Spring Lake Township Land Use Study

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Prepared for the Supervisors of

Spring Lake Township

by

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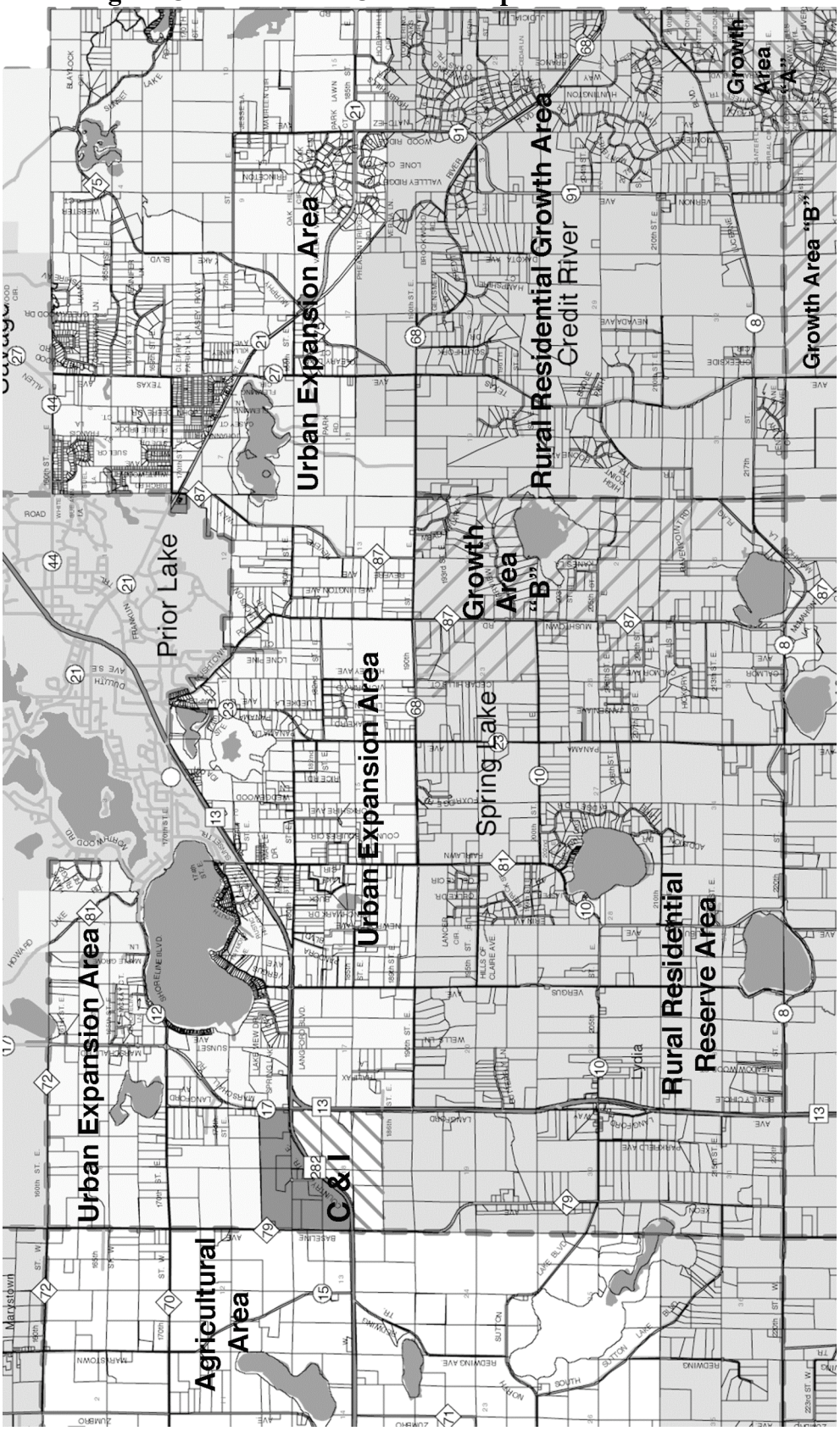
The 2020 Comprehensive Plan

The current Scott County Comprehensive Plan recognizes five broad land use categories and two staged growth areas. They are the:

> Urban Expansion Area: That area adjacent to municipalities that is anticipated to receive municipal services within the next 40 years. The Urban Expansion Area is protected by this Plan to facilitate future development at urban densities along with necessary infrastructure.
>
> Agricultural Area: That area currently in agricultural production and intended to continue this land use for the next 20 years.
>
> Rural Residential Reserve Area: That area where urban services are not anticipated to be provided in the next 40 years. The goal of this land use is to reserve options for future development potential.
>
> Rural Residential Growth Area: That area where urban services are not anticipated to be provided, which has already been largely developed at densities less than one per ten acres, where infrastructure is in place to support residential developments.
>
> Staged Growth Areas "A" and "B". These are areas designated for expansion of the Rural Residential Growth Area on a staged basis (first to "A" then "B") taking into consideration the following criteria: infrastructure needed to support growth; availability of land for development; and local township road planning and storm water management system maintenance capabilities.
>
> Commercial/Industrial Areas: Those areas where existing businesses are located and which have previously been designated for this use. These areas will be allowed to accommodate additional development provided necessary infrastructure is provided. Areas are also identified which reserve future commercial/industrial uses, which are not anticipated to be developed for the next 20 years.

Figure One 2020 Land Use Plan Map on page 2 illustrates how these categories have been applied to Spring Lake and the adjoining Townships. Sand Creek has chosen to discourage residential development and, with the exception of the three sections on its southern boundary, is designated as an Agricultural Area or within the Urban Expansion Area of Jordon. Credit River has adopted an opposite strategy and has encouraged residential development. The proposed development of the Territory required a mandatory Environmental Impact Statement. Scott County and Laurent Development Company LLC chose to expand the scope of the investigation and jointly fund an Alternative Urban Areawide Review (AUAR) to assess the environmental impacts associated with the development of the Territory and the remaining large parcels within the Township study area. This study provided the basis for designation as either within the Urban Expansion area of Savage or as a Rural Residential Growth Area, part of the Township as a Growth Area, and a remaining area in the southeast corner of the Township in Growth Area A. This Growth area extends into New Market Township and east to I 35.

Figure One 2020 Land Use Plan Map



In Spring Lake Township the area generally north of 190th St has been designated for the urban expansion of Prior Lake. The remainder of the Township, with the exception of an area designated for Commercial and Industrial development on either side of Hwy 282 west of Hwy 13, has been designated as Rural Residential Reserve. An area north and south of Kane Lake has been placed in Growth Area B.

The general goals and policies of the Plan focus development within cities and then in the Rural Residential Growth Area in clusters that preserve buildable land for the future, specifically by Open Space Design techniques. Development in the Rural Residential Reserve areas at economic and final density is discouraged. The Plan provides goals and policies for each of the land use categories that provide the basis for and are implemented by the Zoning Ordinance.

Agricultural District policies assert Prime agricultural land is a resource that should be protected at a priority reflective of its relative benefit to society and establishes the preservation of agricultural uses and operating farms within the agricultural area as the priority in all planning and development decisions. Policies protect and preserve agricultural uses and the economic viability of farming operations by limiting residential density to one unit per 40 acres.

Rural Residential Growth Area policies support staged rural residential developments that respect the overall planned gross density of one unit per 2.5 acres of buildable land. The areas proposed for rural residential growth are selected because of the improbability of the extension of urban services into these areas.

Policies encourage the use of community sewer and water supply systems and the tight cluster concept to encourage the sense of rural community, and an Open Space Design option with incentives (including densities based on gross acreage) for developers to build communities that preserve buildable land for the future. Policies are intended to prevent uncoordinated development from occurring; focus the market demand on those areas where necessary public infrastructure such as storm water management plans and systems, roads and utilities are in place; reduce the local tax burden for local road construction and maintenance; improve public safety by concentrating residential growth to avoid scattered demand for emergency services; improve interconnectivity of local roads and reduce temporary cul-de-sacs; and focus traffic unto a completed local road system and allows for safer traffic exchanges on County roads.

The Rural Residential Growth Area will be expanded into Staged Growth Area "A", then into Staged Growth Area "B" taking into consideration the infrastructure needed to support growth; the availability of land for development and the local township road planning and storm water management system maintenance capabilities.

Rural Residential Reserve policies, as the name implies, discourages development at current economic and permanent density and provides for the reservation of land in this district by encouraging preservation of buildable land for future options. Permitted development within the Rural Residential Reserve Area is limited a density that preserves buildable land for future; *standard subdivisions* at a density of 1 unit per 10 acres of non-wetland area; *clustered subdivisions* reserving at least 50% of the total buildable land as open space for future

development options and creating at this time a neighborhood that can be compatibly integrated with future final development of the parcel; and *Open Space Design* developments that preserve buildable land for the final development in the future as part of a clustered subdivision.

Urban Growth Expansion Area policies recognize that while there are areas within the County that will remain in rural residential development without urban services, they also recognize that where urban expansion can occur, it should occur, as it is the most cost-effective use of land to accommodate residential needs. Therefore Urban Growth Expansion Areas sized to accommodate growth through 2040 around each of the cities in the County are established to prevent development now that will greatly complicate the ability to later extend roads and utilities. Residential development within the Urban Growth Expansion Area is only allowed in development patterns that will facilitate the future logical extension of public utilities and urban growth, standard subdivisions of one residence per 40 acres and clustered subdivisions of one residence per 10 acres that reserve the balance of land area for future development when public utilities and services become available.

The Zoning Ordinance

The Plan policies are implemented by the Zoning Ordinance by both the division of County and the Township into zoning districts, each with different district standards that change from district to district and by performance standards, for example stormwater management, that apply across all the districts. The current zoning districts applied in the Township are shown on the following Figure Two North Township Zoning Districts and Figure Three South Township Zoning Districts. A summary and comparison of each of the residential districts mapped in the Township is provided in Appendix One Comparison of Residential Districts, Appendix Two Comparison of Urban Expansion Districts and Appendix Three Comparison of Agricultural Districts. The complete provisions of all the sections of the Zoning Code are available on the Scott County web site.

The intensity of residential development permitted in each district is:

RR-1 Rural Residential Reserve District	1 dwelling unit per 10 acres
RR-2 Rural Residential Single Family District	1 dwelling unit per 2.5 acres
RR-3 Residential Suburban Single Family District	2.2 dwelling units per acre
RR-1C Rural Residential Reserve Cluster District	1 dwelling unit per 8 acres
UER Urban Expansion Reserve District	1 dwelling unit per 40 acres
UER-C Urban Expansion Reserve Cluster District	1 dwelling unit per 10 acres
A-1 Agricultural Preservation District	1 dwelling unit per 40 acres
A-2 Agricultural Woodlands District	4 dwelling units per 40 acres
A-3 Agricultural Preservation Density District	1 dwelling unit per 40 acres

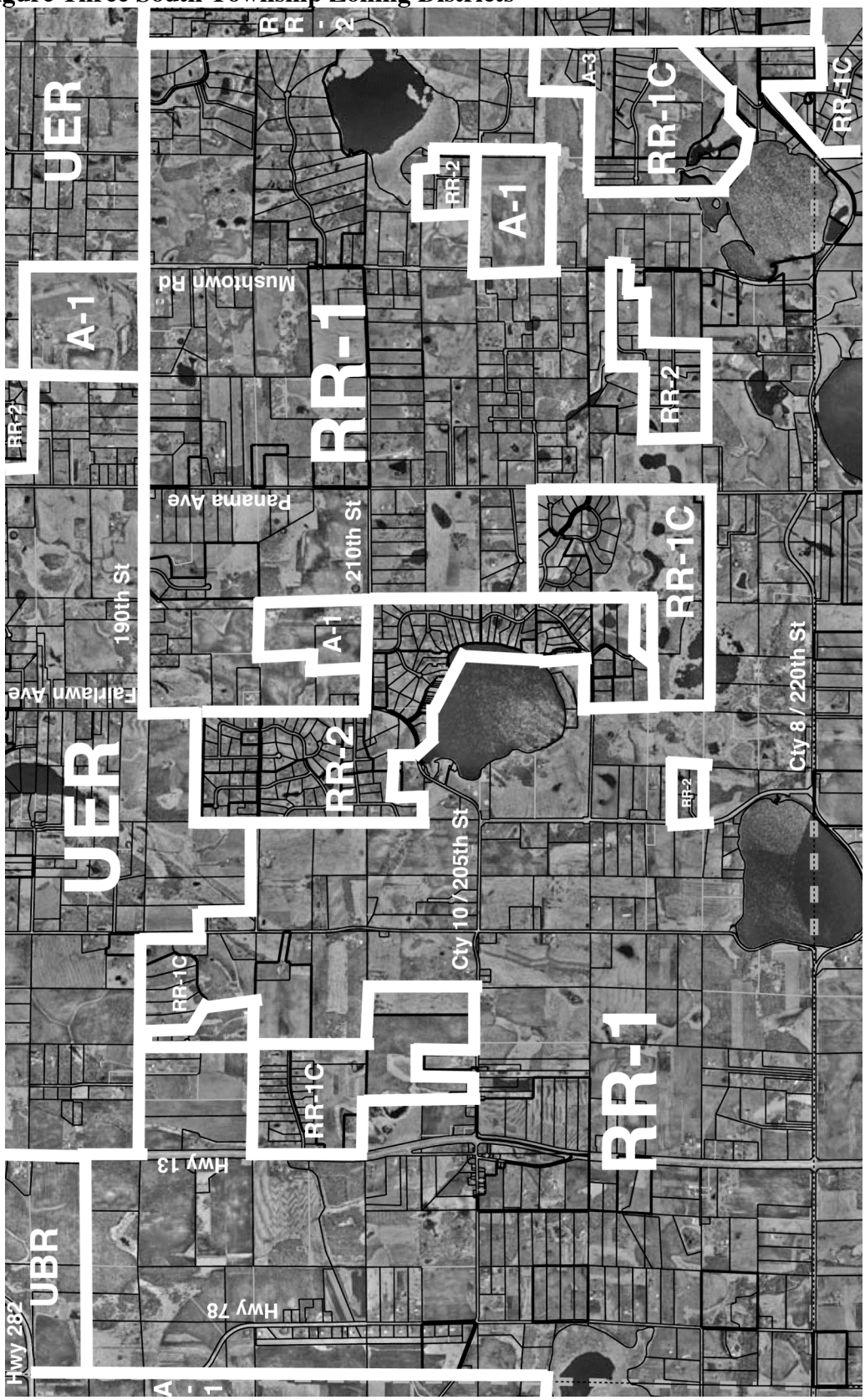
The permitted intensity of development in the RR-2 District can be increased to 1 dwelling unit per 2.1 and 1.7 acres; in the RR-1C District to 1 dwelling unit per 5.3 and 4.0 acres; and in the UER-C District to 1 dwelling unit per 6.7 and 5.0 acres by the use of Open Space Design as provided in Chapter 80 of the Zoning Code.

Figure Two on page illustrates how these districts have been applied in the north part of the Township and also shows the areas for orderly annexation through the next eight years through 2014. Annexation into the City, and connection to City sewer and water, permits development of homes on 15.000 sf lots. An example of this density are the single family homes in the Deerfield subdivision south of Cty 21 on the east side of Prior Lake. The orderly annexation agreement provides an overall framework for the timing of the annexations, but the actual dates are subject to public projects that extend sewer into the area and private housing demand that pulls and pays for service to the sites. This summer sewer service will be extended along Cty 82 to the west to serve areas in the westerly parts of the City and the northwesterly parts of the Township. The next planned extension is wrapping this service southerly around Spring Lake. No extensions, other than by petition are planned to the south of the City,

The predominant district in the south part of the Township, consistent with the policies of the Comprehensive Plan is the RR-1 Reserve District. Exceptions are approved RR-1C cluster developments, with the preserved areas, and some grandfathered RR-2 parcels.

Figure Two North Township Zoning Districts

Figure Three South Township Zoning Districts



Stormwater Management and Resource Management Plans

Chapter 6 of the County Zoning Ordinance, Stormwater Management, Erosion Control and Wetlands provides the requirements and process for addressing this issue for all developments in the County. The purposes of this Chapter are protection, preservation, maintenance, and use of the water and soil resources of the unincorporated area of the County through management of stormwater drainage, minimization of land disturbance, and prevention of damage from erosion and sedimentation; use of controls and regulations to secure safety from floods; to prevent loss of life, property damage, and other losses and risk associated with flood conditions; to reduce the financial burdens imposed upon the community through rescue and relief efforts occasioned by the occupancy or use of areas subject to periodic flooding; to protect individual and community riparian rights; and to preserve the location, character, and extent of natural and artificial water storage and retention areas; enforcement of the Chapter and the coordination of the enforcement of appropriate and applicable Federal, State, County, and local regulations; and implementation of the goals and policies of the Scott County Comprehensive Plan, as amended.

The required Resource Management Plan develops and applies the information necessary to comply with the performance standards for Stormwater Management, Erosion and Sediment Control, and Wetland Conservation. Generally, peak discharge rates from the property boundary cannot exceed pre-settlement conditions.

Best management practices, implemented by the required resource management plan, also can serve a surrogate assuring design practices that preserve or restore the natural character of the site.

Typical management strategies and best practices necessary for an approved plan in Scott County are described in the "Minnesota Stormwater Manual", November 2005, prepared for the Minnesota Stormwater Steering Committee, can include:

A. Preserving Natural Areas
    1. Natural Area Conservation
    2. Stream and Shoreline Buffers
B. Disconnecting and Distributing Stormwater
    1. Compost and Amended Soils
    2. Disconnection of Surface Impervious Cover
    3. Rooftop Disconnection
    4. Grass Channels
    5. Stormwater Landscaping
C. Reducing Impervious Cover in Site Design
    1. Narrower Streets
    2. Slimmer Sidewalks
    3. Smaller Cul-de-Sacs
    4. Shorter Driveways
    5. Smaller Parking Lots

A. Preserving Natural Areas

From a stormwater standpoint, it is desirable to maintain as much natural vegetative cover such as forest, prairie or wetland as possible. Natural areas generate the least amount of stormwater runoff and pollutant loads and establish and maintain the desired pre-development hydrology for the site. One of the first steps in the site planning involves identifying, conserving and restoring natural areas present at the development site. The overall strategy is to maximize natural area conservation beyond what is required under local or state resource requirements. Next, designers modify the layout of the development project to take advantage of natural features, preserve the most sensitive areas, and mitigate any stormwater impacts.

1. Natural Area Conservation

Natural area conservation protects natural resources and environmental features that help maintain the pre-development hydrology of a site by reducing runoff and promoting infiltration. Examples include any undisturbed vegetation preserved at the development site, such as forests, prairies, and riparian areas, ridge tops and steep slopes, and stream, wetland and shoreline buffers. Designers should also place a particular priority on preserving natural drainage pathways, intermittent and perennial streams, and floodplains and their associated wetlands. Buildings and roads should be located around the natural topography and drainage so as to avoid unnecessary disturbance of vegetation, soils and natural drainage ways. The undisturbed soils and vegetation of natural areas promote infiltration, runoff filtering and direct uptake of pollutants. Forested areas intercept rainfall in their canopy, reducing the amount of rain that reaches the ground. Vegetation also pumps soil water back into the atmosphere which increases storage available in the soil. Native vegetation also prevents erosion by stabilizing soil, filtering sediment and pollutants from runoff, and nutrient uptake. Preserving natural areas creates many economic benefits including decreased heating and cooling costs, higher property values and improved habitat. Generally a natural grassland area would have to be five acres or larger to approach *full* ecological function, and a forested site would have to be in the range of 20-40 acres.

Reforestation is accomplished through active replanting or natural regeneration of forest cover. Research has demonstrated the runoff reduction benefits associated with forest cover compared to turf cover. The benefits include reduced annual runoff volumes, higher rates of infiltration, reduced soil erosion, and greater uptake removal of stormwater pollutants. Forest soils actively promote greater infiltration rates due to surface organic matter and macro pores created by tree roots. Forests also intercept rainfall in their canopy, reducing the amount of rain that reaches the ground and increasing potential water storage in forest environments.

2. Stream and Shoreline Buffers

Many communities require buffers at development sites to provide a vegetative setback between development and streams, lakes or wetlands. The portions of a site reserved for buffers can present an excellent opportunity to practice better site design. The primary function of buffers is to physically protect a stream, lake or wetland from future disturbance or encroachment; however, with careful design they can also be used to capture and filter stormwater runoff from upland areas of the site.

B. Disconnecting and Distributing Stormwater

1. Compost and Amended Soils
Compost amended soils are used to recover soil porosity lost due to compaction as a result of past construction, soil disturbance and ongoing human traffic. The amendment process seeks to recover the porosity and bulk density of soils by incorporating soil amendments or conditioners into the lawn, such as compost, top soil, lime and gypsum). Soils can also be amended through the addition of fibers for structural support to prevent compaction, as well as the simple addition of sand to improve permeability or organic material other than compost (e.g. peat).

2. Disconnection of Surface Impervious Cover
Surface disconnection spreads runoff from small parking lots, courtyards, driveways and sidewalks into adjacent pervious areas where it is filtered or infiltrated into the soil. Designers look for areas of the site where flow can be diverted into turf, lawns or a vegetated filter strip.

3. Rooftop Disconnection
Disconnection of rooftops offers an excellent opportunity to spread runoff over lawns and other pervious areas where it can be filtered and infiltrated. Downspout disconnection can infiltrate runoff, reduce runoff velocity, and remove pollutants.

4. Grass Channels
Curbs, gutters and storm drains are all designed to be hydraulically efficient in removing stormwater from a site. However, they also increase peak runoff discharge, flow velocity, and pollutant delivery to downstream waters. From a better site design perspective, grass channels are preferable to curb and gutters as a conveyance system, where development density, topography, soils and slopes permit their use.

5. Stormwater Landscaping
Traditionally, landscaping and stormwater management have been treated separately in site planning. In recent years, engineers and landscape architects have discovered that integrating stormwater into landscaping features can improve the function and quality of both. The basic concept is to adjust the planting area to accept stormwater runoff from adjacent impervious areas and utilize plant species adapted to the modified runoff regime.

C. Reducing Impervious Cover in Site Design

This strategy relies on several techniques to reduce the total area of rooftops, parking lots, streets, sidewalks and other types of impervious cover created at a development site. The basic approach is to reduce each type of impervious cover by downsizing the required minimum geometry specified in current local codes,

Planning for Rural Residential Development

Metropolitan Council policies designate the Township as "diversified rural" and specifically states that wastewater services are not planned for extension into or through the Township before the end of the 2030 planning period. The role assigned to the Township by the Metro Council is the preservation of properties where post-2030 growth can be provided with cost-effective and efficient urban infrastructure. Development in the Township is restricted to not more than an average of 26 homesites in each year through 2030, and with each homesite being not less than 10 acres.

Scott County 2020 Plan policies, as they are required by Statute, support and reinforce the Metropolitan Council's vision for development in the Townships. The 2020 Plan encourages most of the growth in and around the cities, where suburban residential densities are supported by and make the best use of the regional sanitary sewer systems. County policies encourage and require reserving the balance of land area for future development options and preserving buildable land for the future when infrastructure and services are able to accommodate increased housing density.

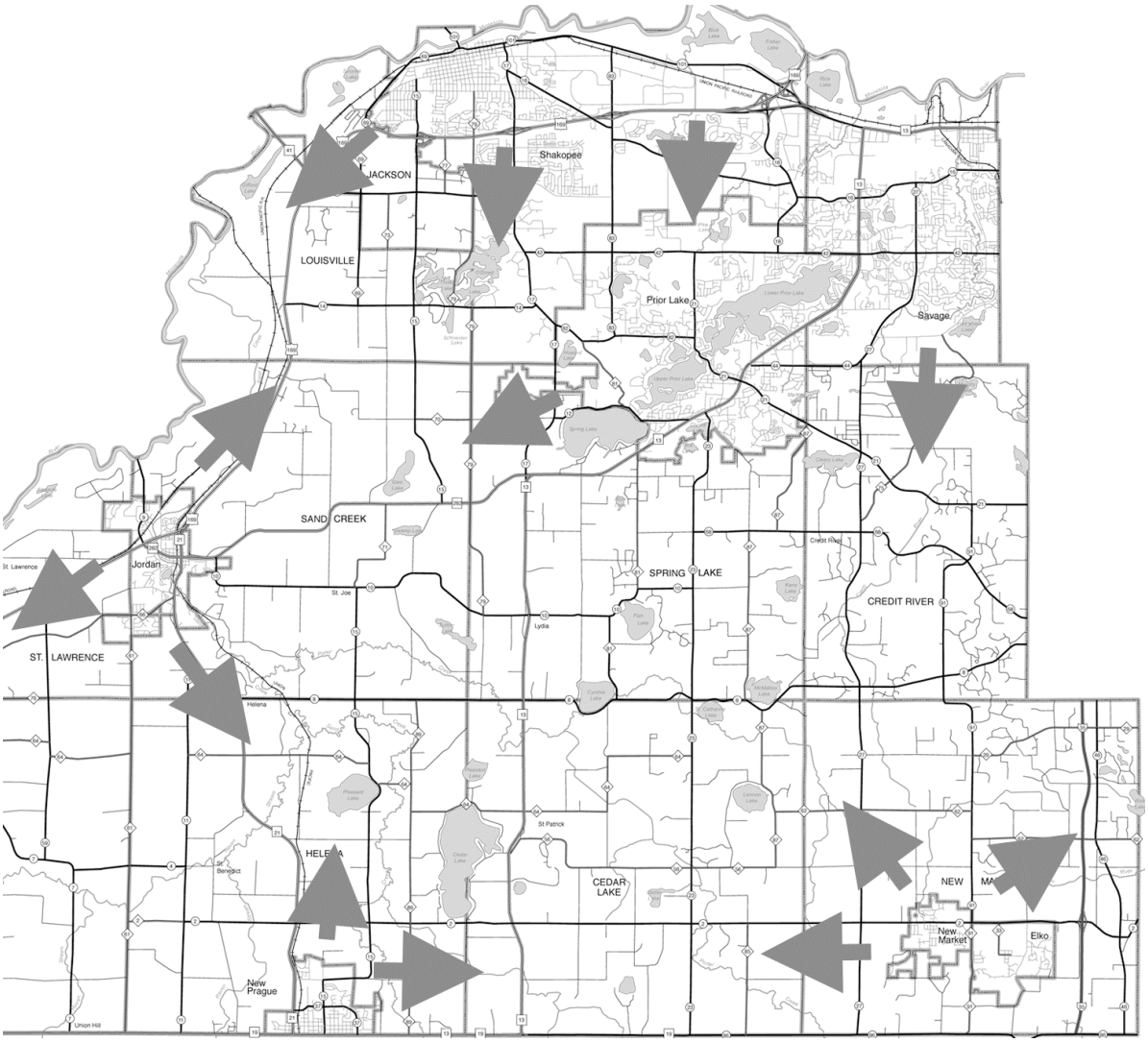
An alternate basis for planning would recognize that urban infrastructure will not be provided in the Township before 2030 and it may not be ever be provided throughout the Township. This low probability of extension of regional sewer service throughout the Township in any meaningful or planning time frame is based on three patterns in the County and the Township.

Figure 4 Pattern of Planned Infrastructure Growth at the top of page 12 describes the planned extension of regional wastewater services to accommodate growth in the County as indicated by the Urban Expansion Areas of the 2020 Land Use Plan Map and the designated Urban Expansion Reserve Districts on the Zoning Map.

Shakopee is extending service south towards Prior Lake within its municipal boundaries from its border with Savage, has annexed and is annexing portions of Jackson Township and is initiating discussions with Louisville Township. Savage continues to extend south to Credit River Township, which is also in the path of the northward extension of New Market and Elko. Sewer service is also planned to extend eastward along Cty 2 / 260th St. towards New Prague, which is planned to extend eastward along this roadway. Jordon will extend service along Hwy 169 into St. Lawrence Township to meet the extension of service from Belle Plaine. Prior Lake is expanding west, not south, under its current orderly annexation agreement with Spring Lake and infrastructure plans.

This pattern of planned infrastructure extension creates an island that includes portions of Spring Lake, Cedar Lake, Helena and Sand Creek Townships that will not have any infrastructure by 2030, may not have infrastructure by 2060, and may not be completely served until 2090 or into the next millennium, if ever. This will delay beyond any reasonable land use planning time frame economic development of properties and deny the continued investment and the new residents Spring Lake Township needs to remain viable.

Figure Four Pattern of Planned Infrastructure Growth



In Spring Lake Township there are also two practical conditions that encourage Prior Lake to continue to seek significant annexation and expansion of regional service to the west and discourage significant expansion or service and annexation to the south. These conditions are recognized in Section 11 of the 2005 Joint Resolution amending the Orderly Annexation Agreement between City of Prior Lake and Spring Lake Township. In that section of the agreement the City provides its support for the amendment of the Comprehensive Plan and the Zoning Map to designate this area for development, no longer reserving it for urban growth in the UER District.

Figure Five Spring Lake Township Center Sections on page 13 describes the wetland and topographic (in 10 ft contours) conditions in the Township of the sections directly south of the City. This map, taken from the USGS 7.5 Minute Prior Lake Quadrangle, describes conditions

not found to the west of the City that will make residential development at a density that will support extension of the infrastructure, as well as the construction of the extension itself difficult, inefficient and uneconomic.

Figure Five Spring Lake Township Center Sections

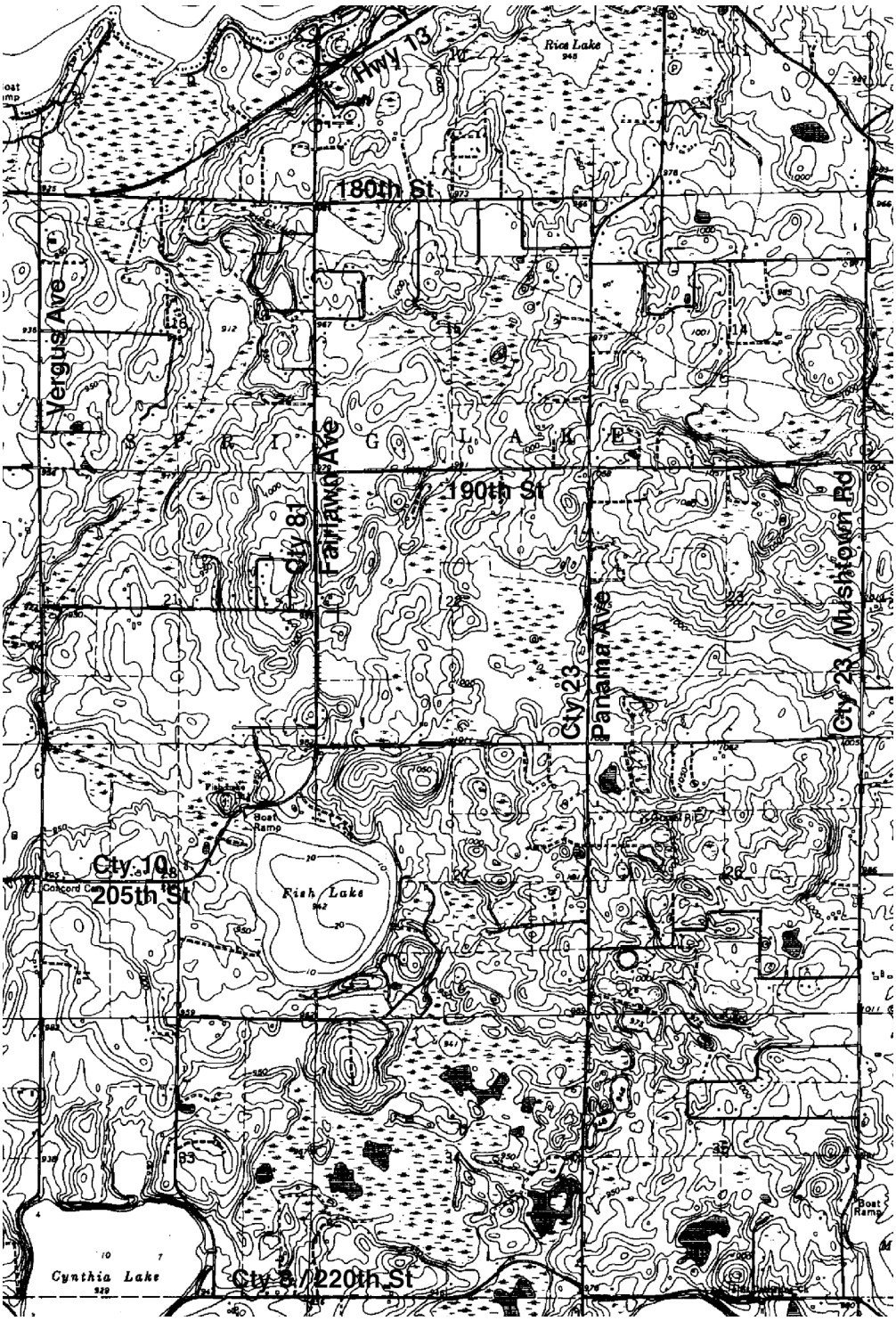


Figure Six Ownership Pattern, illustrates the existing subdivisions and the absence of large parcels in these same sections that will also discourage extension southward from Prior Lake.

Figure Six Ownership Pattern

As part of the 2030 Comprehensive Plan Update the County should consider a land use category for a Rural Residential *Development* Area for those parts of the Townships that do not anticipate urban services and suburbanization in the planning period. This use category would supplement and work with the Rural Residential Reserve Areas and the Rural Residential Growth Areas.

Scott County should recognize and create a path to take advantage of this opportunity during the 2030 Plan process.

The path of a Rural Residential Development District would be providing a middle way between the present Metropolitan Council (and Scott County) pattern and the pattern of regulation of counties outside the statutory metropolitan area. Its purpose is summarized by the following Table One Approaches to Growth Management.

Table One Approaches to Growth Management

	PLANNED	**RURAL DEVELOPMENT**	**MINISTERIAL**
Big Idea	Efficient Infrastructure Now Preserve Future Connections	What you have determines what you build	Predictability, Equity
Goal	Build City / Preserve Country	Sustain Country Designed to not seem Designed	Predictable and Efficient Process
Method	Phased Development (MUSA)	Site by Site Review Based on Predetermined Attributes/What you have determines what you build	Uniform Quantified Regulations in General and Overlay Districts
Standards	Inside / Outside	Presence or absence of prescribed site features	Uniform, quantitative
Technique	Very wide density steps, 120:1 e.g. 1 home/ 0.3 ac to 1 home per 40 ac Mandatory clusters	Questions that must be asked	Binary regulations
Examples	Savage, Scott County, Open Space Design, Territory, OER	Site Plan Review, Hickory Hollow	Outside Metro
Certainty	Schedule for Utilities	Known Questions	Absolute
Equity	Assurance & Schedule Exponential Increase in Land Value	Known site conditions, Development proceeds by individual schedules	Equal treatment across a wide range of site conditions

Certain basic values: *proximity, spontaneity, use of shared resources, diversity, common good* and similar values are best realized in urban settings. Other basic values: *order, serenity, independence, control, self-reliance, connection to nature* and similar values are best realized in rural settings.

The opportunity provided in Spring Lake Township by the lakes, wetlands and gentle but persistent changes in elevation, while not necessarily exceptional in eastern Scott County, are exceptional in the Region. They have created of a landscape throughout the Township that has preserved the attractive elements and the image of a mixed natural and agrarian landscape rather than completely tilled landscape. The barriers these lakes and wetlands have and will present to the southward expansion by annexation to the City of Prior Lake and higher density residential development of homesites in the Township have preserved this area for rural development.

The preservation of these landscapes, and the opportunity and mandate for lower density permanent development and continued township governance they have created, is exceptional by its location in the most intensely developed and developing sector of the Metropolitan Area. Almost one out of every four Minnesotans lives in Hennepin County, and the County is the site of 60% of the jobs in the Metropolitan Area. And, 75% of those jobs are located in the part of the County south of I 394, directly proximate to eastern Scott County.

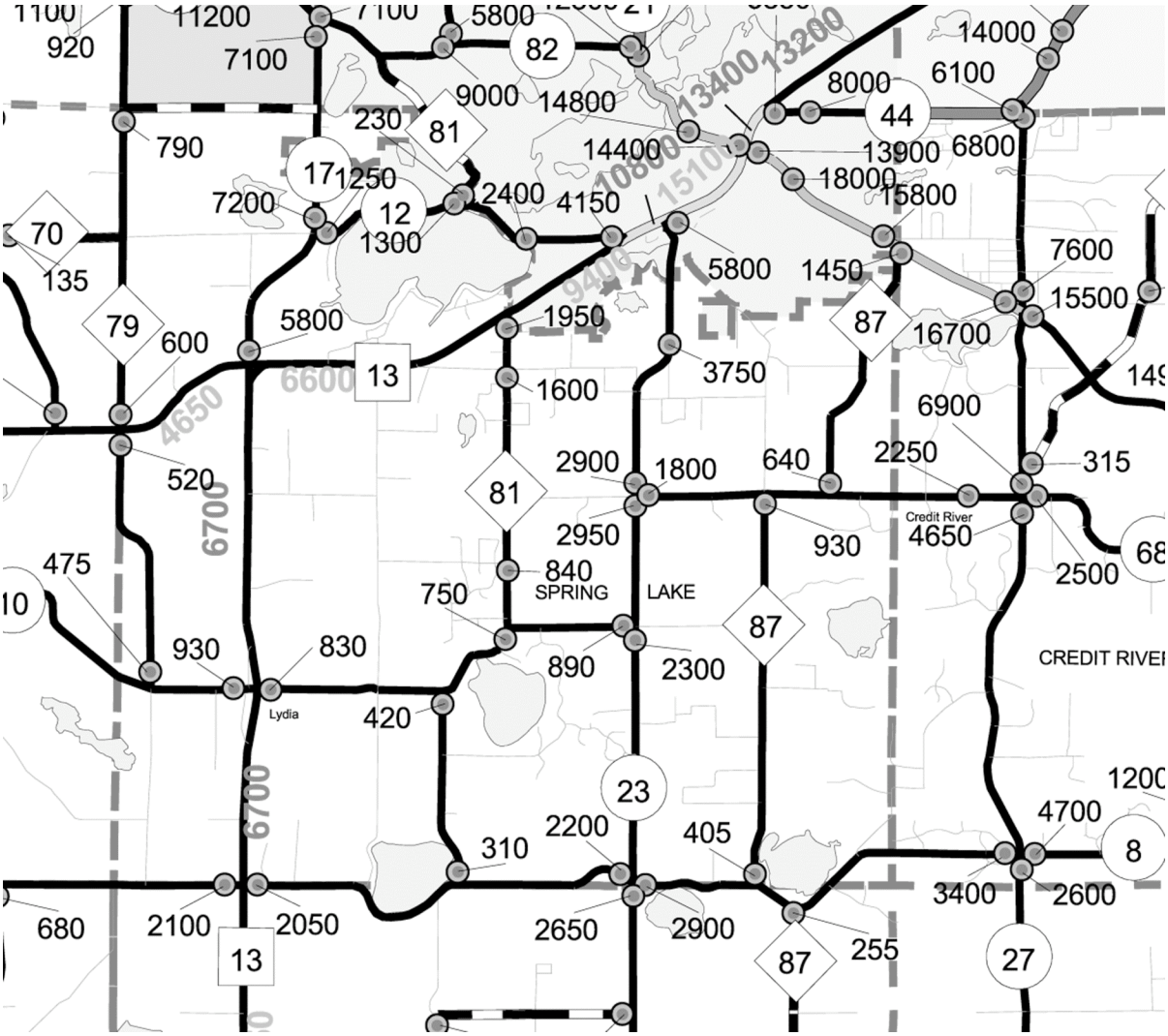
Figure Seven Pattern of Present Subdivisions describes how land is held in the Township. Land is in a diverse mix of some larger parcels (no shading), the permitted 10 acre parcels (lighter shading) and the 2 ½ acre parcels that are part of a cluster or grandfathered (heaviest shading).

Figure Seven Pattern of Present Subdivisions

The pattern of the County and the connecting Township roads provides a system that distributes traffic throughout the Township and can support decentralized development in the Township. Figure Eight 2004 Traffic Volume on page 17 describes the current use and demand on County and State Highways in the Township. The highest traffic counts are found on Hwy 13 in Prior Lake in the vicinity of County 21/ Eagle Creek Avenue. These volumes on Hwy 13 are reduced

by more than one half before the intersection with Hwy 282. The Township is following a program they have developed for paving its roads to in anticipation of development.

Figure Eight 2004 Traffic Volume



The Township also has adopted a Parks Plan to accompany growth with continued provision of these services.

In Spring Lake Township the Rural Residential Development alternative would allow economic, sustainable and reasonable development preserving the rural character of the landscape of the lager parcels and would encourage consolidation and redevelopment of the present 10 acre lots in a more natural character.

The following sections describe the reliability, installation and regulation of the current on site sewage systems that are the foundation of a Rural Residential Development District, a different treatment for hydric soils, and describe what a Rural Residential Development could look like.

On Site Sewage Treatment Systems

A. The Viability and Reliability of Decentralized Sewage Treatment Systems

In the United States Environmental Protection Agency Report "Onsite Wastewater Treatment Systems Manual EPA/625/R-00/008 February 2002", the Agency found that public health and environmental protection officials now acknowledge that decentralized onsite systems are not just temporary installations that will be replaced eventually by centralized sewage treatment services, but permanent approaches to treating wastewater for release and reuse in the environment.

Onsite systems are recognized as potentially viable, low-cost, long-term, decentralized approaches to wastewater treatment if they are planned, designed, installed, operated, and maintained properly. The wastewater cannot be applied at rates faster than the soil can accept it, nor can the soil be overloaded with solids or organic matter to the point where soil pores become clogged with solids or an overly thick development of the biomass. These failures are often traced to unpumped and sludge-filled tanks, which result in clogged absorption fields, and hydraulic overloading caused by increased occupancy and greater water use, due to untrained and often uninformed system owners assuming responsibility for operating and maintaining their relatively simple, gravity-based systems. The failure and malfunctioning of septic systems causes public health problems as a result of consumption of drinking improperly treated ground water and contribute to an overabundance of nutrients in ponds and lakes, leading to the excessive growth of algae and other nuisance aquatic plants.

Individual sewage treatment systems (ISTS) have evolved from the pit privies used widely throughout history to installations capable of producing a disinfected effluent that is fit for human consumption. Although achieving such a level of effluent quality is seldom necessary, the ability of onsite systems to remove settleable solids, floatable grease and scum, nutrients, and pathogens from wastewater discharges defines their importance in protecting human health and environmental resources. The typical ISTS is a conventional onsite gravity system consisting of a septic tank and a soil absorption field. Site limitations and more stringent performance requirements have led to significant improvements in the design of wastewater treatment systems and how they are managed. Over the past 20 years the industry has developed many new treatment technologies that can achieve high performance levels on sites with size, soil, ground water, and landscape limitations that might preclude installing conventional systems. New technologies and improvements to existing technologies are based on defining the performance requirements of the system, characterizing wastewater flow and pollutant loads, evaluating site conditions, defining performance and design boundaries, and selecting a system design that addresses these factors. It is often both efficient and effective to collect and treat septic tank effluent from clusters of individual sources through a community or cluster sewage treatment system (CSTS) driven by gravity, pressure, or vacuum. This alternative shares the costs and responsibility of the specialized design, operation, maintenance and enhanced management oversight required by these community systems.

B. The Individual Sewage Treatment System

All septic systems have the objectives and use some or all of the methods and processes described by Table Two Treatment Objectives and Alternate Methods on page 19. The three primary components of a conventional system are the soil, the subsurface wastewater infiltration system (SWIS) also called a drain field or infiltration trench, and the septic tank. The soil serves as a biological, physical, and chemical treatment medium for the wastewater, as well as a porous medium to disperse the wastewater in the receiving environment as it percolates to the ground water. The SWIS is the interface between the engineered system components and the receiving ground water environment. Septic tanks remove most settleable and floatable material and function as an anaerobic bioreactor that promotes partial digestion of retained organic matter. Onsite wastewater treatment system designs vary according to the site and wastewater characteristics encountered.

Subsurface wastewater infiltration systems provide both dispersal and treatment of the applied wastewater. Placement of a SWIS infiltration surface may be below, at, or above the existing ground surface (in an in-ground trench, at grade, or elevated in a mound system). Actual placement relative to the original soil profile at the site is determined by desired separation from a limiting condition.

The method and pattern of wastewater distribution in a subsurface infiltration system are important design elements. Uniform distribution aids in maintaining unsaturated flow below the infiltration surface, which results in wastewater retention times in the soil that are sufficiently long to effect treatment and promote subsoil reaeration. Uniform distribution design also results in more complete utilization of the infiltration surface. Gravity flow and dosing are the two most commonly used distribution methods.

Gravity flow is the most commonly used method because they are simple and inexpensive to construct but are the least efficient method of distribution. Distribution is very uneven over the infiltration surface, resulting in localized overloading. It is characterized by the term “trickle flow” because the effluent is slowly discharged over much of the day. Typically, tank discharges are too low to flow throughout the distribution network. Thus, distribution is unequal and localized overloading of the infiltration surface occurs with concomitant poor treatment and soil clogging.

Dosed-flow distribution systems are a significant improvement over gravity-flow distribution systems. Dosing accumulates the wastewater effluent in a dose tank from which the water is periodically discharged under pressure in “doses” to the infiltration system. The dose volumes and discharge rates are usually such that much of the distribution network is filled, resulting in more uniform distribution over the infiltration surface. Dosing outperforms gravity-flow systems because distribution is more uniform. In addition, the periods between doses provide opportunities for the subsoil to drain and reaerate before the next dose. They can be used in any application and should be the method of choice. Unfortunately, they are commonly perceived to be less desirable because they add a mechanical component to an otherwise “passive” system and add cost because of the dosing equipment.

Table Two Treatment Objectives and Alternate Methods

Treatment Objective	Treatment Process	Treatment Methods
Suspended Solids Removal	Sedimentation	Septic tank Free water surface constructed wetland Vegetated submerged bed
	Filtration	Septic tank effluent screens Packed-bed media filters (including dosed systems) Granular (sand, gravel, bottom ash) Peat, textile Mechanical disk filters Soil infiltration
Soluble Carbonaceous BOD and Ammonium Removal	Aerobic, suspended-growth reactors	Extended aeration Fixed-film activated sludge Sequencing batch reactors
	Fixed-film aerobic bioreactor	Soil infiltration Packed-bed media filters (including dosed systems) Granular (sand, gravel, bottom ash) Peat, textile Trickling filter Fixed-film activated sludge Rotating biological contactors
	Lagoons	Facultative and aerobic lagoons Free water surface constructed wetland
Nitrogen transformation	Biological Nitrification (N) Denitrification (D)	Activated sludge (N) Sequencing batch reactors (N) Fixed film bio-reactor (N) Reticulating media filter (N, D) Fixed-film activated sludge (N) Anaerobic upflow filter (N) Anaerobic submerged media reactor (D) Submerged vegetated bed (D) Free-water surface constructed wetland (N, D)
	Ion exchange	Cation exchange (ammonium removal) Anion exchange (nitrate removal)
Phosphorus Removal	Physical/Chemical	Infiltration by soil and other media Chemical flocculation and settling Iron-rich packed-bed media filter
Pathogen Removal (bacteria, viruses, parasites)	Biological Filtration / Predation / Inactivation	Sequencing batch reactors Soil infiltration Packed-bed media filters Granular (sand, gravel, bottom ash) Peat, textile
	Disinfection	Hypochlorite feed Ultraviolet light
Grease Removal	Flotation	Grease trap Septic tank,
	Adsorption	Mechanical skimmer
	Aerobic biological treatment (incidental removal will occur; overloading is possible)	Aerobic biological systems

Drip distribution, which was derived from drip irrigation technology, has been introduced as a method of wastewater distribution. It is a method of pressure distribution capable of delivering small, precise volumes of wastewater effluent to the infiltration surface. It is the most efficient of the distribution methods and is well suited for all types of SWIS applications.

The primary purpose of a septic tank is to provide suspended solids and oil/grease removal through sedimentation and flotation. This is accomplished by providing a long wastewater residence time in the septic tank. Tank volume, geometry, and compartmentalization affect the residence time. The tank provides primary treatment by creating quiescent conditions inside a covered, watertight vessel. In addition to primary treatment, the septic tank stores and partially digests settled and floating organic solids in sludge and scum layers. This can reduce the sludge and scum volumes by as much as 40 percent. Gases generated from digestion of the organics are vented back through the building sewer and out of the house plumbing stack vent. The tank also provides some peak flow attenuation.

Tanks should be pumped when sludge and scum accumulations exceed 30 percent of the tank volume or are encroaching on the inlet and outlet baffle entrances. Periodic pumping of septic tanks is recommended to ensure proper system performance and reduce the risk of hydraulic failure. If systems are not inspected, septic tanks should be pumped every 3 to 5 years depending on the size of the tank, the number of building occupants, and household appliances and habits In Minnesota, accumulated sludge and scum material stored in the tank should be removed by a certified, licensed or trained service provider and reused or disposed of in accordance with applicable federal, state, and local codes.

C. The Emerging Technologies and Practices

New tank technologies, typically called Advanced Treatment Units or Systems or performance systems, that pretreat the wastes before they leave the tank by in-tank filtration systems (effluent filters, pump vaults), secondary treatment systems (intermittent sand filters, recirculating sand filters, textile filters), collection systems (effluent sewers), pumping packages, accessory items, using electrical controls and monitoring systems allowing treated effluent to be returned to the environment via drainfield, lagoon, constructed wetland, or subsurface irrigation with reduced threat of biomat buildup. These new technologies loose the simplicity of a traditional tank and drainfield (mound/bed/trench) based systems, but by their efficiency and replacement of the soil as the biological, physical, and chemical treatment medium show great promise.

The other technology is source separation "graywater" technologies that provide alternate treatment and recycling for some wastewater, avoiding the onsite sewage system.

D. The Regulatory Framework

Through the leadership of the University of Minnesota and others over the last 20 years we have experienced a revolution that has increased the training, certification, licensing, inspection, maintenance, repair and overall permitting of onsite sewage disposal systems.

The Scott County “Individual/Community Sewage Treatment System Ordinance No. 4" provides the requirement of a permit to capture the placement, design and maintenance of ISTS and CSTS in the County pursuant to the State Statute and Rules. The Ordinance provides specific and detailed requirements and standards for the design, location, and inspection of ISTS / CSTS, as well as the qualifications and licensing requirements of persons involved in all phases of the process.

Minnesota Statutes also require that before signing an agreement to sell or transfer real property, a seller must disclose to a buyer in writing the status and location of all septic systems on the property, including existing or abandoned systems. The disclosure must indicate whether the system is in use and whether it is, to the seller's knowledge, in compliance with applicable laws and rules.

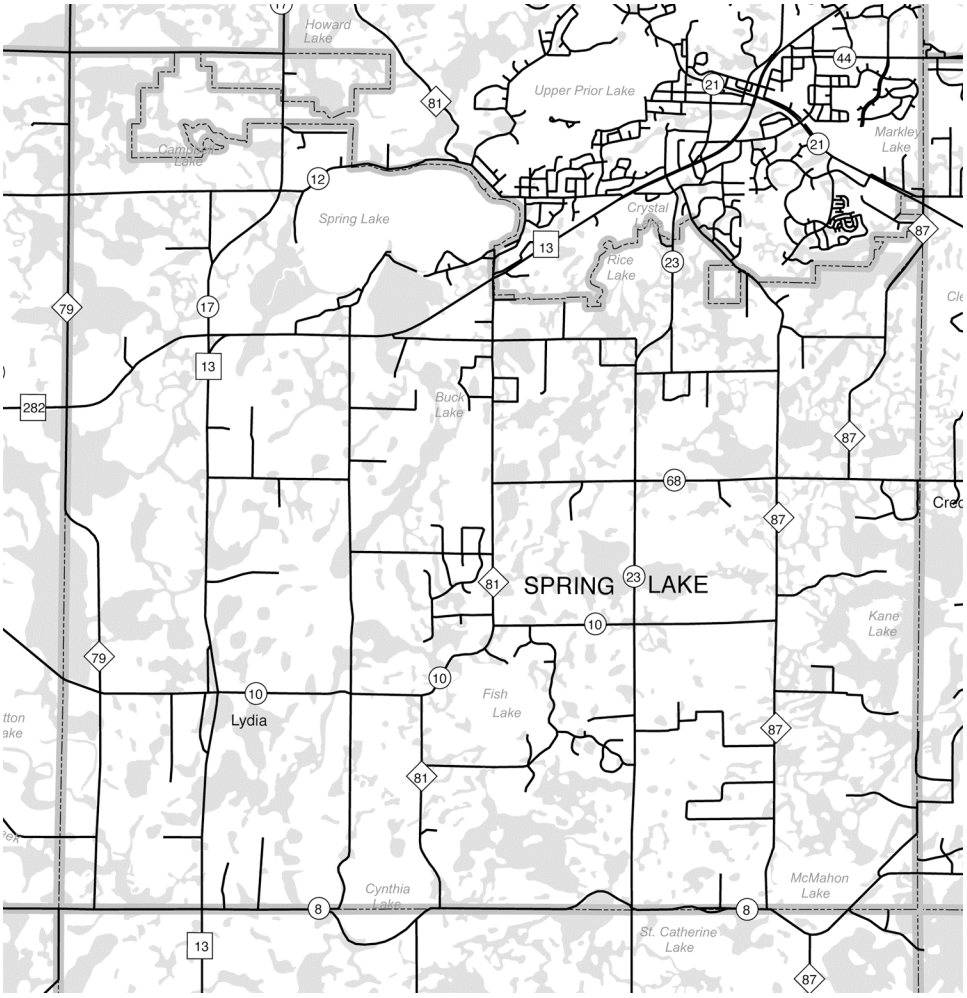
Many professionals, especially at the Metropolitan Council, believe that sewage treatment is too important, and the result of a failure too hazardous, to trust individuals with a variation of skills, resources and awareness to manage. Scott County provides incentives to use Community Sewage Treatment Systems that are professionally monitored, managed and maintained. An alternative to provide confidence Individual Sewage Treatment Systems are being properly maintained is the establishment of a public service district that would provide for prepayment and assured inspection by a licensed inspector, and if necessary pumping, every three years.

Counting Hydric Soils

Hydric-soils are soils that are, or prior to the installation of agricultural tile lines were saturated, flooded or ponded for substantial periods of time during the growing season and which have developed anaerobic conditions in the upper part. The criteria for identifying hydric soils were developed by the National Technical Committee for Hydric Soils, and were published in the Federal Register on February 24, 1995. Hydric soils reflect the natural topography and soil conditions that existed prior to the introduction of agricultural drainage tiles and ditches.

The shaded areas on the following Figure Nine Map of Hydric Soils in Spring Lake Township, describes the pattern of hydric soils in the Township. These soils are distributed throughout the Township and as would be expected follow the pattern of the more detailed Wetland / Drained Basin Inventory recently prepared by the Scott County Soil and Water Conservation District.

Figure Nine Map of Hydric Soils in Spring Lake Township



It is prudent to anticipate storm water will collect on the land in the depressions that generally are associated with hydric soil types. This is the reason for restricting development on and preserving hydric soils that are either seasonably wet or have been drained artificially to accommodate agriculture. As farmland improved by agricultural drainage tiles and ditches is developed into residential or commercial uses, private surface and subsurface drainage systems are typically abandoned and the hydric soils will likely return to wet conditions unsuitable for homes and ISTSs.

Environmental and safety benefits result from the combination of the use of pre-settlement storm water runoff rates and some consideration for the impact of volume and hydric soil preservation by reducing the overall runoff and encouraging ground water recharge. Allowing, encouraging or requiring artificially drained hydric soils to revert to natural conditions will reduce existing stream erosion and lake and wetland degradation from siltation, reduce long-term costs for storm water management and improve wildlife habitat and rural natural environment aesthetics.

A planning strategy, which is separate from the environmental strategy of preserving buildable land and future options is implemented by the approach of combining the hydric soil concept with the land use density determination. Several Comprehensive Plan policies encourage consideration of only non-hydric land for determining development densities and the use of cluster subdivision design. This is meant to ensure environmentally safe growth o a site by site basis, and promote orderly growth, more efficient land consumption, and the preservation of buildable open space for *future use at higher densities when infrastructure becomes available*.

Unfortunately, this planning strategy has the exactly opposite and detrimental effect when applied to areas like Spring Lake when future use at higher densities made possible by extension of regional utility service is neither realistic nor desired. When a conforming non-hydric soil location for the required drainfields and a non hydric or corrected building site is provided on each parcel, the environmental benefits are assured and all hydric soils on a parcel should be permitted to contribute to meeting the minimum required lot area. The planning element of this strategy can and should be abandoned in areas designated in the Rural Residential Development District.

The Hickory Hollow Development

One model for development is the Hickory Hollow Development located south of 206th St and west of Panama Ave. along Hickory Trail. The development is the numbered lots on Figure Ten Hickory Hollow Development.

Figure Ten Hickory Hollow Development

The following Table Three Hickory Hollow Development describes this development

Table Three Hickory Hollow Development

Total Number of Homesites	29 Homesites
Total Area of Homesites	89.26 ac
Average Homesite Area	3.1 ac per Homesite
Approximate Total Developed Area	110 ac (80 + 30)
Approximate Gross Density	3.8 ac per Homesite

The individual homesites vary in area from 2.5 to 4.7 acres. Table Four Hickory Hollow Homesites describes the net density: homesites only, not Including Outlots, Street ROW and the cluster preserved area, of each lot in the development.

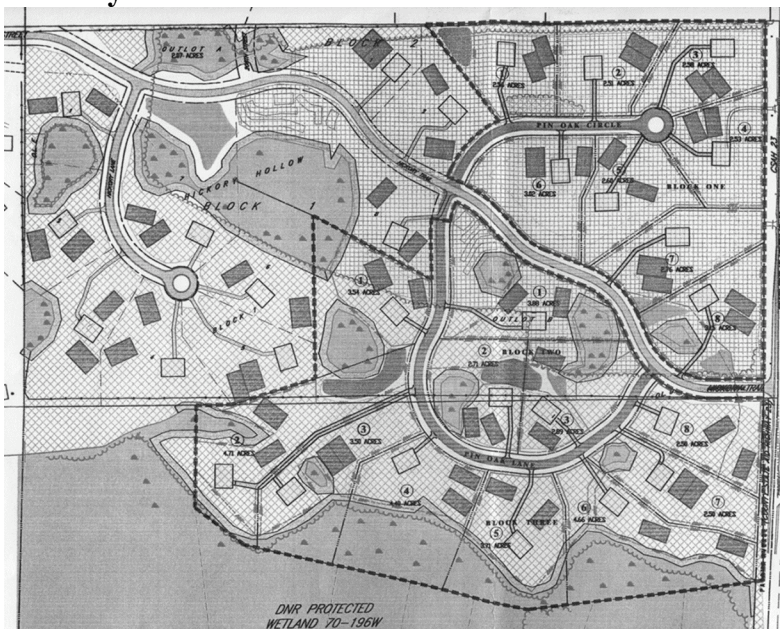
Table Four Hickory Hollow Homesites

Phase One		Phase Two			
Block One	Acres	Block One	Acres	Block Three	
Lot 1	3.5	Lot 1	2.56	Lot 1	3.54
2	3.65	2	2.51	2	4.71
3	3.44	3	2.58	3	3.5
4	2.57	4	2.53	4	4.4
5	3.51	5	2.68	5	3.71
6	2.62	6	3.02	6	4.7
7	2.63	7	2.76	7	2.5
8	2.55	8	3.15	8	2.5
Total	23.47	Total	21.79	Total	29.52
Average	2.96	Average	2.71	Average	3.69

Block Two		Block Two	Acres
Lot 1	~ 2.5	Lot 1	3.54
2	~ 2.5	2	2.71
Total	~ 5.0	3	2.89
Average	~ 2.5	Total	9.48
		Average	3.16

Figure Eleven Hickory Hollow Plan describes how the homesites, primary and secondary drainfields and stormwater ponds are arranged and accommodated in the development.

Figure Eleven Hickory Hollow Plan



Hickory Hollow is an example, absent the now required preserved area to the south, of the desired character of future development in the Township. It is desirable and economic in today's market, meets current standards for individual sewage treatment systems and stormwater and resource management on the developed parcels, provides connectivity with the street system, and has a net density of 3.1 acres per unit and a gross density of 3.8 acres per unit.

The Hickory Hollow development provides an example of how a Rural Residential Development district could use the opportunity created by the pattern of planned infrastructure development in Scott County and implement many of the following principles for development in Spring Lake Township, gradually intensifying residential development while respecting and assuring preservation of the natural and cultural features, including Township governance, in Spring Lake Township

Draft Spring Lake Township Principles guiding development south of 180th St for inclusion in the Scott County 2030 Comprehensive Plan Update.

1. Planning and land use regulation for the area south of 180th St as provided in Section 11 of the Orderly Annexation Agreement with Prior Lake should assume regional sewage treatment will not be made available in this area except by petition on its northern edge.

2. The present regulation of new on site sewage treatment systems and the evolving technologies and practices assure Community Sewage Treatment Systems (CSTS) or Individual Sewage Treatment Systems (ISTS) when properly maintained are the practical and responsible long term sewage treatment method in the area of the Township south of 180th St.

3. An overall residential density approaching 2 ½ acres per homesite with no supporting cluster preserves and meeting existing and proposed performance standards is the reasonable, sustainable and desired long-term development which will maintain and preserve the natural and cultural character of Spring Lake Township. This development is not intended to be an interim activity reserving properties in the Township until some planned alternate future development or phase can be implemented. It is the desired long-term development of properties in this part of the Township.

4. Provided a conforming non-hydric soil location for the required drainfields and a non hydric or corrected building site is provided on each parcel, all hydric soils on a parcel should be permitted to contribute to meeting the minimum required lot area.

5. Application of the zoning regulations implementing these principles should be accomplished on a parcel-by-parcel basis.

6. The status of the Lydia area as a Hamlet should be recognized in the Comprehensive Plan and Zoning Ordinance, and the directly people-serving retail and office activities allowed by the C1 General Commercial district should be permitted, and the smaller residential lot sizes typical in this traditional hamlet development should be accommodated as conforming parcels.

Appendix One: Comparison of Residential Districts

	RR-1 Rural Residential Reserve District	RR-2 Rural Residential Single Family District	RR-3 Residential Suburban Single Family District	RR-1C Rural Reserve Cluster District
Purpose	Be a reserve for future higher density rural residential development when support services and infrastructure can be provided. Development in this district shall maintain low density rural environment until such time as the need for additional rural residential development and rezoning to RR-2, Rural Residential Single Family District is approved.	Application in those areas of Scott County identified in the Comprehensive Plan where vacant land has become subject to increased amounts of single family residential development.	Provide for single family dwelling units on existing lots of record with connection to public sanitary sewer treatment systems at a relatively dense urban scale to be established only when these services are available.	Be a reserve for future higher density rural residential development when support services and infrastructure can be provided. Development in this district shall maintain low density rural environment in a cluster subdivision design until such time as the need for additional rural residential development and rezoning to RR-2, Rural Residential Single Family District is approved.
Agricultural	*Permitted* - Agricultural uses and buildings as defined by this Ordinance, Feedlots, new or expanding operations of less than 250 animal units, as regulated by Chapter 9 of this Ordinance, limited livestock raising, as regulated by Chapter 9 of this Ordinance. *Conditional* - New or expanding feedlots of 250 animal units or more, as regulated by Chapter 9 of this Ordinance.	Permitted - Limited livestock raising of 10 animal units or less on lots 10 acres or greater in size, as regulated by Chapter 9 of this Ordinance.	None	*Permitted* - Agricultural uses and buildings as defined by this Ordinance on lots 10 acres or greater in size.
Residential Density	1 dwelling unit per 10 acres of non-wetland land	1 dwelling unit per 2.5 acres of buildable land (non-hydric soils) as determined using one of the following methods: a. Non-hydric soils as shown on the Scott County Geographic Information System (GIS); *or* b. Land outside of the 100 year floodplain area, as determined by the County, using two (2) foot contour surveys of relevant areas; *or* c. A field delineation of the	2.2 dwelling units per Acre	The density for the residential cluster subdivisions shall be 1 dwelling per 8 acres based on the gross areas of the site when 50 percent or more of the non-hydric soils is preserved as open space for future development, provided the cluster shall establish open space to be reserved for future development. The open space shall be platted into outlots that meet the

	RR-1 Rural Residential Reserve District	RR-2 Rural Residential Single Family District	RR-3 Residential Suburban Single Family District	RR-1C Rural Reserve Cluster District
		hydric soils by a Registered Soil Scientist following the criteria found in the United States Army Corps of Engineers Wetland Delineation Manual (1987 Manual) or the Natural Resource Conservation Service publication Field Indicators of Hydric Soils in the United States.		minimum performance standards for the district and open space standards of Chapter 80 and Ghost platting concept plans shall be required to illustrate how the current plat may be integrated with future development. All lots in residential clusters are designed to receive permanent access from a future local public street.
OSD Incentive	No (ISTS - Individual Sewage Treatment System)	Yes CUP ISTS/20% = 1 per 2.1 ac CW&S/45% = 1 per 1.7 ac	No (CW&S - Community Sewage Treatment System (CSTS) & well)	Yes CUP ISTS/50% = 1 per 5.3 ac CW&S/100% = 1 per 4.0 ac
Residential Lot Area	10 acres with at least 1 acre of non-hydric soils. Lot must demonstrate sufficient area to accommodate 2 individual sewage treatment systems.	2.5 acres with at least 1 acre of nonhydric soils. Lot must demonstrate sufficient area to accommodate 2 independent sewage treatment systems. Less than 25% impervious	0.46 acre / 20,000 square feet	2.5 acres, 1 acre of non-hydric soils. Lot must demonstrate sufficient area to accommodate 2 independent sewage treatment systems.
Residential Lot Width	300 feet measured at the building site for lots created prior to March 2, 1996. For lots after March 2, 1996, 300 feet shall be maintained at the front setback line and extending to the location of the principal building.	150 feet at the building site for parcels created prior to March 2, 1996. For lots created after March 2, 1996, 150 feet shall be maintained at the front setback line and extending to the location of the principal building.	75 feet measured at the front setback line.	150 feet measured at the building site for lots created prior to March 2, 1996. For lots created after March 2, 1996, 150 feet shall be maintained at the front setback line and extending to the location of the principal building.
Residential Building Setbacks	*Front* -150 feet measured from the centerline of a County or State road or 100 feet from the County or State road right-of-way, whichever is greater. 100 feet from centerline of public local road, or 67 feet from the public local road right-of-way, whichever is greater. On lots less than 2 acres, 35 feet from the road right-of-way on a local street, 100 feet from the right-	*Front* - 150 feet from the centerline of a County or State road or 100 feet from the County or State road right-of-way, whichever is greater. 100 feet from the centerline of a local public street, or 67 feet from the local public street right-of-way, whichever is greater. On lots of record less than 2 acres, 35 feet from the road right-of-way on a local street, 100 feet from the	*Front* - 25 feet from the road right-of-way.	*Front* - 150 feet from the centerline of a County or State road or 100 feet from a County or State road right-of-way, whichever is greater. 100 feet from the centerline of a local public street or 67 feet from a local public street right- of- way, whichever is greater.

	RR-1 Rural Residential Reserve District	RR-2 Rural Residential Single Family District	RR-3 Residential Suburban Single Family District	RR-1C Rural Reserve Cluster District
	of-way on other public roads. *Side* - 30 feet. On lots of record less than 2 acres, 15 feet. Front yard setbacks shall apply to side yards adjoining a street on corner lots. *Rear* - 60 feet. On lots of record less than 2 acres, 30 feet. Principal building height, 35 ft	right-of-way on other public roads. *Side*- 30 feet. Front yard setbacks shall apply to side yards adjoining a public street on a corner lot. On lots of record less than 2 acres, 15 feet. On a corner lot, see Front Yard Setback. *Rear* - 60 feet. On lots of record less than 2 acres, 30 feet. Principal building height, 35 ft	*Side* - 10 feet. *Rear* - 30 ft Principal building height, 35 ft	*Side* - 30 feet from any side yard. Front yard setbacks shall apply to side yards adjoining a street on corner lots. *Rear* - 60 feet Principal building height, 35 ft
Residential Accessory Buildings	1000 - 5000 sf, 15 - 24 ft tall depending on lot area Exceptions (1) Existing or proposed agricultural buildings currently used for agricultural purposes, as verified by the Planning Department. (2) Existing agricultural buildings previously used for agricultural purposes shall not be included in area calculation requirements of this table, unless they are suitable for use as garages or residential accessory structures (such as a machine shed), as determined by the Planning Department.	1000 - 5000 sf, 15 - 24 ft tall depending on lot area	1000 - 5000 sf, 15 - 24 ft tall depending on lot area	1000 - 5000 sf, 15 - 24 ft tall depending on lot area Exceptions, Existing or proposed agricultural buildings currently used for agricultural purposes, as verified by the Planning Department.

Appendix Two: Comparison of Urban Expansion Districts

	UER Urban Expansion Reserve District	UER-C Urban Expansion Reserve Cluster District
Purpose	This District is to preserve land in those areas of Scott County identified in its Comprehensive Plan for logical future extension of urban land uses served by public utilities. This zoning district is intended to preserve these areas of the County in very low rural development densities or clustered residential developments that may be compatibly integrated with future urban development. This district is also meant to perform the following functions: 1. To conserve land in a viable economic status until such time as public utilities may be extended and urban development densities may be supported. 2. To reduce the possibility of urban/rural land use conflicts in both the use of the land and future extension of public utilities and other infrastructure items.	This district is to preserve land in those areas of Scott County identified in its Comprehensive Plan for logical future extension of urban land uses served by public utilities. This zoning district is intended to preserve these areas of the County in very low rural development densities or clustered residential developments that may be compatibly integrated with future urban development. This district is also meant to perform the following functions: 1. To conserve land in a viable economic status until such time as public utilities may be extended and urban development densities may be supported. 2. To reduce the possibility of urban/rural land use conflicts in both the use of the land and future extension of public utilities and other infrastructure items. 3. To regulate residential development in a cluster subdivision design that preserves open space for future development when public utilities become available.
Agricultural	*Permitted* - agricultural uses and buildings as defined by this Ordinance, feedlots – expanding operations of less than 250 animal units, as regulated by Chapter 9 of this Ordinance, limited livestock raising, as regulated by Chapter 9 of this Ordinance. *Conditional* - agriculturally related machine shop, feedlots – expanding operations having 250 or more animal units, as regulated by Chapter 9 of this Ordinance, feedlots – new operations having 50 or more animal units provided they are located 1) mile or more from a city boundary or existing public sewer or water, as regulated by Chapter 9 of this Ordinance.	*Permitted* - agricultural uses and buildings as defined by this Ordinance located on lots of 10 acres or greater in size
Residential Density	1 dwelling unit per 40 acres of land	The density for a cluster residential subdivision shall be calculated by one of the following methods: a. If 70 percent or more of the non-hydric land in a subdivision can be preserved as open spaces for future development, the density may be 1 unit per 10 acres based on gross acreage of the subdivision. *or* b. If 80 percent or more of non-wetland land in the subdivision can be preserved as open space for future development, the density may be 1 unit per ten 10 acres based on the gross acreage of the subdivision.

	UER Urban Expansion Reserve District	UER-C Urban Expansion Reserve Cluster District
		The cluster shall establish open space to be reserved for future development. The open space shall be platted into outlots that meet the minimum performance standards for the district and open space standards of Chapter 80 and all lots in residential clusters must be designed to receive permanent access from a future local public street.
OSD Incentive	No (ISTS-Individual Sewage Treatment System) (CW&S - Community Sewage Treatment System (CSTS) & well)	Yes CUP ISTS/50% = 1 per 6.7 ac W&S/100% = 1 per 5 ac
Residential Lot Area	40 acres, impervious surface no more than 25 percent of the lot	For lots with independent sewage treatment systems and/or individual wells - 1 acre of non-hydric land. Where independent sewage treatment systems are proposed, each lot shall demonstrate sufficient land area to accommodate 2 independent sewage treatment systems. For lots with community sewage treatment systems and community wells or public sewer and water – 20,000 square feet. Impervious surface no more than 25 percent of the lot
Residential Lot Width	Lots of record established prior to March 2, 1996, 600 feet measured at the building site. For lots created after March 2, 1996, 600 feet shall be maintained at the minimum front yard setback extending to the location of the principal building.	100 feet shall be maintained at the required front yard setback, and extending to the location of the principal building.
Residential Building Setbacks	*Front* - 150 feet measured from the centerline of a County road or 100 feet from the County road right-of-way, whichever is greater. 100 feet from the centerline of a local public street, or 67 feet from the local public street right-of-way, whichever is greater. On lots less than 2 acres, 35 feet from the road right-of-way on a local street, 100 feet from the right-of-way on other public roads. *Side* - 30) feet. On lots of record less than 2 acres, 15 feet. On corner lots, the side yard setback abutting the road shall be the same as the front yard setback. *Rear* - 60 feet. On lots of record less than 2 acres, 30 feet. Maximum height of the principal building is 35 ft	*Front* - 150) feet from the centerline of a County or State road or 100 feet from the County or State road right-of-way, whichever is greater. 30 feet measured from the local street right-of-way. *Side*- 15 feet. Where a side yard adjoins a public road right-of-way, the front yard setbacks shall apply. *Rear* - 30 feet. Maximum height of the principal building is 35 ft
Residential Accessory Buildings	1000 - 4000 sf, 15 - 24 ft tall, depending on lot area.	1000 - 5000 sf, 15 - 24 ft tall, depending on lot area.

Appendix Three: Comparison of Agricultural Districts

	A-1 Agricultural Preservation District	A-2 Agricultural Woodlands District:	A-3 Agricultural Preservation Density District:
Purpose	Application in those areas where it is desirable, because of the high quality of soils, availability of water and highly productive capability of the land, to preserve, promote, maintain and enhance the use of land for agricultural purposes and to protect this land from encroachment by nonagricultural uses, structures and activities.	The predominant land use remains agriculture, but there exists single family homes and hobby farms. Given the area's proximity to major highways and growing suburban areas, there will be continued pressure for additional residential development which may be allowed at a low density. Development will not be provided with an urban level of service. Land zoned A-1, Agricultural Preservation may be considered for rezoning to A-2, Agricultural Woodlands.	Those areas of Scott County where it is desirable because of the high quality of soils, availability of water and highly productive capability of the land, to preserve, promote, maintain and enhance the use of land for agricultural purposes. Detached single family dwellings may be located individually or clustered to maintain a one (1) home per forty (40) acre density. Only to those lands zoned A-1, Agricultural Preservation District shall be eligible to be rezoned to A-3, Agricultural Preservation Density District.
Agricultural	*Permitted* — Agricultural uses and buildings as defined by this Ordinance, Feedlots – new or expanding operations of less than 500 animal units, as regulated by Chapter 9 of this Ordinance, Limited livestock raising, as regulated by Chapter 9 *Conditional* — New or expanding feedlots of 500 animal units or more.	*Permitted* — Agricultural uses and buildings as defined by this Ordinance.	*Permitted* — Agricultural uses and buildings as defined by this Ordinance, Feedlots, new or expanding operations of less than 500 animal units, as regulated by Chapter 9 *Conditional* —New or expanding feedlots of 500 animal units or more.
Residential Density	Single family detached dwelling 1 dwelling unit per 40 acres	Single family detached dwelling 4 dwelling units per 40 acres	Single family detached dwelling 1 dwelling unit per 40 acres
Residential Lot Area	40 acres	10 acres with at least 1 acre of non-hydric soils. Each lot must demonstrate sufficient area to accommodate two individual sewage treatment systems.	The minimum lot size for a single family dwelling shall be determined by the topography of the property, the ability to locate the principal dwelling, any accessory structures, and 2 individual sewage treatment systems, which all meet applicable setback requirements.
Residential Lot Width	600 feet measured at the building site for parcels created prior to March 2, 1996. Parcels created after March 2, 1996 must have 600 feet in width shall be maintained	300 feet measured at the building site for lots created prior to March 2, 1996. For parcels created after March 2, 1996, 300 feet shall be maintained at the front setback line and extending to the location	a. Existing Farmstead. 300 feet at the building site. Parcels created after March 2, 1996 must be at least three 300 feet in width shall be maintained at the minimum building setback line

	A-1 Agricultural Preservation District	A-2 Agricultural Woodlands District:	A-3 Agricultural Preservation Density District:
	at the front setback line and extending to the location of the principal building.	of the principal building.	and extending to the location of the principal building. b. Non-Farmstead. 50 feet at the building site. Parcels created after March 2, 1996, must be at least 150 feet in width shall be maintained at the minimum building setback line and extending to the location of the principal building.
Residential Building Setbacks	Front, 150 feet from the centerline of a County or State road or 100 feet from the County or State road right-of-way, whichever is greater, or 100 feet from the centerline of the local public street, or 67 feet from the local public street right-of-way, whichever is greater. On lots less than 2 acres, 35 feet from the road right-of-way on a local street, 100 feet from the right-of-way on other public roads. Side, 30 feet. On lots of record less than 2 acres, 15 feet. Front yard setbacks shall apply to side yards adjoining a street on corner lots. Rear, 60 feet. On lots of record less than) acres, 30 feet. Principal Building Height 35 feet.	Front, 150 feet from the centerline of a County or State road or 100 feet from the County or State road right-of-way, whichever is greater. 100 feet from the centerline of a local public street, or 67 feet from the local public street right-of-way, whichever is greater. On lots of record less than 2 acres, 35 feet from the road right-of-way on a local street, 100 feet from the right-of-way on other public roads. Side 30 feet. On lots of record less than 2 acres, 15 feet. Front yard setbacks shall apply to side yards adjoining a street on corner lots. Rear, 60 feet. On lots of record less than 2 acres, 30 feet. Principal Building Height 35 feet.	Front, 150 feet from the centerline of a County road or 100 feet from the County road right-of-way, whichever is greater, 100 feet from the centerline of a local public street, or 67 feet from the local public street right-of-way, whichever is greater. On lots less than 2 acres, 35 feet from the road right-of-way on a local street, 100 feet from the right-of-way on other public roads. Side, 30 feet. On lots less than2 acres, 15 feet. Front yard setbacks shall apply to side yards adjoining a street on corner lots. Rear, 60 feet. On lots less than 2 acres, 30 feet. Principal Building Height 35 feet.
Residential Accessory Buildings	1000-4000 sf, 15-24 ft tall depending on lot area	1000-5000 sf, 15-24 ft tall depending on lot area	1000-2000 15-18 ft height depending on lot area