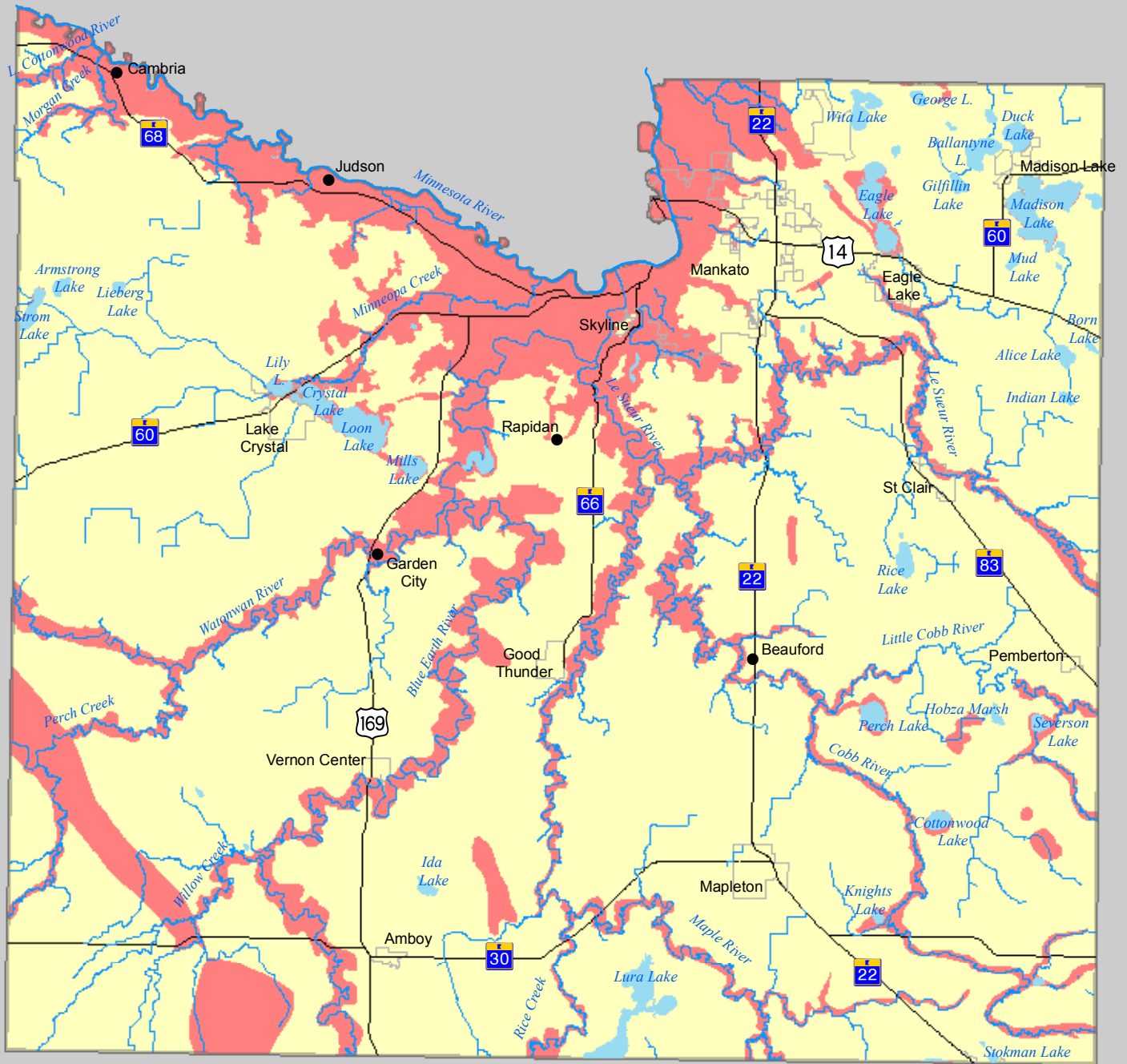
Class V Rule Purpose: Regulate and manage the safe injection of non-hazardous fluids through on-site disposal systems such as dry wells, septic systems, leach fields or similar types of drainage wells.


Septic System: a "well" that is used to emplace sanitary waste below the surface and is typically comprised of a septic tank and subsurface fluid distribution system or disposal system.

Subsurface Fluid Distribution System: An assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground. Examples of Fluids: Wastewater disposal- stormwater runoff, incidental and process wastes from industry, car wash water, food processing wastes, treated sanitary wastes, and drainage from agricultural activities.


The County addresses Class V injection wells by minimizing their potential use during the construction permit process, requiring holding tanks for floor drains, and through land use regulations restricting development of business and industrial development in areas without municipal infrastructure.

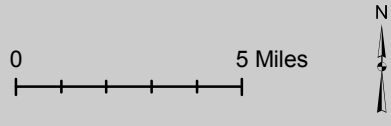
Map 27. Class V Disposal Well Sensitivity



 Lake
 Stream, River or Ditch
 State or U.S. Highway
 City

Class V Sensitivity

 Sensitive
 Not Sensitive



Prepared By: Blue Earth County
Environmental Services
October 2007

Source: Minnesota Department of Health -Published December 20, 2005
 "The data shows areas where Class 5 automotive waste disposal wells are likely to present a threat to underground sources of drinking water based on geological conditions. The term "Class 5" refers to a broad category of disposal wells defined under federal regulations. Structures such as the drain fields for septic systems, dry wells, and underground gravel pockets that dispose of fluids used by internal combustion engines are identified as automotive waste disposal wells." - MDH)

SSTS Maintenance and Septage Disposal

The owner of the septic system must maintain their septic system at least every three years by pumping the septic tank to remove septage (scum, grease and sludge) and at the time of pumping assess whether the tank leaks. Septage disposal is regulated by State and EPA. There are no County requirements for septage disposal.

Increased compliance with maintenance requirements will increase the amount of septage requiring management. Septage pumpers are licensed and regulated by the State. Most septage generated in the County is land applied. Factors limiting land application include land availability and wet or frozen conditions. Problems have been observed mainly when the ground is saturated and equipment cannot get in the field. Municipalities generally refuse to accept septage. Municipalities have had concerns about the contents of and potential hazardous substances in septage.

CENTRALIZED, PUBLICLY-OWNED TREATMENT WORKS

City of Mankato Wastewater Treatment Plant

The wastewater treatment plant (WWTP) has grown from the mid-1950's primary settling tanks to the current tertiary treatment facility that produces water which is generally about 0.4 mg/l Total Phosphorus, <5 mg/l in Total Suspended Solids and <2 mg/l Biochemical Oxygen Demand. Current flows are approximately 7.0 million gallons per day (MGD) with a maximum month capacity of 11.25 MGD. The City permits and monitors industrial dischargers through the City's delegated pretreatment program. Local industries have spent millions of dollars to reduce pollutants in their effluent resulting in cleaner water and biosolids end products at the wastewater treatment plant.

A Water Reclamation Facility (WRF) was constructed in 2006 to supply cooling tower needs for an electric power company as well as phosphorus removal for all of the city's needs past current design flows. The WRF was funded by local industry to treat WWTP effluent to California Title 22 Standards for Water Reuse. This level of treatment has been determined to be protective of public health in uses that include: edible food crops; parks and playgrounds; school yards; and residential landscaping. The City will own and operate the WRF in exchange for supply water. This award-winning water reuse project was the first of its kind in the State of Minnesota. Previously all wastewater plant effluent had been treated and then discharged to the Minnesota River.

The City of Mankato WWTP serves the cities /districts of North Mankato, Eagle Lake, South Bend Township, Skyline, and Lake Washington Sanitary District. The City has orderly annexation agreements with Lime Township, South Bend Township and Mankato Township. The City of Madison Lake will be also added in 2008. The lakeshore areas near the City of Madison Lake may eventually be partners with the City of Mankato as well.

Other Blue Earth County Municipalities

Of the remaining municipalities, most are located in the Le Sueur River Watershed. The Good Thunder and Pemberton POTWs were newly constructed within the last 15 years and have been issued phosphorus permits by the MPCA. The City of Mapleton's wastewater discharges to a County ditch in the Cobb River watershed. The City of

Amboy's and City of Vernon Center's wastewater discharges in the Blue Earth River watershed.

The City of Lake Crystal WWTP discharges to Minneopa Creek. The State has designated Minneopa Creek as a Class 7 waters. Class 7 waters are those with "limited resource value for recreation and wildlife." Minneopa Creek is a local and regionally significant water resource with Minneopa State Park located near the confluence of the creek with the Minnesota River. The State's classification of Minneopa Creek should be upgraded to help improve and protect Minneopa Creek. Future construction and upgrades Lake Crystal's POTW should recognize the recreational and water quality goals associated with Minneopa Creek.

IMPLEMENTATION PLAN

Subsurface Sewage Treatment Systems (SSTS)

Water Management Plan Goal:

Prevent and reduce ground and surface water pollution from wastewater with administration of local programs intended to improve subsurface wastewater treatment and reduce wastewater discharges to surface waters.

GUIDING PRINCIPLES:

- » Untreated wastewater is a potential threat to public health and can pollute surface and ground water.
- » Of the total County population, 77 percent live in a municipality.
- » All eleven of the municipalities in Blue Earth County own, or are in partnership with a publicly owned, MPCA-permitted wastewater treatment works (POTW) system.
- » The County's land use plans and regulations steer new development of residential, commercial and industrial uses to areas with wastewater services provided by POTW in order to protect surface and ground water, among other issues.
- » The County operates an SSTS management program in compliance with Minnesota Rules.
- » The County accelerates the rate of SSTS compliance and exceeds State rules with local ordinance requirements triggering upgrades, including compliance inspections for property transfers and permit status review with construction permits.
- » Dwellings with direct discharge to surface water, defined as imminent public health threats, are the highest priority.

ONGOING ACTIVITIES:

The County will continue to administer the local SSTS management program, including permitting, inspections, enforcement, education and GIS data base all in accordance with State and local regulations. The County will be updating the *Sewage Treatment Ordinance Section of the County Code* in accordance with new State rules effective February 4, 2008. Reducing public health threats and increasing compliance with State rules with installation of onsite wastewater treatment is an ongoing County program and a priority of the *Water Management Plan 2008-2013*. The County will continue to require compliance inspections at property transfer. The County will continue to require upgrades of failing systems within a specified period of time (currently five years). The GIS permitting and data base system will be enhanced with computer and electronic permitting during the planning period.

The County will continue to address decentralized wastewater treatment through land use planning and ordinances, including *Zoning Ordinance and Subdivision Ordinance Sections of the County Code*. The County will continue to discourage the types of land uses likely to be defined as Class V injection wells, such as automotive repair, vehicle washes, health care, multifamily dwellings, and manufacturing. These are especially a concern in areas identified as having a higher Class V sensitivity and source water protection areas.

The County administers low interest loan programs through watershed projects. The SWCD administers low interest loan program funding through the MDA.

WATER MANAGEMENT PLAN:

Major changes are possible with SSTS programs due to State rule changes. The County will be enhancing data management with GIS and computerized permitting systems. Once data is available for better analysis and with consideration of future MPCA rule changes, planning efforts for possible program/policy changes can take place.

With steadily increasing numbers of SSTS in compliance with State and local regulations and the required maintenance of septic systems, the County may address maintenance education needs and the proper management of septage.

The County will be considering establishing a County-wide, low interest loans program, as the availability of low interest loans on a watershed basis is limited and difficult to administer and promote to the public.

Objective 1: Continue to manage decentralized wastewater treatment with the County SSTS program.

Action 1: Maintain and update the County Ordinance consistent with State Statutes.

Action 2: Issue permits, conduct inspections and maintain records for SSTS in Blue Earth County.

Objective 2: Reduce the number of dwellings defined as imminent public health threats by 50 percent.

Action 1: Update and analyze all available data to reasonably estimate the number of imminent public health threats and determine a baseline to evaluate future results related to this goal.

Action 2: Assess the need for financial incentives, including low interest loans, to accelerate the percentage of compliant SSTS.

Action 3: Evaluate overall compliance levels every one to three years and adjust education and other program components accordingly to meet objective.

Objective 2: Increase compliance with SSTS maintenance requirements.

Action 1: Determine the level of compliance with State regulated maintenance requirements.

Action 2: Work with haulers, property owner representatives and others to identify and address education, disposal and other needs related to septic system maintenance issues.

Objective 3: Evaluate septage management systems, including disposal, storage and land application.

Action 1: Identify the septage management systems of each contractor in the County.

Action 2: Work with pumpers, contractors, municipalities and other representatives to assess needs related to septage management in Blue Earth County.

