Wastewater Treatment and Collection Systems

Report to the Legislature

September 2000

Minnesota Pollution
Control Agency

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Executive Summary

In July of 1999, the Minnesota Legislature directed the Minnesota Pollution Control Agency (MPCA) to convene a stakeholder committee to address the need for wastewater treatment in areas without centralized collection and treatment systems.[1] "The MPCA assembled a committee of 37 members, including MPCA staff, that represents a cross-section of various interests with a stake in the future direction of wastewater treatment and environmental protection in Minnesota.

Through several months of research and meetings, the committee discussed current issues related to "undersewered" or "unsewered" areas, that is, communities or residential areas which have inadequate or no centralized wastewater treatment (sewer) systems.[2] This report summarizes background information the committee considered and lists the MPCA recommendations based on the committee's discussions for addressing the problems of unsewered and undersewered areas.

Because the audience for this report is interested primarily in what the MPCA recommends, the remainder of the executive summary is devoted to the recommendations. (The recommendations are discussed in greater detail in a separate section, see table of contents.) Other information developed in the committee's work may be found in the relevant sections of this report as listed in the table of contents.

Recommendations

Recommendations that MPCA will commit to:

1. MPCA will take a holistic approach to improving surface and ground water quality by incorporating wastewater treatment concerns in basin and watershed planning and considers impacts such as development on the environment. This allows priority environmental concerns to be managed by the basin.

2. MPCA will continue to develop an integrated funding system that would provide more flexibility to allocate funds from various water-quality programs based on basin priorities. This will require a rule change.

3. MPCA will work with Board of Water and Soil Resources to see how local water planning can be better incorporated into the process for developing wastewater planning.

4. MPCA will review its internal wastewater procedures to better coordinate between point- and non-point program concerns in the agency's wastewater program. The aim should be to encourage consideration of nontraditional wastewater systems.

[1] The committee's Legislative directive was to "convene a committee of interested persons to address the need for central collection wastewater treatment systems in unsewered areas. The committee shall evaluate the effectiveness of alternative system designs and identify regulatory and other barriers to cost-efficient design and construction."

[2] See glossary on page 4 for other terminology commonly used in this report.

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5. MPCA will design a “wind down” strategy and recommended management practices for communities that have declining populations and are not capable of undertaking wastewater upgrades.

Other task force recommendations that are currently not funded and/or not led by the MPCA:

- A planning assistance package should be developed for local governments and community groups. The package would include checklists and/or information packets, and would identify professionals who can provide information on topics such as technical assistance, regulations, and management, funding, siting of facilities and impacts of development on the environment. The purpose would be to help direct local governments toward appropriate technologies and cost-effective solutions earlier in the planning process. A good example of this approach is that developed by the Blue Earth River Basin Initiative, detailed in Appendix 5.

- Should seek ways to fund local experts such as county watershed districts, water planners, Natural Resource Conservation Service, Extension Educators or private coordinators to provide leadership and project management to local governments, communities or other groups as they work through the wastewater decision-making process.

- A process should be investigated to help communities secure funding earlier in the wastewater planning process. This will enable them to fund needed preliminary steps such as site characterization, etc.

- Preferences in the existing funding process that leads toward specific technical solutions should be eliminated. Promote funding for the best solution from an environmental and economic standpoint. Prioritize sites based on risk, sensitivity, environmental and health issues. The state’s current WIF (Wastewater Infrastructure Fund) grant program reduces incentives to consider smaller, less expensive wastewater systems. This would require a rule change.

- Counties or other local governments should consider requiring "operating permits" for land treatment cluster systems and Individual Sewage Treatment Systems (ISTS) on a targeted basis (e.g., new or upgraded sites or targeted existing sites). Currently, construction permits are required for ISTS but permits specifying proper operation after construction are not.

- An operator training and certification program for permitted ISTS (greater than 10,000 gallons per day) with soil-based treatment systems (e.g. drainfields) should be developed. Currently, no certification is required for soil-based treatment. This would require a rule change.

- Regional approaches to handling septage should be developed. Encourage publicly owned treatment works (POTWs), where appropriate, to take septage.

- The names of systems should be reclassified so they are less descriptive (e.g., change to “Type I, Type II,” etc.). The current classifications have value; however, some currently used terms have negative connotations, such as “experimental.” This would require a rule change.

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- The percentage of WIF revenues that communities receiving WIF grants are required to set aside for future capital improvements to wastewater systems (currently $.10 per 1000 gallons) should be increased.

- The local contribution on wastewater projects based on the increased property values the projects will generate should be increased.

- Statewide more education and outreach for locally elected officials and other groups including interest groups, engineers, and consultants should be supported.

- A model management plan for monitoring, operation and maintenance of wastewater systems should be developed.

Communities upgrading failing systems should consider both centralized and decentralized systems. Either approach may provide the most appropriate and cost-effective solution to wastewater treatment and collection problems. This includes individual on-site systems, publicly owned treatment works, and every appropriate system in between. Central collection and wastewater treatment may not be appropriate in all cases and decisions to go with such systems should be consistent with county comprehensive plans and regional growth plans. Decentralized systems can protect public health and the environment and still be appropriate for low-density communities with varying site conditions or small lot sizes.

Achieving adequate wastewater treatment throughout the state requires working with program partners to identify and implement strategies that:

1. Consider local conditions and issues
2. Develop preplanning strategies incorporating alternative technologies, management techniques, regulation and funding opportunities
3. Reflect partnerships among interested and affected groups

In order to provide the necessary guidance and support to local units of government and communities, the MPCA needs to support wastewater activities. This requires that the MPCA's current funding for these activities continue.

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Definitions

- Alternative system: any sewage treatment and disposal system not commonly employed or new technologies or technologies with an unknown reliability.

- Centralized collection and wastewater treatment system: a piping system (sewer) that collects sewage and transports it to a common site for treatment and disposal.

- Cluster system: a wastewater collection, treatment and disposal system where a small number of units are served.

- Decentralized collection wastewater treatment system: an on-site or cluster wastewater system that is used to collect, treat, reuse or dispose of a relatively small volume of wastewater from individual groups of dwellings and businesses that are located relatively close together. On-site and cluster systems are commonly used in combination under central management.

- Individual sewage treatment system (ISTS): a sewage treatment and disposal system located on the property, using subsurface soil treatment and disposal for an individual home or establishment.

- Large on-site system: a sewage treatment and disposal system (not located on the property) using subsurface soil treatment and disposal for more than one home or establishment.

- On-site system: a natural system or mechanical device used to collect, treat, and discharge or reclaim wastewater from an individual dwelling or commercial establishment without the use of community-wide sewers or centralized treatment facility.

- Permit: a document issued to any person specifying the terms of installation, ownership, management, and control of a sewage treatment and disposal system. Permits for treatment systems are of two types:
  - National Pollutant Discharge Elimination System Permit (NPDES): A federal permit required for all discharges to the ground surface or surface water. The NPDES permit specifies to what levels waste must be treated before discharge.
  - State Disposal System: A Minnesota permit for subsurface treatment and disposal, issued to large ISTS that receive over 10,000 gallons per day or use rapid infiltration basins or spray irrigation systems.

- Publicly Owned Treatment Works (POTW): A publicly owned and operated wastewater treatment facility. Usually refers to municipal systems.

- Septage: The solids that accumulate in a septic tank. These solids must be periodically pumped from the tank and properly disposed of.

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- Sewage disposal: the process of returning treated sewage to the environment. Most treatment processes finish with direct discharge to surface waters or ground water, via discharge into or onto the soil (e.g. drainfield or spray irrigation).

- Sewage treatment: the process used to remove contaminants from the sewage. Treatment processes can range from mechanical methods such as large municipal treatment plants to passive soil-based treatment.

- Undersewered areas: Areas with inadequate wastewater treatment. Undersewered areas in Minnesota may include unincorporated communities, incorporated cities (some), clusters of homes, trailer parks, or rural residential areas where existing wastewater treatment methods are not adequate to protect public health or the environment. The situations range from failing individual systems to cities with inadequate collection and treatment infrastructure.

- Unsewered areas: Areas that do not have centralized wastewater collection and treatment. Include but are not limited to incorporated cities (some), unincorporated communities, clusters of homes, trailer parks or other rural residential areas where wastewater collection is not done through a large sewer system.

- Wastewater Infrastructure Funding (WIF) Program: The state's grant program to help local governments build or upgrade wastewater treatment facilities.

- Water Pollution Control Revolving Fund: The state's revolving fund to make low interest loans to local governments to build or upgrade wastewater treatment facilities. Also known as the Clean Water State Revolving Fund or SRF.

- Water-quality cooperative: An association of persons organized under Chapter 308A to install, own, manage and control individual sewage treatment systems or alternative-discharging sewage systems and provide water-quality treatment and management services for its members within a defined geographical area.

- Water-quality treatment and management service: A private or joint powers service that monitors and operates sewage treatment systems. The management, use or reuse, recycling, or reclamation of land, water or wastewater for purposes are part of a comprehensive plan to reduce, prevent or eliminate water pollution.

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History/Background

Large and medium cities

The passage of the federal Clean Water Act in 1972 put the country on a fast track to cleaning up its sewage treatment problems. Dead or dying waterways and lakes, exemplified by notoriously polluted waters such as Lake Erie and Ohio's Cuyahoga River, had made national action imperative.

The Clean Water Act instigated the federal construction grants program, which provided funding to build or upgrade publicly owned treatment works, with the goal of restoring the water quality of the nation's lakes and streams. These large federal investments in the construction of wastewater facilities focused on large and medium-sized communities that had the largest impact on water quality. Due to the high population density and the number of businesses in these cities, the most cost-effective solution typically was centralized collection and treatment systems. This program was a major success, providing a national infrastructure that has greatly improved water quality.

Small communities and rural areas

Until recently, most small communities and rural areas had little interest in sewage treatment. Most people assumed that the public health and environmental effects of sewage in these low-density areas would be minimal. Wastewater treatment in such areas for generations was handled primarily by on-site methods such as septic systems, cesspools, or direct discharge to ditches or streams. On a regional scale, these practices were for the most part acceptable as long as population density remained low. But as populations have grown in areas, which are not served by centralized wastewater treatment, these methods often no longer provide adequate protection of the environment and public health.

As a result, reliance on septic systems in unsewered areas has created an environmental problem. The wet, high-clay soils found in much of Minnesota leave little margin for successful installation and operation of septic systems. A perception, often incorrect, that pathogens die off in the soil in Minnesota's harsh climatic conditions, coupled with lack of land-use regulation, has resulted in the development of small to very small lots which do not offer suitable area for soil treatment, especially in lakeshore areas and small communities. Drainfields are still being built in such areas even though they have little chance of working properly. These conditions have resulted in open discharges of raw or partially treated sewage to lakes, stream, ditches or low areas.

One example of changes, which aggravate these problems, is changing residential patterns on lakes. Up until the early 1980s lakeshore dwellings were used primarily as weekend get-aways in summer. With the explosion in winter sporting activities and a strong economy, cabins are now being insulated and used year-round. Today, many cabins are inhabited the entire summer and it is not rare to find homeowners who have taken up permanent residence on these small lakeshore lots. The septic systems at these dwellings too often cannot handle the increased usage; the lots are simply too small to allow adequate soil treatment.

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To protect surface waters from degradation, The Department of Natural Resources first issued regulations in 1970 requiring local units of government to regulate septic systems in shoreland areas. Some local governments developed effective programs, but most did not; some still have no programs at all. The University of Minnesota along with the MPCA developed a voluntary training and certification program for ISTS professionals. These programs were marginally successful in improving conditions in rural Minnesota.

Due to perceptions that small communities and rural areas had little environmental or public-health impact compared to larger cities, they typically were not awarded funding under the federal construction grants program. The grant program ended in 1990, leaving many communities and individual households still in need of upgrading their systems. In Minnesota, it was replaced by the Water Pollution Control Revolving Fund loan program, Wastewater Infrastructure Funding (grant) program, and other sources that continue to work with undersewered areas using their limited funds.

MPCA efforts

In 1991, the Legislative Water Commission directed the MPCA and the Department of Trade and Economic Development to study issues related to the future of wastewater treatment in Minnesota. An advisory committee was formed from internal and external interested parties and the committee made recommendations for the future of the state's wastewater treatment programs. Another committee formed in 1993 and issued a report including strategies for management of wastewater issues for small communities and rural areas in the state.

The problem of individual sewage treatment by individual households was addressed legislatively in 1994 with the passage of Minnesota Laws Chapter 617 and subsequent amendments in 1995-1999. Codified as Minnesota Statutes 115.55 and 115.56, this was the first comprehensive statewide effort to ensure adequate sewage treatment in rural areas. The legislation caused some local governments to regulate sewage treatment for the first time, or to attempt to improve their ineffective programs.

Some of the recommendations and strategies associated with the advisory committees and passage of the above laws and amendments were:

- Implement ISTS standards (Minn. Rules Chapter 7080) on a statewide basis to ensure consistent standards regarding on-site systems
- Require a mandatory certification program for professionals involved in the construction, inspection and maintenance or design of on-site systems
- Continue funding the Individual On-Site Wastewater Treatment Systems Grant Program and support program revisions based on environmental criteria
- Provide funding for research
- Provide public education on the benefits and importance of conforming on-site systems
- Assist municipalities in wastewater planning efforts.

Most of these recommendations were implemented, forming a basis for the state's current ISTS program.

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In 1997, a work group sponsored by the MPCA to address undersewered issues began to study the scope and nature of the state's rural wastewater problem. In an effort to more accurately define the problem, the MPCA surveyed Minnesota counties. The survey indicated there are similar wastewater problems throughout the state, yet they vary as a result of regional, environmental and land-use conditions, and economic concerns.

Meetings of the committee which is the subject this report, took place from January until June 2000 (see Appendix 1). Members discussed undersewered issues as a large group and then broke into four specialized groups (funding, technical, regulatory and management) that met until June to define barriers, offer solutions, and develop strategies for managing the issues. The final meeting brought the teams together to discuss their findings and offer any solutions or strategies (Appendix 3).

Historically, a number of initiatives have brought together many interested parties for wastewater-related discussions with the agency. These efforts have assisted greatly in developing strategies to manage wastewater in Minnesota, although progress has been relatively slow. Yet with continuing interest many more issues can be solved. The current directive from the Minnesota State Legislature provides the opportunity to reflect on those past efforts, further define issues, and identify future strategies for the management of wastewater in Minnesota.

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Scope of the Problem

According to 1998 data from the Minnesota Department of Agriculture (MDA), 27 percent of Minnesota's housing units are not connected to a centralized wastewater treatment facility. This represents about 530,000 households generating about 50 million gallons of sewage per day. The majority of these homes use septic systems or other ISTS. Conforming ISTS are considered valid wastewater treatment technologies, and the fact that a community is unsewered does not mean that it is in non-compliance. But a 1998 MDA survey of counties found an estimated 70 percent of ISTS were failing to adequately treat sewage or do not meet minimum treatment standards. (See Appendix 2. The figure now is estimated to be closer to 50 percent due to improved efforts to upgrade and maintain ISTS.) A majority of these unsewered housing units are located in small cities, rural subdivisions, and unincorporated areas.

Issues that typically need to be addressed in undersewered areas include planning and zoning decisions, finances, ground- and surface-water protection, public health hazards, technical requirements for systems, and education. The presence of geologically sensitive areas, small lots, and limited knowledge of sewage treatment on the part of local officials and the public often further complicate these issues.

Differences in geology, soils, land use and economic conditions present difficult technical challenges and solutions. In Minnesota, the northeast and southeast parts of the state have shallow bedrock, high-clay soils, and high water tables. The northwest is concerned with high-clay soils, seasonal high-water tables, and flooding. The north central region is located on sand plain and is also characterized by areas of high water tables.

The "type" of development area further complicates determining solutions for wastewater problems due to political boundaries, current densities, environmental sensitivity, and other factors. Below are the most common settings for undersewered households and their estimated numbers (where an estimate is available).

- Remote rural areas (number unknown)
- Development along lakeshore areas (unknown)
- Small unincorporated towns/ villages (700 towns, 230,000 households)
- Small incorporated cities (157 cities, 30,000 households – *see detail below)*)
- Small rural residential areas (unknown)
- Rural residential areas adjacent to a sewered community (unknown)
- Undersewered households within a sewered community (unknown)
- Undersewered commercial areas (unknown)
- Suburban/extra-urban developments adjacent to incorporated municipalities with centralized collection and sewage treatment facilities (unknown)

<u>Incorporated areas</u>

The figure of 30,000 households in 157 incorporated cities above represents 70,000 people who do not have adequate wastewater treatment. However, of these 157 cities (Appendix 3),

- Six are currently in construction (~ 8,800 people)

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- 19 are in the process of finalizing engineering plans (~8,000 people)
- Eight are in the facility planning process (~1,700 people)
- 16 are involved in preliminary planning and engineering processes (~32,000 people)
- 108 are not currently active in wastewater planning processes (~19,500 people).

The MPCA estimates it will take $375 million including local cost share to assist this segment of the undersewered population.

Unincorporated areas

A 1997 MPCA survey of counties identified over 700 unincorporated areas, with approximately 230,000 households that do not have adequate wastewater treatment. They generate about 21,735,000 gallons per day of sewage[3].

Based on MPCA estimates, the cost to provide adequate wastewater treatment for this situation would be $1.5 billion. (These estimates are based on the numbers of households needing assistance and an assumption that some communities will opt for centralized treatment over ISTS because of various limiting factors.)

In addition, the existing centralized sewage collection and treatment facilities of many small communities are inadequate due to various factors such as growth of the community and age of the facility. The total cost for upgrading all inadequate systems in Minnesota is estimated to be approximately $2 billion. The current WIF funding of $10-$20 million per year is ineffective for a timely upgrade program and the demand for grant funds continues to grow rapidly.

Most small communities do not have sufficient internal resources to build, operate or replace wastewater infrastructure. Currently, some outside funding is available to help offset some of these costs. However, capital depreciation to pay for new or upgraded wastewater facilities in the future is not a current priority for the majority of these communities.

Even with the availability of some funds for wastewater treatment needs, determining solutions for local wastewater problems is a difficult and complex task for small communities. Many of these communities do not have the financial, administrative or technical knowledge needed to make informed decisions to solve these problems. Locally elected officials (county commissioners, city councils, and town board members) continue to ask the agency for guidance on how to solve wastewater treatment problems.

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[3] Estimated based on average wastewater flows of 45 gal/day/person and 2.1 people per household

Environmental and Public Health Risks

Minnesota Statutes Chapter 115 defines untreated sewage on the ground surface as "an imminent threat to public health and safety." It's a reflection of the fact effective treatment of sewage is necessary to protect the health of Minnesotans and our environment. While we've made progress toward the Clean Water Act's goal of "fishable, swimmable" waters, there are still areas where wastewater treatment lags too far behind the curve. Public health and the environment are at risk in many of the state's undersewered areas.

According to a 1995 report titled "Human Health Risks from Nonconforming Individual Sewage Treatment Systems: A Comprehensive Literature Review," improper sewage treatment sends raw or inadequately treated sewage to surface and ground water and can result in serious health and environmental consequences (see Appendix 4). The discharge from septic tanks contains solids, phosphorous, nitrogen, chloride, bacteria, pathogens, viruses and a host of chemicals from cleaners, perfumes, medicines, etc. Effluent also may contain infectious agents from human and food wastes, as well as other pollutants which often get flushed down the drain.

Raw sewage carries human disease pathogens and contributes nutrients and other pollutants to the environment. Municipal water and wastewater treatment plants have nearly eliminated waterborne outbreaks of diseases such as typhoid and cholera. However, in areas where treatment is not adequate, the potential for significant human exposure and resultant disease is increasing as population density goes up and treatment systems age. Illnesses caused by waterborne microorganisms are difficult to assess and quantify because the vast majority of cases are not reported. Although deaths caused by waterborne disease have decreased radically in the past century, there are still documented cases. One failing individual system may appear to be harmless, but when the cumulative impact of all the systems in Minnesota are considered, the potential impact on human health is high.

The Minnesota Department of Health responds to and investigates disease outbreaks. There are a number of causes of outbreaks, including ingesting food- and water-borne disease organisms such as bacteria, viruses, and protozoa. Surface and ground water polluted with untreated or partially treated sewage may carry disease organisms to drinking water supplies, which if untreated, pose a risk to consumers. Sewage-polluted surface water can also carry disease to swimmers and waders, if ingested (as through hand-to-mouth contact) or through wounds.

Minnesota's changing demographics and health regimes have put a greater number of people at risk of infection from contact with untreated sewage or contaminated water supplies, for example people over 65 (this age segment is increasing), increased use of home health care for the sick, and a rise in the number of people with immunodeficiencies (cancer, diabetes).

This information suggests it is imperative that potential human health risks from nonconforming wastewater systems be addressed. Local units of government must be included in developing solutions to this problem. Ensuring that all systems are installed and maintained properly from the beginning will improve the health of all Minnesotans. This will decrease the potential for waterborne disease outbreaks and minimize chronic exposures to low levels of toxic chemicals in drinking-water supplies.

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Centralized vs. Decentralized Wastewater Systems

Traditionally, it has been common for wastewater treatment and collection decisions to fall into an either/or category: either a municipal plant or individual on-site systems. Due to the complexity of wastewater treatment issues for small incorporated cities, unincorporated communities and rural areas, hybrid solutions may in many cases be a better option than either of the traditional choices.

Many residents who live in mid-sized or larger cities have centralized wastewater treatment available to them, in part, because of the former federal grants program. However, there are many municipalities whose collection systems do not reach everyone within their boundaries, or whose facilities are no longer adequate to serve the community. Other small communities, both incorporated and unincorporated, lack centralized treatment for a variety of reasons that can include costs, availability of funding, and housing density. Many communities throughout the state have addressed such problems successfully, but a large segment of the population still is not served by adequate sewage treatment.

The lack of centralized wastewater facilities is not necessarily a problem in itself. Under the right conditions ISTS or small community systems (e.g., cluster systems) can provide excellent, cost-effective wastewater treatment. The problem is the lack of adequate sewage treatment, whatever the method, in many areas of the state.

Some communities with inadequate treatment may be dealing with failing septic systems and water contamination, but do not want to face the increase in costs of central collection and wastewater treatment. Other communities would like to install sewers and treatment plants, but are concerned they won't be able to handle the operation and maintenance costs. Others are concerned about growth; some may want to limit growth, while others want to grow their populations and commercial/industrial activity.

Potential treatment solutions are often complicated by such physical limitations as high water tables, difficult soil conditions, and proximity to surface water; by land-use factors such as dense development, small lot sizes, the politics of annexation; by administrative factors such as lack of a strong local government, planning, or adequate staff resources; or by lack of adequate financial base in communities whose populations are aging and/or declining and have low income levels.

In the past, many communities installed sewers and built central sewage treatment plants because existing individual systems were failing due to poor locations, design or maintenance. Some of them believed that ISTS were only a temporary solution until central collection was available, which often is perceived to be less costly per user and provide extra capacity in developing areas.

However, these concepts aren't necessarily true for all small communities. Rural areas are usually spread out, and would require an extensive wastewater collection system to serve each home. As a result, households in a small area with 500 residents may pay many times more for such a system than those in a city of 100,000. The situation is worsened because treatment plants in many small communities are not large enough to be cost effective. The size and layout of small communities, along with fewer users to share initial capital costs, makes conventional sewers and treatment plants much more costly per resident than in large cities.

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Another factor is that with ISTS, which have been in place for some time, homeowners are used to paying little or nothing for sewage treatment (inadequate as it may be). This disparity across the state creates problems in making decisions for sewage treatment.

These problems led federal, state and local governments to look at other waste water systems for small communities. The needs of the local population, businesses and industries must all be considered. Communities make their own decisions, with knowledge gained from outside sources, including the EPA, MPCA, University of Minnesota extension, Rural Development, Public Facilities Authority, Minnesota Association of Small Cities, consultants, engineers and legal counsel. With the complexity of today's issues and problems and the variety of local conditions, innovative and alternative approaches to wastewater treatment and collection are necessary.

In April of 1997 EPA reported to Congress concerning decentralized wastewater systems. EPA concluded in its report, "adequately managed decentralized wastewater systems are a cost-effective and long-term option for meeting public health and water quality goals." Reasons cited for installing decentralized systems included:

- Properly managed decentralized systems can provide the treatment necessary to protect public health and the environment. They can be sited, sized, designed, installed and operated to meet all federal, state, and local water-quality requirements.
- Are appropriate for low-density communities.
- Decentralized systems are usually the most appropriate technology and most cost-effective options for rural areas and many urban outskirts.
- Are appropriate for varying site conditions.

Decentralized systems can be designed for a variety of site and soil conditions including shallow water tables, bedrock and small lot sizes.

With the variety of technical options today a solution can be found using either one system or a combination of individual and central or decentralized systems. With good management and planning for physical site characteristics, economic conditions and the future, communities can successfully address their wastewater treatment and collection issues. Alternative options have the potential to reduce infrastructure investment and allow locating systems on sites that minimize environmental impact. These options are discussed in greater detail in the next section ("Background for the Undersewered Team").

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Background for the Undersewered Team

The following background information was given to the members of the undersewered team at the beginning of the meeting process to help them understand the situation from the onset.

Introduction

In order to identify barriers to implementing varying technologies, this section will describe the current methodology used in choosing sewage treatment and disposal technologies. In this report it is concerned only with providing proper sewage treatment for an existing problem area, and does not deal with development of new residential areas or the effect on future growth in an existing area if adequate sewage treatment is provided. The scope of this discussion ranges from systems designed for a two-dwelling unit through systems serving small communities.

It should be understood that perceived "barriers" to providing community wastewater treatment are not necessarily bad. There are "snake oil" technologies the citizens of Minnesota should be made aware so an informed choice can be made on a particular technology. These are the technologies that have high hidden costs (operation costs, maintenance costs, short system life, low reliability) or do not perform reliably to meet environmental and public health goals. It should be understood that some complaints about perceived "impediments" to use of alternative wastewater treatment methods come from commercial groups whose systems might not offer reliable performance or environmental protection. In short, reasonable barriers may well serve the citizens of Minnesota.

Current sewage treatment conditions

Many of the problem areas we see today are a result of cities or communities not planning for residential development in the past. Sewage systems were installed primarily to dispose of sewage, not necessarily to treat it to acceptable levels. Improper disposal and treatment causes contamination of ground water, from cesspools and leaky collection pipes, and also surface waters, by discharge of raw or partially treated sewage into road ditches, tile lines, streams, rivers and lakes.

In many instances, residential and commercial development occurred on very small lots with poor soil conditions, which is not conducive to on-site treatment. A typical scenario for a small community in Minnesota is homes with ill-maintained septic tanks connected together with a crude collection system discharging into a river or stream. Another typical scenario is small lake homes with cesspools discharging untreated wastewater directly into the ground water, plus emergency overflow pipes discharging to the lake. These types of conditions result in measurable fecal bacteria and nutrient contamination of surface and ground water.

Description of standards that need to be met

Currently there are only two viable options for disposing of treated wastewater in Minnesota, discharging it either to surface water or ground water. Allowable discharge limits (or standards) for surface water are based on the characteristics of the discharge and of the water body receiving

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the discharge. Some surface waters have very strict discharge standards. Discharge is prohibited outright in some especially high-quality waters, for example Outstanding Resource Value Waters. The intent of the standards is to protect waters of the state for designated uses such as swimming, fishing, drinking water, etc. Typical discharge standards limit contaminants such as fecal coliform bacteria, phosphorus, oxygen-demanding materials, total suspended solids, pH and sometimes ammonia.

Discharge limits for ground water are based on drinking-water standards, since nearly any aquifer is a potential source of drinking water.

Technology options for meeting standards

When evaluating possible solutions for proper sewage treatment and disposal, three factors need to be considered: collection, treatment, and disposal of the treated sewage.

1. Collection

Whether the sewage generated by individual homes or businesses can be treated and disposed of on-site is dependent on many factors. In small communities, an important factor is whether lot sizes can support ISTS, which in many cases are the lowest-cost alternative. If individual systems are not the answer, collection issues to consider include:

<u>Size of collection system</u>
- Small cluster collection. Typically a cluster of a few homes connected to a multi-unit septic system. A service area may include several small clusters.
- Small community collection. Collection of all the sewage within a service area to one location for treatment and disposal.
- Collection with discharge into a nearby large POTW

<u>Type of collection system</u>
- STEP (individual septic tanks with small-diameter variable-grade sewer lines)
- Vacuum sewer
- Gravity
- Low pressure
- Service lines
- Combination

2. Treatment options

There are many options available to treat sewage, including:
- Mechanical treatment plant
- Small package plant
- Aerated pond
- Stabilization pond
- Aerobic tanks
- Intermittent sand filters

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- Recirculating sand filters
- Peat filters
- Other filters (synthetic fiber, etc.)
- Constructed wetland
- Septic tank/drainfield
- Separation technology

3. Disposal options

Options for disposing of treated sewage include:
- Surface water -- discharge pipe to dry ditch, stream/river, or lake
- Ground water
- Drainfield
- Drip dispersal
- Rapid infiltration basin
- Consumptive re-use
- Spray irrigation (may recharge ground water)

Physical problems

Typically, a designer must overcome many physical problems in providing proper treatment and disposal. For example:
- Inadequate collection system, for example leaky systems and/or cross connections with storm sewers (infiltration and exfiltration)
- Small lots
- Setbacks from water supply lines, surface water, property lines, etc.
- Poor soils (or in some situations no soil), including
  - High water table
  - Shallow bedrock
  - Poor soil percolation rates
- Ground-water concerns (for ground-water discharge systems), for example:
  - Sole-source aquifers
  - Karst
  - Existing nitrogen contamination in ground water
- Surface-water concerns
  - Protection of high-quality waters (e.g., ORVW, trout streams)
  - Phosphorus limits for lakes and watersheds
- Internal plumbing retrofits to accommodate new system
- Disturbing landscaping

Social-economic problems

Along with physical problems, social-economic factors to consider include:
- Low incomes
- Some existing systems in a planning area are in compliance, some are not
- Some lots in a planning area are adequate for individual systems, some are not

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- Organization of local jurisdiction
- Planning/construction
- Long-term operation and maintenance
- Staffing
- Sewer rates adequate to build reserves for future replacement or upgrades
- Future replacement or upgrades
- Inputs of local businesses to wastewater treatment system
- Future growth – centralized treatment systems often stimulate additional development, which may or may not be desirable in a particular area.

Assessment/planning/decision

Many groups are involved in assessment of the problem, planning and decision making, The types of groups and their roles may include:

Educator/advocacy groups
- Environmental advocates
- Education
- Planning assistance
- Technology options
- Funding options
- Management options

Regulatory agencies (local or state, depending on size of system and type of discharge)
- Enforcement against non-complying systems
- Educating the owner/public
- Prioritization for funding
- Financial assistance (grants/loans, coordination of sources)
- Develop treatment and disposal standards
- Review and approval of proposed option
- Permit the proposed option
- Operator certification and training
- Operational oversight for compliance and enforcement

Consultants
- Guiding/educating the owner/public
- Assisting the owner/public in organizing (legal process)
- Ordinance development assistance
- Fee structure
- Problem assessment
- Determining cost-effectiveness solution
- Design
- Permitting assistance
- Financing assistance
- Construction inspection

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- Develop operations and maintenance manual
- Initial operation
- Operator training

Owner/operator

- Organizing
- Becoming educated
- Selecting a consultant
- Financing
- Operation and maintenance
- System management

Upgrade process

The typical process to upgrade an area that has inadequate sewage treatment can vary from one location to another. However, typical steps a community must take in upgrading include:

- Identification of the problem (sometimes it takes complaints or regulatory actions to reveal the extent of problems)
- A few local leaders organize
- Contact is made with regulating authority to discuss possible treatment options, funding assistance, organizational options (i.e., sanitary district, incorporation, etc.)
- Local leaders loosely organize the service area
- Select and hire consultant
- Consultant assists in securing funding, formal organization, ordinance development, fee structure
- Consultant assesses current treatment situation and physical constraints (e.g., small lots, poor soils, etc.)
- Consultant prepares facility plan (possible options and costs)
- Community chooses an option
- Regulatory authority reviews/comments/approves facility plan.
- Consultant designs system
- Regulatory authority reviews/approves/issues permit
- Local authority lets/accepts bids
- Construction of system
- Construction inspected by consultant and permitting authority
- Local authority hires/trains operator, fee collection process
- Reporting operation to regulatory authority

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Work Group Decision-Making Process

The MPCA was directed by the Legislature to convene a committee of interested persons to address concerns about undersewered and unsewered areas. The committee addressed the need for central collection and wastewater treatment systems in these areas, evaluated the effectiveness of alternative system designs, and identified regulatory and other barriers to cost–effective design.

Initially, the MPCA started the discussion process by defining undersewered issues in a shared team approach, with dialogue and input from the committee. The committee met as a whole at the beginning and end of the work-group process. The first meeting was to discuss undersewered issues and develop a process for member input. This process included extensive discussion of issues and outcomes the committee would like to see in undersewered areas of the state. The attendees then broke into four specialized groups (funding, technical, regulatory and management) to develop agendas, goals, issues and concerns related to the issues. These teams met several times to discuss specific issues and then developed action plans or strategies to manage those issues which were shared with the entire team. The final meeting was a discussion of barriers and any solutions or strategies from each team. The work product developed at this meeting is found in the appendix.

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Conclusion

Communities upgrading failing systems should consider both centralized and decentralized systems. Either approach may provide the most appropriate and cost-effective solution to wastewater treatment and collection problems. This includes individual on-site systems, publicly owned treatment works, and every appropriate system in between. Central collection and wastewater treatment may not be appropriate in all cases and decisions to go with such systems should be consistent with county comprehensive plans and regional growth plans. Decentralized systems can protect public health and the environment and still be appropriate for low-density communities with varying site conditions or small lot sizes.

While many methods exist to treat wastewater, and some public funding exists to lessen the financial burden, many Minnesotans continue to operate failing municipal and on-site septic systems. Reasons include: many homeowners do not understand the water cycle and how it relates to their wastewater treatment systems; having a nonconforming system usually means little cost to the household; and many homeowners, communities and groups don't know how to correct their wastewater problems. By developing partnerships and working together with the entities involved, Minnesotans can move forward in solving our wastewater collection and treatment dilemma.

Achieving adequate wastewater treatment throughout the state requires working with program partners to identify and implement strategies that:

1. Consider local conditions and issues

- Develop holistic, risk- and outcome-based approaches to solve problems
- Develop procedures to ensure that proposed solutions are consistent with county comprehensive land-use plans
- Prioritization and levels of effort and should be coordinated with basin plans.

2. Develop preplanning strategies incorporating alternative technologies, management techniques, regulation and funding opportunities

- Provide user-friendly guidance

3. Reflect partnerships among interested and affected groups

- Everyone's role must be clearly defined in solving wastewater treatment problems in undersewered areas
- Form stronger relationships with local governments, especially counties, that lead to solutions

Workable solutions will require adequate funding, legislative support, and especially community support. Although the MPCA can provide guidance and technical assistance, success in providing practical wastewater treatment for Minnesotans will depend on cooperation between all resources in each community. The MPCA plans on continuing to work with other agencies, local governments, and citizens to protect and enhance water quality.

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Recommendations

Recommendations that MPCA will commit to:

1. MPCA will take a holistic approach to improving surface and ground water quality by incorporating wastewater treatment concerns in basin and watershed planning and considers impacts such as development on the environment.

2. MPCA will continue to develop an integrated funding system that would provide flexibility to allocate funds from various water-quality programs based on basin priorities.

3. MPCA will work with Board of Water and Soil Resources to see how local water planning can be better incorporated into the process for developing wastewater planning.

4. The MPCA will review its internal wastewater procedures to better coordinate between point- and non-point program concerns in order to ensure better administration of the wastewater program. This would include planning, assistance, outreach, education, plan review, public meetings, enforcement, and staffing involvement that could be brought into one planned approach. The aim should be to encourage consideration of nontraditional wastewater systems.

5. MPCA will design a "wind down" strategy and Best Management Practices for communities that have declining populations and are not capable of undertaking a wastewater upgrade. Work with county programs to address these problems.

Other task force recommendations that are currently not funded:

- A planning assistance framework, checklist and/or an information packet that will identify professionals who can provide information on topics such as technical assistance, regulations, management, funding, site location and impacts of development on the environment should be developed. This is intended to provide guidance for a local governmental unit (LGU), community or group to find an appropriate technology and cost-effective wastewater solution earlier in the planning process. It is important to continue to develop partnerships and provide assistance to LGUs and communities so they can better manage their environmental and health concerns while planning for the future. The Blue Earth River Basin Initiative developed a model Project Decision Process that is a useful tool for communities to follow through the decision process (Appendix 5). The MPCA would only add a planning assistance framework early in the process to support the flow chart.

- Should seek ways to fund local experts such as the county watershed district, water planners, National Resource Conservation Service, University of Minnesota Extension Service or private coordinators to provide leadership and project management to LGUs, communities or groups to work through the wastewater decision process.

- A process should be investigated to help communities secure funding earlier in the wastewater planning process. The costs of preliminary engineering and facility planning are

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typically incurred prior to qualification for SRF loans, WIF grants and other sources of financial assistance. These “preliminary” costs may be prohibitive for many small communities.

- Preferences in existing funding process that lead toward specific technical solutions (i.e. “big pipe”) should be eliminated. Promote funding for the best solution from an environmental and economic standpoint. Prioritize sites based on risk, sensitivity, environmental and health issues. Currently, the Wastewater Infrastructure Fund’s funding formulas and the Intended Use Plan’s process to define priority sites reduces local government incentives to look for less expensive wastewater systems. Also, technical review does not focus on the cost-effective solution to an undersewered area problem resulting in some communities choosing large collection projects (the “big pipe”) without fully considering smaller decentralized alternatives. This process needs review.

- County or LGUs should consider requiring issuance of "operating permits" for land treatment cluster systems and ISTS on a targeted basis (e.g., new or upgraded sites or targeted existing sites). Currently, the county or LGU issues construction permits for ISTS. An expanded county permit (e.g., operational permit) should be developed that would include an operations and management requirement and education materials. Included also should be a map of the system, unit sizing, materials, depth to ground water (if known), ground-water flow direction, soil types, operational hydraulic limits, and maintenance requirements. Systems last longer if they are managed correctly.

- A training and certification program for operators of permitted (i.e., greater than 10,000 gallons per day) soil-based, on-site treatment systems should be developed. Currently, there is no certification requirement for soil-based treatment. Certification is needed because large soil-based treatment systems are classified as Class D wastewater treatment plants, yet Class D operators are not trained to operate soil-based treatment systems. Coordinate a rule change in Minn. R. ch. 9400: Class E Facility Classification and Class E Operator Certification, and Minn. R. ch. 7080 to train and certify for soil based treatment.

- Regional approaches to septage handling should be developed. Encourage POTWs, where appropriate, to take septage. Improper application of septage is a problem in some parts of the state.

- The names of systems should be reclassified so they are less descriptive (Type I, Type II, etc.). The current classifications have value however; some currently used terms have negative connotations, such as “experimental.”

- Communities should be prepared for their future wastewater needs. In WIF grants, there is a requirement that the local government annually set aside $.10 per 1000 gallons for future capital improvements to their wastewater system as it wears out or needs expansion. This amount needs to be revised to provide sufficient funds for future wastewater needs.

- The local contribution on wastewater projects should be increased (thereby reducing the WIF grant and increasing the loan amount). This could be based on the increased property values the project will generate by requiring special assessments on each benefiting property to the maximum level.

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- To ensure strong local programs through education for locally elected officials and interested parties, statewide education and outreach to many entities should be supported, including, but not limited to interest groups, engineers, consultants, etc. Educational topics would include alternative system technologies such as soils, system options, hydrology, engineering, ground water, management and management options.

- A model management plan for monitoring, operation and maintenance should be developed. The plan would define the responsibilities of each entity, including system owner, regulatory agency (permitting authority), designer, installer, pumper, and other service providers that are needed to perform tasks detailed in the management plan.

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CITY	COUNTY	POP.	MPCA DIST.	BASIN / WATERSHED	STATUS	SOLUTION	COMPLETION	COST	FUNDING SOURCES
Pease	Mille Lacs Co.	170	BR	7010207 - UpMiss	COMPLIANCE	STABILIZATION PONDS	1999	$1,251,760	USDA
Lastrup	Morrison Co.	112	BR	7010201 - UpMiss	COMPLIANCE	UPGRADED 51 ISTS	1998	$135,000	ISTS
Buckman	Morrison Co.	197	BR	7010201 - UpMiss	COMPLIANCE	RICH PRAIRIE SANITARY DISTRICT -PONDS	1999	$1,140,000	SCPD/USDA
Hillman	Morrison Co.	46	BR	7010201 - UpMiss	COMPLIANCE	UPGRADED ISTS	1999	$181,000	ISTS
Genola	Morrison Co.	85	BR	7010201 - UpMiss	COMPLIANCE	RICH PRAIRIE SANITARY DISTRICT -PONDS*	1998	$3,960,000	USDA
Brook Park	Pine Co	132	BR	7030004 - St.Crx	COMPLIANCE	48 ISTS & MOUNDS	1994	$156,000	ISTS
Bruno	Pine Co.	90	BR	7030003 - St.Crx	COMPLIANCE	ISTS & MOUNDS	1992	$250,000	ISTS
Rockville	Stearns Co.	653	BR	7010202 - UpMiss	COMPLIANCE	CONNECTED TO COLD SPRING	1998	$1,209,000	PFA
West Union	Todd Co.	75	BR	7010202 - UpMiss	COMPLIANCE	UPGRADED 34 ISTS (29 TRENCH, 5 MOUNDS)	1996	$108,000	ISTS
Burtrum	Todd Co.	174	BR	7010104 - UpMiss	COMPLIANCE	UPGRADED 53 ISTS	1995	$153,000	ISTS
Landfall	Washington Co.	633	MD	7030005 - St.Crx	COMPLIANCE	CONNECTED TO MCES METRO WWTF	1995	$968,000	SCPD
Rushford Village	Fillmore Co.	631	RO	7040008 - LowMiss	COMPLIANCE	CONNECTED TO RUSHFORD	1996	$780,000	PFA/ SCDP
Courtland	Nicollet Co.	462	RO	7020007 - MnRiv	COMPLIANCE	CONNECTED TO NEW ULM	1998	$4,015,950	PFA
Dundas	Rice Co.	482	RO	7040002 - LowMiss	COMPLIANCE	CONNECTED TO NORTHFIELD	1997	$5,100,000	USDA/PFA/SCDP
Elba	Winona Co.	232	RO	7040003 - LowMiss	COMPLIANCE	ISTS UPGRADE	2000		SEMMCHRA
Pemberton	Blue Earth Co.	233	RO	7020011 - MnRiv	COMPLIANCE	STABILIZATION PONDS	1997	$1,827,414	PFA/SCDP
Skyline	Blue Earth Co.	343	RO	7020007 - MnRiv	Compliance	City and County managing ISTS program	Upgrade as Needed		HOMEOWNERS
Alpha	Jackson Co.	154	WI	7100001 - C&DM	COMPLIANCE	UPGRADE 32 ISTS (16 TRENCH, 16 MOUNDS)	1996	$441,000	ISTS
Sunburg	Kandiyohi Co.	112	WI	7020005 - MnRiv	COMPLIANCE	STABILIZATION PONDS	1999	$964,000	USDA/SCDP
Ihlen	Pipestone Co.	94	WI	10170203 - MoRiv	COMPLIANCE	CLUSTERED MOUNDS	1997	$500,000	PFA
North Redwood	Redwood Co.	214	WI	7020007 - MnRiv	COMPLIANCE	CONSOLIDATED WITH REDWOOD FALLS	1996	$669,500	PFA
21 CITIES	**TOTAL POPULATION =**	**5324**		.			**Total =**	**$23,809,624**	
							Average =	**$1,253,138**	

* Genola's $3,960,000 project included replacement of the city of Pierz' existing treatment facility to form the Rich Prairie Sanitary District.

CITY	COUNTY	POP.	MPCA DIST.	BASIN / WATERSHED	STATUS	SOLUTION	EXPECTED COMPLETION	ESTIMATED COST	FUNDING SOURCES
Spring Hill	Stearns Co.	75	BR	7010202 - UpMiss	IN CONSTRUCTION	CONSTRUCTED WETLANDS, COUNTY PERMIT	1999	$595,000	ISTS/USDA
Palisade	Aitkin Co.	150	DU	7010103 - UpMiss	IN CONSTRUCTION	RECIRCULATING GRAVEL FILTER	2000	$745,800	ISTS /SCPD
Dayton	Hennepin & Wright Co.	5,122	MD	7010206 - UpMiss	IN CONSTRUCTION	CONNECTION TO OTSEGO	2000	$4,600,000	PFA
Hanover	Wright & Hennepin Co.	1,256	MD	7010204 - UpMiss	IN CONSTRUCTION	CONNECTION TO ST. MICHAEL	1999	$3,889,375	PFA
Otsego	Wright Co.	6,448	MD	7010204 - UpMiss	IN CONSTRUCTION	OXIDATION DITCH	1999	$3,200,000	CITY FINANCED
Frost	Faribault Co.	240	RO	7020009 - MnRiv	IN CONSTRUCTION	STABILIZATION PONDS	1999	$2,091,000	USDA/PFA/SCDP
Green Isle	Sibley Co.	298	RO	7020012 - MnRiv	IN CONSTRUCTION	CONNECTION TO ARLINGTON	2000	$2,891,000	USDA/PFA/OTHER
Kilkenny	LeSueur Co.	174	RO	7040002 - LowMiss	IN CONSTRUCTION	STABILIZATION PONDS	2000	$1,819,000	USDA/PFA/SCDP
Pennock	Kandiyohi Co.	486	WI	7020004 - MnRiv	IN CONSTRUCTION	STABILIZATION PONDS	2000	$3,224,000	USDA/PFA
Plato	Mc Leod Co.	338	WI	7010205 - UpMiss	IN CONSTRUCTION	CONNECTION TO GLENCOE	2000	$3,360,525	PFA
10 CITIES	**TOTAL POPULATION =**	**14,587**		.			**Total =**	**$23,055,175**	
							Average =	**$2,561,686**	

CITY	COUNTY	POP.	DIST.	BASIN/ WATERSHED	STATUS	PROPOSED SOLUTION	PROPOSED COMPLETION	ESTIMATED COST	POTENTIAL FUNDING SOURCES
Wolf Lake	Becker Co.	33	BR	7010106 - UpMiss	ENGINEERING REVIEW	CLUSTER AEROBIC TREATMENT TO DRIP IRR.	2000	$250,000	ISTS/USDA
Federal Dam	Cass Co.	113	BR	7010102 - UpMiss	ENGINEERING REVIEW	RECIRCULATING SAND FILTERS	2000	$1,358,549	SCPD/PFA
Garrison	Crow Wing Co.	138	BR	7010207 - UpMiss	ENGINEERING REVIEW	GARRISON/KATHIO/W.MILLE LACS SAN. DIST.	2001	$12,642,373	USDA/PFA
Donaldson	Kittson Co.	40	DL	9020311 - RedRiv	ENGINEERING REVIEW	EXTENDED AIR W/ SUBSURFACE DISPOLSAL	2000	$300,000	ISTS/USDA
Bejou	Mahnomen Co.	97	DL	9020108 - RedRiv	ENGINEERING REVIEW	STABILIZATION PONDS	2000	$848,000	PFA
Farwell	Pope Co.	71	DL	7020005 - MnRiv	FAC. PLAN SUBMITTED (USDA)	KENSINGTON FARWELL SANITARY DISTRICT	2000	$3,970,000	USDA/PFA
Villard	Pope Co.	242	DL	7010202 - UpMiss	ENGINEERING REVIEW	SANITARY DISTRICT W/ LEVEN T-SHIP - PONDS	2002	$6,084,500	USDA/PFA
Tamarack	Aitkin Co.	56	DU	7010104 - UpMiss	ENGINEERING REVIEW	CONSTRUCTED WETLANDS	2000	$399,270	ISTS/USDA
Darfur	Watonwan Co.	151	RO	7020010 - MnRiv	ENGINEERING REVIEW	CONSTRUCTED WETLANDS	2000	$744,000	USDA
Sargeant	Mower Co.	77	RO	7080201 - C&DM	ENGINEERING REVIEW	STABILIZATION PONDS	2000	$1,199,000	USDA/PFA/SCDP
Bingham Lake	Cottonwood Co.	153	WI	7020010 - MnRiv	ENGINEERING REVIEW	CONNTECTION TO WINDOM	2000	$1,068,000	USDA/PFA
Prinsburg	Kandiyohi Co.	502	WI	7020004 - MnRiv	ENGINEERING REVIEW	STABILIZATION PONDS	2002	$1,290,000	PFA
Boyd	Lac Qui Parle Co.	225	WI	7020003 - MnRiv	ENGINEERING REVIEW	CONNECT TO CLARKFIELD	2000	$1,350,950	USDA/PFA
Woodstock	Pipestone Co.	153	WI	10170204 - MoRiv	ENGINEERING REVIEW	STABILIZATION PONDS	2000	$916,000	USDA/PFA
14 CITIES	**TOTAL POPULATION =**	**2051**	.	.			**Total =**	**$32,420,642**	
							Average =	**$2,315,760**	

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CITY	COUNTY	POP.	MPCA DIST.	BASIN / WATERSHED	STATUS	SOLUTION	COMPLETION	COST	FUNDING SOURCES
CITY	**COUNTY**	**POP.**	**DIST.**	**BASIN/ WATERSHED**	**STATUS**	**PROPOSED SOLUTION**	**PROPOSED COMPLETION**	**ESTIMATED COST**	**POTENTIAL FUNDING SOURCES**
Saint Stephen	Stearns Co.	809	BR	7010201 - UpMiss	FACILITY PLAN PENDING				
La Porte	Hubbard Co.	146	DL	7010102 - UpMiss	FACILITY PLAN SUBMITTED	RECIRC. SAND FILTER TO DRIP IRRIGATION	2000	$1,032,000	USDA/PFA
Strandquist	Marshall Co.	83	DL	9020311 - RedRiv	FACILITY PLAN SUBMITTED	CLUSTER AEROBIC TREATMENT TO DRIP IRR.	2000/01	$627,000	ISTS/USDA
Gary	Norman Co.	191	DL	9020108 - RedRiv	FACILITY PLAN SUBMITTED	PRETREATMENT TO SUBSURFACE DISPOSAL	2000	$1,589,000	USDA/PFA
Dumont	Traverse Co.	119	DL	9020102 - RedRiv	FACILITY PLAN SUBMITTED	WETLAND + SAND FILTER + UV DISINFECTION	2000	$775,000	USDA/PFA
McGrath	Aitkin Co.	74	DU	7030004 - St.Crx	FAC. PLAN SUBMITTED (USDA)				ISTS/USDA
South Haven	Wright Co.	201	MD	7010203 - UpMiss	FACILITY PLAN SUBMITTED	PONDS + SPRAY IRRIGATION	2000	$2,112,000	USDA/PFA
Delavan	Faribault Co.	226	RO	7020011 - MnRiv	FACILITY PLAN SUBMITTED	RECOMMEND STABILIZATION PONDS	2002	$2,267,330	USDA/PFA
Garvin	Lyon Co.	133	WI	7020008 - MnRiv	FACILITY PLAN SUMITTED	PART OF LAKE SHETEK PROJECT	2001/02	$1,201,594	USDA/PFA
9 CITIES	**TOTAL POPULATION =**	**1982**		.			**Total =**	**$9,603,924**	
							Average =	**$1,371,989**	

CITY	COUNTY	POP.	DIST.	BASIN/ WATERSHED	STATUS	PROPOSED SOLUTION	PROPOSED COMPLETION	ESTIMATED COST	POTENTIAL FUNDING SOURCES
Crosslake	Crow Wing Co	1,470	BR	7010105 - UpMiss	PLANNING	?	?		
Emily	Crow Wing Co.	746	BR	7010105 - UpMiss	PLANNING W/ USDA (RD &REC)	?	?		USDA
Pleasant Lake	Stearns Co.	187	BR	7010203 - UpMiss	PLANNING	?	?		
Roscoe	Stearns Co.	135	BR	7010202 - UpMiss	PLANNING	?	?		USDA
Solway	Beltrami Co.	72	DL	9020303 - RnyRiv	PLANNING W/ USDA	?			
Shevlin	Clearwater Co.	148	DL	9020305 - RnyRiv	PLANNING	?	?		USDA
Foxhome	Wilkin Co.	155	DL	9020103 - RedRiv	PLANNING	?	?		
East Bethel	Anoka Co.	9,723	MD	7010207 - UpMiss	PLANNING	?	?		
Ham Lake	Anoka Co.	11,576	MD	7010206 - UpMiss	PLANNING	?	?		
Nerstrand	Rice Co.	259	RO	7040002 - LowMiss	PLANNING	?	?		
Corcoran	Hennepin Co.	5,698	MD	7010206 - UpMiss	PLANNING	BUSINESS DISTRICT MAY PROCEED SEPARATELY	?		
Oronoco	Olmsted Co.	862	RO	7040004 - LowMiss	PLANNING W/ USDA (RD&REC)	?	?		USDA
Ormsby	Watonwan & Martin Co.	150	RO	7020010 - MnRiv	PLANNING PREPARING RFPs	?	?		COUNTY PLANNING $
La Salle	Watonwan Co.	94	RO	7020010 - MnRiv	PLANNING PREPARING RFPs	?	?		COUNTY PLANNING $
Lewisville	Watonwan Co.	296	RO	7020010 - MnRiv	PLANNING PREPARING RFPs	?	?		COUNTY PLANNING $
Odin	Watonwan Co.	123	RO	7020010 - MnRiv	PLANNING PREPARING RFPs	?	?		COUNTY PLANNING $
Dakota	Winona Co.	357	RO	7040006 - LowMiss	PLANNING	?	?		
Correll	Big Stone Co.	56	WI	7020001 - MnRiv	PLANNING W/ USDA	?			
Revere	Redwood Co.	109	WI	7020008 - MnRiv	PLANNING W/ USDA	?			
De Graff	Swift Co.	137	WI	7020005 - MnRiv	PLANNING W/ USDA	?			
20 CITIES	**TOTAL POPULATION =**	**32,353**		.			**Total =**	**#NAME?**	
							Average =	**#DIV/0!**	

CITY	COUNTY	POP.	DIST.	BASIN/ WATERSHED	STATUS	PROPOSED SOLUTION	PROPOSED COMPLETION	ESTIMATED COST	POTENTIAL FUNDING SOURCES
Ronneby	Benton Co.	49	BR	7010203 - UpMiss					
Bena	Cass Co.	149	BR	7010102 - UpMiss					
Boy River	Cass Co.	52	BR	7010102 - UpMiss					
Fort Ripley	Crow Wing Co.	90	BR	7010104 - UpMiss					
Jenkins	Crow Wing Co.	334	BR	7010105 - UpMiss					
Manhattan Beach	Crow Wing Co.	53	BR	7010105 - UpMiss					
Riverton	Crow Wing Co.	123	BR	7010105 - UpMiss					
Fifty Lakes	Crow Wing Co.	389	BR	7010105 - UpMiss					
Quamba	Kanabec Co.	127	BR	7030004 - St.Crx					
Harding	Morrison Co.	98	BR	7010201 - UpMiss					
Elmdale	Morrison Co.	127	BR	7010201 - UpMiss					
Henriette	Pine Co.	79	BR	7030004 - St.Crx					
Kerrick	Pine Co.	65	BR	7030003 - St.Crx					
Rock Creek	Pine Co.	1,123	BR	7030005 - St.Crx					
Rutledge	Pine Co.	172	BR	7030003 - St.Crx					
Sturgeon Lake	Pine Co.	253	BR	7030003 - St.Crx					
Denham	Pine Co.	39	BR	7030003 - St.Crx					
Saint Rosa	Stearns Co.	73	BR	7010202 - UpMiss					
Aldrich	Wadena Co.	53	BR	7010106 - UpMiss					
Nimrod	Wadena Co.	77	BR	7010106 - UpMiss					

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CITY	COUNTY	POP.	MPCA DIST.	BASIN / WATERSHED	STATUS	SOLUTION	COMPLETION	COST	FUNDING SOURCES
Funkley	Beltrami Co.	17	DL	9020302 - RedRiv					
Turtle River	Beltrami Co.	74	DL	7010101 - UpMiss					
Wilton	Beltrami Co.	174	DL	7010101 - UpMiss					
Tenstrike	Beltrami Co.	194	DL	7010101 - UpMiss					
Leonard	Clearwater Co.	32	DL	9020305 - RedRiv					
Forada	Douglas Co.	174	DL	7020005 - MnRiv					
Norcross	Grant Co.	74	DL	9020102 - RedRiv					
Humboldt	Kittson Co.	65	DL	9020312 - RedRiv					
Saint Vincent	Kittson Co.	111	DL	9020312 - RnyRiv					
Halma	Kittson Co.	80	DL	9020311 - RedRiv					
Holt	Marshall Co.	101	DL	9020304 - RedRiv					
Viking	Marshall Co.	90	DL	9020309 - RedRiv					
Clitherall	Otter Tail Co.	99	DL	9020103 - RedRiv					
Erhard	Otter Tail Co.	180	DL	9020103 - RedRiv					
Richville	Otter Tail Co.	122	DL	9020103 - RedRiv					
Urbank	Otter Tail Co.	72	DL	7020005 - MnRiv					
Vining	Otter Tail Co.	87	DL	9020103 - RedRiv					
Ottertail	Otter Tail Co.	405	DL	9020103 - RedRiv					
Beltrami	Polk Co.	129	DL	9020301 - RedRiv					
Lengby	Polk Co.	104	DL	9020305 - RedRiv					
Trail	Polk Co.	55	DL	9020305 - RedRiv					
Gully	Polk Co.	127	DL	9020305 - RedRiv					
Mentor	Polk Co.	177	DL	9020305 - RedRiv					
Long Beach	Pope Co.	227	DL	7020005 - MnRiv					
Sedan	Pope Co.	61	DL	7010204 - UpMiss					
Westport	Pope Co.	50	DL	7010202 - UpMiss					
Brooks	Red Lake Co.	151	DL	9020305 - RedRiv					
Roosevelt	Roseau & Lake of the Woods	184	DL	9030009 - RnyRiv					
Strathcona	Roseau Co.	44	DL	9020312 - RedRiv					
Tintah	Traverse Co.	71	DL	9020101 - RedRiv					
Doran	Wilkin Co.	65	DL	9020103 - RedRiv					
Kent	Wilkin Co.	124	DL	9020104 - RedRiv					
Nashua	Wilkin Co.	55	DL	9020101 - RedRiv					
Tenney	Wilkin Co.	4	DL	9020101 - RedRiv					
Wright	Carlton Co.	141	DU	7010103 - UpMiss					
Effie	Itasca Co.	112	DU	9030006 - RnyRiv					
Squaw Lake	Itasca Co.	131	DU	9030006 - RnyRiv					
Mizpah	Koochiching Co.	94	DU	9030006 - RnyRiv					
Brookston	St. Louis Co.	103	DU	4010201 - Lk.Sup					
Coates	Dakota Co.	183	MD	7040001 - LowMiss					
Miesville	Dakota Co.	136	MD	7040002 - LowMiss					
New Trier	Dakota Co.	97	MD	7040002 - LowMiss					
Randolph	Dakota Co.	353	MD	7040002 - LowMiss					
Sunfish Lake	Dakota Co.	475	MD	7040001 - LowMiss					
Lakeland	Washington Co.	2,039	MD	7030005 - St.Crx					
Lakeland Shores	Washington Co.	364	MD	7030005 - St.Crx					
Pine Springs	Washington Co.	446	MD	7030005 - St.Crx					
Saint Mary's Point	Washington Co.	350	MD	7030005 - St.Crx					
Afton	Washington Co.	2,920	MD	7030005 - St.Crx					
Evan	Brown Co.	84	RO	7020007 - MnRiv					
Walters	Faribault Co.	75	RO	7020009 - MnRiv					
Whalan	Fillmore Co.	83	RO	7040008 - LowMiss					
Conger	Freeborn Co.	133	RO	7080202 - C&DM					
Manchester	Freeborn Co.	71	RO	7080202 - C&DM					
Myrtle	Freeborn Co.	62	RO	7080201 - C&DM					
Heidelberg	LeSueur Co.	77	RO	7020012 - MnRiv					
Taopi	Mower Co.	81	RO	7060002 - LowMiss					
Minneiska	Wabasha & Winona Co.	133	RO	7040003 - LowMiss					
Millville	Wabasha Co.	170	RO	7040004 - LowMiss					
Hammond	Wabasha Co.	201	RO	7040004 - LowMiss					
Minnesota City	Winona Co.	252	RO	7040003 - LowMiss					
Johnson	Big Stone Co.	41	WI	9020102 - RedRiv					
Cobden	Brown Co.	60	WI	7020008 - MnRiv					
Wilder	Jackson Co.	80	WI	7100001 - C&DM					
Regal	Kandiyohi Co.	51	WI	7010204 - UpMiss					
Blomkest	Kandiyohi Co.	178	WI	7020004 - MnRiv					
Louisburg	Lac Qui Parle Co.	32	WI	7020001 - MnRiv					

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CITY	COUNTY	POP.	MPCA DIST.	BASIN / WATERSHED	STATUS	SOLUTION	COMPLETION	COST	FUNDING SOURCES
Nassau	Lac Qui Parle Co.	72	WI	7020003 - MnRiv					
Florence	Lyon Co.	49	WI	7020006 - MnRiv					
Biscay	McLeod Co.	124	WI	7010205 - UpMiss					
Cedar Mills	Meeker Co.	80	WI	7010205 - UpMiss					
Kingston	Meeker Co.	127	WI	7010204 - UpMiss					
Avoca	Murray Co.	145	WI	7100001 - C&DM					
Dovray	Murray Co.	55	WI	7020008 - MnRiv					
Hadley	Murray Co.	97	WI	7100001 - C&DM					
Bigelow	Nobles Co.	228	WI	10230003 - MoRiv					
Dundee	Nobles Co.	100	WI	7100001 - C&DM					
Kinbrae	Nobles Co.	17	WI	7100001 - C&DM					
Trosky	Pipestone Co.	121	WI	1017024 - MoRiv					
Delhi	Redwood Co.	67	WI	7020007 - MnRiv					
Seaforth	Redwood Co.	85	WI	7020006 - MnRiv					
Kenneth	Rock Co.	75	WI	10170204 - MoRiv					
Clontarf	Swift Co.	161	WI	7020005 - MnRiv					
Hazel Run	Yellow Medicine Co.	77	WI	7020004 - MnRiv					
103 CITIES									
	TOTAL POPULATION =	**18792**		.					
Abbreviations:									
ISTS = ISTS Grant Program									
PFA = Public Facilities Authority									
SCPD = Small Cities Grant Program									
SEMMCHRA = South East Minnesota Multi-Housing Redevelopment Authority									
USDA = US Department of Agricuture Rural Development Program									
REC = Rural Electric Cooperative									

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Committee Outcomes

The committee studied undersewered background information at the beginning of the work group process to afford them the opportunity to understand the facts from the onset. The committee then discussed outcomes they would like to see in two years in undersewered communities. There was general agreement in numerous areas, including but not limited to:

- Clearly defined expectations and responsibilities of all entities involved.
- Simple defined categories of sewage treatment that can be applied to various situations that work and are manageable. Use easily understood terminology.
- A program based on a framework on taking a holistic approach to improving surface and groundwater quality. (A watershed approach in which sewage is just one aspect of the whole)
- A complete program with viable solutions that incorporate using appropriate technology in the appropriate location; have rules and regulations in place to help this work; appropriate funding; education for staff, home owners, local governmental units (LGU); good management of systems; home owners, professionals and the agency working together; citizen involvement.
- Develop a model system that uses innovative technologies to support a centralized approach to managing integrated alternative systems that achieve a defined standard of performance. The model includes guidelines for education, operation and maintenance (O&M), technology, governance, funding, and community involvement.
- Centralized information for communities on funding and treatment alternatives.
- Pre-planning assistance, advice, and technical support for communities.
- Use of "Smart Growth" principles in planning.
- Prioritize sites based on risk, sensitivity, environmental and health issues.

This information was used to help identify barriers and ways to overcome them.

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Barrier Discussion

This section of the report will examine the results of each team concerning:

- What are the barriers?
- Why are they barriers?
- What are the solutions?
- Who should work on it?

Technology Team

Identified Technical Barriers, Reasons, Solutions, and Responsible Parties

- **Barrier**: Classifying systems in Chapter 7080 inhibits the use of new technologies.

  Reason: Systems are classified in Chapter 7080 to identify those systems which have been proven by research and long term field use to provide reliable, long term sewage treatment and disposal which achieves acceptable protection of the environmental and public health. With high standards set for standard systems, local units of government and the ISTS industry can efficiently design, install and inspect these systems, and have little follow-up to correct problems. Therefore, local units of government have to instigate few formal enforcement actions against the owners of newer systems that have failed.

  Solution: Classifying systems may be an impediment to the use of new technologies, however consensus of the technical subgroup seemed to be that the classifications have value and should not be dropped. However, the classification name could be changed to something less descriptive, such as Type I, Type II, etc., which will not have negative connotations (such as experimental).

  Responsible Party (if found to be a priority impediment): MPCA ISTS staff

- **Barrier**: Overly conservative safety factors in design of systems.

  Reason: Conservative safety factors account for the possibility of human error in design and construction, climatic variability, flow variability, lower maintenance requirements and less critical construction inspection requirements.

  Solution: The solution is to decrease the safety factors. However, this may be penny wise and pound foolish. A benefit of increasing the safety factor (in addition to the above list) is increased system life, which may in the long run, have lower overall cost. However, with families moving on an average of every 5 years, they may opt for a much shorter system life since they feel no long-term commitment to the property.

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Responsible Party: Local units of government can reduce the safety factors if desired as alternative local standards (MN Statutes 115.55). Therefore, no action is needed.

- **Barrier**: Known reliability/comfort level/liability considerations of using new technology and engineering reports with cost analysis are biased toward their favorite technology.

  Reason: There is less anxiety when designing a system with known reliability. In this litigious society, along with the concern of developing a bad reputation, designers are wary of trying something with an unknown record of accomplishment. In addition, it can be cheaper to design a system with known reliability, and some customers are biased towards or against a technology. If planning dollars are not available, then the consultant does not want to estimate low.

  Solution 1: Need facility planning funds to do a good investigative study of an area to determine the correct technology. These studies can be costly, but may result in lower overall costs.

  Responsible Party: Legislature - appropriates funding for planning

  Solution 2: Need review by an independent knowledgeable person (Rural development projects are doing this now. An independent engineer could do cost analysis.

  Responsible Party: Legislature - appropriates funding for review of planning documents. PCA - have to go through PCA for appropriation.

  Solution 3: State should have approval packages of various design options. This could be accomplished by developing a Technical Advisory Committee. (Note: The MPCA has developed a specification on dechlorination, but no one uses it.)

  Responsible Party: Legislature - appropriates funding for MPCA staff to develop design packages. MPCA ISTS staff to set up a Technical Advisory Committee. (Has been done).

  Solution 4: Require warranty on performance or have the company have a bond on the reliability of the system (Problem. How to determine the cause of failure; design, construction, use or maintenance)

  Responsible Party: Legislature - supports 7080 rule change and MPCA ISTS staff

  Solution 5: Have national/regional testing of new technologies (MN could spearhead this endeavor)

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Responsible Party: Legislature - appropriates funding to U of M for a testing facility and to enlist buy-in from other states or groups.

Solution 6: Provide training to local decision-makers and have U of M Extension agents who are small community technical and administrative experts.

Responsible Party: Legislature -appropriate funding to increase U of M Extension staff to provide this additional training.

Solution 7: Have good inspectors.

Responsible Party: Legislature - appropriates funding for MPCA staff to increase inspector training.

- **Barrier**: High cost to bring in new technology from a distance place.

  Solution: Have adequate planning funds to afford to investigate and pursue new technologies

  Responsible Party: Legislature -appropriate funding to increase planning dollars.

- **Barrier:** Belief that ISTS are inferior

  Reason: This mind set came from the pre-Chapter 7080 days in which systems were designed which neither treated properly nor dispose adequately.

  Solution 1: Need to educate that 7080 systems are not inferior.

  Responsible Party: Legislature -appropriate funding to increase U of M Extension staff to provide this additional training.

  Solution 2: To ensure that poorly designed systems will not be installed again, ensure strong local programs through education of local elected officials and providing increased training and experience for inspectors.

  Responsible Party: Legislature - appropriates funding for U of M Extension education and administration dollars to local units of government.

  Solution 3: Review 7080 to see if some prescribed methods cause early failure, such as drop boxes.

  Responsible Party: MPCA ISTS staff

  Solution 4: Promote designs with advanced pretreatment systems that could cause systems to last indefinitely

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Responsible Party: Legislature -appropriate funding to increase U of M Extension staff to provide this additional training.

Solution 5: Require service contracts/operating permits to increase system life

Responsible Party: Legislature - support for a rule change to Chapter 7080, MPCA ISTS staff need management and financial support.

Funding Team

- **Barrier:** As currently structured, Wastewater Infrastructure Fund (WIF grant funding) encourages "big pipe" solutions for undersewered areas.

  Reason: The WIF funding formulas reduces local government incentives to look for smaller, less expensive waste water systems. As costs for projects rise the grant amounts also go up. The priority list gives more points to regionalization projects. PCA technical review does not focus on the cost-effective solution to an undersewered area problem.

  Solution 1: Tightening the Wastewater Infrastructure Fund (WIF) requirements which would provide grant money only for existing need and limits grant funding to $15,000 per household.

  Responsible Party: Legislature – (Adopted in the 2000 session)

  Solution 2: Increase the local contribution to the project (thereby reducing the WIF grant and increasing the loan amount) based on the increased property values the project will generate by requiring special assessments on each benefiting property to the maximum level.

  Responsible party: PFA, Legislature

  Solution 3: Modify the priority system rules to reduce or eliminate the 150 additional points given to an undersewered area project if it connects with an existing facility. This will help ensure various treatment alternatives are considered on their own merits and reduce the incentive to choose "big pipe" solutions.

  Responsible party: PCA

- **Barrier:** Minimal planning that fails to adequately consider all treatment alternatives.

  Reason: Without funding and technical assistance for local units of government to consider and understand other alternatives, they may tend to favor traditional

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technology "big pipe" solutions as an easy if not entirely correct solution to the community's waste water problems.

Solution 1: Provide advice and planning assistance to Local units of government early in the planning stage.

Responsible party: Pollution Control Agency or an interagency guidance group

Solution 2: Provide up-front planning grants to local governments for wastewater planning. This could include a challenge grant program for counties to develop an overall wastewater plan for a county (or multi-county area).

Responsible party: PFA, PCA, and Legislature

- **Barrier:** Wastewater systems are not free and communities need to be accountable for financing their wastewater needs.

Reason: There is a cost to having clean water. Upgrading or building a new system has its costs.

Solution 1: Increase local contribution by requiring special assessments (see Barrier 1 under funding, Solution 2).

Responsible party: PFA, Legislature

Solution2: In WIF grants, there is a requirement that the local government annually set-aside $.10 per 1,000 gallons for future capital improvements to their waste water system as it wears out or needs expansion. This amount needs to be raised if it is to provide sufficient funds for communities to be prepared for their wastewater needs in the future.

Responsible party: Legislature

Solution 3: Establish an annual tax on existing ISTS systems and a charge on each new ISTS built. A portion of these funds could be directed to the counties to pay for inspections, wastewater planning, etc. and the remainder could come back to the WIF program to pay for future grants in undersewered areas.

Responsible party: PFA, Legislature

Regulatory Team

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- **Barrier:** Significant costs of Preliminary Engineering are seldom recovered through project funding and may turn out to be unnecessary investments if the projects are delayed or never completed.

  Reason: Preliminary Engineering needs to be completed before environmental review is completed and funding and permit applications are prepared. These are often significant up-front costs and barriers to the initiation of wastewater projects.

  Solution 1: Simplify the permitting process to avoid the need for significant up-front expenditures before it is clear that the project is going to proceed.

  Responsible party: Pollution Control Agency

  Solution 2: MPCA could publish standard "off the shelf" preliminary engineering designs for wastewater treatment facilities (Public Domain). These could be generic community drainfields, stabilization ponds, constructed wetlands, mechanical facilities, collection systems, etc. Communities could proceed with environmental review, funding and permit applications based on their intent to construct standard treatment facilities. Once these processes are underway, funding is secured, etc., consulting engineers could be brought in to customize the design to local needs. [Editorial note: Much of the necessary background data collection (estimated design flows, identification of potential discharge locations, survey of existing ISTS, preliminary treatment site identification, etc.) might be accomplished with MPCA guidance and the assistance of MPCA and/or County staff. This type of work may also be of interest to civil or environmental engineering university departments.] Also, models exist for government provided design services (NRCS services and Storm water Best Management Practices (BMPs).]

  Responsible party: Pollution Control Agency

- **Barrier:** Current regulations require all sewer systems (and pretty much everything else) to be designed by registered professional engineers.

  Reason: Minnesota Statutes § 326.02. Subd. 3. Practice of professional engineering. Any person shall be deemed to be practicing professional engineering within the meaning of sections 326.02 to 326.15 who holds out as being able to perform or who does perform any technical professional service, such as planning, design or observation of construction for the purpose of assuring compliance with specifications and design, in connection with any public or private structures, buildings, utilities, machines, equipment, processes, works, or projects wherein the public welfare or the safeguarding of life, health, or property is concerned or involved, when such professional service requires the application of the principles of mathematics and the physical and applied engineering sciences acquired by education or raining, and by experience.

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Solution 1: There should be an exemption for small collection systems designed by ISTS designers to serve soil based treatment systems that do not otherwise require the involvement of professional registered engineers.

Responsible Party: Based on this statute the Board of Architecture, Professional Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design requires sanitary sewers to be designed by registered professional engineers. This may add considerable cost to a cluster ISTS system designed by a certified ISTS Designer.

Solution 2: It is a good idea to involve a soil scientist in site evaluation early on in planning a large soil based treatment system to ensure that soils are adequate. This may cost several thousand dollars, but that is not significant in the context of an overall project cost of several hundred thousand dollars.
Other discussion:

- What is the cut-off point?
- What can a certified ISTS designer or installer handle and what requires evaluation by a soil scientist?
- Local regulatory personnel don't necessarily have sufficient expertise for these evaluations.
- ISTS training doesn't provide sufficient expertise for these evaluations.

Solution 3: Propose language for inclusion in Minn. R. ch. 7080 and adoption by LGU's for inclusion in local ISTS Ordinances:

> "The Permitting Authority may require site evaluation performed by a Professional Soil Scientist when the following conditions are associated with the design of a soil based treatment system below the 10,000 gallon per day SDS permit threshold:
>
> Complex local soil conditions
> The system will be designed to serve more than one residence
> The system will receive public financing
> Other conditions specified by the Permitting Authority"

Responsible Party: MPCA

Solution 4: Propose language change for Minn. Stat. § 326.02, subd. 3 Practice of Professional Engineering.

> Propose language allowing the Local Unit of Government or other Permitting Authority to establish whether the services of a professional engineer or soil scientist are necessary for the design of soil based treatment systems. Develop a set of criteria (listed in Minn. R. ch. 7080)

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to help develop local guidelines for when such services should be required.
7080 - The Permitting Authority may require the services of a professional engineer or soil scientist... for the design of soil based treatment facilities and related collection facilities that do not require SDS permits form the MPCA.

Responsible party: Board of Architects, Engineers, etc.

- **Barrier:** The vendors of "Warrantied" ISTS technologies listed in accordance Minn. R. ch. 7080.0450 can sometimes take advantage of the warrantied status of their products to push for downsizing system components.

  Solution: MPCA web site should maintain an up to date list of Warrantied ISTS systems.

  Responsible party: Pollution Control Agency

- **Barrier:** Local permitting authorities (Counties, Cities, Townships, Districts) may not have the resources and expertise necessary to evaluate alternative systems and standards.

  Reason: The 1999 revision of Minn. R. ch 7080 includes three different provisions for alternative standards or systems:

  7080.0178 - Other Systems
  7080.0179 - Performance Systems
  7080.0305, subp. 6. - Alternative Local Standards

  In a related issue, Minn. R. ch. 7080.0400 New Technology, establishes procedures for the MPCA to designate new technologies as "standard" or " alternative" systems based on the review of system design information.

  This may cause confusion for communities as they attempt to select a wastewater solution.

  Solution: Establishment of a Technology Review Board to evaluate proposed technologies and standards. This group could review proposed systems, alternatives, standards, etc., help establish the designation of new technologies (standard or alternative) and act as a resource for local permitting authorities in need of technical review of proposed systems.

  Responsible party: Pollution Control Agency – this group now exists

- **Barrier:** Several cost and administrative factors may act as barriers for small communities that need to install wastewater treatment systems. In addition to the

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above items, the following related issues were discussed since they are closely related to each other:

Permit Costs
Preliminary Engineering
Technical Review Board
General Permit

Reason:

- Although the incremental costs associated with NPDES/SDS permitting are not prohibitive, they are in addition to the project's capital costs and operational expenses.
- The administrative responsibilities associated with maintaining an MPCA permit often exceed a small town's personnel resources, resulting in chronic non-compliance for failure to submit reports and other "paper violations".
- In order to avoid MPCA permitting requirements (10,000 gallons per day for soil based treatment systems), often communities and their engineering consultants design treatment facilities based on permitting thresholds, and may "under-design" in order to avoid permit related costs and responsibilities. This phenomenon is likely to occur regardless of where the "line" is drawn. The same sort of thing occurs in order to avoid the increased monitoring and operational requirements associated with a higher facility classification or designation as a major facility. MPCA permitting processes and engineering review also entail additional scrutiny of the facility's engineering design and often result in increased capital costs, time delay (including a 30 day public comment period), and more effort required of the engineering consultant.
- The NPDES permit model is used for all wastewater treatment systems, regardless of size or potential for environmental degradation. Would a less onerous (risk based) permit model be more appropriate for small communities? General permit?
- Small communities lack the expertise to navigate the complicated world of wastewater facility financing, design and construction. Project managers needed to help with the process (organization, community education, applications, interviews, evaluating options, etc.).

Solution 1: Designs by registered professional engineers should not be required for soil based treatment systems that do not require SDS permits (<10,000 gallons per day). Licensed ISTS designers are capable of designing these systems.

Responsible party: Pollution Control Agency

Solution 2: General permits for "low risk" systems, designed to reduce operating, monitoring and administrative costs. They should apply to all low risk domestic wastewater treatment systems, including existing facilities.

Responsible party: Pollution Control Agency

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Solution 3: Publication of "off the shelf" generic wastewater treatment facility designs that can be used by communities to get through the initial (unfunded) stages of a project. Will still need to collect site specific information (project flows & loadings, soil types, demographic projections, discharge point identification, etc.). Engineering students, NRCS, MPCA, Counties, private testing firms, or other organizations could help collect the basic information. This may allow communities to explore the likelihood of funding for a project before making significant investments. Once the community has secured project funding, the services of an engineering or ISTS professional would be required to tailor the design to local needs.

Responsible party: Pollution Control Agency, NRCS

Solution 4: A Pre-Application Review Board composed of state, county, local, funding agency, public interest group, etc., officials could review projects in the initial stages of development and make recommendations to the project proposer. The Board could help the project proposer by offering suggested course of action (advise them to hire a project manager), sharing information about the cost of similar types of projects, etc. If successful, projects that have been reviewed by this Board may expedite the process. A pre-application review board should be as local as possible though it may be difficult to assemble comprehensive expertise at the local /regional level.

Responsible party: Pollution Control Agency, involvement by local/regional level organizations. (MNDOT Local Review Boards may serve as models for these groups).

Solution 5: Legislature should provide appropriate funding levels for counties, MPCA, project financing.

Responsible party: Legislature.

- **Barrier:** Operator Certification

Reason: Large soil based treatment facilities (>10,000 gallons per day) are permitted as Class D facilities (the least technologically complex classification), requiring the services of Class D certified operators. The MPCA assigns this classification to these facilities because it is the least technologically complex facility classification in the current facility classification rule (Minn. R. Ch. 9400). Class D operator training courses do not, however, provide information on the construction, evaluation or operation of soil based treatment systems. As a result Class D operators do not necessarily have the expertise necessary to operate soil based treatment facilities.

Solution: The MPCA and the University of Minnesota Extension Service should develop a curriculum for training operators of large soil based wastewater

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treatment facilities. Minn. R. Ch. 9400.0500 should be modified to include a specific wastewater treatment facility classification for large soil based treatment systems. These could be listed as Class E facilities. Minn. R. Ch. 9400.0700 should be modified to certify individuals who have successfully completed the soil based treatment system training, described above, and completed a combination of additional schooling or work experience, as Class E wastewater treatment facility operators.

Responsible party: Pollution Control Agency, U of Mn Extension

- **Barrier:** Water Quality Coops

  Reason: The Water Quality Coops claim that state statutes make them exempt from any need for local permits.

  Solution: Modify statutes to make clear that Water Quality CO-OPs are subject to the same local standards as everyone else.

  Responsible party: Legislature

- **Barrier:** Management of Septage

  Reason:
  - The Metropolitan Council has required all the counties under its jurisdiction to start a septic tank pumping program, but has not made arrangement with its POTWs to accept the septage from these programs.
  - EPA's Class V Injection Well regulations are causing more holding tanks to be installed, which results in increased volumes of septage. Disposal may require an analysis of waste.
  - Population growth causes greater volumes of septage to be generated and makes it more difficult to find areas for land application.
  - Few counties keep track of the land application of septage, issue site approvals, etc.
  - Many Publicly Owned Treatment Works (POTW's) do not accept septage. Reasons: Waste strength is not known and most POTW's don't have the storage facilities to allow septage to remain until a waste analysis is completed; septage is generated outside of the POTW taxing area; many POTW's don't have the capacity to handle extra loading.

  Solution 1: Need regionalized approaches to septage handling such as regional storage and treatment facilities or preserve land application sites.

  Responsible Party: MPCA, Counties, POTW's

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Solution 2: POTW's should be designed and encouraged or required to accept septage.

Note: Extra priority points on the Project Priority List could be awarded for facilities that intend to accept septage.

Responsible party: MPCA, PFA

- **Barrier**: MPCA Responsiveness (60 Day Rule):

  Reason: MPCA often takes too long for review and approval of plans, permit issuance, etc. Many other permitting authorities (counties, municipalities, etc.) operate under a "60 day rule". A permit is issued by default within sixty days of the application date unless the permitting authority has acted on the request. The following potential variables were discussed:
  - MPCA could outsource functions that it can't handle
  - MPCA could hire more staff to handle issues that it can't currently address
  - MPCA could jettison parts of the program to streamline the process

  Solution 1: Goal: Streamline process to achieve a 120 day timeline from permit application to permit issuance.

  Responsible Party: PCA

  Solution 2: Plans & specifications and permit applications should be sent back (stop the clock) if they are not acceptable or incomplete.

  Assumptions:
  - Permit application and plans & specifications are submitted simultaneously.
  - Community notification if more time is required due to the need to resolve issues that have arisen during the public notification period (EAW or Permit).

  The group discussed the need for some repercussion in the event that MPCA should fail to meet this timeline. Issue permit with no conditions? Liquidated damages? Waive permit fees?

  Responsible party: PCA

- **Barrier**: Standards are sometimes difficult to meet.

  Discussion: A proposal might be: If a community were under 25,000 gal/day, they would not be required to meet the most standards that are required today. For example if they had a 10 BOD limit it would be lessened to 25 BOD. This

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could potentially save the communities capital costs needs to meet the current standards.

Reason:

- Less stringent standards could translate into lower capital costs and operational costs for small community wastewater systems.
- Is it always necessary to require a full-blown solution from a community whose impact may not be particularly significant?
- Discussed the process of establishing effluent standards and various existing exceptions made for particular treatment technologies.

Solution 1: The Regulatory group does not endorse any relaxation of treatment standards.

Solution 2:The committee approved the idea that there could be an enforcement strategy that could allow communities to temporarily implement certain Best Management Practices in lieu of immediate compliance with current treatment standards. These would be options only for communities that are not able to afford construction of wastewater treatment facilities or dying (vitality-challenged) communities.

Responsible Party: PCA

Solution 3: The execution of BMP's would be implemented through Compliance Schedules enforced by the MPCA.

Responsible Party: PCA

- **Barrier:** Land Use/Zoning:

Reason:

- MPCA does not have the authority to become involved in land use and zoning decisions.
- Many undersewered areas border municipalities that have existing wastewater treatment facilities that could accommodate flows from outlying areas.
- Cooperation between political jurisdictions is often impossible due to questions of annexation. The result has been the construction of redundant treatment facilities.
- MPCA attitude towards these issues may be changing (smart growth initiatives).

Solution: The Community Based Planning Program (St. Cloud Area) should be looked at. A pilot project was implemented (MN Planning). Should be reviewed to examine any improvements, good ideas, etc.
There are many issues in the land/use zoning discussion. The legislature should work out incentives for cooperation.

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Responsible Party: Legislature, PCA

Management Team

The management team organized their barriers according to the categories of groups involved in the management arena. They are as follows:

1. Consulting engineers
2. County (Planning and Zoning, Elected Officials)
3. City or Townships with an ordinance governing ISTS
4. City or Township without an ISTS ordinance
5. ISTS Installers
6. ISTS Pumpers
7. ISTS Designers
8. Homeowners
9. State Regulatory & assistance agencies (MPCA, MDH, MDA, BWSR, DNR,)
10. Met Council
11. Sanitary Sewer Districts, Subordinate Sewer Districts, small city with municipal sewer system
12. Management Group (homeowner association, lake association, MN Association of Watershed Districts)
13. Management Entity (water quality coop, rural electric coop, private management company)
14. Educators
15. Funding agencies

- **Barriers for Consulting Engineers:**

  Large systems require a design by PE (in statute).
  Perceived by others as pushing "the big pipe" only.
  Perceived by others as pushing options on small cities that are too costly.
  Financial interest: the bigger the project, the higher the profit.
  Financial incentives available to a city that chooses "big pipe" option.
  Do not recognize the limitations of their individual company.
  Limited knowledge of options to big pipe technology (i.e. small, medium alternatives).
  Not focused on management; seem to be focused on construction of expensive project.
  Little support by the state to allow engineers to select a less costly alternative for a small community.

  Solution 1: Rewards/incentives to look at more cost-effective solutions

  Responsible Party: Legislature

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Solution 2: Cost effective solutions need to be prepared that are acceptable to MPCA reviewers

Responsible Party: Engineers, PCA

Solution 3: Alternative systems to "the big pipe" philosophy

Responsible Party: PCA to educate

Solution 4: Education

Responsible Party: PCA

Activities:
O&M should be part of the design package
Education: real costs of operating a system
Revise the funding criteria to promote, where possible, options other than "big pipe"
Method to receive fair compensation in order to provide an unbiased best wastewater system for a given area.

- **Barriers for County (P&Z, elected officials, Association of Minnesota Counties):**

Perception that the next level of government (i.e. state) as a manager is not good for the county
MPCA often perceived as a group to take money away from county programs
No site inspection requirement in 7080
Pressures on county staff to approve sewer systems ASAP without adequate inspections
Inspection of existing system not consistent across county borders
Not all LGU staff has adequate training or experience
Misconception that engineers and big pipe are bad for the county
No source of funding for LGU to require management for wastewater systems
State can't enforce against county for not regulating system maintenance
Lack of jurisdiction by county into other units of government (cities)
Perception that all development is positive for the county

Solutions:
Understanding of alternative systems
Better understanding all technologies such as soils, system options, hydrology, engineering
Understanding of ground water
Ownership & management options for area-wide and individual systems: pro and con
Learn the value of "big pipe" as well as smaller options
Specific training for LGU's

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Responsible Party: PCA, U of MN for education

Solutions:
Money
Linkage between land use planning and sewage treatment/management
Grant for Comp. Plan to prepare countywide approach to management for wastewater
More authority

Responsible Party: Legislature, PFA, and PCA

Solution: Community support to recognize the need for sewage management

Responsible Party: County to educate community

Solution:
Need MPCA to be the "bad guy" to force maintenance and management
Management plan: mandatory management for every system

Responsible Party: PCA

Activities:
Increase county employee level of understanding
Increase level of understanding of elected officials
Specific training for counties: what's in 7080 from a county ordinance perspective; enforcement –done by county versus done by state; how to inspect; value in proper inspection as it relates to management and long-term operation of the system; options
Training (mandatory?) on treatment options
Training on wastewater treatment: pro-con of big and small pipe technology
Provide challenge grants to county as part of Water Plan or Comprehensive Plan for wastewater planning purposes

- **Barriers for City/Township with sanitary ordinance (League of Minnesota Cities, Small Cities, Minnesota Township Association):**
  Staff has less time to spend on sewage issues than county
  Staff is spread very thin in the area of wastewater services
  Gap in knowledge and education is greater than in county staff
  Difficult to attract (and pay) qualified personnel
  Often not as restrictive as county
  Enforcement program seems lacking – want state to do enforcement
  Perception that all development is positive for the city/township
  Perception that the next level of government (i.e. county) as a manager is not good for the city/township

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ISTS permit fees are considered operating funds for a city/township
Small cities w/ POTW spend most of time trying to maintain older system

Solutions:
See county solutions

Activities:
Same as County
More training and education
Raise fees to cover costs to administer the program and pay for wastewater treatment [this includes both POTW & ISTS]
Don't take the ISTS ordinance responsibilities from the county

- **Barriers for Cities/Townships without sanitary ordinance (and member organizations):**

Have some land use responsibilities, no sewage knowledge or responsibilities
Neither state nor county is pushing the need for maintenance or management
Perception that all development is good for the community
Perception that more government is needless bureaucracy

Solution:
Understanding of the needs for maintenance/management
Link between land use planning and wastewater management
Some understanding to "force" county to bring the right wastewater option into the area

Responsible Party: County, City, Township, Smart Growth and PCA for education

Activities:
Training and education (particularly relating to adequate wastewater treatment and quality of life)
Workshops sponsored by the local unit of government in question to train the citizens and businesses
Facilitating services to assist these groups in getting information to their homeowners and businesses
Assisting communities in anticipating developments/sewer services for the development
Implement an ordinance for sewer maintenance/management
Recognize that they, as a local unit of government, have a part to play in growing community development by dealing with the management of wastewater

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- **<u>Barriers for Installers:</u>**

  Need to make a buck
  Get in, do the job, get out. Can't make money with something called "management"
  Neither LGU nor state is pushing management
  System management is a new, and unknown, term
  Financial interest: the bigger the project, the higher the profit
  Limited scope of knowledge on options to the small pipe
  Homeowners/businesses do not see the value in proper management
  Newly installed systems do not need a final inspection by a regulatory authority prior to the trench being closed; therefore, management isn't pushed by the LGU

  <u>Solutions</u>:
  Understand the concepts of "big – medium – small pipe"
  Training on limitations of what they can and cannot do
  Advanced training
  Tiered approach: more advanced work with more training

  <u>Responsible Party</u>: PCA, U of MN for education

  Solution: Tiered business licensing (7080)

  <u>Responsible Party</u>: PCA

  <u>Solutions</u>:
  Incentives to educate homeowner, businesses on the needs of management
  Understand the value of engineering
  Concept of "management" as a new, profitable business

  <u>Responsible Party</u>: Legislature, PCA, County and LGU

  Activity:
  Training/education on management as a business
  Explore the concept of creating a business license category for ISTS management including monitoring-operation-maintenance (M-O-M).

- **<u>Barriers for Pumpers:</u>**

  Neither LGU nor state is pushing management
  Not all pumpers perform their service as mandated in 7080
  No requirement to pump tank at time of system inspection
  Land application: siting becoming difficult to dispose of solids
  Homeowners don't see the need to manage
  Homeowner doesn't generally initiate the action to pump the tank for maintenance
  Tanks normally pumped only after a problem exists

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Solutions:
Understand that they have an important job as it relates to proper operation of a system
Education
Training on maintenance/management as a viable business venture

Responsible Party: PCA, County, U of MN for education

Activities:
Training on UIC program; disposal of solids generated
Training on 40 CFR Part 257, land application of non-domestic septage
Encourage county to develop approved land application sites
Inspection or spot check of application methods, sites
Look at regional or other geographic land application approaches
Education on leaking tanks, reporting to LGU
Research on tank pumping frequency
Training/education on management as a business
Form from PCA to the pumpers (what to do during an inspection)

- **Barriers for Designers:**

Need to make a buck, hard to say "no" to potential business even if over your head
Lack of knowledge in new technology
Financial interest: the bigger the project, the higher the profit
Limited scope of knowledge on options to the small pipe

Solutions:
Understand "big – medium –small pipe" planning
Advanced/tiered training
Knowledge of ground water, hydrology, engineering and soils
Recognize their limitations
Need to understand how planning plays a part in community wastewater system
Understand the value of engineering
Conflict of interest: designer can inspect, fail, design new replacement system

Responsible Party: PCA and U of M Extension for education

Activities:
Provide a plan for the entire system to the homeowner/business
Training and education on alternative systems; management options, rules and regulations
Training on management as a business

- **Barriers for Homeowners:**

O&M is not easy to understand
Idea that you can flush and the problem goes away: lack of education

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Lack of knowledge on implications to their drinking water of neighbor's bad system
Answer shopping: cheapest price for installation of a system
Unknown location or type of system on their property
More money for sewage is not necessary
Until management is a requirement by a regulatory unit, homeowner and business compliance will not occur

Solutions:
Understanding of impacts of failing system to their own health and environment
Understanding of the need for proper maintenance
Understanding of management of a system (pumps; tank; filters; solids; effluents)
Money
Simple approach to proper O&M of their own system
Details of what is necessary for their system
Education of alternatives available
Understanding of the benefits of planning an area-wide solution

Responsible Party: PCA, U of MN for education

Activities:
All systems need an operating permit
Massive state-wide education/outreach program on the necessity of a management program (similar to the recycling and conservation programs which have taken close to 20 years)
Coordinated outreach done by MPCA, BWSR, OEA, and MDH. Homeowners can get legislative support.
Education/training on impacts of sewage on the environment; how to maintain a system

- **Barriers for State Regulatory, non-funding agencies (MPCA, MDH, BWSR, MDA, DNR):**

  Agencies don't share information with each other on sanitary issues
  Responsibilities of each agency re: waste treatment unclear to the public
  Too many government entities involved with wastewater
  Staff doesn't see "eye to eye": big pipe versus little pipe
  MPCA organization creates difficulties to solving sanitary problems. Staff split between "Majors", "Regulars" and "Community and Area-Wide". Each staff has a part of an answer as it relates to solving sanitary problems.
  Very little focus on "medium-size pipe and options"
  "Answer shopping" by public
  Lack of resources
  Don't have the time or staff to process the paper involved with 7080
  Lack of enforcement. PCA staff is not present during inspections.
  Jurisdiction unclear to public on various agencies; role in wastewater
  The value of management is not universally accepted

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Unclear level of enforcement against local units of government that does not comply with program requirements

Solution:
Resources to do their part of sanitary work as mandated by legislature

Responsible Party: PCA, MDH, BWSR, MDA and DNR

Solution:
Alternative and emerging technology training
Need training program for "medium-size solutions"
Provide more education: what you drink has been someone else's sewage

Responsible Party: PCA for education

Solution: Support from end user groups to management at state level to get staff time to help users

Responsible Party: County, townships, cities and communities

Activity:
Explore the possibility of creating a business license category for ISTS management and O&M. This could be separate license or tied to installers, designers, pumpers, inspectors
Move all sanitary activities from all agencies into just one agency.
Move all sanitary activities in the Pollution Control Agency to one group. Currently, these activities are done from Majors (large POTW's), Regulars (smaller POTW's, approving Sanitary Sewer Districts) and Community & Area Wide (ISTS, UICs, watershed and area-wide planning). Work on eliminating the "answer shopping" problem.
Dedicate an adequate number of staff to deal with all the wastewater issues: ISTS responsibilities as defined in 115, NPDES/SDS permitted facilities, and planning for area-wide solutions dealing with sensitive environments, annexations or sanitary sewer districts. Also need staff to address UIC issues.
Educate staff on the pro & con of each alternative available
PCA engineers should question and approve the costs to a small community
Clarify and simplify the approach of adequate wastewater treatment for small communities and unincorporated areas
Support challenge grant concept to tie wastewater planning dollars to the county water plan or comprehensive plan.
Develop a process to educate on a geographic/watershed basis on the needs for centralized collection followed by some sort of treatment (individual, group, centralized, decentralized)

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Develop an agency approach to deal with wastewater issues on an area-wide basis. Issues of possible annexation or creating or enlarging sanitary sewer districts to solve problems should be shared countywide.
Change 7080 to require a management plan for all sewer systems. Homeowners or businesses could carry out the plan. The responsibility of making sure management is done would be the local unit of government.
Change 7080 to require all ISTS to have a final "uncovered" walk-through inspection prior to backfilling the holes.
PCA should take primacy for the UIC program
PCA should generate a form for pumpers to use covering the various components of monitoring-operation-maintenance
PCA should research the desired tank pumping frequency
PCA should develop a standard for tank tightness testing (many new septic tanks leak)
Revise 7080 to recognize all systems, large and small, need an operating permit.
Revise 7080 to recognize Responsible Management Entity
MPCA take on 40 CFR Part 503 relating to land application of domestic septage
Cross-training on big-medium-small pipe options
Research efforts: domestic septage, non-domestic septage, treatment effectiveness, leaking septic tanks, tightness testing standard for tanks
Clarify laws to either enforce against LGU's who don't comply with existing laws or get the MPCA out of the ISTS business
Revise 7080 to clarify responsibilities for making sure a system is designed and is the correct system for the site, and will work as designed

- **Barriers for Met Council:**

  Management will only be for 7 of the 87 counties
  Unclear regulatory authority
  More focused on big pipe technology
  Not a complete understanding of what proper management is for a wastewater system

  Solutions:
  Knowledge of options available: big pipe to small pipe
  Cooperate with PCA to get management plans to all cities in 7-county Metro area

  Responsible Party: Education from PCA

  Solution: Cooperation with local units of government

  Responsible Party: Met Council, State agencies

  Activities:
  Training on options to the big pipe

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Seem to have the necessary tools now to generate a management program for all ISTS.
May need support for commercial/business management as UICs
Keep Met Council as a partner to share their success stories with the rest of us (they seem to have the support of the legislature)
Share the tools developed (computer data base) with others
Share maintenance/management approach

- **Barriers for Sanitary Sewer Districts; Subordinate Service District; Small City with POTW**

  Haven't thought about management outside of a very small area covered by permit
  Focus is only on their existing permit
  Unclear regulatory authority
  Expensive to hire operator
  Need to hold to a budget
  Difficult to enforce on failing components of a system
  Operator doesn't look into individual home generators of waste flow or strength

  Solutions:
  Understanding of their authority as it relates to management
  Education on the value of management

  Responsible Party: PCA and U of M Extension to educate

  Solution:
  Enforcement tools to assure maintenance/management done so system continues to function properly

  Responsible Party: PCA

  Activities:
  Training on maintenance and management
  Cooperation with other local units of government

- **Barriers for Management Groups – an entity that can provide a management service (i.e. homeowner association, lake association, Minnesota Association of Watershed Districts, lake improvement district, watershed district):**

  Too often, the leader departs the scene
  Failure to accept individual responsibilities
  Lack of follow through in their responsibilities

  Solutions:
  Strong leadership
  Local champion to push concepts
  Understanding of need for management

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Education
Have a good plan and carry out the plan
Different systems are available to make an informed decision on an approach for an area

Responsible Party: Homeowner association, lake association, Minnesota Association of Watershed Districts, lake improvement district, and watershed district):

Activities:
Best Management Practices (BMP's) for homeowners
Local unit of government needs to approve and issue an operating permit
Operating permit needs to include a detailed management plan
A "responsible management entity" needs to perform all or parts of the management plan. A Responsible Management Entity (RME) could be a homeowner or other entity.
A management plan should include M-O-M (Monitoring-operation-maintenance) and a replacement fund
Local unit of government with oversight to check if the management plan is being followed
Be required to implement a management plan with an operating permit

- **Barriers for Management Entity Provider (WQ Co-op, Electric Co-op, Private Management Company):**

Possible increased costs for users
Multiple regulatory entities in a different geographic area
Multiple LGU's in a different geographic area
Very time consuming to establish a management approach
State doesn't push management
Working model of a management approach doesn't exist yet

Solutions:
Need economy of scale (more cost-effective with multiple members)
Access to property
Long-term contract with users
Education
Support by LGU/state on the need and value of management

Responsible Party: WQ Co-op, Electric Co-op and Private Management Company

Activities:
Training and knowledge of wastewater options: POTW, ISTS, and other mid-sized solutions
Education and training
Demonstrate the value of management to the customers
Educate customer on management options/management practices

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Determine what the system owner needs to do to properly maintain and manage the system
Require designer to furnish a management plan (M-O-M – monitoring-operations-maintenance) for all members systems (need to consider how to accomplish this with existing systems)
Should bonding or insurance be required?
Provide the criteria for proper M-O-M
Provide a list of certified M-O-M companies to members
Consider starting to work with management plans for cluster systems rather than individual homeowners at this time (already need an operating permit from LGU)
Required having a wastewater system community contract
BMP's for the system in place by each member

- **Barriers for Educators:**

Currently only UM Extension has contract to provide ISTS-related training in state
Perception that educators are convinced consultants do not provide best option
Can only provide education to those interested in being educated (can't educate all)
Not all educators agree
Lack of research and information on all topics
Lack of conceptual framework on what "management" really means
Too many groups in the state of Minnesota are working on the same or similar issues who don't come together for a common solution before an issue gets into a policy-making program

Solution: Money to operate

Responsible Party: Legislature

Solution
Education into the value of different options
Competition to stay sharp as educators
Understanding of all options: "big-medium-small pipe"
Pro and con of all of the above
Values and limitations of both engineers and ISTS-professionals

Responsible Party: Education from PCA

Activities:
Unbiased wastewater training center for all wastewater activities and dollars
Research
Define/develop management terminology: what is management

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Bring all educators with same or opposing views together with a facilitator to discuss the big picture before it goes to a policy making stage

- **<u>Barriers for Funding agencies (state: MPCA, DTED, PFA, MDA, BWSR; federal: USDA Rural Development; MnDOT; USCOE; Legislature; Congress):</u>**

  Too many players
  "This is the way it's always been done"
  Most funding is geared to big pipe technology
  Less money is available today than in the past
  Public "conditioned" to believe the government should pay for wastewater treatment
  Project costs increase due to many of the requirements of the funding agencies
  Each agency is biased based on self-survival

  <u>Solution:</u>
  Given direction
  Funding to continue

  <u>Responsible Party</u>: Legislature, PCA management

  <u>Solution:</u>
  Education/training on waste treatment alternatives
  Education on the problem of lack of management

  <u>Responsible Party</u>: PCA to get educated

  <u>Solution:</u> Support from end users to get more money & support

  <u>Responsible Party</u>: Legislature, counties, LGU's

  Activities:
  Put all wastewater funding dollars under one roof
  Management must be required for any project receiving public monies
  Attach more management strings to funding
  One agency does the funding; another agency regulates; another one educates (third party to help eliminate bias towards one solution over another)
  Simplify funding process: only fill out one form for funding
  M-O-M plan reported to LGU as a requirement to receive public funding
  Plan money grants/loans based on area-wide/county-wide solutions.
  Recognize alternatives include options other than big pipe technology
  Block grants to counties tied to County Water Plan or Comp Plan for wastewater planning

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Management Team Final Comments

The concept of "management" can be explained by comparing sewer systems to an electrical system. They are both utilities. There are codes (rules) which apply to both utilities. Both have licensed professionals. Both have licensed inspectors. There are some simple projects (like running an extension cord for portable power or changing a light bulb) that can be done by the homeowner. There are even some dwellings where a homeowner (like a deer shack in the woods using a portable generator) can do all the work. Some tasks need to be done by a licensed business (adding another circuit). Both can have serious health effects if a problem occurs which is not corrected (like a fire if bad wiring exists). Both need monitoring and maintenance. A management entity deals with repair or replacement of parts of the system beyond the house (transformers, power poles), collection of fees from the users, and maintaining a cost-effective utility.

To have a good waste water system, the team found that a Management Plan consisting of the following items was necessary.

1. Each and every sewer system, whether an ISTS, a cluster of systems or a municipal POTW, needs a management plan. A management plan should be part of the property. When a house sells, the plan needs to stay with the house and is passed on to the new buyer.

2. A good management plan brings all the players together and spells out responsibilities of each entity: the system owner, the regulatory agency (permitting authority), the designer, installer, pumper, and whatever other service providers are needed to perform tasks detailed in the management plan.

3. A management plan consists of monitoring, operation and maintenance. Depending on the complexity of the system, it may include direction on reporting to the local permitting authority.

4. Monitoring includes checking the septic tank, reading the flow meter, checking plumbing for leaks, checking the lift station and checking the condition of either the sewer pipe leaving the property or the soil treatment area, whichever case applies.

5. Operation includes knowing what goes into your own system, watching the amount of water being generated, and controlling the strength of the waste.

6. Maintenance includes pumping the septic tank, repairing or replacing baffles, cleaning effluent screens, and fixing or replacing leaking faucets or toilets.

7. Reporting to either the permitting authority or a management entity may be necessary for more complicated treatment systems, systems with a high flow or higher than normal waste strength, or systems used by multiple property owners.

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8. An individual homeowner may do much of the management plan. However, some parts, like pumping the contents of the septic tank or repairing broken components, will need to be done by licensed businesses.

9. A "responsible management entity" may be organized in a number of ways: those spelled out in statute; an association of homeowners working through a contract; or a private business working to provide all or parts of the management plan.

10. A management entity may have all or part of the following responsibilities: planning, site evaluation, design, installation, monitoring, operation, maintenance, residual (septage) management and disposal, collection of operating fees, reporting to the permitting authority negotiating corrective actions with the permitting authority, system replacement, or education of members. This entity may also be utilized to address "smart growth" scenarios: clustering a treatment system rather than using individual systems.

7080 already says all systems must be operated in compliance with 7080. In addition, each permit we issue for small municipalities talks about proper operation and maintenance. The Management Team discussed not changing the rule, but rather simply enforcing what is already on the books.

With respect to selling the concept of a management plan, education is still a key component: education by all of us and education for each group associated with the undersewered problem.

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Strategies

Each sub-team prioritized their solutions to the barriers and arranged them according to the type of problem that would be solved if the solution were applied. This drove the development for brainstorming possible strategies. In some cases the pros and cons of these strategies need further consideration. The following areas of importance evolved from that list.

1. Ways to Ease the Permitting Process

State pre - approval design package
Publish generic WastewaterTreatment Facility (WWTF) plans
Encourage better project management (e.g. MAP – Minnesota Assistance Program)
Streamline MPCA permit process
Pre-application review board
General permits for low risk sites
Warranty or bond system performance
New facility class (soil)
No P.E. for WWTF's <10,000 GPD
7080 language allowing local governmental units to require PE's and soil scientists

2. Good Planning Decisions

Need project planning money
Money for LGU's to develop management plan
Need to establish county wastewater challenge grants
Provide free planning money
Reduce front-end expenses
Local planning for system management and septage disposal sites
Train local decision-makers how to scrutinize planning documents
Determine amount of technical review /cost effectiveness
Project managers needed
Coordinate local wastewater planning with county/regional development plans

3. Technology Assessment

ISTS technology review board
Provide pilot testing opportunities
Change 7080 classifications to less descriptive terms (e.g. Type I, Type II, etc.)
Promote ISTS designs that extend system life
Maintain accurate information on warrantied ISTS
Develop testing facility
Provide research into cause of failure of ISTS

4. Funding of System Construction

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Tax abatement to capture increased property values
Review priority system for disparities
Increase funding for WIF program and ISTS program
Centralize funding sources
Increase amount set-aside for capital replacement

5. **Operation and Management**

Require service contracts and operating permits
Encourage POTW's to accept septage
Change pumper license to include operation and management
Regional septage management
Operating permit for every system
New operator class (soil)

6. **Training for Professionals**

Highly skilled inspectors – require site inspections
Education for contractors
Education for LGU's
Use education to **prohibit** poor design and installation

7. **Educating Public (Communities etc.)**

Complete comprehensive manual
Education for homeowners
Education for undersewered community
Education on value of ISTS
Education on value of all treatment options
Use new communication tools...internet, etc.

8. **Enforcement Strategies**

More enforcement
Enforcement strategy with BMP's for communities with declining populations
Enforce all counties to have ordinances

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Common Themes and Linkages

The following common themes and linkages from the four sub-teams emerged from the strategy brainstorm discussion. These items were found in two or more sub-teams as solutions.

- Perception that, "my system is my problem," and the reality is that it affects neighbors, waters of the state, etc. The individual must be responsible.
- PCA needs to be a leader and supporter in the wastewater process, though there is a concern about staff resources.
- Preliminary steps in the wastewater planning process need to be a priority and emphasized in the realm of planning (area wide solutions), funding and technology.
- PCA review of the project needs to happen early in the process.
- Take into consideration smart growth and assistance.
- Everyone needs to understand their roles and responsibilities (state, regional, local governmental units, and the individual.
- The legislature needs to be involved in "growth" issues such as annexation and state planning.
- Technology is not the problem, the problem is the perception many individuals have that there are not good alternatives for wastewater treatment.
- There is need for education and outreach about the water cycle, from the agency to the individual.
- There are multiple scenarios in the state and there is no "cookie cutter" approach that can be used.
- A permitting option would develop a general permit for small community treatment systems (low risk and <10,000 gallons per day – it would also cover existing low risk systems).
- Funding needs to be revised to support the best system-eliminate the incentive toward large regional systems.
- Local project management should be tied to funding.
- Best Management Practice's for small towns of declining population.

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Barrier	Solution	Responsible Party
Classifying systems in Chapter 7080 inhibits the use of new technologies.	Classifying systems may be an impediment to the use of new technologies, however consensus of the technical subgroup seemed to be that the classifications have value and should not be dropped. However, the classification name could be changed to something less descriptive, such as Type I, Type II, etc., which will not have negative connotations (such as experimental).	(if found to be an necessary impediment)- MPCA ISTS staff
Overly conservative safety factors in design of systems.	The solution is to decrease the safety factors. However, this may be penny wise and pound foolish. A benefit of increasing the safety factor (in addition to the above list) is increased system life, which may in the long run, have lower overall cost. However, with families moving on an average of every 5 years, they may opt for a much shorter system life since they feel no long-term commitment to the property.	Local units of government can reduce the safety factors if desired as alternative local standards (MN Statutes 115.55).
Known reliability/comfort level/liability considerations of using new technology and engineering reports with cost analysis are bias toward their favorite technology.	1 - Need facility planning funds to do a good investigative study of an area to determine the correct technology. These studies can be costly, but may result in lower overall costs.	Legislature - appropriates funding for planning
	2 - Need review by an independent knowledgeable person (Rural development projects are doing this now. Cost analysis could be done by an independent engineer.	Legislature - appropriates funding for review of planning documents. PCA - have to go through PCA for appropriation
	3 - State should have approval packages of various design options. This could be accomplished by developing a Technical Advisory Committee. (Note: The MPCA has developed a specification on disinfection, but no one uses it.)	Legislature - appropriates funding for MPCA staff to develop design packages. MPCA ISTS staff to set up a Technical Advisory

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Barrier	Solution	Responsible Party
	4 - Require warranty on performance or have the company have a bond on the reliability of the system (Problem. How to determine the cause of failure; design, construction, use or maintenance)	Legislature - support 7080 rule change and MPCA ISTS staff
	5 - Have national/regional testing of new technologies (MN could spearhead this endeavor)	Legislature - appropriates funding to U of M for a testing facility and to enlist buy-in from other states or groups
	6 -Provide training to local decision-makers and have U of M Extension agents who are small community technical and administrative experts.	Legislature - appropriate funding to increase U of M Extension staff to provide this additional training.
	7- Have good inspectors.	Legislature - appropriates funding for MPCA staff to increase inspector training.
High cost to bring in new technology from a distance place.	Have adequate planning funds to afford to investigate and pursue new technologies.	Legislature - appropriate funding to increase planning dollars.

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Barrier	Solution	Responsible Party
Belief that ISTS are inferior	1 - Need to educate that 7080 systems are not inferior.	Legislature - appropriate funding to increase U of M Extension staff to provide this additional training.
	2 - To ensure that poor designed systems will not be installed again, ensure strong local programs through education of local elected officials and providing increased training and experience for inspectors.	Legislature - appropriates funding for U of M Extension education and administration dollars to local units of government.
	3 - Review 7080 to see if some prescribed methods cause early failure, such as drop boxes.	MPCA ISTS staff
	4 - Promote designs with advanced pretreatment systems that could cause systems to last indefinitely	Legislature - appropriate funding to increase U of M Extension staff to provide this additional training
	5 - Require service contracts/operating permits to increase system life	Legislature - support for a rule change to Chapter 7080, MPCA ISTS staff need moral and financial support.

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Barrier	Solution	Responsible Party
As currently structured, WIF grant funding encourages “big pipe” solutions for undersewered areas.	1- Tightening the Wastewater Infrastructure Fund (WIF) requirements which would provide grant money only for existing need and limits grant funding to $15,000 per household.	Legislature - This has been done
	Solution 2- Increase the local contribution to the project (thereby reducing the WIF grant and increasing the loan amount) based on the increased property values the project will generate. There are two possible methods to do this: 1) require an annual tax abatement from the local government equal to the value of the project; or 2) require special assessments on each benefiting property to the maximum level.	PFA, Legislature
	3- Modify the priority system rules to reduce or eliminate the 150 additional points given to an undersewered area project if it connects with an existing facility. This will help ensure various treatment alternatives are considered on their own merits and reduce the incentive to choose “big pipe” solutions.	PCA
Minimal planning that fails to adequately consider all treatment alternatives.	1- Provide advice and planning assistance to Local units of government early in the planning stage.	Pollution Control Agency or an interagency guidance group
	2- Provide up-front planning grants to local governments for wastewater planning. This could include a challenge grant program for counties to develop an overall wastewater plan for an entire county (or multi-county area).	PFA, PCA, and Legislature

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Barrier	Solution	Responsible Party
Accountability. Waste water systems are not free.	1- Increase local contribution by requiring tax abatement or special assessments (see Barrier 1 under funding, Solution 2).	PFA, Legislature
	2- In WIF grants, there is a requirement that the local government annually set-aside $.10 per 1,000 gallons for future capital improvements to their waste water system as it wears out or needs expansion. This amount needs to be raised if it is to provide sufficient funds for communities to be prepared for their waste water needs in the future	Legislature
	Solution 3- Establish an annual tax on existing ISTS systems and a charge on each new ISTS built. A portion of these funds could be directed to the counties to pay for inspections, wastewater planning, etc. and the remainder would come back to the WIF program to pay for future grants in undersewered areas.	PFA, Legislature

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Barrier	Solution	Responsible Party
Significant costs of Preliminary Engineering are seldom recovered through project funding and may turn out to be unnecessary investments if the projects are delayed or never completed.	1: Simplify the permitting process to avoid the need for significant up-front expenditures before it is clear that the project is going to proceed.	Pollution Control Agency
	2: MPCA could publish standard "off the shelf" preliminary engineering designs for wastewater treatment facilities (Public Domain). These could be generic community drainfields, stabilization ponds, constructed wetlands, mechanical facilities, collection systems, etc. Communities could proceed with environmental review, funding and permit applications based on their intent to construct standard treatment facilities. Once these processes are underway, funding is secured, etc., consulting engineers could be brought in to customize the design to local needs. [Editorial note: Much of the background data collection (estimated design flows, identification of potential discharge locations, survey of existing ISTS, preliminary treatment site identification, etc.) might be accomplished with MPCA guidance and the assistance of MPCA and/or County staff. This type of work may also be of interest to civil or environmental engineering university departments. Also, models exist for government provided design services (NRCS services and Storm Water Best Management Practices (BMPs).	Pollution Control Agency
Current regulations require all sewer systems (and pretty much everything else) to be designed by registered professional engineers.	There should be an exemption for small collection systems designed by ISTS designers to serve soil based treatment systems that do not otherwise require the involvement of professional registered engineers.	Based on this statute the Board of Architecture, Professional Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design requires sanitary sewers to be designed by registered professional engineers. This may add considerable cost to a cluster ISTS system designed by a certified ISTS Designer.

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Barrier	Solution	Responsible Party
Revisited the above item. "Current regulations require all sewer systems (and pretty much everything else) to be designed by registered professional engineers".	1: It is a good idea to involve a soil scientist in site evaluation early on in planning a large soil based treatment system to ensure that soils are adequate. This may cost several thousand dollars, but that is not significant in the context of an overall project cost of several hundred thousand dollars. What is the cut-off point? What can a certified ISTS designer or installer handle and what requires evaluation by a soil scientist? Local regulatory personnel don't necessarily have sufficient expertise for these evaluations. ISTS training doesn't provide sufficient expertise for these evaluations.	
	2: Propose language for inclusion in Minn. R. ch. 7080 and adoption by LGU's for inclusion in local ISTS Ordinances: "The Permitting Authority may require site evaluation performed by a Professional Soil Scientist when the following conditions are associated with the design of a soil based treatment system below the 10,000 gallon per day SDS permit threshold: Complex local soil conditions The system will be designed to serve more than one residence The system will receive public financing Other conditions specified by the Permitting Authority"	MPCA
	3: Propose language change for Minn. Stat. § 326.02, subd. 3 Practice of Professional Engineering. Propose language allowing the Local Unit of Government or other Permitting Authority to establish whether the services of a professional engineer or soil scientist are necessary for the design of soil based treatment systems. Develop a set of criteria (listed in Minn. R. ch. 7080) to help develop local guidelines for when such services should be required. 7080 - The Permitting Authority may require the services of a professional engineer or soil scientist..... for the design of soil based treatment facilities and related collection facilities that do not require SDS permits form the MPCA	Board of Architects, Engineers
The vendors of "Warrantied" ISTS technologies listed in accordance Minn. R. ch. 7080.0450 can sometimes take advantage of the warrantied status of their products to push for downsizing system components.	MPCA web site should maintain an up to date list of Warrantied ISTS systems.	Pollution Control Agency

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Barrier	Solution	Responsible Party
Local permitting authorities (Counties, Cities, Townships, Districts) may not have the resources and expertise necessary to evaluate alternative systems and standards.	Establishment of an ISTS Technology Review Board to evaluate proposed technologies and standards? This group could review proposed systems, alternatives, standards, etc., help establish the designation of new technologies (standard or alternative) and act as a resource for local permitting authorities in need of technical review of proposed systems	Pollution Control Agency
Several cost and administrative factors may act as barriers for small communities that need to install wastewater treatment systems. In addition to the above items, the following related issues were discussed since they are closely related to each other: Permit Costs Preliminary Engineering Technical Review Board General Permit	1: Designs by registered professional engineers should not be required for soil based treatment systems that do not require SDS permits (<10,000 gallons per day). Licensed ISTS designers are capable of designing these systems.	Pollution Control Agency
	2: General permits for "low risk" systems, designed to reduce operating, monitoring and administrative costs. They should apply to all low risk domestic wastewater treatment systems, including existing facilities.	Pollution Control Agency
	3: Publication of "off the shelf" generic wastewater treatment facility designs that can be used by communities to get through the initial (unfunded) stages of a project. Will still need to collect site specific information (project flows & loadings, soil types, demographic projections, discharge point identification, etc.). Engineering students, NRCS, MPCA, Counties, private testing firms, or other organizations could help collect the basic information. This may allow communities to explore the likelihood of funding for a project before making significant investments. Once the community has secured project funding, the services of an engineering or ISTS professional would be required to tailor the design to local needs.	Pollution Control Agency, NRCS

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Barrier	Solution	Responsible Party
	4: A Pre-Application Review Board composed of state, county, local, funding agency, public interest group, etc., officials could review projects in the initial stages of development and make recommendations to the project proposer. The Board could help the project proposer by offering suggested course of action (advise them to hire a project manager), sharing information about the cost of similar types of projects, etc. If successful, projects that have been reviewed by this Board may expedite the process. A pre-application review board should be as local as possible though it may be difficult to assemble comprehensive expertise at the local /regional level.	
	Legislature should provide appropriate funding levels for counties, MPCA, project financing.	Pollution Control Agency, involvement by local/regional level organizations. (MNDOT Local Review Boards may serve as models for these groups), Legislature.
Operator Certification	The MPCA and the University of Minnesota Extension Service should develop a curriculum for training operators of large soil based wastewater treatment facilities. Minn. R. Ch. 9400.0500 should be modified to include a specific wastewater treatment facility classification for large soil based treatment systems. These could be listed as Class E facilities. Minn. R. Ch. 9400.0700 should be modified to certify individuals who have successfully completed the soil based treatment system training, described above, and completed a combination of additional schooling or work experience, as Class E	Pollution Control Agency
Water Quality Coops	The WQ Coops should be subject to the same local standards as everyone else, or should just be abolished altogether	Legislature
Management of Septage	1: Need regionalized approaches to septage handling such as regional storage and treatment facilities.	MPCA, Counties, POTW's

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Barrier	Solution	Responsible Party
	2: POTWs should be designed (and encouraged/required) to accept septage. Note: Extra priority points on the Project Priority List could be awarded for facilities that intend to accept septage.	MPCA, PFA
MPCA Responsiveness (60 Day Rule):	1: Goal: Streamline process to achieve a 120 day timeline from permit application to permit issuance.	PCA
	2: Plans & specifications and permit applications should be sent back (stop the clock) if they are not acceptable or incomplete. Assumptions: Permit application and plans & specifications are submitted simultaneously. Community notification if more time is required due to the need to resolve issues that have arisen during the public notification period (EAW or Permit). The group discussed the need for some repercussion in the event that MPCA should fail to meet this timeline. Issue permit with no conditions? Liquidated damages? Waive permit fees?	PCA
Standards are sometimes difficult to meet.	1: The Regulatory group does not endorse any relaxation of treatment standards.	
	2:Approved an enforcement strategy that could allow communities to temporarily implement certain Best Management Practices in lieu of immediate compliance with current treatment standards. These would be options only for communities that are not able to afford construction of wastewater treatment facilities or dying (vitality challenged) communities	PCA

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	3: The execution of BMPs would be implemented through Stipulation Agreements or Compliance Schedules enforced by the MPCA.	PCA
Land Use/Zoning	The Community Based Planning Program (St. Cloud Area) should be looked at. A pilot project was implemented (MN Planning). Should be reviewed to examine any improvements, good ideas, etc. There are many issues in the land/use zoning discussion and we should be more involved. The legislature should work out incentives for cooperation.	Legislature, PCA

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Barrier	Solution	Responsible Party
Barriers for Consulting Engineers Large systems require a design by PE (in statute). Perceived by others as pushing “the big pipe” only. Perceived by others as pushing options on small cities that are too costly. Financial interest: the bigger the project, the higher the profit. Financial incentives available to a city that chooses “big pipe” option. Do not recognize the limitations of their individual company. Limited knowledge of options to big pipe technology (i.e. small, medium alternatives). Not focused on management; seem to be focused on construction of expensive project.Little support by the state to allow engineers to select a less costly alternative for a small community	1: Rewards/incentives to look at more cost-effective solutions	Legislature
	2: Cost effective solutions need to be prepared that are acceptable to MPCA reviewers	Engineers, PCA
	3: Alternative systems to “the big pipe” philosophy	PCA to educate
	4: Education	PCA

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Barrier	Solution	Responsible Party
Barriers for County (P&Z, elected officials, Association of Minnesota Counties):Perception that the next level of government (i.e. state) as a manager is not good for the county. MPCA often perceived as a group to take money away from county programs. No site inspection requirement in 7080. Pressures on county staff to approve sewer systems ASAP without adequate inspections. Inspection of existing system not consistent across county borders. Not all LGU staff have adequate training or experience Misconception that engineers and big pipe are bad for the county No source of funding for LGU to require management for wastewater systems State can't enforce against county for not regulating system maintenance Lack of jurisdiction by county into other units of gov't (cities) Perception that all development is positive for the county	Understanding of alternative systems. Better understanding all technologies: soils; system options; hydrology; engineering. Understanding of ground water. Ownership & management options for area-wide and individual systems: pro and con. Learn the value of "big pipe" as well as smaller options	PCA, U of Mn for education
	Money. Linkage between land use planning and sewage treatment/management Grant for Comp. Plan to prepare county-wide approach to management for wastewater. More authority	Legislature, PFA, PCA
	Community support to recognize the need for sewage management	County to educate community

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Barrier	Solution	Responsible Party
	Need MPCA to be the “bad guy” to force maintenance and management. Management plan: mandatory management for every system	PCA
Barriers for City/Township with sanitary ordinance (League of Minnesota Cities, Small Cities, Minnesota Township Association): Staff has less time to spend on sewage issues than county. Staff is spread very thin in the area of wastewater services. Gap in knowledge and education is greater than in county staff. Difficult to attract (and pay) qualified personnel. Often not as restrictive as county. Enforcement program seems lacking – want state to do enforcement. Perception that all development is positive for the city/township. Perception that the next level of government (i.e. county) as a manager is not good for the city/township. ISTS permit fees are considered operating funds for a city/township. Small cities w/ POTW spend most of time trying to maintain older system.	See county solutions	
Barriers for Cities/Townships without sanitary ordinance (and member organizations): Have some land use responsibilities, no sewage knowledge or responsibilities. Neither state nor county is pushing the need for maintenance or management. Perception that all development is good for the community. Perception that more government is needless bureaucracy	Understanding of the needs for maintenance/management. Link between land use planning and wastewater management. Some understanding to “force” county to bring the right wastewater option into the area	County, City,Township, Smart Growth and PCA for education

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Barrier	Solution	Responsible Party
Barriers for Installers: Need to make a buck. Get in, do the job, get out. Can't make money with something called "management". Neither LGU nor state is pushing management System management is a new, and unknown, term. Financial interest: the bigger the project, the higher the profit. Limited scope of knowledge on options to the small pipe. Homeowners/businesses do not see the value in proper management Newly installed systems do not need a final inspection by a regulatory authority prior to the trench being closed; therefore, management isn't pushed by the LGU	1 - Understand the concepts of "big – medium – small pipe. Training on limitations of what they can and cannot do. Advanced training. Tiered approach: more advanced work with more training	PCA, U of Mn for education
	2 -Tiered business licensing (7080)	PCA
	3 -Incentives to educate homeowner, businesses on the needs of management. Understand the value of engineering. Concept of "management" as a new, profitable business.	Legislature, PCA, County and LGU

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Barrier	Solution	Responsible Party
Barriers for Pumpers:Neither LGU nor state is pushing management. Not all pumpers perform their service as mandated in 7080. No requirement to pump tank at time of system inspection. Land application: siting becoming difficult to dispose of solids. Homeowners don't see the need to manage. Homeowner doesn't generally initiate the action to pump the tank for maintenance. Tanks normally pumped only after a problem exists.	Understand that they have an important job as it relates to proper operation of a system. Education. Training on maintenance/management	PCA, County, U of Mn for education
Barriers for Designers: Need to make a buck; hard to say "no" to potential business even if over your head . Lack of knowledge in new technology. Financial interest: the bigger the project, the higher the profit. Limited scope of knowledge on options to the small pipe	Understand "big – medium –small pipe" planning. Advanced/tiered training. Knowledge of ground water, hydrology, engineering and soils. Recognize their limitations. Need to understand how planning plays a part in community wastewater system. Understand the value of engineering. Conflict of interest: designer can inspect, fail, design new replacement system.	PCA for education
Barriers for Homeowners: O&M is not easy to understand. Idea that you can flush and the problem goes away: lack of education. Lack of knowledge on implications to their drinking water of neighbor's bad system. Answer shopping: cheapest price for installation of a system. Unknown location or type of system on their property. More money for sewage is not necessary. Until management is a requirement by a regulatory unit, homeowner and business compliance will not occur	Understanding of impacts of failing system to their own health and environment. Understanding of the need for proper maintenance. Understanding of management of a system (pumps; tank; filters; solids; effluents). Money. Simple approach to proper O&M of their own system. Details of what is necessary for their system. Education of alternatives available. Understanding of the benefits of planning an area-wide solution	PCA, U of MN for education

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Barrier	Solution	Responsible Party
Barriers for State Regulatory, non-funding agencies (MPCA, MDH, BWSR, MDA, DNR): Agencies don't share information with each other on sanitary issues. Responsibilities of each agency re: waste treatment unclear to the public. Too many government entities involved with wastewater. Staff doesn't see "eye to eye": big pipe versus little pipe. MPCA organization creates difficulties to solving sanitary problems. Staff split between "Majors", "Regulars" and "Community and Area-Wide". Each staff has a part of an answer as it relates to solving sanitary problems. Very little focus on "medium-size pipe and options" "Answer shopping" by public. Lack of resources. Don't have the time or staff to process the paper involved with 7080. Lack of enforcement. PCA staff is not present during inspections. Jurisdiction unclear to public on various agencies; role in wastewater. The value of management is not universally accepted	1-Resources to do their part of sanitary work as mandated by legislature	PCA, MDH, BWSR, MDA and DNR
	2-Alternative and emerging technology training. Need training program for "medium-size solutions. Provide more education: what you drink has been someone else's sewage	PCA for education
	3 -Support from end user groups to management at state level to get staff time to help users	County, townships, cities and communities

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Barrier	Solution	Responsible Party
Barriers for Met Council: Management will only be for 7 of the 87 counties. Unclear regulatory authority More focused on big pipe technology. Not a complete understanding of what proper management is for a wastewater system.	1 -Knowledge of options available: big pipe to small pipe. Cooperate with PCA to get management plans to all cities in 7-county Metro area.	Education from PCA
	Cooperation with local units of government	Met Council, State agencies
Barriers for Sanitary Sewer Districts; Subordinate Service District; Small City with POTW. Haven't thought about management outside of a very small area covered by permit. Focus is only on their existing permit. Unclear regulatory authority Expensive to hire operator. Need to hold to a budget. Difficult to enforce on failing components of a system. Operator doesn't look into individual home generators of waste flow or strength.	1 -Understanding of their authority as it relates to management. Education on the value of management	PCA to educate
	2 -Enforcement tools to assure maintenance/management done so system continues to function properly	PCA

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Barrier	Solution	Responsible Party
Barriers for Management Groups: an entity that can provide a management service (i.e. homeowner association, lake association, Minnesota Association of Watershed Districts, lake improvement district, watershed district): Too often, the leader departs the scene. Failure to accept individual responsibilities. Lack of follow through in their responsibilities.	Strong leadership. Local champion to push concepts. Understanding of need for management. Education. Have a good plan and carry out the plan. Different systems are available to make an informed decision on an approach for an area.	Homeowner association, lake association, Minnesota Association of Watershed Districts, lake improvement district, watershed district):
Barriers for Management Entity Provider (WQ Co-op, Electric Co-op, Private Management Company): Possible increased costs for users. Multiple regulatory entities in a different geographic area. Multiple LGUs in a different geographic area. Very time consuming to establish a management approach. State doesn't push management. Working model of a management approach doesn't exist yet.	Need economy of scale (more cost-effective with multiple members). Access to property. Long-term contract with users. Education. Support by LGU/state on the need and value of management.	WQ Co-op, Electric Co-op, Private Management Company
Barriers for Educators: Currently only UM Extension has contract to provide ISTS-related training in state. Perception that educators are convinced consultants do not provide best option. Can only provide education to those interested in being educated (can't educate all). Not all educators agree. Lack of research and information on all topics. Lack of conceptual framework on what "management" really means. Too many groups in the state of Minnesota are working on the same or similar issues who don't come together for a common solution before an issue gets into a policy-making program.	1 -Money to operate	Legislature
	2 -Education into the value of different options. Competition to stay sharp as educators. Understanding of all options: "big-medium-small pipe". Pro and con of all of the above. Values and limitations of both engineers and ISTS-professionals.	Education from PCA

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Barrier	Solution	Responsible Party
Barriers for Funding agencies (state: MPCA, DTED, PFA, MDA, BWSR; federal: USDA Rural Development; MnDOT; USCOE; Legislature; Congress): Too many players. "This is the way it's always been done". Most funding is geared to big pipe technology. Less money is available today than in the past Public "conditioned" to believe the government should pay for wastewater treatment. Project costs increase due to many of the requirements of the funding agencies. Each agency is biased based on self-survival.	1 -Given direction. Funding to continue.	Legislature, PCA management
	2 -Education/training on waste treatment alternatives. Education on the problem of lack of management.	PCA to get educated
	3 -Support from end users to get more money & support	Legislature, counties, LGU's

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