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NOTICE OF MEETING

The City of Lake Elmo
Planning Commission will conduct a meeting on
Monday, October 27, 2014 at 7:00 p.m.

AGENDA

1. Pledge of Allegiance
2. Approve Agenda
3. Approve Minutes
 - a. October 13, 2014
4. Public Hearing - None
5. Business Item
 - a. RURAL AREA ANALYSIS DISCUSSION AND PRESENTATION. The Planning Commission is being asked to review and discuss development within the City's rural development areas.
 - b. DESIGN STANDARDS DISCUSSION. The Commission will discuss residential design standards. There is no staff report for this item.
6. Updates
 - a. City Council Updates – October 21, 2014 meeting:
 - i. None
 - b. Staff Updates
 - i. Upcoming Meetings:
 - November 10, 2014
 - November 24, 2014
 - c. Commission Concerns
7. Adjourn



**City of Lake Elmo
Planning Commission/City Council Workshop
Minutes of October 13, 2014**

Chairman Williams called to order the meeting of the Lake Elmo Planning Commission at 7:00 p.m.

COMMISSIONERS PRESENT: Williams, Dodson, Kreimer, Larson, Lundgren, Dorschner and Haggard

COMMISSIONERS ABSENT: None

City Council Members Present: Smith, Reeves, Nelson, Bloyer and Mayor Pearson

STAFF PRESENT: Community Development Director Klatt, City Planner Johnson, City Administrator Zuleger and Planning Intern Casey Riley

Approve Agenda:

The agenda was accepted as presented.

Approve Minutes: September 8, 2014

There was clarification of a number of items in the minutes and corrections of typographical errors.

M/S/P: Dodson/Kreimer move to approve the minutes of September 22nd as amended;

Vote: 7-0, motion carried unanimously.

Business Items: Land Use Development Update/Comprehensive Plan Discussion

Klatt began his presentation by describing the materials that were provided to the Planning Commission. He gave a brief overview of the Met Council Thrive 2040 Process. Klatt discussed the elimination of the MOU and described the steps to achieve the elimination. He highlighted the fact that the City is no longer subject to wastewater inefficiency fees, which would have totaled \$1,000,000 in 2015 had the MOU not been eliminated. As the MOU has been retired, the City is no longer subject to growth mandated with penalties.

Klatt started to further describe the Met Council regional planning process, noting that the City's next required decennial update to its Comprehensive Plan is in 2018. The

System Statement, identifying the regional expectations of the City's land use plan, will be released in the fall of 2015.

Dodson asked about how regional plans are reviewed by other jurisdictions. Klatt noted that the pertinent organizations are reviewing the plans that they affect them, for instance the watershed district would review the surface water plan.

Johnson stated that the Met Council has a regional plan that is reviewed by all jurisdictions. If there is a major change to a plan, the appropriate agency has to sign off on it.

Larson described all the layers of the planning process, such as the Lake Elmo Airport. He talked about the number of households needed to maintain a viable downtown. In addition, the City needs to be thoughtful in providing enough parks and recreation for newly developing areas.

Williams asked about the number of total households as it relates to the number of persons per household. Council member Smith added that the persons per household number is important to Lake Elmo's ultimate population projections. The 2030 plan used 2.75 persons per household, while the 2040 plan is using 2.5 persons per household. Smith also stated that using ranges makes it much more difficult to manage growth. Smith stated that based on what we have already approved, we really don't need to use all 1000 acres along I-94 to meet our requirement.

There was a general discussion about REC units and the future population obligations for Lake Elmo.

Klatt provided a summary of Lake Elmo obligations. The City will need to plan for a 24,000 population until the 2015 system statement is released. The City has also taken several actions to functionally rebalance the land use plan to reduce numbers when possible.

Haggard asked if we wanted to use the 2040 plan, would 10 months be enough time to look at it. Klatt responded that if there is concern, then the City should use our staging plan. Smith stated that if we are looking at allowing more development in the rural areas on smaller parcels, that should be factored into population as well.

Klatt provided an overview of all the current residential development projects that have received some level of approval from the City. In addition, staff provided estimates of likely future development according to the current land use plan.

Dodson asked if the City identified the area near Manning Ave for high density housing. Klatt noted that the plan was City-driven.

There was a general discussion about the Inwood development.

There was a discussion about the Village Planning Area, specifically the mixed-use area.

Moving forward, Klatt presented the City's staging plan. He highlighted the Stage 1, 2 and 3 areas in the I-94 Corridor. Williams asked to what level of discretion the City has to refuse a proposed development in the Stage 3 area. Klatt noted that the City could deny a project through the use of the Staging Plan. Williams asked about Moratoriums/Interim Ordinances. Klatt explained the state rules surrounding interim ordinances.

Haggard stated that she thought the village was going to be developed before the I-94 corridor was fully built out. Klatt stated that the Village was part of the stage I planning.

Smith stated that she feels we should not have moved into phase II for only 50 homes as it was not necessary until we completed more of phase I.

Klatt further described the functional rebalancing efforts undertaken since the plan has been adopted. These efforts have resulted in a reduction of nearly 500 housing units.

Kyle wrapped up with some concluding thoughts. He provided the staff's recommendations related to rebalancing efforts in advance of the next Comp Plan update which included rebalancing along I94 as part of transit planning and continuing to discuss the rural planning areas.

Discussion of Gateway Corridor and how a transit hub might impact zoning. If a hub goes in the higher density most likely would go closer to the hub.

Williams thanked the staff for the information provided. He noted surprise that the City is still subject to the 2030 Land use plan. He noted that the developments that have been approved thus far have tracked fairly close to the minimum density levels, which is good.

Bloyer stated that he would like to see the rural areas built out at 2.5 acres per unit.

Smith stated that we need to slow down the pace of development. We have already approved almost 2000 units of the previously mandated 4000 units if we include Gonyea West and that is just too many in too short of a time. We need to slow down and have thoughtful growth.

There was a discussion about growth and moving into Stage 2 and water. The City chose to open up that area by running water to Hunter's Crossing.

Mayor asked what suggestions the Planning Commission has in dealing with development.

Larson spoke about providing public amenities for the new and existing residents.

Haggard noted her support for buildout of the Stage 1 areas before pushing into the Stage 2 and 3 areas.

Dorschner noted that the Planning Commission has methodically reviewed development proposals. He noted that a viable downtown requires populations and development in the Village Area. Businesses require rooftops.

Dodson noted that the proposed transit line will make the higher density residential more likely to occur. It makes sense to locate higher density land use adjacent to a transit stop. Dodson noted his concern about the number of homes on private community septic systems. Finally, he noted that the City's lack of commercial land is troubling given the cost of services for residential development.

Smith spoke about the guidance of the Comp Plan with regards to the buffering around rural planning areas. Pearson

Kreimer noted that the City should be looking at the 2040 population forecast starting in the Spring of 2014. Kreimer noted that a lower density threshold should be considered in the I-94 Corridor. Kreimer would like to see the low end of the range to be 1.5 units in the I-94 Corridor.

Larson noted that the City should look at development a little outside the box.

Williams noted that he is concerned about the numbers. There seems to be inconsistencies in the plan. 1200 additional homes from the rural areas would be required. Williams noted that the high density housing will be a shock to existing residents.

Haggard asked what the correct number should be for population. Would the Council be ok with residential development over 20,500. Bloyer noted that he would prefer growth in the rural area as opposed to additional growth in the urban areas.

Zuleger shared his recommendation for additional rebalancing or changes to the land uses. He suggested that the land adjacent to Manning Ave would be better served as Business Park. In addition, the land south of 5th Street in Stage 1 is more likely to develop commercially. Staff has done some analysis showing that the likely population is closer to 18,000 to 19,000. Klatt noted that with the elimination of the MOU, the City will be able to plan for the best land uses as opposed to only thinking about the numbers.

Larson noted that he would like to maintain the sense of the rural area as best as possible. The City should protect what is different and unique.

Mayor spoke about the rural development areas, specifically 2.5 acre lots.

Williams noted that he would like the City to explore single family design standards. There was a discussion about which direction to go with design standards. The Council asked the Commission to think about it.

Updates and Concerns

Council Updates

1. Hammes Final Plat passed.
2. Hammes Estates Developers Agreement passed.
3. Hunter's Crossing Developers Agreement passed.

Staff Updates

1. Upcoming Meetings
 - a. October 14, 2014 – Downtown Summit 6:30 – 9:30 pm at Christ Lutheran Church to look at economic development issues, market study and planning issues that affect downtown.
 - b. October 27, 2014
 - c. November 10, 2014

Commission Concerns – None

Meeting adjourned at 10:23pm

Respectfully submitted,

Joan Ziertman
Planning Program Assistant



PLANNING COMMISSION

DATE: 10/27/14

AGENDA ITEM: 5A – BUSINESS ITEM

CASE # 2013-036

ITEM: Rural Area Development Analysis and Discussion – Presentation of “Rural Area Inventory and Analysis” Report

SUBMITTED BY: Kyle Klatt, Community Development Director

REVIEWED BY: Casey Riley, City Planner

SUMMARY AND ACTION REQUESTED:

At its September 22, 2014 meeting, the Planning Commission reviewed a draft report prepared by Staff that inventoried lots in the City’s rural development areas, including a quantitative analysis of the various residential developments within these areas. This information was prepared to assist the Planning Commission with its ongoing discussion concerning growth and development issues with the City’s rural (unsewered) areas. Staff has since completed additional work on this report, and would like to present and review the latest version of the document with the Planning Commission.

At earlier meetings this year, the Commission received a broader overview of rural development issues from Staff, which included discussions concerning the status of the RAD-ALT land use category and the potential expansion of residential estates zoning in the community. More recently, the City Council, based on a recommendation from the Planning Commission, voted to remove the RAD-ALT land use category from the Comprehensive Plan. At this time, Staff would like to seek further direction from the Commission on the latter issue of the residential estates land use category, and superficially, whether or not the Commission would like to reconsider certain elements from the land use plan as follows:

- The minimum lot areas within the rural area development land use category. At present, no rural development is allowed on parcels less than 40 acres in size without Council approval of a special exception for a development.
- The usage of a residential estates zoning district (i.e. 2.5 acre lots) as a future land use. The “Residential Estates” land use category has not been applied to any future development in the community since the open space preservation ordinance was adopted in the 1990’s.

The attached report is intended to help the Planning Commission weigh all of the issues associated with making any changes to the rural development areas, and to be used as a starting point for future discussions on this matter.

GENERAL INFORMATION

<i>Applicant:</i>	City-initiated action for discussion
<i>Request:</i>	Continue previous review and discussion of land use plans and policies concerning Rural Development Areas
<i>History:</i>	The City revised its Comprehensive Plan for rural areas in the early-mid 1990's to allow for open space developments. The amendments from this time period limited the use of the Residential Estates as a future land use and instead encouraged any future development of land to be consistent with the City's open space regulations. The RAD-2 category was added to the Plan in 2005 in response to Met Council growth directives.
<i>Deadline for Action:</i>	None
<i>Applicable Regulations:</i>	Comprehensive Plan – Chapter III: Land Use Plan Zoning Ordinance – Article 9: Rural District Standards

REVIEW AND ANALYSIS

The below analysis is repeated from a report submitted to the Planning Commission earlier this year. Included in this report is a list of potential actions that should be considered by the Commission should there be a desire to make any changes to the City's policies concerning development in rural areas.

GENERAL RURAL DEVELOPMENT REGULATIONS

One of the Commission's discussion items from earlier in the year included the City's rural development areas in general, and in particular, how to best plan for the future use of parcels that are under 40 acres in size. The City's current open space ordinance allows for OP developments on parcels that are 40 acres or more in size, but would only allow such development on smaller parcels through an exception process. In practice there have only been a few OP developments that have been created on properties with less than 40 acres. Under current zoning regulations, parcels that are less than 40 acres and zoned RR – Rural Residential could be split into lots no smaller than 10 acres, while parcels zoned A – Agriculture could not be further subdivided.

The Commission may also want to further discuss the RED (Residential Estates) land use category to assess whether or not this land use could be expanded into new areas in order to provide alternative development options on smaller parcels. At present, the City's Comprehensive Plan does not identify any new areas for RED development outside of existing developments or areas that were planned for such land use prior to the 2005 land use plan. The Staff comments below concerning residential development on smaller rural parcels take into account an expansion of the RED classification.

Some facts that should be considered by the Commission as it discusses this item include the following:

- There have been around 20 OP developments approved and constructed over the past 20 years in Lake Elmo. Some of these developments have been recognized nationally for best practices in conservation-based subdivisions.
- There have been no new OP developments approved by the City within since 2007. This is due partly to the downturn in the economy.
- At present, there are roughly 30-40 vacant lots available within OP developments. This number continues to drop by each year, meaning the current supply of OP lots will last no more than 2 years without additional subdivisions coming forward.
- The City has seen several large lot subdivision created in the last several years (10 acre lots) that have removed land from potential development under OP regulations.
- Staff has observed a fairly healthy market for lots within RS – Rural Single Family areas, and periodically older, existing homes are razed to make way for new, larger structures within these areas. The significant number of lake-frontage lots in the Tri-Lakes area will continue to be a factor in the demand for redevelopment of existing lots.
- The City has made recent agreements to extend public sewer service into a small rural single family area on the west side of Lake Olson and has agreed to extend sewer into at least one open space development outside of the Village. Staff expects pressure to provide sewer service to the Tri-Lakes area and to open space developments that are located close to the urban service areas will be one of the more important land use decisions that should be addressed in the next major Comprehensive Plan update.
- The City has rejected proposals in the past to split land in RAD areas into parcels less than 10 acres. Staff has found that it is very difficult for potential applicants to meet all of the City's variance criterion for these types of and use applications.

Should the Planning Commission and City Council decide to pursue changes to the minimum lot sizes allowed in rural development areas or to expand the use of the Residential Estates land use to new developments, Staff would like to offer the following as general comments:

- Maintaining an adequate amount of road frontage for every platted lot will be very problematic for most parcels that are less than 40 acres in size. The City does allow one parcel to be split without road frontage in rural development areas, but this often leads to situations in which a driveway is either shared by two parties or a driveway easement crosses someone else's land. This type of situation may be acceptable when there are over 20 acres to work with, but could become problematic on smaller lots.
- The cost of servicing developments with lots that are larger than $\frac{1}{4}$ to $\frac{1}{2}$ of an acre in size is much higher than in developments with smaller and/or clustered lots. Even in situations in which sewer and water are installed on an each individual lot, the City must still provide roads, storm water improvements, fire protection, and other services that are now spread across a greater area.
- As lots become smaller, it is more difficult to find suitable area for adequate on-site septic systems. Smaller lots also provide less land that could be used to address failing systems.

- The platting of lots less than 10 acres in size would eliminate large areas of open space that are protected by the current minimum lot area requirements. One of the foremost goals in the City Comprehensive Plan is the preservation of open space and rural character. The platting of lots of less than ten acres in size may not help the City achieve these objectives.
- Further subdivision of lots in rural areas into parcels of 2 to 5 acres in size would create an environment in these areas that is much more suburban than rural in character. With additional homes the City can expect to see additional traffic, more buildings, fewer agricultural parcels, and less vegetation than presently exists in these areas.

Because the Planning Commission has only recently completed its work on major Comprehensive Plan amendments for the City's future sewer service areas, the Commission may want to consider looking at options for updating the Comprehensive Plan and ordinances concerning rural development areas. Staff would recommend that any such work, if the Planning Commission finds that the City should study this issue further, be considered as part of the work plan for 2015.

To help the Planning Commission with its discussion on this topic, Staff has developed the following options that could be considered for further study:

- 1) Revise the Zoning Ordinance to allow OP developments on parcels of less than 40 acres in size. At one time the minimum lot size for an OP project was 20 acres; however, this provision was changed in order to encourage the preservation of larger open space areas throughout the City. The previous Staff analysis that was shared with the Planning Commission noted that this course of action would be needed in order to meet the City's 2030 growth forecasts. The revised 2040 forecast reduces the pressure to accommodate additional housing within rural development areas.
- 2) Change the minimum lot areas requirements in the City's A and RR zoning districts to allow smaller parcels to be created in these areas. For example, the City could reduce the minimum lot area in RR zones to 5 acres and A zones to 20 acres. A change in the minimum lot area may require the City to reconsider how it manages road frontage and lot ratio requirements in these zoning districts.
- 3) Expand the use of the Residential Estates classification to areas that are not currently guided for this type of density. Consistent with the Staff comments above, the City's RED developments have a much different look and feel than the City's OP developments, even though the OP developments allow for more homes. The Planning Commission should take this into consideration if it would like to pursue this type of land use change.
- 4) Create a new land use category that would allow for limited development of parcels less than 40 acres in size while still adhering to the basic principles for an open space development. A new land use category could potentially allow for clustering of development on smaller lots provided the undeveloped portions of a site are either protected or retained under common ownership. Staff suggests that a new category should only be created if it can meet certain expectations, for instance, allowing for efficient delivery of public services, preserving open spaces, maintaining the City's rural character, providing environmental protection, reducing storm water impacts, etc. Staff is planning on doing some additional research into how a new land use category could be created prior to the Planning Commission meeting and will share some additional information with the Commission on this concept at the meeting.

- 5) Other options or alternatives as recommended by the Planning Commission.

Because any of the options noted above will require a fair amount of time and effort to implement, Staff is recommending that the Commission conduct a general review of these options at the meeting and give Staff some general direction as to one or more specific options that are chosen for further study and analysis. At this time, Staff does not have a specific recommendation for action on any of these alternatives.

RECCOMENDATION:

Staff further recommends that the Commission provide Staff with direction on which, if any, of the general rural development options should be pursued in the future.

ATTACHMENTS:

1. Rural Area Inventory and Analysis

ORDER OF BUSINESS:

- IntroductionCommunity Development Director
- Report by StaffCommunity Development Director
- Questions from the Commission Chair & Commission Members
- Public CommentsChair
- Discussion by the Commission Chair & Commission Members
- Action by the Commission..... Chair & Commission Members



Rural Area Inventory & Analysis



By Catherine Riley

City of Lake Elmo
Planning Intern

FINAL DRAFT 10/27/14



Table Of Contents

Research:	4
Cost of Community Services	5
Lake Elmo Cost of Community Services	6
Infrastructure	7
Road Maintenance	8
Schools	9
Public Safety	11
Environmental Impacts	11
Wastewater	12
Farming and the Agricultural Sector	13
Agricultural Preservation and Sense of Place	14
Inventory:	15
Rural Area Map	15
Open Space Preservation Totals	16
Residential Estate Totals	26
Rural Single Family Totals	33
Rural Residential Totals	45
Agricultural Totals	62
Carriage Station Totals	69
Scenario Study:	70
RR & A Parcel Maps	70
Scenario 1	71
Scenario 2	72
Scenario 3	73
Scenario 4	74
Conclusions	75
Appendix A: Inventory Data	78
Appendix B: Scenario Data	84

Rural Area Inventory and Analysis



The City of Lake Elmo has conducted a Rural Area Analysis to study parcels with rural zoning. The study includes an analysis of each development and aims to compare infrastructure quantities for the rural land use types, as well as population and area. The intent of the study is to provide background and information to aid in future decisions regarding rural zoning and land uses.

A secondary goal of this study is to provide research illustrating the increase of community service costs associated with growth. Four scenarios were developed to calculate increased populations, infrastructure amounts and costs, as well as revenues and expenditures. These hypothetical scenarios aim to generate numbers to illustrate how development could affect the areas with rural zoning in Lake Elmo.

The research included aims to provide information to address the issues associated with rural development. The research uses several terms and vocabulary that is defined as:

High-density development:	Density similar to what would be found in a large city.
Large lot development:	Characterized by low-density and automobile dependence.
Low-density development:	Density of area is greater than or equal to 1 unit per acre.
Urbanized:	Characterized by areas with a full range of public services, city sewer, and water.
Working land:	Land used for agriculture or open space.

Rural Area Research



Successful communities are places where residents can live, work and play. Rural areas are often subject to sprawl, especially as new developments weaken the agricultural sector. Without strong policies to support open space, rural areas can be consumed by sprawling developments with the community's rural identity consumed as well.

Many studies show that new residential development built adjacent to existing urbanized areas is more cost-effective for local governments than new residential development in rural areas, or in areas without supporting infrastructure. Many different factors contribute to the advantage of placing new development adjacent to existing cities or developed infrastructure, including the cost of public services, environmental impact concerns, and the influence of new development on the agricultural sector.

Growth can occur in two different ways: new growth in areas adjacent to already urbanized locations, and development in areas “beyond the urban fringe.” These areas are typically in the rural countryside and contain low-density developments (2 or fewer houses per acre) (Heimlich and Anderson, 2001). These areas are often not connected to sewer systems or citywide water systems and require automobile transportation for travel. The term “sprawl” has been used to define this type of land use pattern. Sprawl is characterized by “scattered, low-density development that uses a lot of land, geographic separation of essential places such as home, work and shopping, and dependency on automobiles” (Freedgood, 2002).

Low-density large lot development is financially rewarding for developers, but creates a land use pattern that is unsustainable damaging to community development and successful places. While low-density large lot development is more attractive to developers, it is costly for government to provide public services to areas. In addition, low-density development that takes place outside urban areas removes land from agricultural use and converts it to a different type of open space. This change in land use can redefine the look and feel of a community and the result is impossible to reverse.

In Minnesota, the number of acres of agricultural land decreased by 2.2 million from 1982 to 1992, with about 10% being converted into urban development (Duncan et al, 1999). From 2007 to 2012, agricultural land decreased by about 882,000 acres (USDA, 2012). As urbanized areas increase, the land from which they are developed is converted from open space, pasture, or cropland. Today, land use patterns indicate that new developments are almost three times more land intensive than they have historically been (Duncan et al, 1999).

Cost of Community Services



Fire stations and emergency services are part of public and community services.

Cost of Community Services and Cost of Public Services Studies are common ways governments evaluate and study growth and its fiscal impacts. The American Farmland Trust has gathered fifteen years of Cost of Community Service Studies (COCS) from nationwide sources. The studies conclude that while residential development contributes a greater proportion of tax revenue than farm and open space lands, residential developments consume more tax revenue than they provides. Farms and open space lands consume less tax revenue than they provide, as they require fewer public services (Heimlich and Anderson, 2001).

The American Farmland Trust began conducting COCS studies to calculate a community's public service costs versus public revenues based of land use. The studies provided tangible information to disprove commonly held beliefs about planning. These myths are that open lands, such as agriculture, should be developed to their "highest and best use," that land used for agriculture receive an "unfair" tax break due to the land being valued for its current use as agriculture instead of its potential value, and that residential development will lower property taxes by increasing the tax base (Freedgood, 2002).

COCS allow the public to understand the fiscal impacts of land use and are often used as a tool to inform policy. "The special contribution of COCS studies is finding that working lands are also an important commercial land use that helps balance community budgets" (Freedgood, 2002). Agricultural land actually pays for itself and creates a surplus of revenue, helping to balance industrial and residential sectors.



As residential areas grow, the city will need to maintain the expanding infrastructure.

Land Use and COCS

The American Farmland Trust and the Land Stewardship Project conducted a study to analyze the differing costs of services in three metro area farm communities. The land uses studied were residential, industrial and agricultural. The study found that the different land uses were distinctive by the amount of revenue they produced and consumed. The study found that residential lands used \$1.40 in services for every \$1.00 of revenue created, while commercial and industrial lands use \$0.37 in services for every \$1.00 created, and agricultural lands used only \$0.50 in services for every \$1.00 of revenue created. The study also found that residential land uses were typically producing 90% of cities revenues, while consuming more than 98% of the revenues. In comparison, agricultural land uses produced 2% of the cities revenues, but were responsible for less than 1% of expenditures (American Farmland Trust, 1994). The total cost of serving residential lands in this study exceeded the amount produced by property taxes.

Lake Elmo Cost of Community Services



In Lake Elmo, the revenue-to-expenditure ratio for residential land showed that for every \$1 in revenue generated, there was a \$1.07 expenditure.



The revenue-to-expenditure ratio for commercial and industrial land showed that for every \$1 in revenue generated, there was a \$0.20 expenditure.



The revenue-to-expenditure ratio for working and open land showed that for every \$1 in revenue generated, there was a \$0.27 expenditure.

The American Farmland Trust included the City of Lake Elmo in their 1994 study. The COCS study illustrated the revenue relationships between three different land uses: Residential, Commercial and Industrial, and Working and Open Land. For Residential land, the revenue-to-expenditure ratio was 1:1.07. Every dollar of tax revenue collected required an expenditure of \$1.07. For Commercial and Industrial Land, the ratio was 1:0.20, and for Working and Open Land, the ratio was 1:0.27 (American Farmland Trust, 2010).

Commercial, Industrial, and Working and Open Lands produced a surplus of revenue in 1994. Surprisingly, the Commercial and Industrial lands provided an even greater allowance than Working and Open Land. The other COCS studies included in the same report typically show Working and Open Land to have the fiscally advantageous revenue to expenditure ratio (American Farmland Trust, 2010).

Infrastructure



Sewer systems are sized over capacity to allow for higher densities, growth, and more users.

Infrastructure provides the framework for development and infrastructure upgrades are closely tied to growth. Growth requires road improvements, and road improvements or new roads are a catalyst for new development. At a critical mass, two lane roads often found in rural areas are replaced with wider roads to accommodate higher traffic volumes. These new roads attract more growth, and as old septic systems and wells fail, pressure is added in mass for the city to install sewer services, trunk lines, and city water systems. Sewer systems are typically the last infrastructure investment a city makes before higher density levels are reached (Heimlich and Anderson, 2001).

The costs accrued by growth vary depending upon where the growth occurs within a city. Low-density development costs more than compact development (Heimlich and Anderson, 2001). If development occurs adjacent to existing “urbanized” areas, or areas with existing infrastructure in place, local governments profit. A study was conducted by Real Estate Research Corporation that determined that low-density “sprawl” created 74% greater capital costs than high-density planned development (Heimlich and Anderson, 2001). The low-density large lot developments required higher land, residential construction, road, and utility costs. The study also revealed that public capital costs for streets and utilities were 120% greater for the low-density large lot developments and operating and maintenance costs were 13% higher when compared with high-density planned development.



As densities grow, rural roads will need to widen to accommodate higher traffic volumes.

A similar study was conducted in 1998 to determine what costs unchecked low-density large lot developments accrued in various parts of the country. This study determined that infrastructure costs were 5 to 25 percent higher for low-density large lot development than compact high-density development (Heimlich and Anderson, 2001).

“At typical urban-suburban densities, per capita infrastructure costs fall as densities rise. At very low densities, the use of septic systems, open drainage, and unpaved rural streets without curbs and sidewalks may result in low costs, but the equally low quality of such services becomes evident as development increases and these services prove inadequate” (Heimlich and Anderson, 2001).

Road Maintenance



Land use policies that concentrate new development in currently developed areas will tend to hold down aggregate per capita costs for maintaining all local streets and roads.

The Minnesota Department of Agriculture's Cost of Public Services Study revealed an inverse relationship between per capita road maintenance expenditures and density, residential market value and percentage of city dwellers (Duncan et al, 1999). Road maintenance is the largest expenditure item for local governments. The per capita cost of maintaining roads within a county declines as density, residential market value, and percent of residents in cities increases. The MDA Cost of Public Services Study concludes that the preferred strategy to lower per capita road costs in counties is to encourage new growth to take place in cities and existing developed land.

Urbanized areas and high traffic streets often require a more expensive road that is built to withstand traffic volumes and frequency of use. A typical residential street in Lake Elmo is estimated to cost \$158 per linear foot for construction, whereas a typical rural road is estimated at \$104 per linear foot.

Road maintenance costs vary depending upon the size of the city or township. Statewide findings report that average per capita costs are \$58 for cities, and \$47 for townships. These costs reflect the higher urban road standards required by cities (Duncan et al, 1999).

The MDA Cost of Public Services study shows a relationship between per capita residential market value, per capita road costs and density. The report confirms that as per capita market value increases; per capita road costs will rise. However, as both per capita residential market value and density increase, per capita road costs decline (Duncan et al, 1999).

The study results also show a strong relationship between the percent of residents living within a city and the county's per capita outlays for road maintenance. As more residents move to the city, the county's per capita outlays for maintenance of county roads decreases. Similarly, the study determined a linear relationship between density and the per capita cost for maintaining roads. As density increases within the township, the per capita cost for maintaining roads decreases. The road maintenance costs for local government are affected by changes in land use and are subject to variance by available state aid. The study concludes that "land use policies that concentrate new development in currently developed areas will tend to hold down aggregate per capita costs for maintaining all local streets and roads within a county (Duncan et al, 1999).

Snow removal maintenance during winter months adds to annual expenditures.

Schools



As development increases, the per pupil operating cost of schools increase.

As city populations expand, schools must acquire more students. State and federal aid are not available to schools with expanding student populations if the new student population is above the poverty line. As a result, school systems with growing student populations must constantly pursue new ways to come up with tax revenues to maintain the quality of the education they provide or find ways to cut spending per pupil (Heimlich and Anderson, 2001).

Generally, as development increase and population increases, per pupil operating cost of schools increase. The new students require transportation, and thus, the per pupil transportation costs increase. Often, school districts must accumulate long-term debt to manage new growth and as a result, per pupil long-term debt increases.

NOTE: The Stillwater School District predicts enrollment to stay level with development.



Winona, MN, grew 7.5% between 1980 and 1995; per pupil operating costs increased \$34.

School operating costs were analyzed within the Minnesota Cost of Public Services Study. Per pupil market value of real property within the district directly influenced per pupil operating costs. In Minnesota, as per pupil market value increases, the amount of state aid the school district receives per pupil declines. The study found that schools with higher per pupil market values of real property tended to spend more in local revenues, partially due to state aid, and partially due to income levels (Duncan et al, 1999).

Winona Area School District in Winona County, MN, experienced a 6% increase of population between 1980 and 1995. The City of Winona experienced a 7.5% increase in population during this time. It is estimated that 75% of the county's population lived within cities in 1996. Between 1988 and 1997, the Winona Area School District, which serves the City of Winona, Wilson Township and the surrounding cities, increased an average of 0.6 percent annually. As a result, per pupil operating costs increased by two percent per pupil transportation costs increased from \$382 to \$416, and the long-term debt per pupil increased from \$163 to \$1,298.

Schools



Prior Lake's growth occurred near existing schools, allowing student to walk to school.

Prior Lake Area School District is another example, with a much higher level of growth. The City of Prior Lake increased 42.7% between 1985 and 1995, with the Scott County expanding only 35.4%. The Prior Lake Area School District serves most of Prior Lake, part of Savage, and portions of Spring Lake and Credit River Townships. Between 1988 and 1997, enrollment increased four percent annually and per pupil operating outlays increased 2.7 percent annually. The increased enrollment rate resulted in an increase in per pupil transportation costs from \$358 to \$390. A large factor positively influencing transportation costs was that new growth had occurred within the Prior Lake School District and was near the District's schools. This case study revealed that per pupil transportation costs for students residing within the area's cities were much lower than those outside of the cities. In this case, development occurred near existing schools, and students were able to walk to school, keeping per pupil transportation costs low.



School transportation costs are higher in MN due to the severe weather.

School transportation costs are also affected by development. Minnesota has severe weather, and per pupil transportation costs statewide are elevated. Density, location and form of development, and costs for pupil transportation are strongly related. An increase in density results in a decline of per pupil transportation costs. Areas with high densities produce lower per pupil transportation costs than areas of low density. As the number of pupils using the transportation increases, costs decrease. Areas of growth that maximize the number of pupils per square mile and create new development in areas located adjacent to existing developments will have lower per pupil transportation costs. Encouraging students to walk to school also lowers per pupil transportation costs, and new development can be strategically built near existing schools to maximize this effect (Duncan et al, 1999).

School and municipal annual operating costs for low-density development were found to be 2-5 percent greater than compact high-density development (Heimlich and Anderson, 2001).

Public Safety



Public safety is one of the highest expenditure items for local governments.

Public safety services include law enforcement, fire protection, and ambulance services. As population increases, the per capita cost of law enforcement increases, as expected. Similarly, as per capita residential market value increases, the per capita cost of law enforcement increases. Lower governmental outlays are typically found in areas with a strong agricultural sector (Duncan et al, 1999).

Fire protection and ambulance service costs mirror those of law enforcement. Per capita fire protection costs are strongly related to density, population, and per capita market value. As density, population and/or per capita market value increase, there is a need for more firefighter, firehouses, and other public safety amenities. These additional and expanded services increase per capita costs (Duncan et al, 1999).

Environment



As snow melts, road salt dissolves and flows into water bodies affecting water quality.

Development and land use change, especial low-density growth, can have detrimental impacts to water quality, air pollution, public safety, soil quality, and wildlife habitats. Low-density growth converts large amounts of agricultural land, natural habitats, wetland areas, flood plains, and aquifer recharge areas into developments. With compact development, the impact to the environment can be limited, wildlife habitats and natural ecosystems would remain intact, and water runoff volumes and quality changes would be minimized (Heimlich and Anderson, 2001).

Numerous issues relating to water are created with low-density development. The largest impact is the increased impervious surface area and paved areas. Paved areas interfere with ground water recharge and disrupt natural hydraulic cycles (Gallagher, 2001). Sheet flow across parking lots and streets carry pollutants, chemicals, and litter to surface waters. A watershed is ecologically stressed when just 10 to 20% of its area is impervious (Gallagher, 2001). Stormwater regulations and restrictions are in place and help off-set these impacts.

Low-density large lot developments consume large amounts of land and wetlands. Unfortunately, almost half of all wetland losses are due to low-density development. Wildlife habitat is also impacted and wetland areas are one the most coveted habitats as they provide a source of water. Uninhibited growth can have serious impact on natural habitat fragmentation. Fragmentation is the leading cause of the decrease of biodiversity in extreme cases can lead to extinction (Heimlich and Anderson, 2001). In cases where low-density development does not destroy habitat, the loss of fragments of habitat decrease its ecological value and can impact migration patterns (Gallagher, 2001).

Wastewater Systems



Low density development increased chemicals and pollutants that harm water quality.

Wastewater Treatment & Environmental Cost:

Several studies have addressed the non-monetary cost of different wastewater systems. The environmental effects of susceptible systems, such as septic tanks, can endanger ecosystems, poison groundwater, and damage the areas residents cherish. One study calculated the environmental benefits of wastewater treatment in monetary terms by quantifying the potential undesirable outputs and the costs the outputs would accrue. The undesirable outputs included increased levels of suspended solids, phosphorus, nitrogen, and other pollutants entering the ecosystem. The study concluded that wastewater that is treated through sanitary sewer conveyance to a wastewater treatment plant outweighs the cost of potential undesirable outputs to the environment (Molinos-Senate et al, 2010).



Higher densities increase the amount of septic tanks and effluent within the ecosystem.

Density Increase & Septic Systems:

In rural areas, septic tanks discharge to drain fields where the effluent is “cleaned” as it travels downward between sand and soil particles. The drain field is designed to filter out potentially harmful chemicals and contaminants, and the filtered water is left to help recharge the groundwater. Higher densities increase the amount of septic tanks and effluent within the ecosystem. Studies show that increased density in rural areas result in ecosystems receiving increased pollutant loads. Most notable are the presence of pharmaceuticals and hormones, with pharmaceuticals being detected more frequently (Standley et al, 2008). The study analyzed high-density residential areas and compared water quality results with low-density residential areas, both in rural locations beyond the sewer line. The pharmaceuticals and hormones were detected at higher concentrations in the high-density areas with impacts to nearby bodies of water and well water quality (Standley et al, 2008).

Farming and the Agricultural Sector



Development occurring next to agricultural land increases pressure for development.

Development and land use change affect the agricultural sector and the market value of agricultural land. The land use changes and new developments do not necessarily mean the end of agriculture, however, in order for the agricultural sector to survive, it must adapt to development by changing the products and services offered (Heimlich and Anderson, 2001).

A national-scale analysis of the determinants of agricultural land values predicted the effects of potential land development on agricultural land prices. The study found that a number of factors, including policy, discourage the preservation of agricultural land and encouraged development. Agricultural land in close proximity to urban centers increased in value as development occurred, and landowners in these areas were under great pressures to develop their land. The value of the land includes potential uses, and the land price reflects the sum of expected net returns the land would accrue if changed to its most profitable use. If the land is currently profitable as agriculture, but projected to yield large returns in the future from development, these yields are included in the current land value. As a result, the development of land in close proximity to agricultural land increases the value of the agricultural land, and adds pressure for development. The study found that to conserve the land, or to use the land for agricultural use would require a significant financial compensation (Plantinga et al, 2002) to the landowner. The influence of new development on agricultural land values must be of consideration and should influence future planning decisions. Strategic planning is needed to prevent the loss of agricultural land and open spaces.



Agricultural land value is influenced by its proximity to urban areas.

The study found strong relationships between potential density increases and the value of agricultural land. If the density in a county increased by one unit, the land value increased by \$65.14 per acre, and the increase in highway density, or greater traffic, increased agricultural land value by \$1264 per acre. Finally, the study determined that if the county had a large amount of agricultural land, the value of the land diminished, allowing the land use to remain agricultural. These results are for an average of three thousand counties across the United States (Plantinga et al, 2002).

Agricultural land value is also based on its proximity to urban areas. The closer the agricultural land is to an urban center, the higher the land is valued. Agricultural land near an urban center is more likely to develop than land located farther from the urban center (Colver et al, 1997). It is necessary for the City of Lake Elmo to understand the effects of the estimated population growth within the Twin Cities Metro. The increased density will increase the value of agricultural land in Lake Elmo, and the increased density within Lake Elmo will add to the value.

Agricultural Preservation



Agricultural land and open space help define Lake Elmo's rural identity. Agricultural areas provide benefits to the City as they limit public service costs.

Minnesota's Agricultural Land Preservation Act

In response to the large amounts of agricultural land being converted to other uses, Minnesota adopted the Agricultural Land Preservation Act in 1984. The purpose of the Act is to preserve farmland for future generations to use, and to help farmers develop long term plans for their land (Duncan, 1996). The Act allows the land to be preserved for agricultural use and the farmers receive tax credits and other benefits for their commitment.

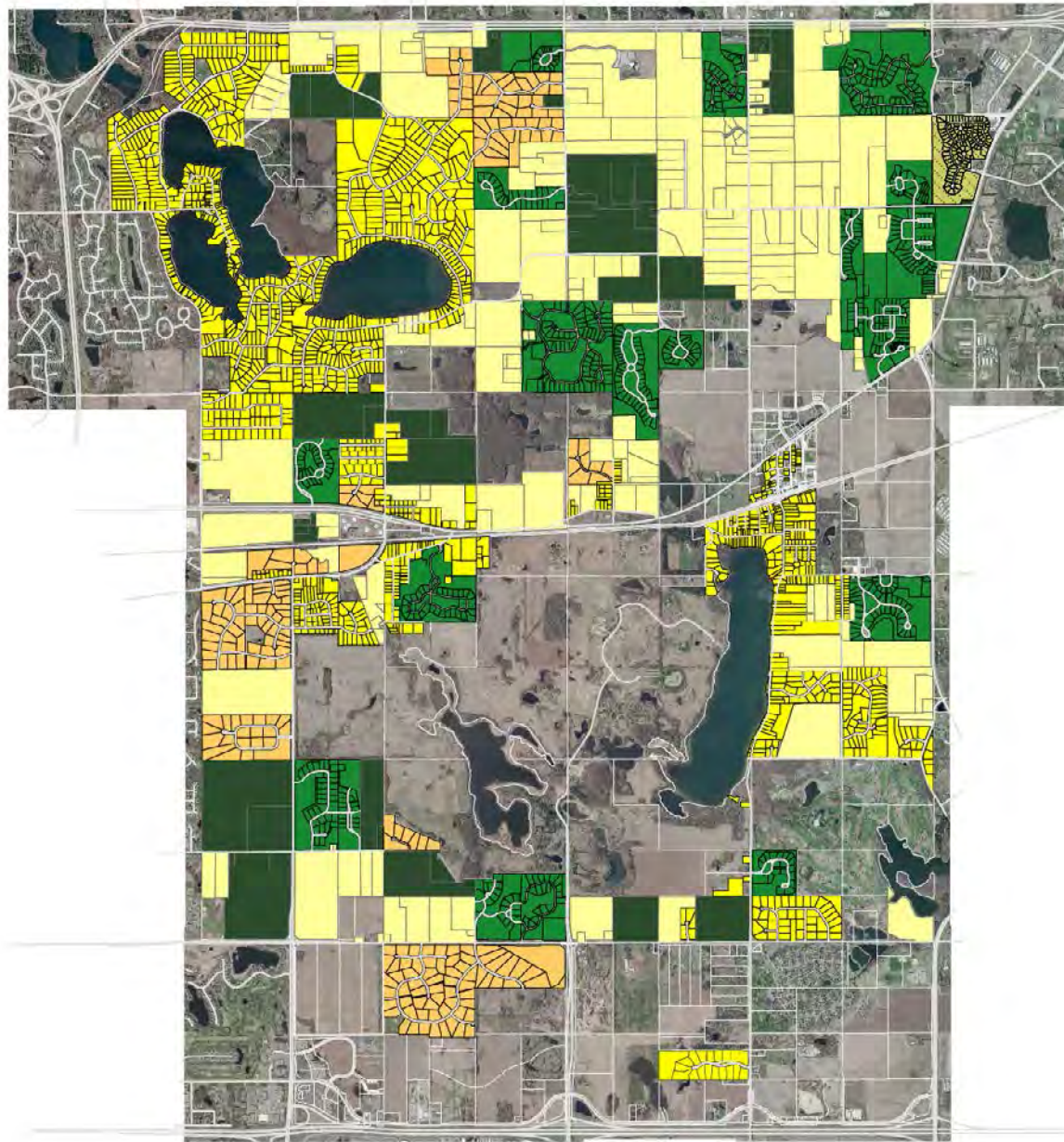
The land protected by the Act as the "agricultural preserve" has advantages such as the prohibition of public facility siting in preserve areas, expanded protection in eminent domain actions, and exemptions for local ordinances that restrict or inhibit normal agricultural practices. The Preservation Act also provides benefits to the City as it limits public service costs in rural areas and places responsible limits on non-farm development in the agriculture sector (Duncan, 1996).

Sense of Place and Rural Identity

The costs associated with growth must consider the impact of development to the landscape. The natural environment and open space areas contribute to quality of life by providing recreation, pleasant views, clean air, and an identity. Low-density development consumes open space and the effects are lasting (Heimlich and Anderson, 2001).

Area Profiles: Rural Land Use Areas in Lake Elmo

Rural Area Zoning Map



The rural areas of Lake Elmo are zoned as Agricultural (A), Rural Residential (RR), Rural Single Family (RS), Residential Estates (RE), and Open Space Preservation (OP).

Several Open Space Preservation (OP) subdivisions have been processed through a conditional use permit, but retain Agricultural or Rural Residential zoning.

This inventory aims to guide stakeholders and policymakers by summarizing the infrastructural quantities, areas, and densities of each subdivision. The following provides an analysis of the subdivisions found in the Rural Planning Area of Lake Elmo.

A summary of all findings can be found in Appendix A, located at the end of this document.

Legend

A	R2-PUD
OP	RE
RS	RR

0 0.5 1 Mile



Open Space Preservation Zoning



Open Space Preservation Zoning Totals

Zoning	OP
Average Number of Lots	33
Estimate Average Population per Development	117 persons
Total Mean Lot Size	0.63 acres

Roads

Average Linear Feet of Road	5,257 LF
Average Linear Feet of Road per Lot	156 LF
Estimated Total Mean Road Cost	\$861,469
Estimated Mean Road Cost Per Lot	\$25,603

Water

Estimated Total Mean Cost for Water Infrastructure	\$307,495
Estimated Mean Cost for Water Infrastructure per Lot	\$9,760

Sanitary System

Estimated Total Mean Linear Feet of Sanitary Sewer Pipe	3,999 LF
Estimated Mean Linear Feet of Sanitary Sewer Pipe per Lot	122 LF
Estimated Total Mean Cost of Sanitary Sewer Pipe	\$496,491
Estimated Mean Cost of Sanitary Sewer Pipe per Lot	\$15,116

Bluestem at Fields of St. Croix

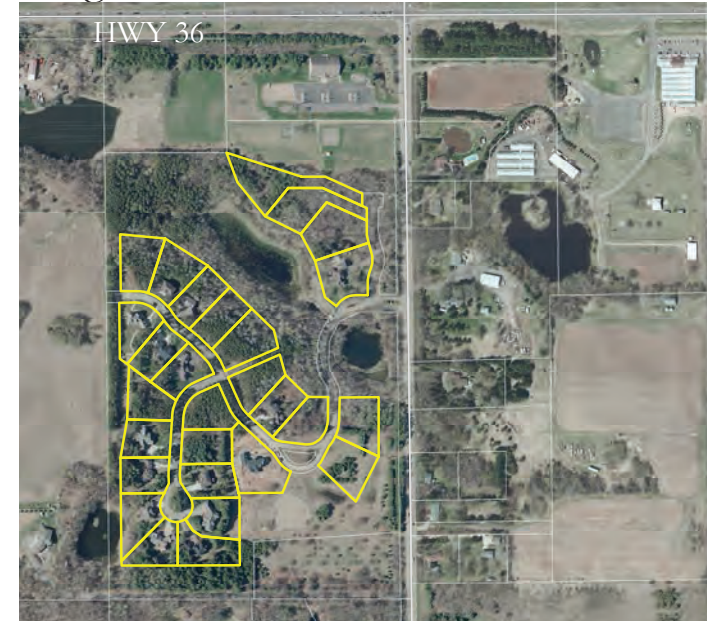


0 50 100 200 Feet

Bluestem at Fields of St. Croix Totals

Zoning	OP	Water System Type	City
Estimate Population	49 persons	Linear Feet of Pipe	793 feet
Secondary Access	No	Linear Feet of Pipe per Lot	57 feet
Number of Lots	14	Estimate Cost of Water System Total	\$32,513
Mean Lot Size	0.08 acres	Estimate Cost of Water System per Lot	\$2,322
Sum of All Lot Sizes	1.12 acres		
Linear Feet of Road	868 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	62 feet	Estimate DWF (gal/day)	2,848 g/d
Estimate Cost of Road Reconstruction Total	\$142,165	Linear Feet of Pipe	616 feet
Estimate Cost of Road Reconstruction per Lot	\$10,155	Linear Feet of Pipe per Lot	44 feet
		Estimate Cost of Sanitary System Total	\$76,487
		Estimate Cost of Sanitary System per Lot	\$5,463

Discover Crossing

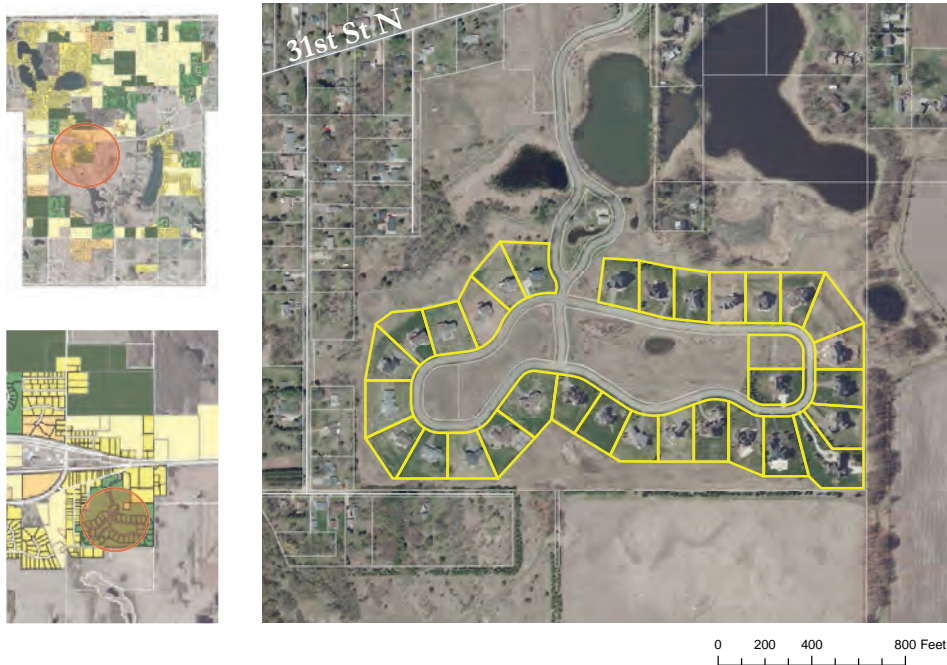


0 100 200 400 600 800 Feet

Discover Crossing Totals

Zoning	OP	Water System Type	City
Estimate Population	98 persons	Linear Feet of Pipe	3,798 feet
Secondary Access	No	Linear Feet of Pipe per Lot	136 feet
Number of Lots	28	Estimate Cost of Water System Total	\$155,718
Mean Lot Size	0.86 acres	Estimate Cost of Water System per Lot	\$5,561
Sum of All Lot Sizes	24.13 acres		
Linear Feet of Road	3,345 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	119 feet	Estimate DWF (gal/day)	5,695 g/d
Estimate Cost of Road Reconstruction Total	\$548,112	Linear Feet of Pipe	3,659 feet
Estimate Cost of Road Reconstruction per Lot	\$19,575	Linear Feet of Pipe per Lot	131 feet
		Estimate Cost of Sanitary System Total	\$454,268
		Estimate Cost of Sanitary System per Lot	\$16,224

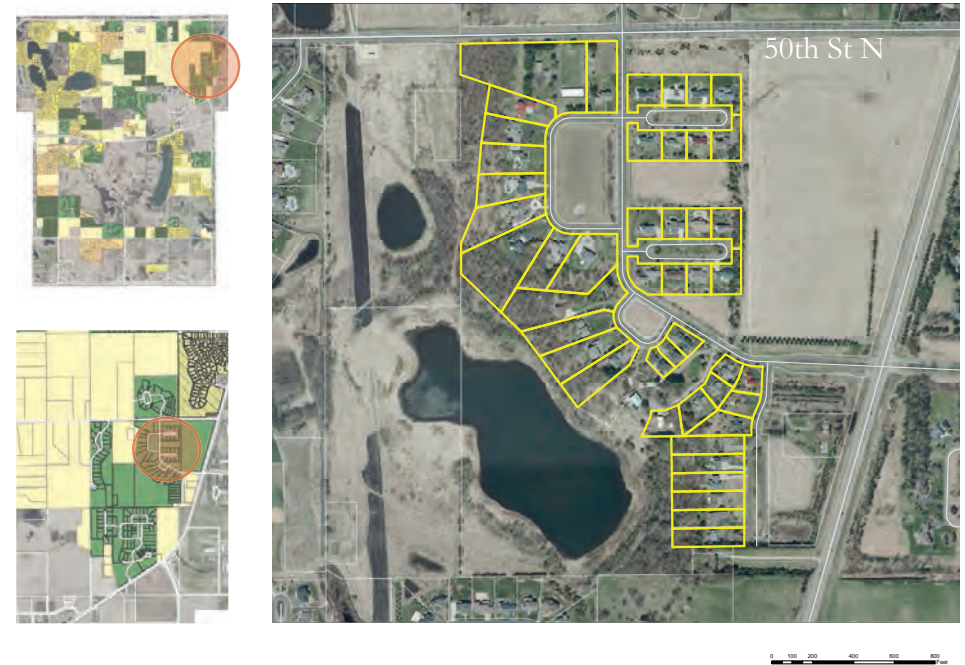
Farms of Lake Elmo



Farms of Lake Elmo Totals

Zoning	OP	Water System Type	City
Estimate Population	112 persons	Linear Feet of Pipe	6,518 Feet
Secondary Access	No	Linear Feet of Pipe per Lot	204 feet
Number of Lots	32	Estimate Cost of Water System Total	\$267,238
Mean Lot Size	0.82 acres	Estimate Cost of Water System per Lot	\$8,351
Sum of All Lot Sizes	26.22 acres		
Linear Feet of Road	6,926 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	216 feet	Estimate DWF (gal/day)	6,509 g/d
Estimate Cost of Road Reconstruction Total	\$1,134,894	Linear Feet of Pipe	5,425 feet
Estimate Cost of Road Reconstruction per Lot	\$35,466	Linear Feet of Pipe per Lot	170 feet
		Estimate Cost of Sanitary System Total	\$673,617
		Estimate Cost of Sanitary System per Lot	\$21,051

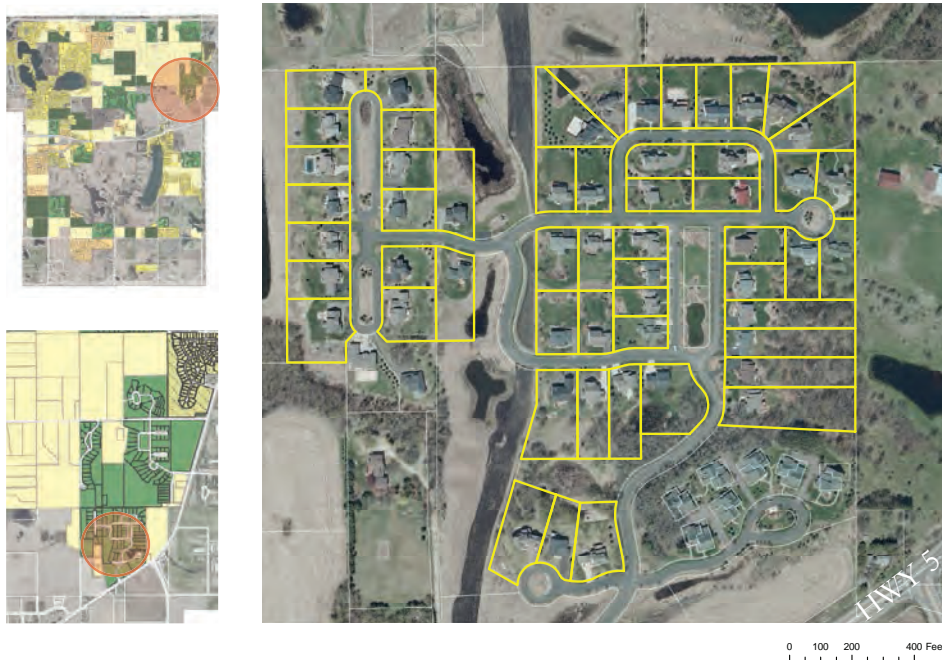
Fields of St. Croix 1



Fields of St. Croix 1 Totals

Zoning	OP	Water System Type	Private Well
Estimate Population	161 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	46	Estimate Cost of Water System Total	\$621,000
Mean Lot Size	0.74 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	36.53 acres		
Linear Feet of Road	3,345 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	119 feet	Estimate DWF (gal/day)	9,357 g/d
Estimate Cost of Road Reconstruction Total		Linear Feet of Pipe	4,416 feet
Estimate Cost of Road Reconstruction per Lot		Linear Feet of Pipe per Lot	96 feet
		Estimate Cost of Sanitary System Total	\$548,419
		Estimate Cost of Sanitary System per Lot	\$11,922

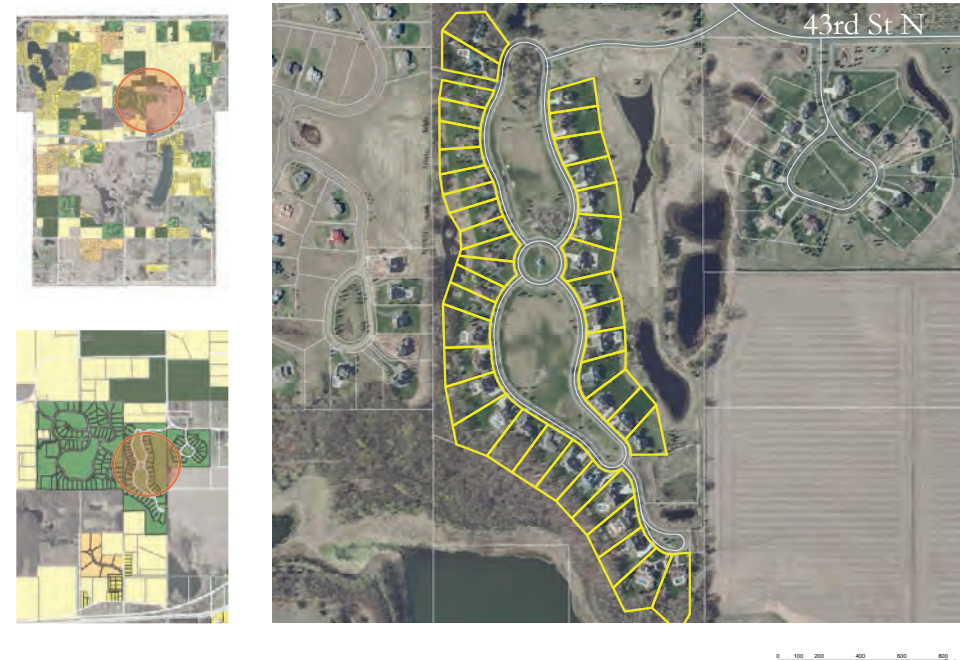
Fields of St. Croix 2nd Addition



Fields of St. Croix 2nd Addition Totals

Zoning	OP	Water System Type	City
Estimate Population	189 persons	Linear Feet of Pipe	5,913 feet
Secondary Access	No	Linear Feet of Pipe per Lot	110 feet
Number of Lots	54	Estimate Cost of Water System Total	\$242,433
Mean Lot Size	0.06 acres	Estimate Cost of Water System per Lot	\$4,490
Sum of All Lot Sizes	1.24 acres		
Linear Feet of Road	7,476 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	138 feet	Estimate DWF (gal/day)	10,984 g/d
Estimate Cost of Road Reconstruction Total		Linear Feet of Pipe	4,112 feet
Estimate Cost of Road Reconstruction per Lot		Linear Feet of Pipe per Lot	76 feet
		Estimate Cost of Sanitary System Total	\$510,573
		Estimate Cost of Sanitary System per Lot	\$9,455

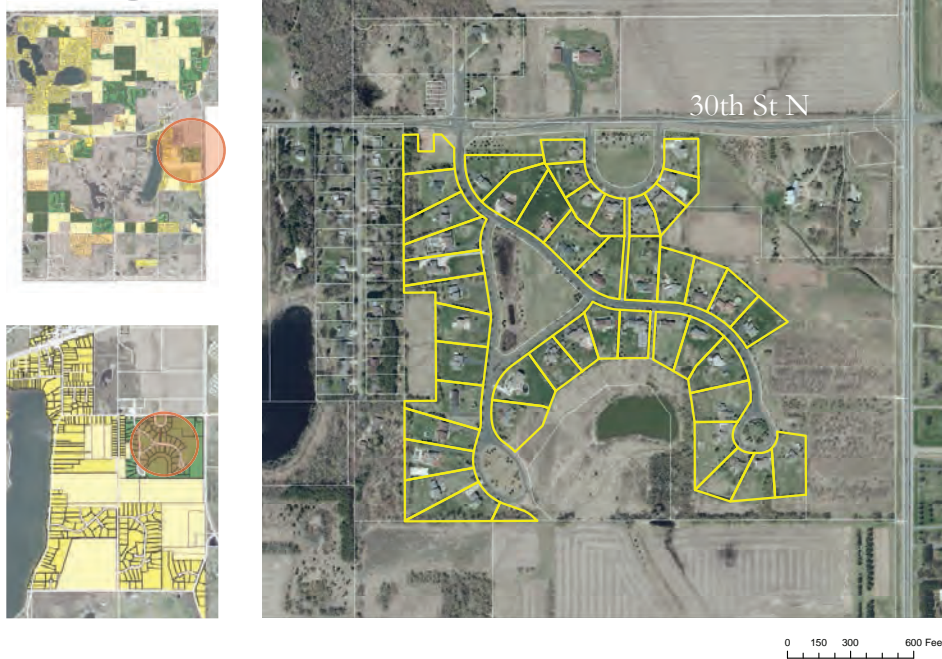
Hamlet on Sunfish Lake



Hamlet on Sunfish Lake Totals

Zoning	OP	Water System Type	Private Well
Estimate Population	144 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	41	Estimate Cost of Water System Total	\$553,500
Mean Lot Size	0.73 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	29.80 acres		
Linear Feet of Road	6,630 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	162 feet	Estimate DWF (gal/day)	8,340 g/d
Estimate Cost of Road Reconstruction Total	\$1,086,392	Linear Feet of Pipe	1903 feet
Estimate Cost of Road Reconstruction per Lot	\$26,497	Linear Feet of Pipe per Lot	46 feet
		Estimate Cost of Sanitary System Total	\$236,329
		Estimate Cost of Sanitary System per Lot	\$5,764

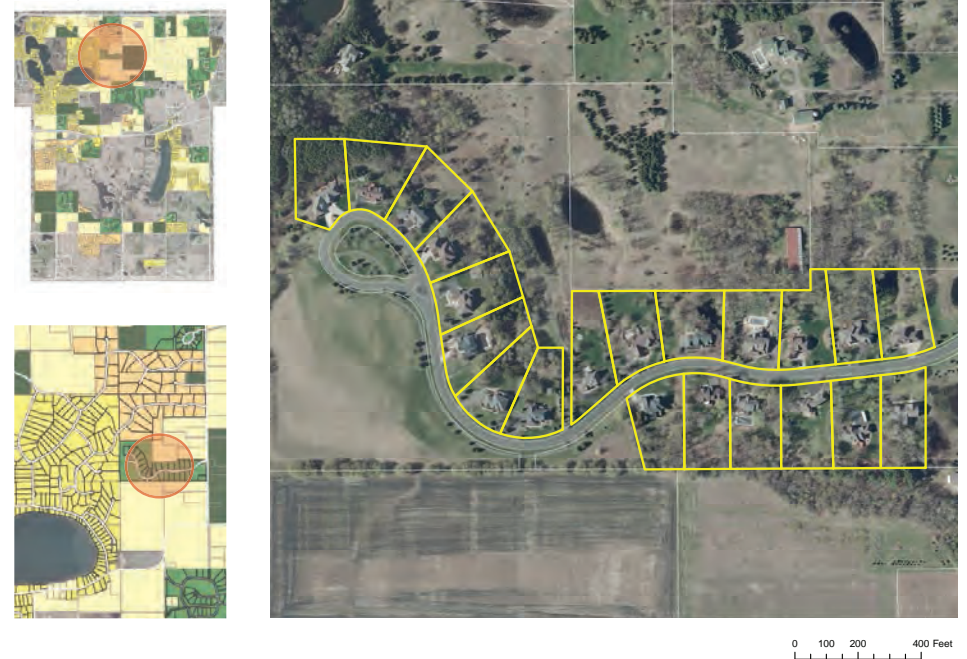
Heritage Farm



Heritage Farm Totals

Zoning	OP	Water System Type	City
Estimate Population	161 persons	Linear Feet of Pipe	6,188 feet
Secondary Access	No	Linear Feet of Pipe per Lot	135 feet
Number of Lots	46	Estimate Cost of Water System Total	\$253,708
Mean Lot Size	0.85 acres	Estimate Cost of Water System per Lot	\$6,515
Sum of All Lot Sizes	39 acres		
Linear Feet of Road	5,991 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	130 feet	Estimate DWF (gal/day)	9,357 g/d
Estimate Cost of Road Reconstruction Total	\$981,751	Linear Feet of Pipe	5,991 feet
Estimate Cost of Road Reconstruction per Lot	\$21,342	Linear Feet of Pipe per Lot	130 feet
		Estimate Cost of Sanitary System Total	\$743,883
		Estimate Cost of Sanitary System per Lot	\$16,171

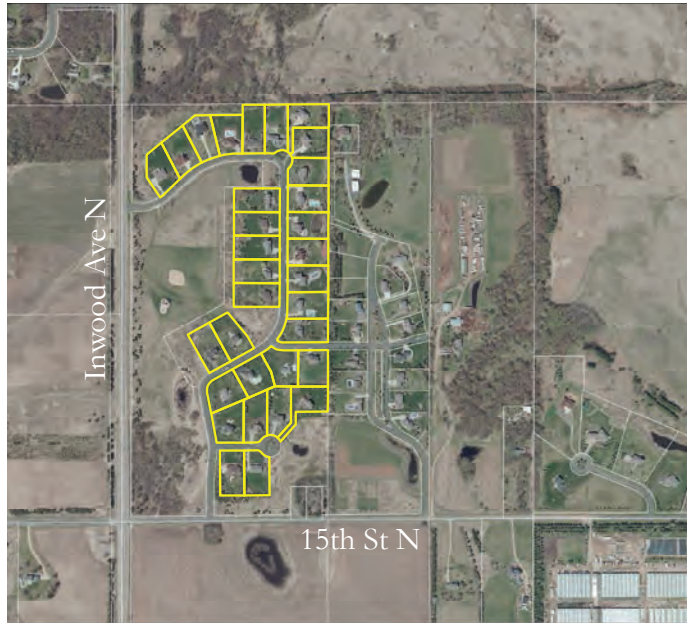
Meyer's Pineridge



Meyer's Pineridge Totals

Zoning	OP	Water System Type	Private Well
Estimate Population	74 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	21	Estimate Cost of Water System Total	\$283,500
Mean Lot Size	0.1 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	20.8 acres		
Linear Feet of Road	3,449 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	164 feet	Estimate DWF (gal/day)	4,272 g/d
Estimate Cost of Road Reconstruction Total	\$565,088	Linear Feet of Pipe	3,449 feet
Estimate Cost of Road Reconstruction per Lot	\$26,909	Linear Feet of Pipe per Lot	164 feet
		Estimate Cost of Sanitary System Total	\$438,201
		Estimate Cost of Sanitary System per Lot	\$20,391

Parkview Estates



Parkview Estates Totals

Zoning	OP	Water System Type	Private Well
Estimate Population	112 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	32	Estimate Cost of Water System Total	\$432,000
Mean Lot Size	0.05 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	1.8 acres		
Linear Feet of Road	4,598 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	144 feet	Estimate DWF (gal/day)	6,509 g/d
Estimate Cost of Road Reconstruction Total	\$753,428	Linear Feet of Pipe	4,598 feet
Estimate Cost of Road Reconstruction per Lot	\$23,544	Linear Feet of Pipe per Lot	144 feet
		Estimate Cost of Sanitary System Total	\$570,918
		Estimate Cost of Sanitary System per Lot	\$17,841

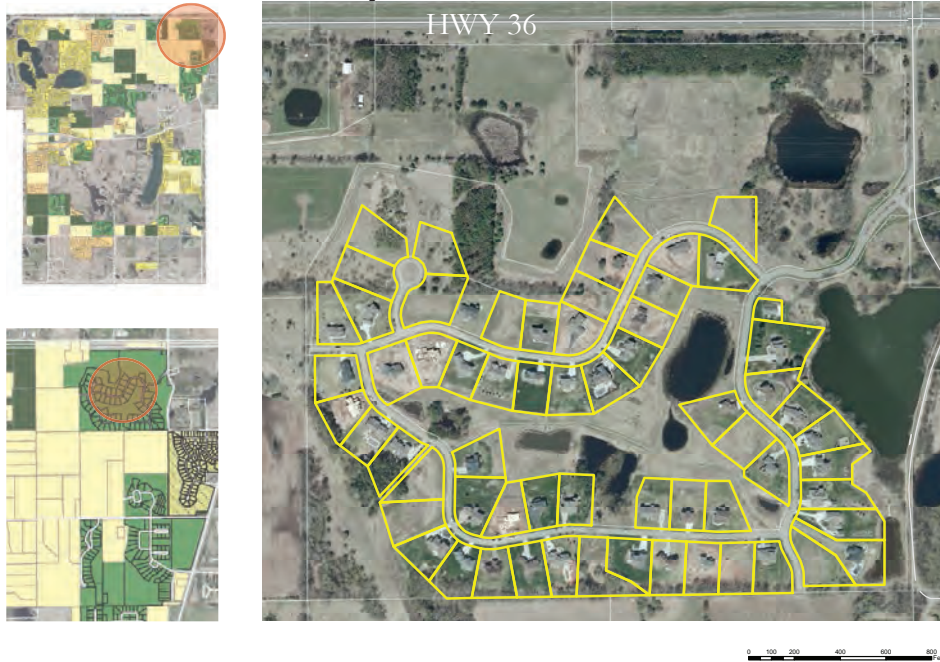
Prairie Hamlet



Prairie Hamlet Totals

Zoning	OP	Water System Type	Private Well
Estimate Population	56 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N.A
Number of Lots	16	Estimate Cost of Water System Total	\$216,000
Mean Lot Size	0.45 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	7.16 acres		
Linear Feet of Road	1,426 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	89 feet	Estimate DWF (gal/day)	3,255 g/d
Estimate Cost of Road Reconstruction Total	\$233,714	Linear Feet of Pipe	370 feet
Estimate Cost of Road Reconstruction per Lot	\$14,607	Linear Feet of Pipe per Lot	23 feet
		Estimate Cost of Sanitary System Total	\$45,942
		Estimate Cost of Sanitary System per Lot	\$2,871

St. Croix's Sanctuary



St. Croix's Sanctuary Totals

Zoning	OP	Water System Type	City
Estimate Population	217 persons	Linear Feet of Pipe	8,665 feet
Secondary Access	No	Linear Feet of Pipe per Lot	140 feet
Number of Lots	62	Estimate Cost of Water System Total	\$355,265
Mean Lot Size	0.83 acres	Estimate Cost of Water System per Lot	\$5,730
Sum of All Lot Sizes	52 acres		
Linear Feet of Road	7,785 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	126 feet	Estimate DWF (gal/day)	12,611 g/d
Estimate Cost of Road Reconstruction Total	\$1,275,650	Linear Feet of Pipe	7,887 feet
Estimate Cost of Road Reconstruction per Lot	\$20,575	Linear Feet of Pipe per Lot	127 feet
		Estimate Cost of Sanitary System Total	\$979,243
		Estimate Cost of Sanitary System per Lot	\$15,794

Sunfish Ponds



Sunfish Ponds Totals

Zoning	OP	Water System Type	Private Well
Estimate Population	56 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	16	Estimate Cost of Water System Total	\$216,000
Mean Lot Size	0.81 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	12.95 acres		
Linear Feet of Road	1,660 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	104 feet	Estimate DWF (gal/day)	3,255 g/d
Estimate Cost of Road Reconstruction Total	\$272,008	Linear Feet of Pipe	1,600 feet
Estimate Cost of Road Reconstruction per Lot	\$17,001	Linear Feet of Pipe per Lot	104 feet
		Estimate Cost of Sanitary System Total	\$206,117
		Estimate Cost of Sanitary System per Lot	\$12,882

Tamarack Farm Estates



0 100 200 400 Feet

Tamarack Farm Estates Totals

Zoning	OP	Water System Type	Private Well
Estimate Population	67 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	19	Estimate Cost of Water System Total	\$256,500
Mean Lot Size	0.69 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	13.25 acres		
Linear Feet of Road	2,044 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	108 feet	Estimate DWF (gal/day)	3,865 g/d
Estimate Cost of Road Reconstruction Total	\$334,848	Linear Feet of Pipe	2,044 feet
Estimate Cost of Road Reconstruction per Lot	\$17,624	Linear Feet of Pipe per Lot	108 feet
		Estimate Cost of Sanitary System Total	\$253,735
		Estimate Cost of Sanitary System per Lot	\$13,354

Tana Ridge

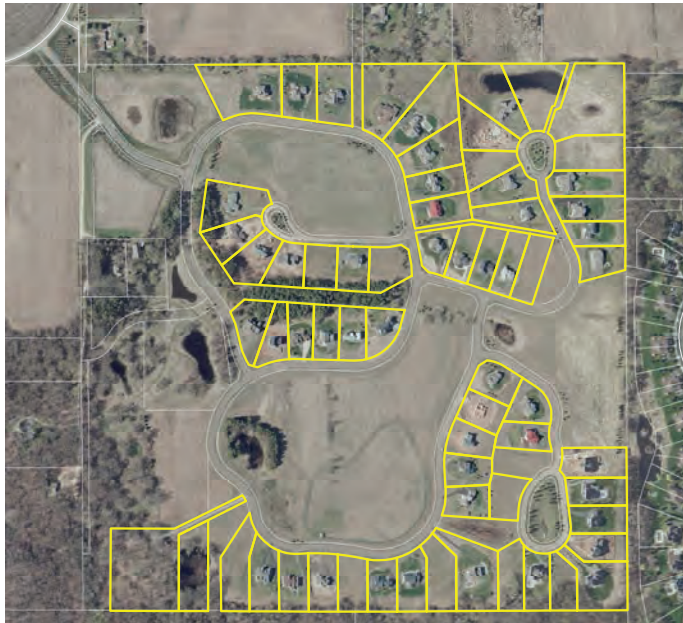


0 100 200 400 600 800 Feet

Tana Ridge Totals

Zoning	OP	Water System Type	City
Estimate Population	70 persons	Linear Feet of Pipe	3,635 feet
Secondary Access	No	Linear Feet of Pipe per Lot	182 feet
Number of Lots	20	Estimate Cost of Water System Total	\$149,035
Mean Lot Size	0.77 acres	Estimate Cost of Water System per Lot	\$7,452
Sum of All Lot Sizes	15.34 acres		
Linear Feet of Road	3,435 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	172 feet	Estimate DWF (gal/day)	4,068 g/d
Estimate Cost of Road Reconstruction Total	\$562,859	Linear Feet of Pipe	1,903 feet
Estimate Cost of Road Reconstruction per Lot	\$28,143	Linear Feet of Pipe per Lot	95 feet
		Estimate Cost of Sanitary System Total	\$236,329
		Estimate Cost of Sanitary System per Lot	\$11,816

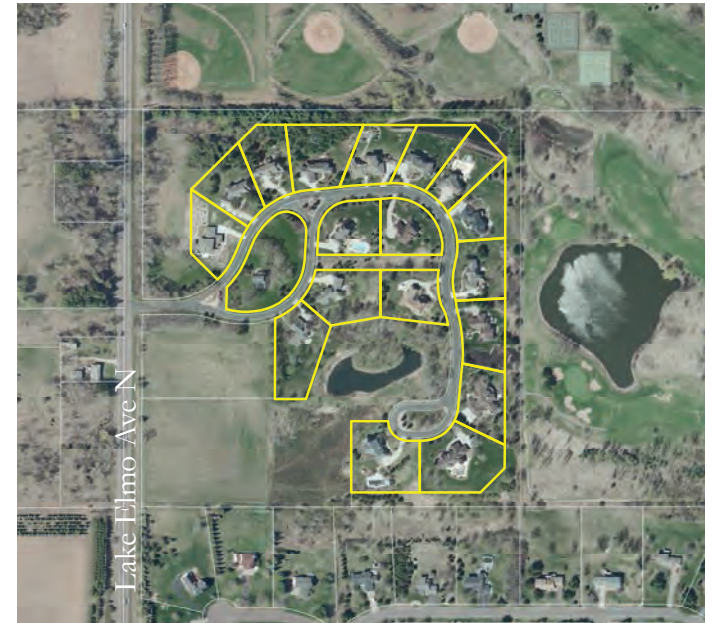
Tapestry at Charlotte's Grove



Tapestry at Charlotte's Grove Totals

Zoning	OP	Water System Type	City
Estimate Population	235 persons	Linear Feet of Pipe	11,452 feet
Secondary Access	No	Linear Feet of Pipe per Lot	171 feet
Number of Lots	67	Estimate Cost of Water System Total	\$459,532
Mean Lot Size	0.99 acres	Estimate Cost of Water System per Lot	\$7,008
Sum of All Lot Sizes	67.6 acres		
Linear Feet of Road	12,090 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	180 feet	Estimate DWF (gal/day)	13,628 g/d
Estimate Cost of Road Reconstruction Total	\$1,981,067	Linear Feet of Pipe	7,945 feet
Estimate Cost of Road Reconstruction per Lot	\$29,568	Linear Feet of Pipe per Lot	119 feet
		Estimate Cost of Sanitary System Total	\$986,688
		Estimate Cost of Sanitary System per Lot	\$14,727

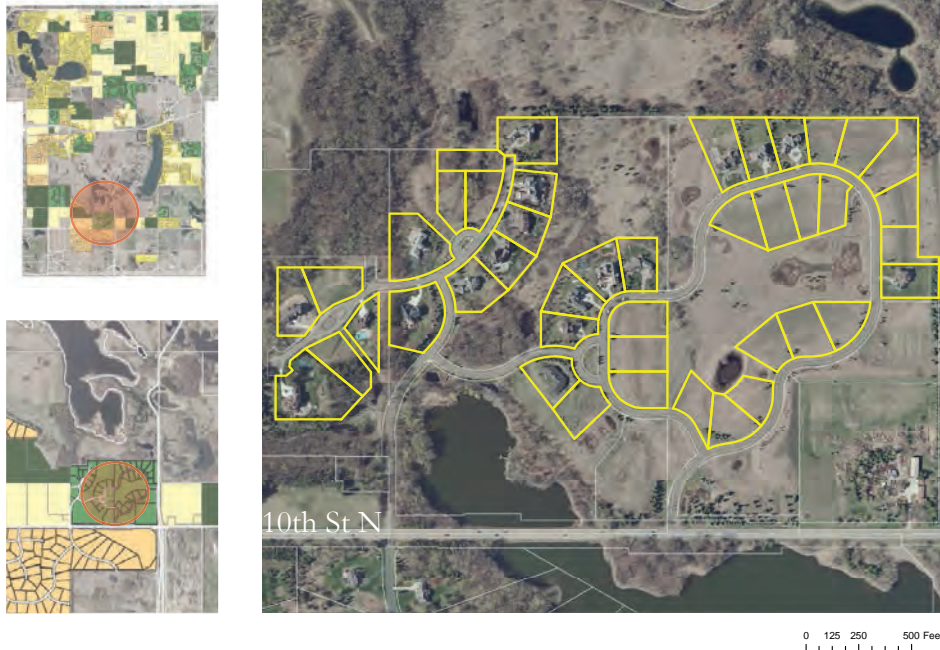
The Homestead



The Homestead Totals

Zoning	OP	Water System Type	Private Well
Estimate Population	67 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	19	Estimate Cost of Water System Total	\$256,500
Mean Lot Size	0.86 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	16.4 acres		
Linear Feet of Road	6,684 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	352 feet	Estimate DWF (gal/day)	3,864.8 g/d
Estimate Cost of Road Reconstruction Total	\$1,095,299	Linear Feet of Pipe	6,684 feet
Estimate Cost of Road Reconstruction per Lot	\$57,647	Linear Feet of Pipe per Lot	352 feet
		Estimate Cost of Sanitary System Total	\$829,975
		Estimate Cost of Sanitary System per Lot	\$43,683

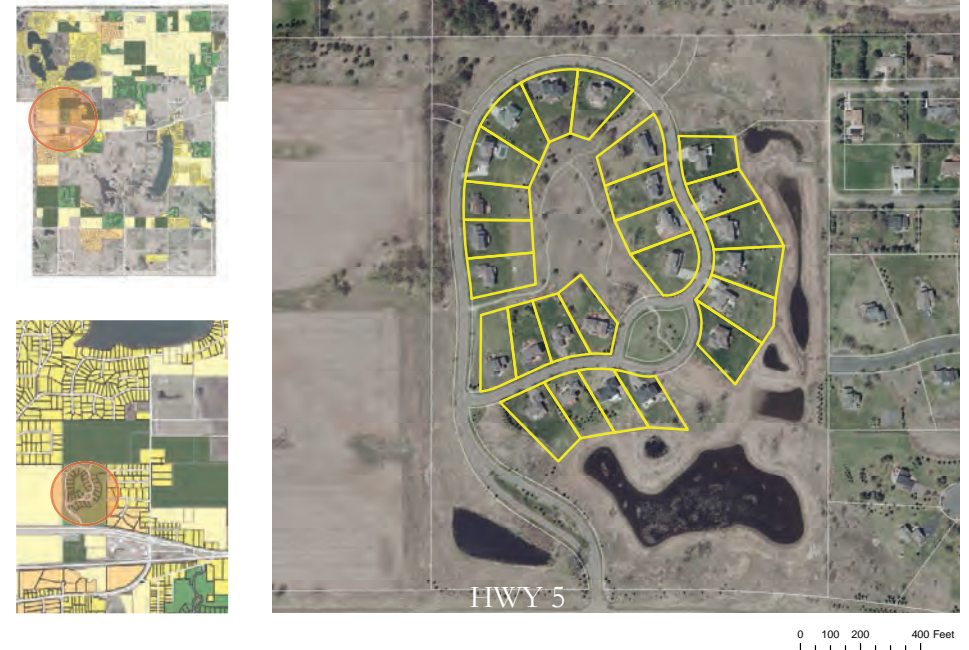
Whistling Valley



Whistling Valley Totals

Zoning	OP	Water System Type	Private
Estimate Population	151 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	43	Estimate Cost of Water System Total	\$580,500
Mean Lot Size	1.02 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	43.81 acres		
Linear Feet of Road	7,500 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	174 feet	Estimate DWF (gal/day)	8,747 g/d
Estimate Cost of Road Reconstruction Total	\$1,228,950	Linear Feet of Pipe	6,523 feet
Estimate Cost of Road Reconstruction per Lot	\$28,580	Linear Feet of Pipe per Lot	152 feet
		Estimate Cost of Sanitary System Total	\$809,939
		Estimate Cost of Sanitary System per Lot	\$18,835

Wildflower Shores



Wildflower Shores Totals

Zoning	OP	Water System Type	City
Estimate Population	88 persons	Linear Feet of Pipe	4,731 feet
Secondary Access	No	Linear Feet of Pipe per Lot	189 feet
Number of Lots	25	Estimate Cost of Water System Total	\$193,971
Mean Lot Size	0.63 acres	Estimate Cost of Water System per Lot	\$7,759
Sum of All Lot Sizes	15.8 acres		
Linear Feet of Road	5,216 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	209 feet	Estimate DWF (gal/day)	5,085 g/d
Estimate Cost of Road Reconstruction Total	\$854,694	Linear Feet of Pipe	2,788 feet
Estimate Cost of Road Reconstruction per Lot	\$34,188	Linear Feet of Pipe per Lot	112 feet
		Estimate Cost of Sanitary System Total	\$346,177
		Estimate Cost of Sanitary System per Lot	\$13,847

Residential Estates Zoning



Residential Estates Zoning Totals

Zoning	RE
Average Number of Lots	19
Estimate Average Population per Development	66 persons
Total Mean Lot Size	3.41 acres

Roads

Average Linear Feet of Road	3,330 LF
Average Linear Feet of Road per Lot	179 LF
Estimated Total Mean Road Cost	\$543,799
Estimated Mean Road Cost Per Lot	\$29,394

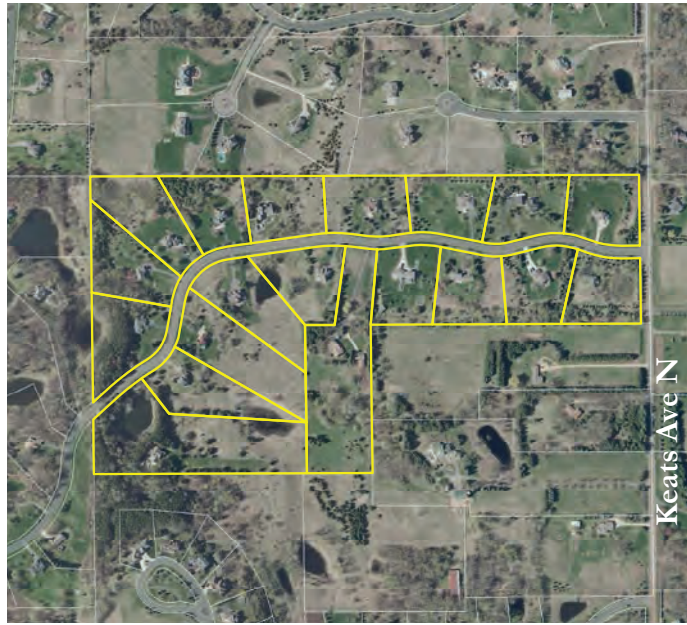
Water

Estimated Total Mean Cost for Water Infrastructure	\$216,266
Estimated Mean Cost for Water Infrastructure per Lot	\$11,235

Sanitary System

Estimated Total Mean Linear Feet of Sanitary Sewer Pipe	3,330 LF
Estimated Mean Linear Feet of Sanitary Sewer Pipe per Lot	179 LF
Estimated Total Mean Cost of Sanitary Sewer Pipe	\$413,527
Estimated Mean Cost of Sanitary Sewer Pipe per Lot	\$22,273

Arabian Hills

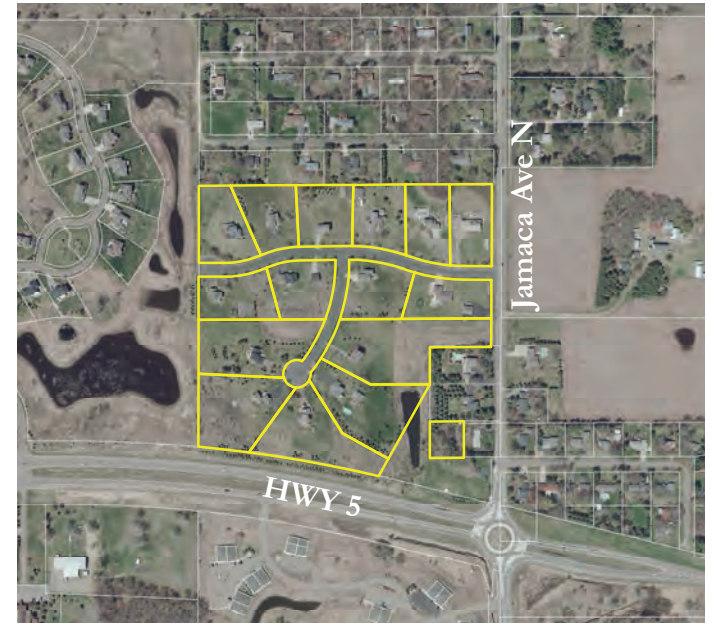


0 135 270 540 Feet

Arabian Hills Totals

Zoning	RE	Water System Type	Private Well
		Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
		Estimate Cost of Water System Total	\$256,500
		Estimate Cost of Water System per Lot	\$13,500
Linear Feet of Road	3,049 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	160 feet	Estimate DWF (gal/day)	3,865 g/d
Estimate Cost of Road Reconstruction Total	\$499,544	Linear Feet of Pipe	3,049 feet
Estimate Cost of Road Reconstruction per Lot	\$26,292	Linear Feet of Pipe per Lot	160 feet
		Estimate Cost of Sanitary System Total	\$378,535
		Estimate Cost of Sanitary System per Lot	\$19,923

Beau Crest



0 100 200 400 Feet

Beau Crest Totals

Zoning	RE	Water System Type	City
Estimate Population	56 persons	Linear Feet of Pipe	1,933 feet
Secondary Access	No	Linear Feet of Pipe per Lot	121 feet
Number of Lots	16	Estimate Cost of Water System Total	\$79,253
Mean Lot Size	1.84 acres	Estimate Cost of Water System per Lot	\$4,953
Sum of All Lot Sizes	29.5 acres		
Linear Feet of Road	1,904 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	119 feet	Estimate DWF (gal/day)	3,255 g/d
Estimate Cost of Road Reconstruction Total	\$312,022	Linear Feet of Pipe	1,904 feet
Estimate Cost of Road Reconstruction per Lot	\$19,501	Linear Feet of Pipe per Lot	119 feet
		Estimate Cost of Sanitary System Total	\$236,438
		Estimate Cost of Sanitary System per Lot	\$14,777

Cardinal View

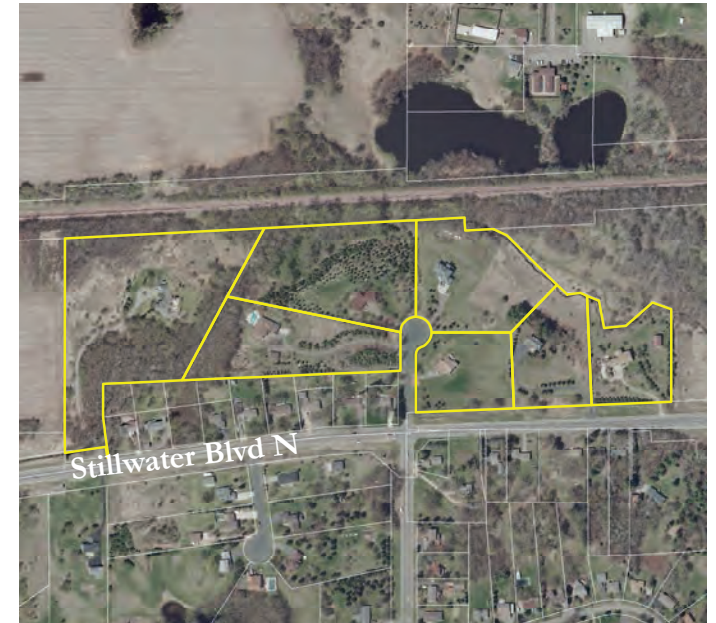
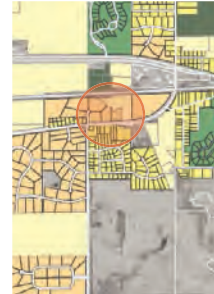


0 100 200 400 Feet

Cardinal View Totals

Zoning	RE	Water System Type	Private
Estimate Population	25 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	7	Estimate Cost of Water System Total	\$94,500
Mean Lot Size	3.04 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	21.3 acres		
Linear Feet of Road	1,400 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	200 feet	Estimate DWF (gal/day)	1,4234 g/d
Estimate Cost of Road Reconstruction Total	\$229,404	Linear Feet of Pipe	1,400 feet
Estimate Cost of Road Reconstruction per Lot	\$32,772	Linear Feet of Pipe per Lot	200 feet
		Estimate Cost of Sanitary System Total	\$173,833
		Estimate Cost of Sanitary System per Lot	\$24,833

Eagle Point Creek Estates

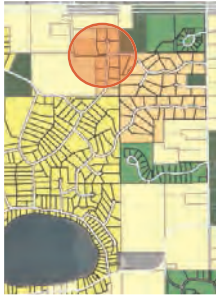


0 100 200 400 Feet

Eagle Point Creek Totals

Zoning	RE	Water System Type	City
Estimate Population	25 persons	Linear Feet of Pipe	600 feet
Secondary Access	No	Linear Feet of Pipe per Lot	86 feet
Number of Lots	7	Estimate Cost of Water System Total	\$24,600
Mean Lot Size	4.33 acres	Estimate Cost of Water System per Lot	\$3,514
Sum of All Lot Sizes	30.3 acres		
Linear Feet of Road	396 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	57 feet	Estimate DWF (gal/day)	1,424
Estimate Cost of Road Reconstruction Total	\$64,889	Linear Feet of Pipe	396 feet
Estimate Cost of Road Reconstruction per Lot	\$9,270	Linear Feet of Pipe per Lot	57 feet
		Estimate Cost of Sanitary System Total	\$49,170
		Estimate Cost of Sanitary System per Lot	\$7,024

Judith Mary Manor

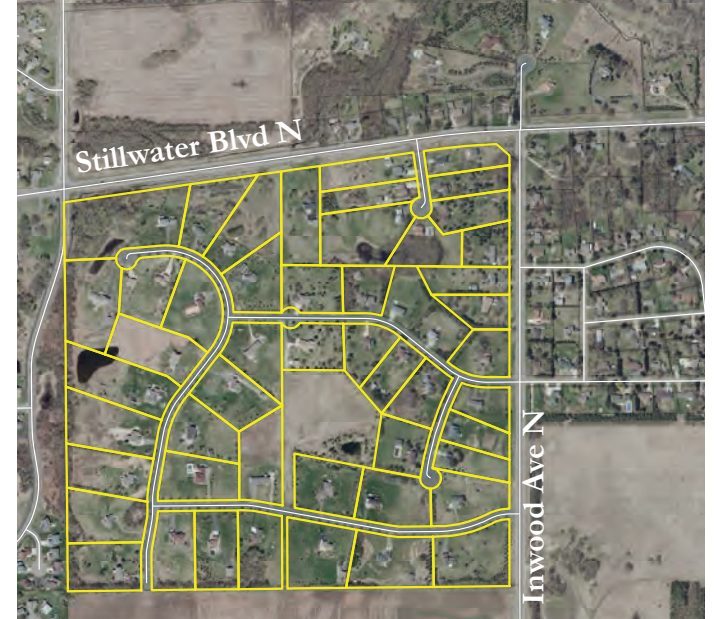


0 200 400 800 Feet

Judith Mary Manor Totals

Zoning	RE	Water System Type	Private
Estimate Population	42 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	12	Estimate Cost of Water System Total	\$162,000
Mean Lot Size	3.08 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	37.0 acres		
Linear Feet of Road	2,147 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	179 feet	Estimate DWF (gal/day)	2,441 g/d
Estimate Cost of Road Reconstruction Total	\$351,807	Linear Feet of Pipe	2,147 feet
Estimate Cost of Road Reconstruction per Lot	\$29,317	Linear Feet of Pipe per Lot	179 feet
		Estimate Cost of Sanitary System Total	\$266,586
		Estimate Cost of Sanitary System per Lot	\$22,215

Lake Elmo Heights

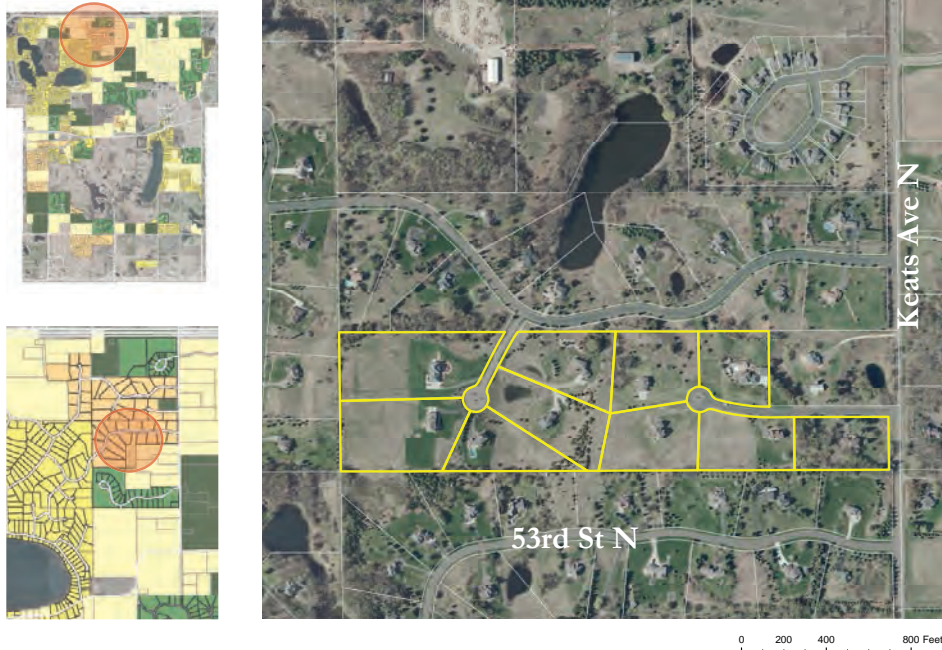


0 250 500 1,000 Feet

Lake Elmo Heights Totals

Zoning	RE	Water System Type	City
Estimate Population	140 persons	Linear Feet of Pipe	6,420 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	161 feet
Number of Lots	40	Estimate Cost of Water System Total	\$263,220
Mean Lot Size	2.56 acres	Estimate Cost of Water System per Lot	\$6,581
Sum of All Lot Sizes	102.4 acres		
Linear Feet of Road	6,420 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	161 feet	Estimate DWF (gal/day)	8,136 g/d
Estimate Cost of Road Reconstruction Total	\$1,051,981	Linear Feet of Pipe	6,420 feet
Estimate Cost of Road Reconstruction per Lot	\$26,300	Linear Feet of Pipe per Lot	161 feet
		Estimate Cost of Sanitary System Total	\$797,150
		Estimate Cost of Sanitary System per Lot	\$19,929

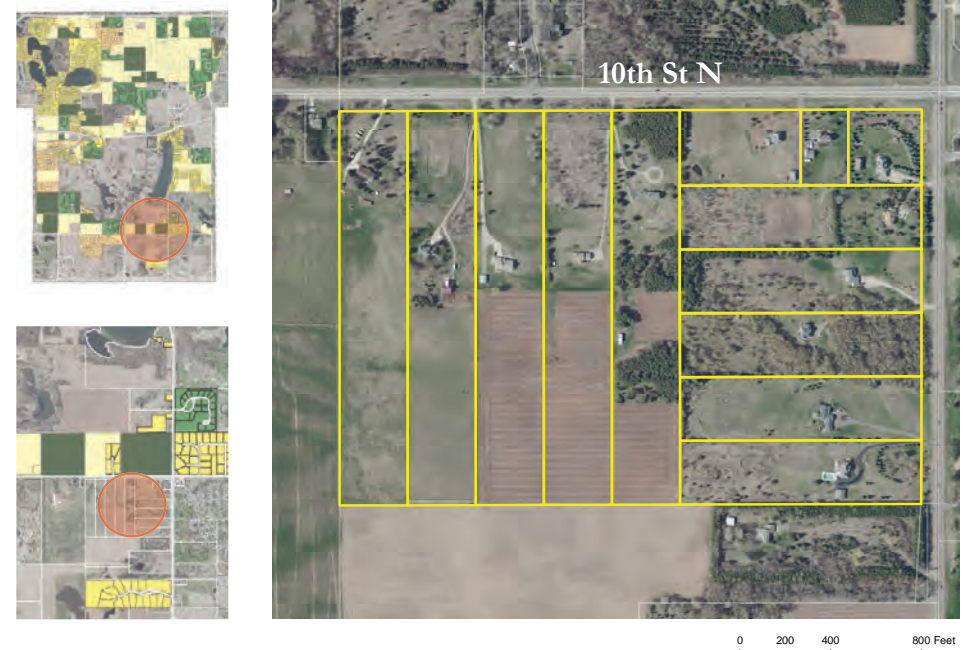
Lake Elmo Vista



Lake Elmo Vista Totals

Zoning	RE	Water System Type	Private
Estimate Population	35 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	10	Estimate Cost of Water System Total	\$135,000
Mean Lot Size	3.25 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	32.5 acres		
Linear Feet of Road	1,692 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	169 feet	Estimate DWF (gal/day)	2,034 g/d
Estimate Cost of Road Reconstruction Total	\$277,251	Linear Feet of Pipe	1,692 feet
Estimate Cost of Road Reconstruction per Lot	\$27,725	Linear Feet of Pipe per Lot	169 feet
		Estimate Cost of Sanitary System Total	\$210,090
		Estimate Cost of Sanitary System per Lot	\$21,009

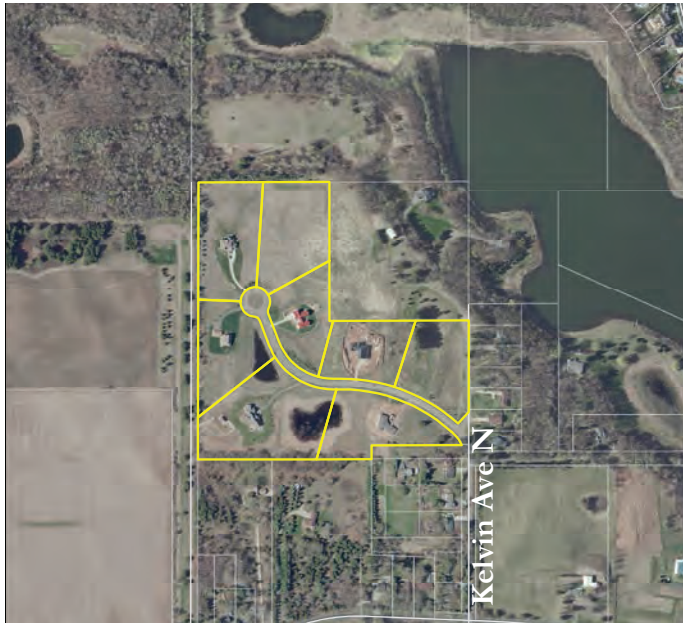
Midland Meadows



Midland Meadows Totals

Zoning	RE	Water System Type	Private
Estimate Population	46 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	13	Estimate Cost of Water System Total	\$175,500
Mean Lot Size	7.87 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	102.3 acres		
Linear Feet of Road	4,505 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	346 feet	Estimate DWF (gal/day)	2,644 g/d
Estimate Cost of Road Reconstruction Total	\$738,091	Linear Feet of Pipe	4,504 feet
Estimate Cost of Road Reconstruction per Lot	\$56,776	Linear Feet of Pipe per Lot	346 feet
		Estimate Cost of Sanitary System Total	\$559,296
		Estimate Cost of Sanitary System per Lot	\$43,023

Park Meadows

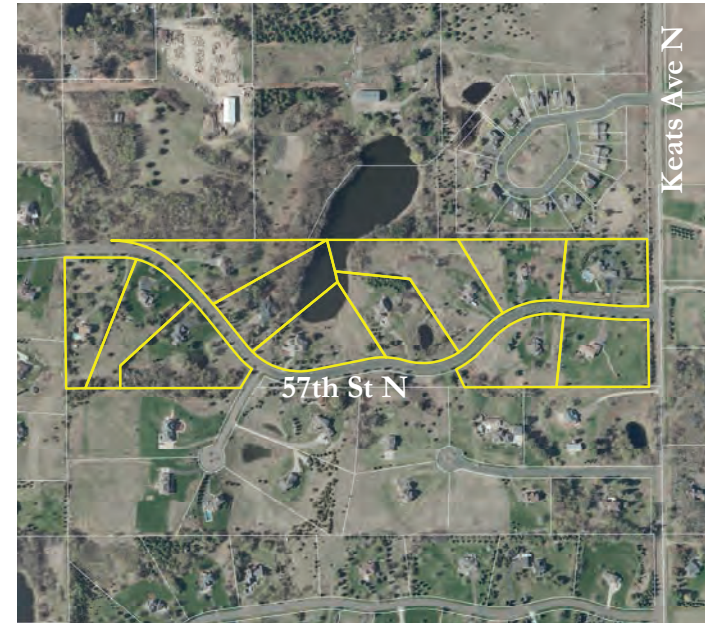


0 100 200 300 400 500 Feet

Park Meadows Totals

Zoning	RE	Water System Type	City
Estimate Population	28 persons	Linear Feet of Pipe	2,320 feet
Secondary Access	No	Linear Feet of Pipe per Lot	290 feet
Number of Lots	8	Estimate Cost of Water System Total	\$95,120
Mean Lot Size	3.28 acres	Estimate Cost of Water System per Lot	\$11,890
Sum of All Lot Sizes	26.3 acres		
Linear Feet of Road	1,290 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	161 feet	Estimate DWF (gal/day)	1,627 g/d
Estimate Cost of Road Reconstruction Total	\$211,379	Linear Feet of Pipe	1,290 feet
Estimate Cost of Road Reconstruction per Lot	\$26,422	Linear Feet of Pipe per Lot	161 feet
		Estimate Cost of Sanitary System Total	\$160,175
		Estimate Cost of Sanitary System per Lot	\$20,022

Rolling Hills

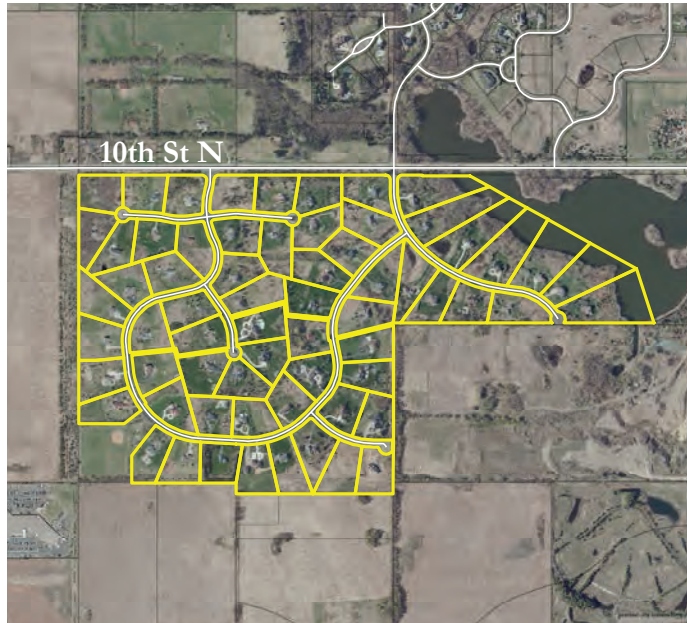


0 200 400 800 Feet

Rolling Hills Totals

Zoning	RE	Water System Type	Private
Estimate Population	42 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	12	Estimate Cost of Water System Total	\$162,000
Mean Lot Size	2.81 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	33.8 acres		
Linear Feet of Road	2,943 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	245 feet	Estimate DWF (gal/day)	2,440 g/d
Estimate Cost of Road Reconstruction Total	\$482,207	Linear Feet of Pipe	2,943 feet
Estimate Cost of Road Reconstruction per Lot	\$40,184	Linear Feet of Pipe per Lot	245 feet
		Estimate Cost of Sanitary System Total	\$365,398
		Estimate Cost of Sanitary System per Lot	\$30,500

Stonegate

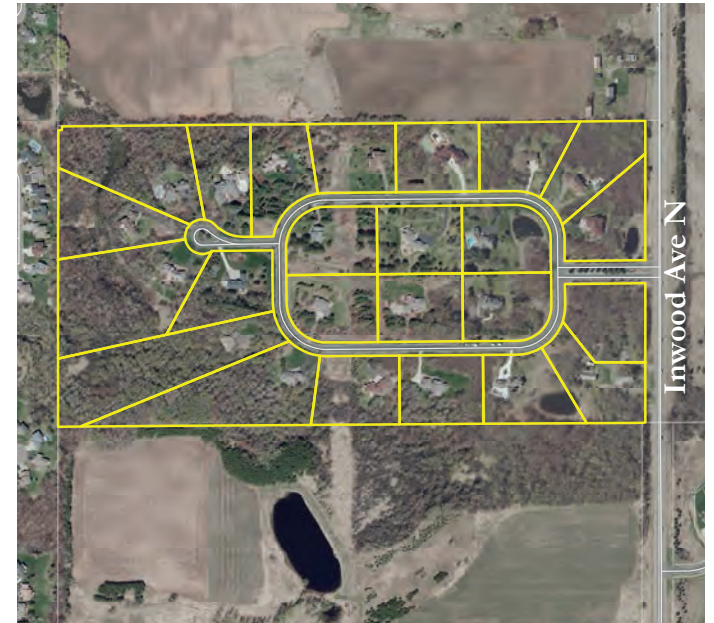


0 500 1,000 2,000 Feet

Stonegate Totals

Zoning	RE	Water System Type	Private
Estimate Population	224 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	64	Estimate Cost of Water System Total	\$864,000
Mean Lot Size	2.8 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	179.2 acres		
Linear Feet of Road	10,070 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	157 feet	Estimate DWF (gal/day)	13,018 g/d
Estimate Cost of Road Reconstruction Total	\$1,650,070	Linear Feet of Pipe	10,070 feet
Estimate Cost of Road Reconstruction per Lot	\$25,782	Linear Feet of Pipe per Lot	157 feet
		Estimate Cost of Sanitary System Total	\$1,250,358
		Estimate Cost of Sanitary System per Lot	\$19,537

Torre Pines



0 100 200 400 600 Feet

Torre Pines Totals

Zoning	RE	Water System Type	Private
Estimate Population	74 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	21	Estimate Cost of Water System Total	\$283,500
Mean Lot Size	2.93 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	70.4 acres		
Linear Feet of Road	4,150 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	198 feet	Estimate DWF (gal/day)	4,272 g/d
Estimate Cost of Road Reconstruction Total	\$656,945	Linear Feet of Pipe	4,150 feet
Estimate Cost of Road Reconstruction per Lot	\$32,382	Linear Feet of Pipe per Lot	198 feet
		Estimate Cost of Sanitary System Total	\$515,292
		Estimate Cost of Sanitary System per Lot	\$24,538

Rural Single Family Zoning



Rural Single Family Zoning

Zoning	RS
Average Number of Lots	50
Estimate Average Population per Development	176 persons
Total Mean Lot Size	1.27 acres

Roads

Average Linear Feet of Road	5,503 LF
Average Linear Feet of Road per Lot	129 LF
Estimated Total Mean Road Cost	\$659,306
Estimated Mean Road Cost Per Lot	\$16,256

Rural Single Family Zoning Totals

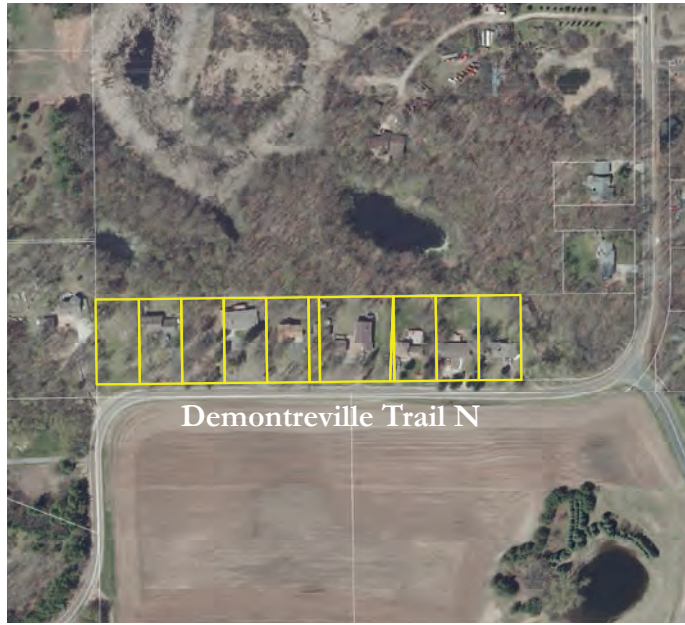
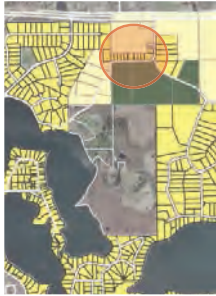
Water

Estimated Total Mean Cost for Water Infrastructure	\$603,971
Estimated Mean Cost for Water Infrastructure per Lot	\$12,161

Sanitary System

Estimated Total Mean Linear Feet of Sanitary Sewer Pipe	5,503 LF
Estimated Mean Linear Feet of Sanitary Sewer Pipe per Lot	129 LF
Estimated Total Mean Cost of Sanitary Sewer Pipe	\$683,265
Estimated Mean Cost of Sanitary Sewer Pipe per Lot	\$16,037

Bergman Addition



Bergman Addition Totals

Zoning	RS	Water System Type	Private
Estimate Population	39 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	11	Estimate Cost of Water System Total	\$148,500
Mean Lot Size	0.42 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	4.6 acres		
Linear Feet of Road	1,025 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	93 feet	Estimate DWF (gal/day)	2,238 g/d
Estimate Cost of Road Reconstruction Total	\$106,928	Linear Feet of Pipe	1,025 feet
Estimate Cost of Road Reconstruction per Lot	\$9,721	Linear Feet of Pipe per Lot	93 feet
		Estimate Cost of Sanitary System Total	\$127,271
		Estimate Cost of Sanitary System per Lot	\$11,570

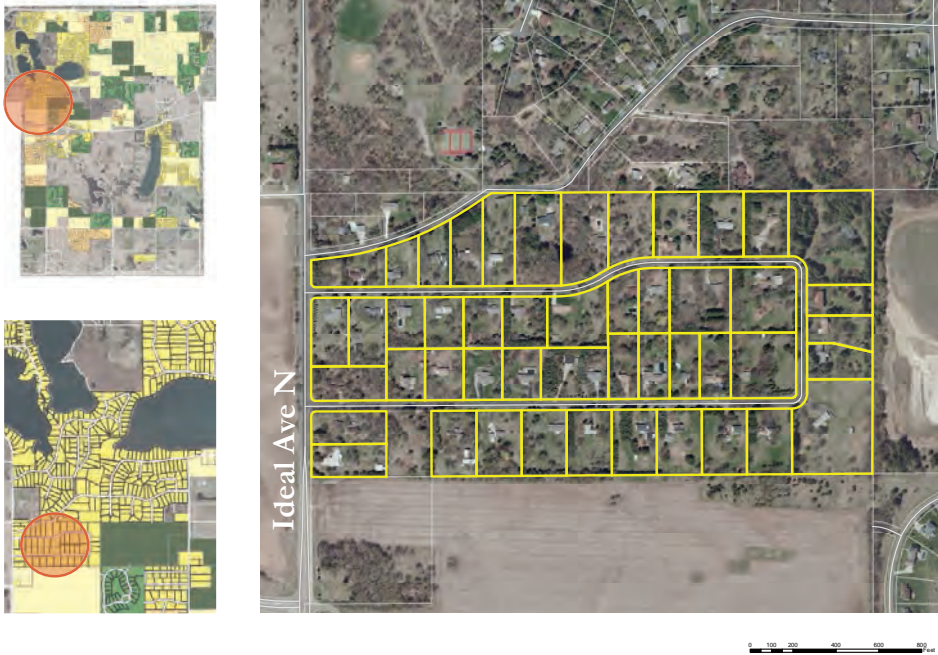
Berschen's Shores



Berschen's Shores Totals

Zoning	RS	Water System Type	Private
Estimate Population	84 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	24	Estimate Cost of Water System Total	\$324,000
Mean Lot Size	0.67 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	16.0 acres		
Linear Feet of Road	2,860 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	119 feet	Estimate DWF (gal/day)	4,882 g/d
Estimate Cost of Road Reconstruction Total	\$298,355	Linear Feet of Pipe	2,860 feet
Estimate Cost of Road Reconstruction per Lot	\$12,431	Linear Feet of Pipe per Lot	119 feet
		Estimate Cost of Sanitary System Total	\$355,117
		Estimate Cost of Sanitary System per Lot	\$14,797

Bordners Garner Farmettes



Bordners Garner Farmettes Totals

Zoning	RS	Water System Type	Private
Estimate Population	168 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	48	Estimate Cost of Water System Total	\$648,000
Mean Lot Size	1.42 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	67.9 acres		
Linear Feet of Road	5,220 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	109 feet	Estimate DWF (gal/day)	9,764 g/d
Estimate Cost of Road Reconstruction Total	\$855,349	Linear Feet of Pipe	5,220 feet
Estimate Cost of Road Reconstruction per Lot	\$17,820	Linear Feet of Pipe per Lot	109 feet
		Estimate Cost of Sanitary System Total	\$648,150
		Estimate Cost of Sanitary System per Lot	\$13,503

Darwin Acres



Darwin Acres Totals

Zoning	RS	Water System Type	Private
Estimate Population	49 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	14	Estimate Cost of Water System Total	\$189,000
Mean Lot Size	0.87 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	12.2 acres		
Linear Feet of Road	3,432 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	245 feet	Estimate DWF (gal/day)	2,848 g/d
Estimate Cost of Road Reconstruction Total	\$358,026	Linear Feet of Pipe	3,432 feet
Estimate Cost of Road Reconstruction per Lot	\$25,573	Linear Feet of Pipe per Lot	245 feet
		Estimate Cost of Sanitary System Total	\$426,140
		Estimate Cost of Sanitary System per Lot	\$30,439

David Nelson Estates

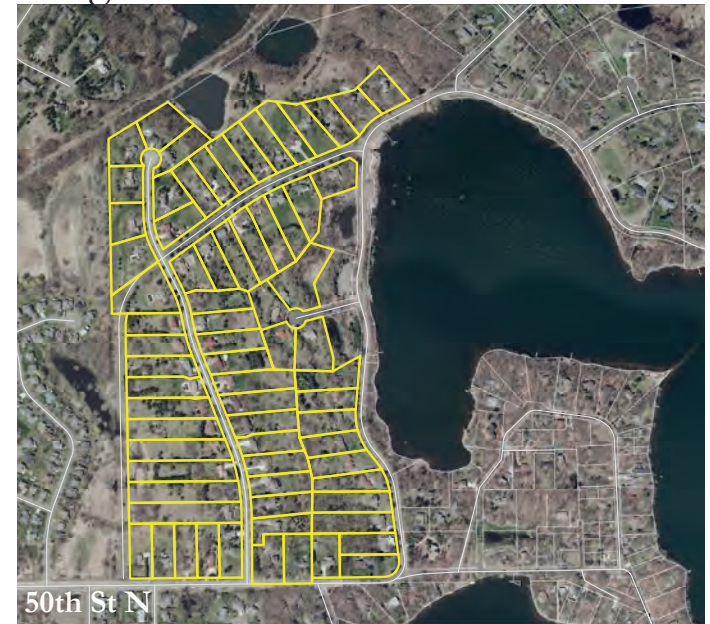
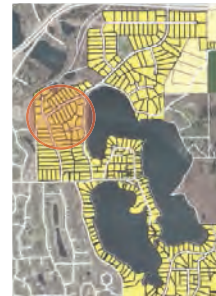


0 100 200 400 Feet

David Nelson Estates Totals

Zoning	RS	Water System Type	Private
Estimate Population	18 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	5	Estimate Cost of Water System Total	\$67,500
Mean Lot Size	1.68 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	8.4 acres		
Linear Feet of Road	588 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	118 feet	Estimate DWF (gal/day)	1,017 g/d
Estimate Cost of Road Reconstruction Total	\$96,350	Linear Feet of Pipe	588 feet
Estimate Cost of Road Reconstruction per Lot	\$19,270	Linear Feet of Pipe per Lot	118 feet
		Estimate Cost of Sanitary System Total	\$73,010
		Estimate Cost of Sanitary System per Lot	\$14,602

Demontreville Highlands



0 100 200 400 Feet

Demontreville Highlands Totals

Zoning	RS	Water System Type	Private
Estimate Population	490 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	140	Estimate Cost of Water System Total	\$1,890,000
Mean Lot Size	1.18 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	83.9 acres		
Linear Feet of Road	8,345 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	60 feet	Estimate DWF (gal/day)	28,477 g/d
Estimate Cost of Road Reconstruction Total	\$870,550	Linear Feet of Pipe	8,345 feet
Estimate Cost of Road Reconstruction per Lot	\$6,218	Linear Feet of Pipe per Lot	60 feet
		Estimate Cost of Sanitary System Total	\$1,036,171
		Estimate Cost of Sanitary System per Lot	\$7,401

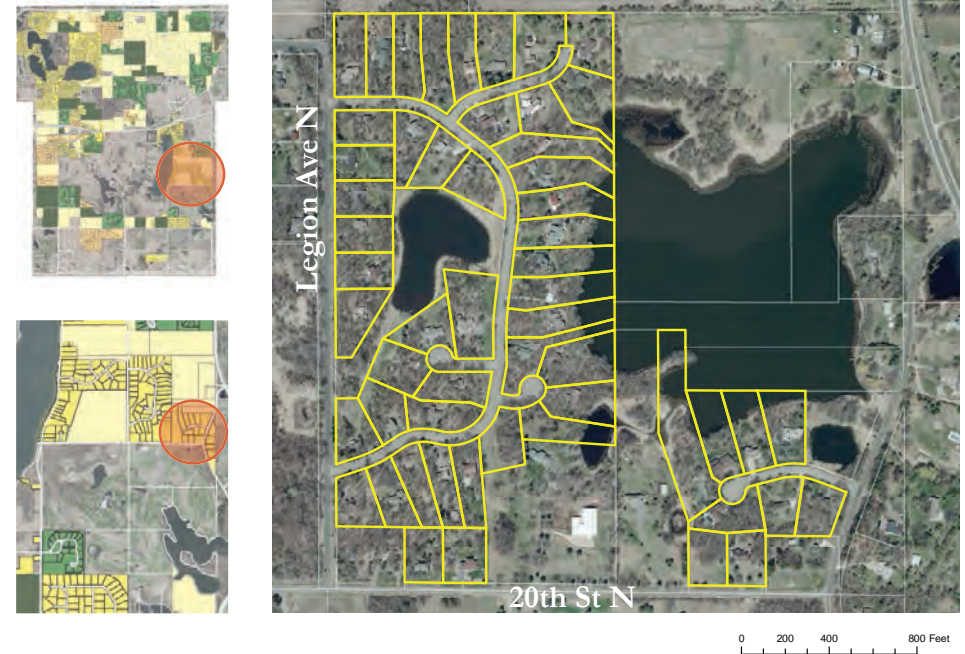
Down's Lake



Down's Lake Totals

Zoning	RS	Water System Type	Private
Estimate Population	7 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	2	Estimate Cost of Water System Total	\$27,000
Mean Lot Size	1.51 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	3.0 acres		
Linear Feet of Road	767 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	384 feet	Estimate DWF (gal/day)	407 g/d
Estimate Cost of Road Reconstruction Total	\$80,013	Linear Feet of Pipe	767 feet
Estimate Cost of Road Reconstruction per Lot	\$40,007	Linear Feet of Pipe per Lot	384 feet
		Estimate Cost of Sanitary System Total	\$95,236
		Estimate Cost of Sanitary System per Lot	\$47,618

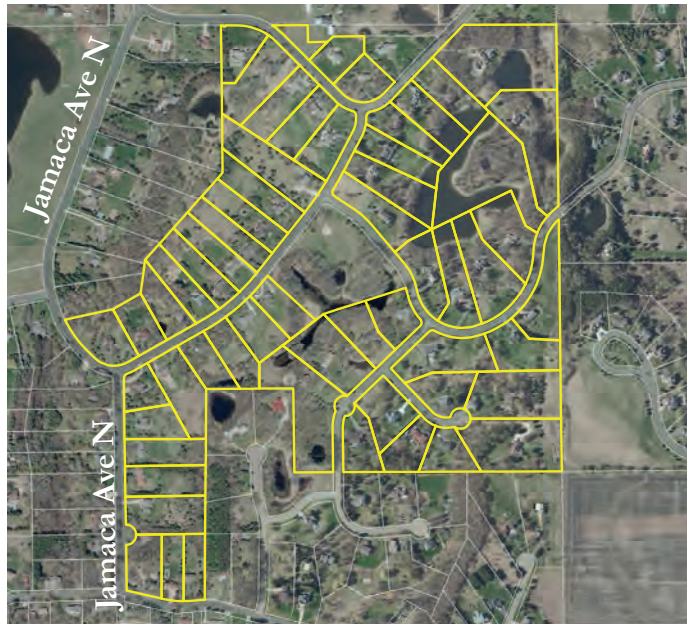
Eden Park



Eden Park Totals

Zoning	RS	Water System Type	Private
Estimate Population	193 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes/No	Linear Feet of Pipe per Lot	N/A
Number of Lots	55	Estimate Cost of Water System Total	\$742,500
Mean Lot Size	1.20 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	66.1 acres		
Linear Feet of Road	4,600 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	84 feet	Estimate DWF (gal/day)	11,188 g/d
Estimate Cost of Road Reconstruction Total	\$753,756	Linear Feet of Pipe	4,600 feet
Estimate Cost of Road Reconstruction per Lot	\$13,705	Linear Feet of Pipe per Lot	84 feet
		Estimate Cost of Sanitary System Total	\$571,167
		Estimate Cost of Sanitary System per Lot	\$10,385

Fox Fire Estates

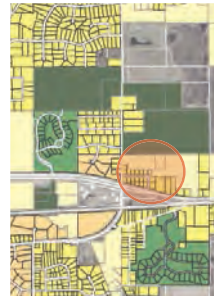


0 250 500 1,000 Feet

Fox Fire Estates Totals

Zoning	RS	Water System Type	Private
Estimate Population	203 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	58	Estimate Cost of Water System Total	\$783,000
Mean Lot Size	2.11 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	122.3 acres		
Linear Feet of Road	9,199 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	159 feet	Estimate DWF (gal/day)	11,798 g/d
Estimate Cost of Road Reconstruction Total	\$959,640	Linear Feet of Pipe	9,199 feet
Estimate Cost of Road Reconstruction per Lot	\$16,546	Linear Feet of Pipe per Lot	159 feet
		Estimate Cost of Sanitary System Total	\$1,142,209
		Estimate Cost of Sanitary System per Lot	\$19,693

Friedrich Heights

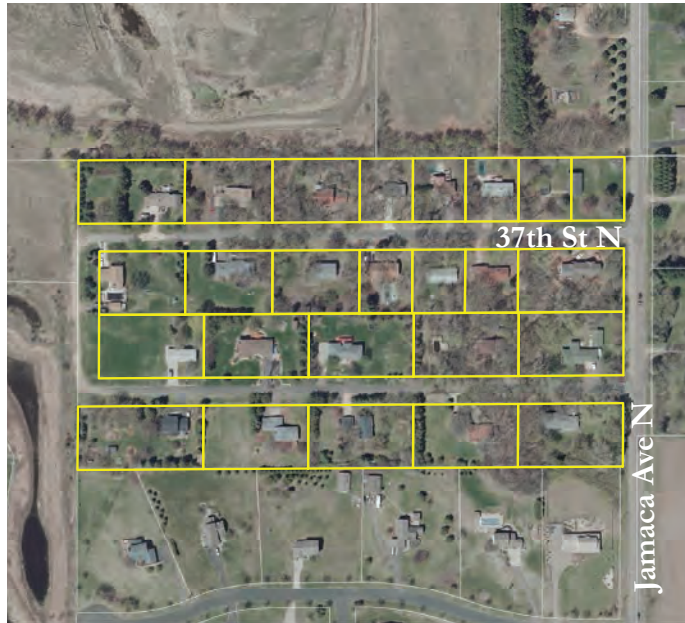
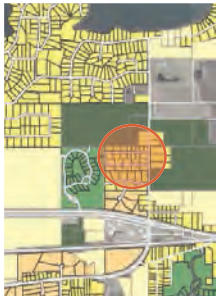


0 100 200 400 Feet

Friedrich Heights Totals

Zoning	RS	Water System Type	Private
Estimate Population	46 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	13	Estimate Cost of Water System Total	\$175,500
Mean Lot Size	0.49 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	6.3 acres		
Linear Feet of Road	1,171 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	90 feet	Estimate DWF (gal/day)	2,644 g/d
Estimate Cost of Road Reconstruction Total	\$122,159	Linear Feet of Pipe	1,171 feet
Estimate Cost of Road Reconstruction per Lot	\$9,397	Linear Feet of Pipe per Lot	90 feet
		Estimate Cost of Sanitary System Total	\$145,399
		Estimate Cost of Sanitary System per Lot	\$11,185

Kenridge

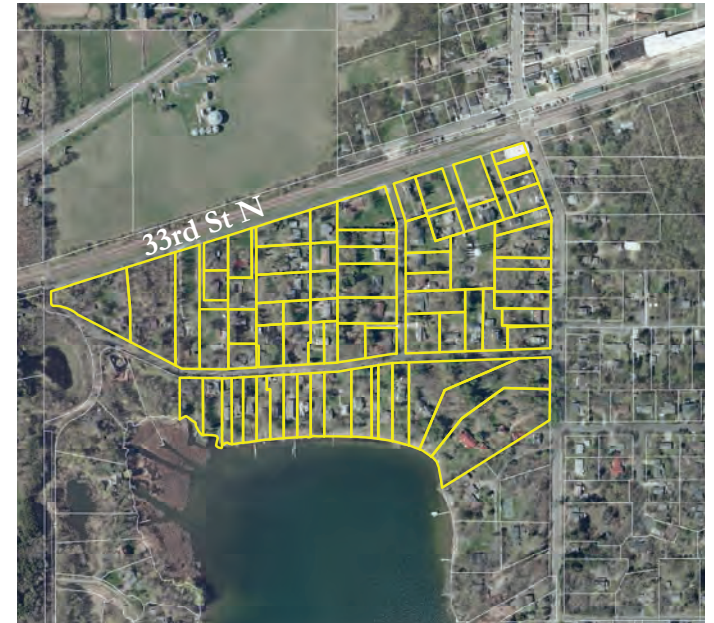


0 100 200 400 Feet

Kenridge Totals

Zoning	RS	Water System Type	City
Estimate Population	88 persons	Linear Feet of Pipe	3,384 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	135 feet
Number of Lots	25	Estimate Cost of Water System Total	\$138,744
Mean Lot Size	0.69 acres	Estimate Cost of Water System per Lot	\$5,550
Sum of All Lot Sizes	17.4 acres		
Linear Feet of Road	3,000 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	120 feet	Estimate DWF (gal/day)	5,085 g/d
Estimate Cost of Road Reconstruction Total	\$491,580	Linear Feet of Pipe	3,000 feet
Estimate Cost of Road Reconstruction per Lot	\$19,663	Linear Feet of Pipe per Lot	120 feet
		Estimate Cost of Sanitary System Total	\$372,500
		Estimate Cost of Sanitary System per Lot	\$14,900

Lake Elmo Park



0 200 400 800 Feet

Lake Elmo Park Totals

Zoning	RS	Water System Type	City
Estimate Population	256 persons	Linear Feet of Pipe	3,203 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	44 feet
Number of Lots	73	Estimate Cost of Water System Total	\$131,323
Mean Lot Size	0.57 acres	Estimate Cost of Water System per Lot	\$1,799
Sum of All Lot Sizes	45.0 acres		
Linear Feet of Road	3,203 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	44 feet	Estimate DWF (gal/day)	14,849 g/d
Estimate Cost of Road Reconstruction Total	\$334,137	Linear Feet of Pipe	3,203 feet
Estimate Cost of Road Reconstruction per Lot	\$4,577	Linear Feet of Pipe per Lot	44 feet
		Estimate Cost of Sanitary System Total	\$397,706
		Estimate Cost of Sanitary System per Lot	\$5,448

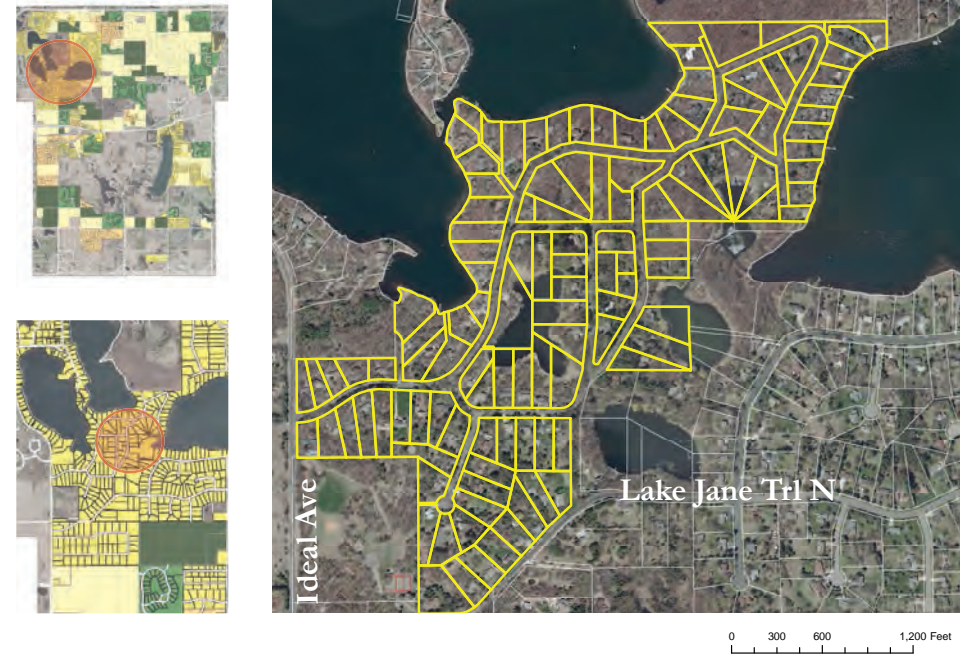
Lane's Demontreville Country Club



Lane's Demontreville Country Club Totals

Zoning	RS	Water System Type	Private
Estimate Population	305 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes/No	Linear Feet of Pipe per Lot	N/A
Number of Lots	87	Estimate Cost of Water System Total	\$1,174,500
Mean Lot Size	0.56 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	48.6 acres		
Linear Feet of Road	6,050 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	70 feet	Estimate DWF (gal/day)	17,697 g/d
Estimate Cost of Road Reconstruction Total	\$991,353	Linear Feet of Pipe	6,050 feet
Estimate Cost of Road Reconstruction per Lot	\$11,393	Linear Feet of Pipe per Lot	70 feet
		Estimate Cost of Sanitary System Total	\$751,208
		Estimate Cost of Sanitary System per Lot	\$8,635

Oace Acres



Oace Acres Totals

Zoning	RS	Water System Type	Private
Estimate Population	424 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	121	Estimate Cost of Water System Total	\$1,633,500
Mean Lot Size	0.98 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	118.6 acres		
Linear Feet of Road	13,569 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	112 feet	Estimate DWF (gal/day)	24,613 g/d
Estimate Cost of Road Reconstruction Total	\$1,415,487	Linear Feet of Pipe	13,569 feet
Estimate Cost of Road Reconstruction per Lot	\$11,698	Linear Feet of Pipe per Lot	112 feet
		Estimate Cost of Sanitary System Total	\$1,684,780
		Estimate Cost of Sanitary System per Lot	\$13,923

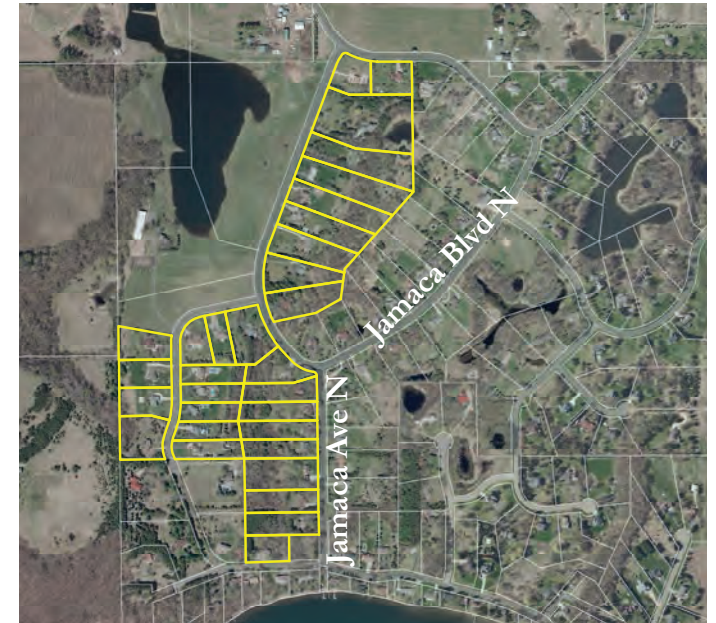
Packard Park



Packard Park Totals

Zoning	RS	Water System Type	Private
Estimate Population	74 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	21	Estimate Cost of Water System Total	\$283,500
Mean Lot Size	1.57 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	33.1 acres		
Linear Feet of Road	3,264 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	155 feet	Estimate DWF (gal/day)	4,272 g/d
Estimate Cost of Road Reconstruction Total	\$534,855	Linear Feet of Pipe	3,264 feet
Estimate Cost of Road Reconstruction per Lot	\$25,469	Linear Feet of Pipe per Lot	155 feet
		Estimate Cost of Sanitary System Total	\$405,292
		Estimate Cost of Sanitary System per Lot	\$19,300

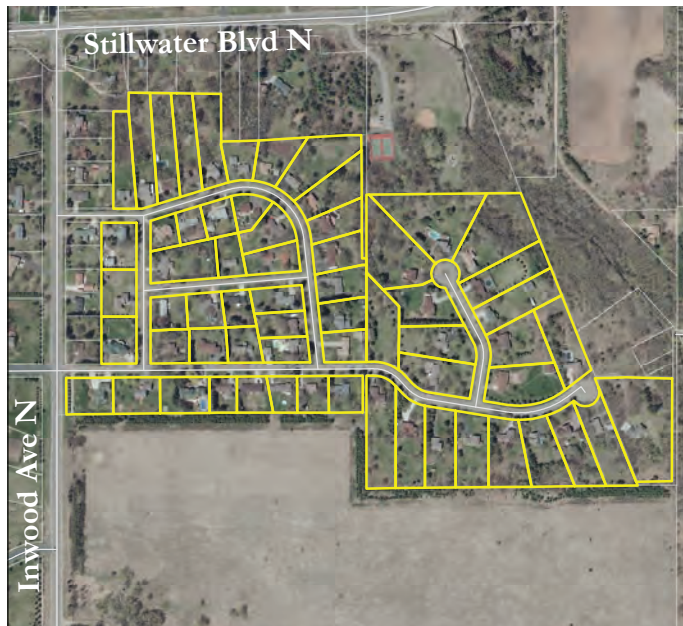
Springborn's Green Acres



Springborn's Green Acres Totals

Zoning	RS	Water System Type	Private
Estimate Population	109 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	31	Estimate Cost of Water System Total	\$418,500
Mean Lot Size	1.82 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	56.5 acres		
Linear Feet of Road	5,760 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	186 feet	Estimate DWF (gal/day)	6,306 g/d
Estimate Cost of Road Reconstruction Total	\$600,883	Linear Feet of Pipe	5,760 feet
Estimate Cost of Road Reconstruction per Lot	\$19,383	Linear Feet of Pipe per Lot	186 feet
		Estimate Cost of Sanitary System Total	\$715,200
		Estimate Cost of Sanitary System per Lot	\$23,071

Tablyn Park

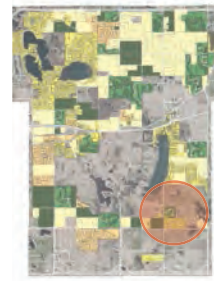


0 100 200 400 600 800 Feet

Tablyn Park Totals

Zoning	RS	Water System Type	City
Estimate Population	221 persons	Linear Feet of Pipe	5678 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	90 feet
Number of Lots	63	Estimate Cost of Water System Total	\$232,789
Mean Lot Size	0.84 acres	Estimate Cost of Water System per Lot	\$3,695
Sum of All Lot Sizes	52.7 acres		
Linear Feet of Road	5,920 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	94 feet	Estimate DWF (gal/day)	12,815 g/d
Estimate Cost of Road Reconstruction Total	\$617,574	Linear Feet of Pipe	5,920 feet
Estimate Cost of Road Reconstruction per Lot	\$9,803	Linear Feet of Pipe per Lot	94 feet
		Estimate Cost of Sanitary System Total	\$735,067
		Estimate Cost of Sanitary System per Lot	\$11,668

Tartan Meadows



0 100 200 400 600 Feet

Tartan Meadows Totals

Zoning	RS	Water System Type	Private
Estimate Population	133 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	38	Estimate Cost of Water System Total	\$513,000
Mean Lot Size	1.6 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	60.8 acres		
Linear Feet of Road	4,800 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	126 feet	Estimate DWF (gal/day)	7,730 g/d
Estimate Cost of Road Reconstruction Total	\$786,528	Linear Feet of Pipe	4,800 feet
Estimate Cost of Road Reconstruction per Lot	\$20,698	Linear Feet of Pipe per Lot	126 feet
		Estimate Cost of Sanitary System Total	\$596,000
		Estimate Cost of Sanitary System per Lot	\$15,684

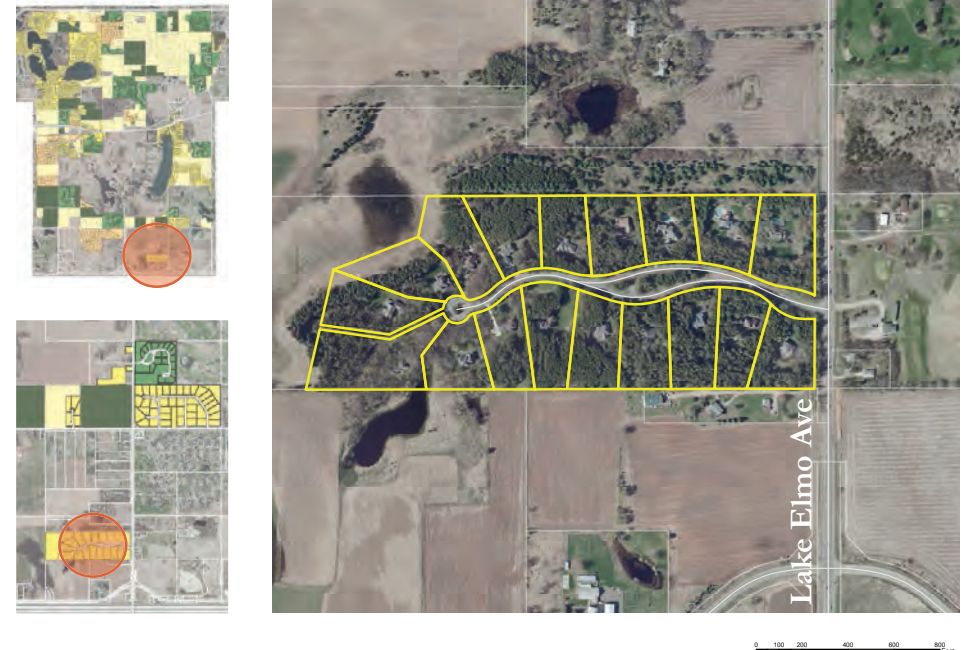
Teal Pass Estates



Teal Pass Estates Totals

Zoning	RS	Water System Type	Private
Estimate Population	53 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	15	Estimate Cost of Water System Total	\$202,500
Mean Lot Size	1.94 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	29.2 acres		
Linear Feet of Road	2,304 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	154 feet	Estimate DWF (gal/day)	3,051 g/d
Estimate Cost of Road Reconstruction Total	\$377,533	Linear Feet of Pipe	2,304 feet
Estimate Cost of Road Reconstruction per Lot	\$25,169	Linear Feet of Pipe per Lot	154 feet
		Estimate Cost of Sanitary System Total	\$286,080
		Estimate Cost of Sanitary System per Lot	\$19,072

The Forest



The Forest Totals

Zoning	RS	Water System Type	Private
Estimate Population	63 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	18	Estimate Cost of Water System Total	\$243,000
Mean Lot Size	1.96 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	35.2 acres		
Linear Feet of Road	1,675 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	93 feet	Estimate DWF (gal/day)	3,661 g/d
Estimate Cost of Road Reconstruction Total	\$274,466	Linear Feet of Pipe	1,675 feet
Estimate Cost of Road Reconstruction per Lot	\$15,248	Linear Feet of Pipe per Lot	93 feet
		Estimate Cost of Sanitary System Total	\$207,979
		Estimate Cost of Sanitary System per Lot	\$11,554

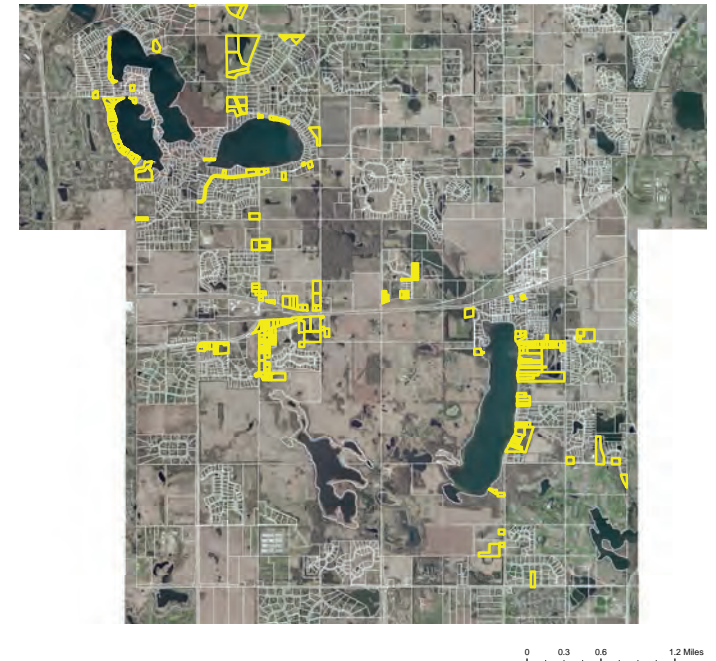
Water's Bay



Water's Bay Totals

Zoning	RS	Water System Type	Private
Estimate Population	18 persons	Linear Feet of Pipe	N/A
Secondary Access	No	Linear Feet of Pipe per Lot	N/A
Number of Lots	5	Estimate Cost of Water System Total	\$67,500
Mean Lot Size	2.39 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	12.0 acres		
Linear Feet of Road	440 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	88 feet	Estimate DWF (gal/day)	1,017 g/d
Estimate Cost of Road Reconstruction Total	\$45,901	Linear Feet of Pipe	440 feet
Estimate Cost of Road Reconstruction per Lot	\$9,180	Linear Feet of Pipe per Lot	88 feet
		Estimate Cost of Sanitary System Total	\$54,633
		Estimate Cost of Sanitary System per Lot	\$10,927

All Other RS



All Other Rural Single Family Totals

Zoning	RS	Water System Type	Varies
Estimate Population	844 persons	Linear Feet of Pipe	N/A
Secondary Access	Varies	Linear Feet of Pipe per Lot	N/A
Number of Lots	241	Estimate Cost of Water System Total	\$3,253,500
Mean Lot Size	1.5 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	359 acres		
Linear Feet of Road	33,870 feet	Sanitary System Type	Varies
Linear Feet of Road per Lot	141 feet	Estimate DWF (gal/day)	49,022 g/d
Estimate Cost of Road Reconstruction Total	\$3,533,318	Linear Feet of Pipe	33,870 feet
Estimate Cost of Road Reconstruction per Lot	\$14,661	Linear Feet of Pipe per Lot	141 feet
		Estimate Cost of Sanitary System Total	\$4,205,525
		Estimate Cost of Sanitary System per Lot	\$17,450

Rural Residential Zoning



Rural Residential Zoning Totals

Zoning	RR
Average Number of Lots	7
Estimate Average Population per Development	20 persons
Total Mean Lot Size	16.5 acres

Roads

Average Linear Feet of Road	2,616 LF
Average Linear Feet of Road per Lot	468 LF
Estimated Total Mean Road Cost	\$272,930
Estimated Mean Road Cost Per Lot	\$48,832

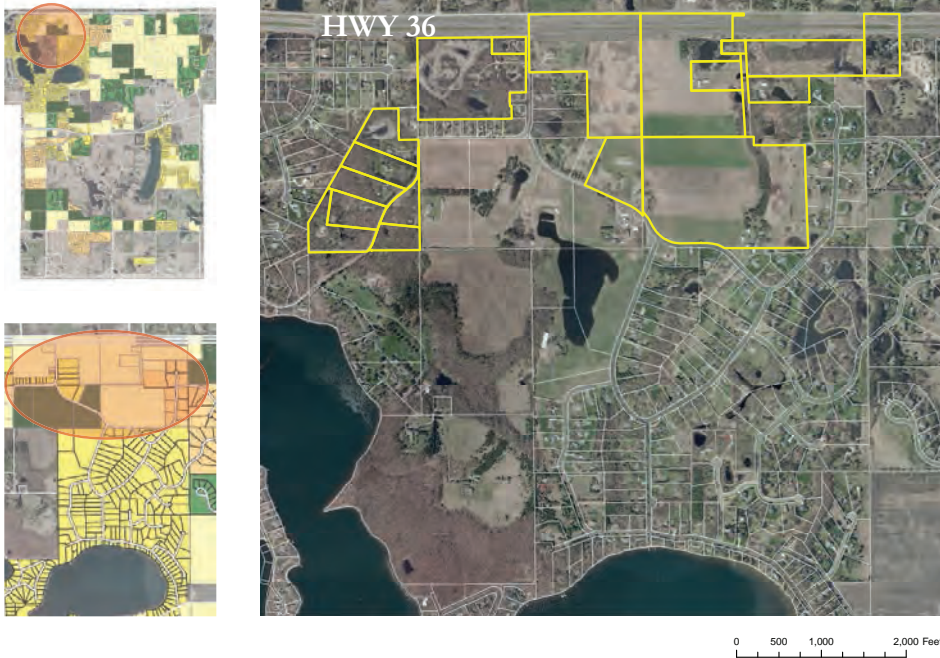
Water

Estimated Total Mean Cost for Water Infrastructure	\$110,000
Estimated Mean Cost for Water Infrastructure per Lot	\$13,500

Sanitary System

Estimated Total Mean Linear Feet of Sanitary Sewer Pipe	2,645 LF
Estimated Mean Linear Feet of Sanitary Sewer Pipe per Lot	478 LF
Estimated Total Mean Cost of Sanitary Sewer Pipe	\$328,432
Estimated Mean Cost of Sanitary Sewer Pipe per Lot	\$59,315

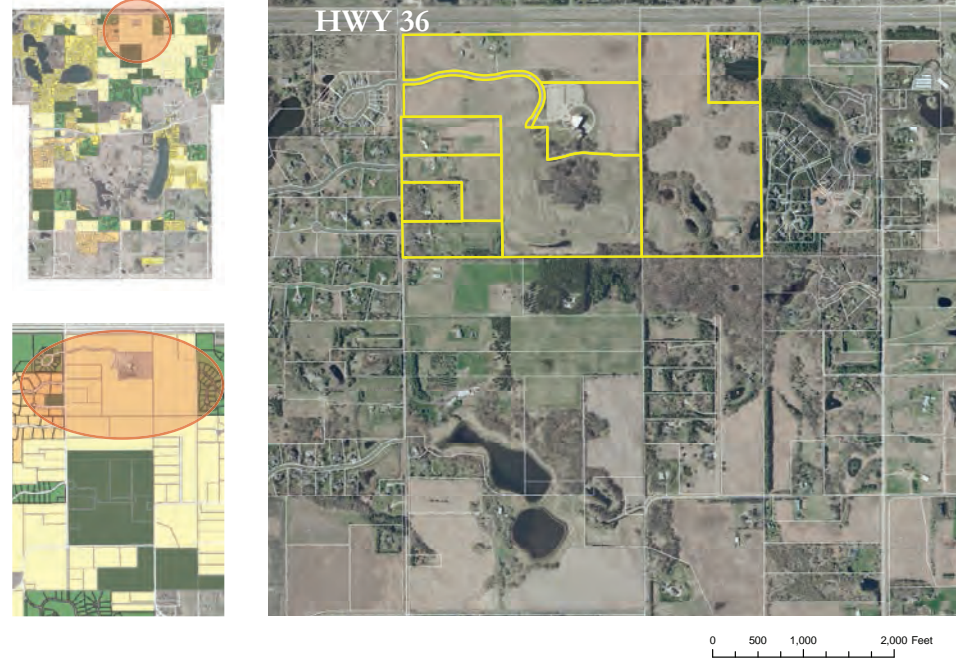
Rural Residential 1



Rural Residential 1 Totals

Zoning	RR	Water System Type	Private
Estimate Population	63 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	18	Estimate Cost of Water System Total	\$243,000
Mean Lot Size	12.46 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	224.3 acres		
Linear Feet of Road	3,881 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	216 feet	Estimate DWF (gal/day)	3,661 g/d
Estimate Cost of Road Reconstruction Total	\$404,878	Linear Feet of Pipe	3,881 feet
Estimate Cost of Road Reconstruction per Lot	\$22,493	Linear Feet of Pipe per Lot	216 feet
		Estimate Cost of Sanitary System Total	\$481,906
		Estimate Cost of Sanitary System per Lot	\$26,773

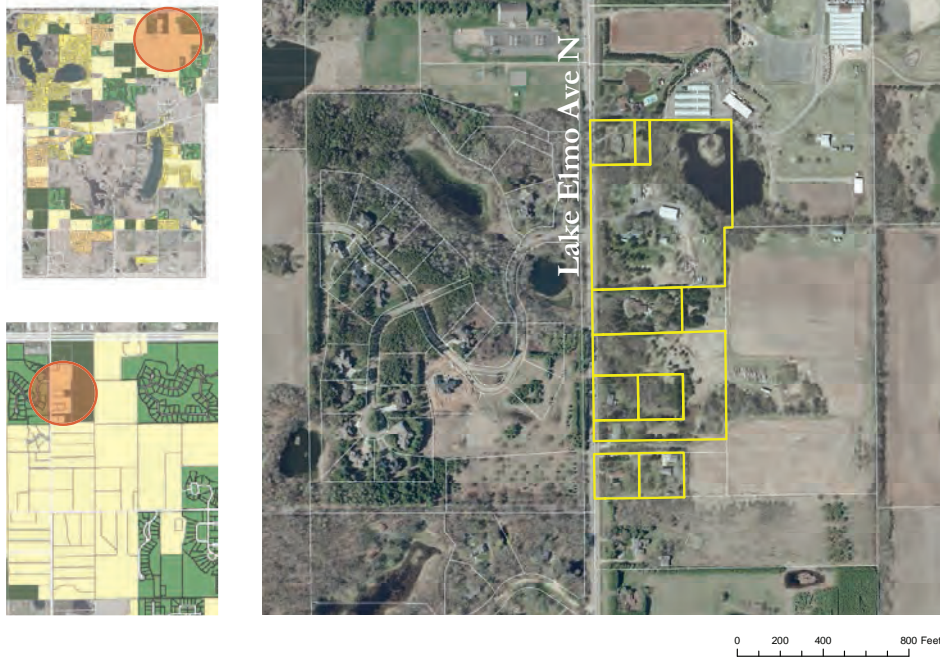
Rural Residential 2



Rural Residential 2 Totals

Zoning	RR	Water System Type	City
Estimate Population	32 persons	Linear Feet of Pipe	6,970
Secondary Access	Yes	Linear Feet of Pipe per Lot	774 feet
Number of Lots	9	Estimate Cost of Water System Total	\$285,770
Mean Lot Size	24.42 acres	Estimate Cost of Water System per Lot	\$31,752
Sum of All Lot Sizes	219.8 acres		
Linear Feet of Road	2,477 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	275 feet	Estimate DWF (gal/day)	1,831 g/d
Estimate Cost of Road Reconstruction Total	\$258,369	Linear Feet of Pipe	2,477 feet
Estimate Cost of Road Reconstruction per Lot	\$28,708	Linear Feet of Pipe per Lot	275 feet
		Estimate Cost of Sanitary System Total	\$307,524
		Estimate Cost of Sanitary System per Lot	\$34,169

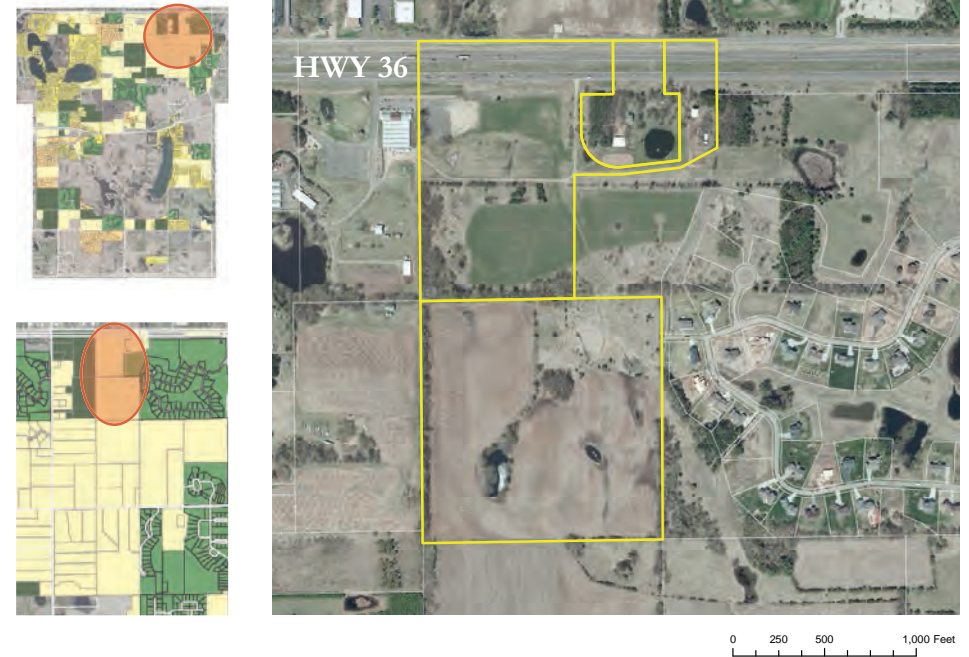
Rural Residential 3



Rural Residential 3 Totals

Zoning	RR	Water System Type	Private
Estimate Population	32 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	9	Estimate Cost of Water System Total	\$121,500
Mean Lot Size	2.52 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	22.6 acres		
Linear Feet of Road	1,700 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	189 feet	Estimate DWF (gal/day)	1,831 g/d
Estimate Cost of Road Reconstruction Total	\$177,344	Linear Feet of Pipe	1,700 feet
Estimate Cost of Road Reconstruction per Lot	\$19,705	Linear Feet of Pipe per Lot	189 feet
		Estimate Cost of Sanitary System Total	\$211,083
		Estimate Cost of Sanitary System per Lot	\$23,454

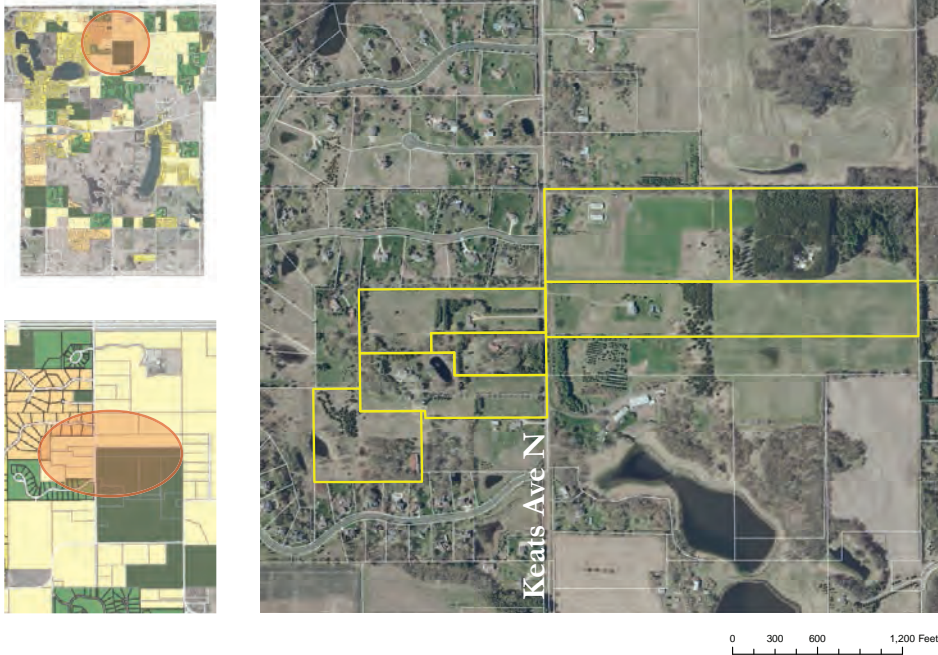
Rural Residential 4



Rural Residential 4 Totals

Zoning	RR	Water System Type	City
Estimate Population	11 persons	Linear Feet of Pipe	1,396 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	465 feet
Number of Lots	3	Estimate Cost of Water System Total	\$57,236
Mean Lot Size	26.57 acres	Estimate Cost of Water System per Lot	\$19,079
Sum of All Lot Sizes	79.8 acres		
Linear Feet of Road	1,630 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	543 feet	Estimate DWF (gal/day)	610 g/d
Estimate Cost of Road Reconstruction Total	\$170,042	Linear Feet of Pipe	1,630 feet
Estimate Cost of Road Reconstruction per Lot	\$56,681	Linear Feet of Pipe per Lot	543 feet
		Estimate Cost of Sanitary System Total	\$202,392
		Estimate Cost of Sanitary System per Lot	\$67,464

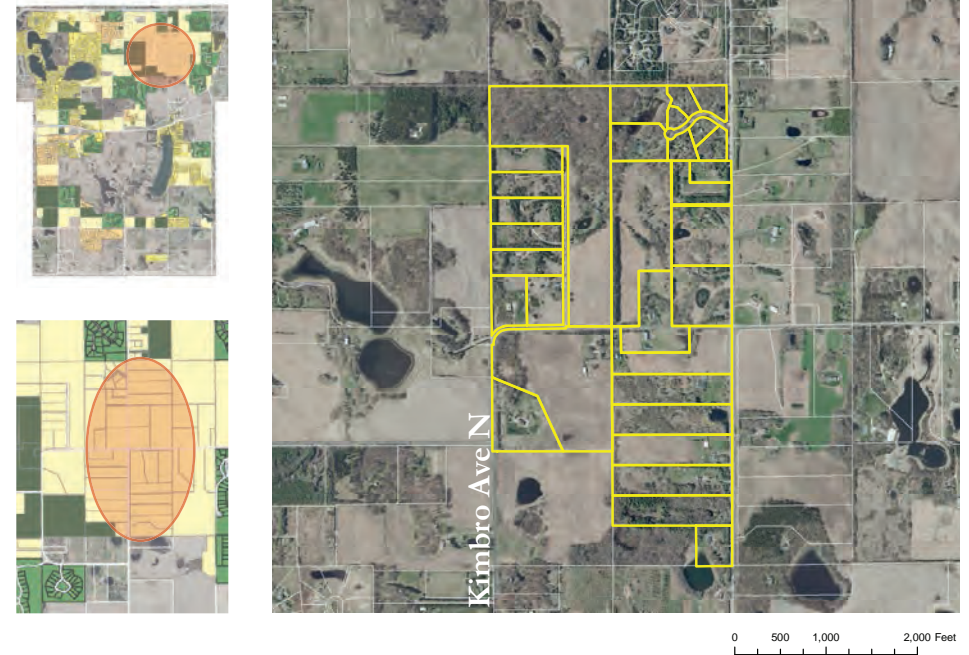
Rural Residential 5



Rural Residential 5 Totals

Zoning	RR	Water System Type	City/Private
Estimate Population	25 persons	Linear Feet of Pipe	1,625 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	325 feet
Number of Lots	7	Estimate Cost of Water System Total	\$93,625
Mean Lot Size	14.3 acres	Estimate Cost of Water System per Lot	City: \$11,447 Private: \$13,500
Sum of All Lot Sizes	100.2 acres		
Linear Feet of Road	1,620 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	231 feet	Estimate DWF (gal/day)	1,424 g/d
Estimate Cost of Road Reconstruction Total	\$168,998	Linear Feet of Pipe	1,620 feet
Estimate Cost of Road Reconstruction per Lot	\$24,143	Linear Feet of Pipe per Lot	321 feet
		Estimate Cost of Sanitary System Total	\$201,150
		Estimate Cost of Sanitary System per Lot	\$28,734

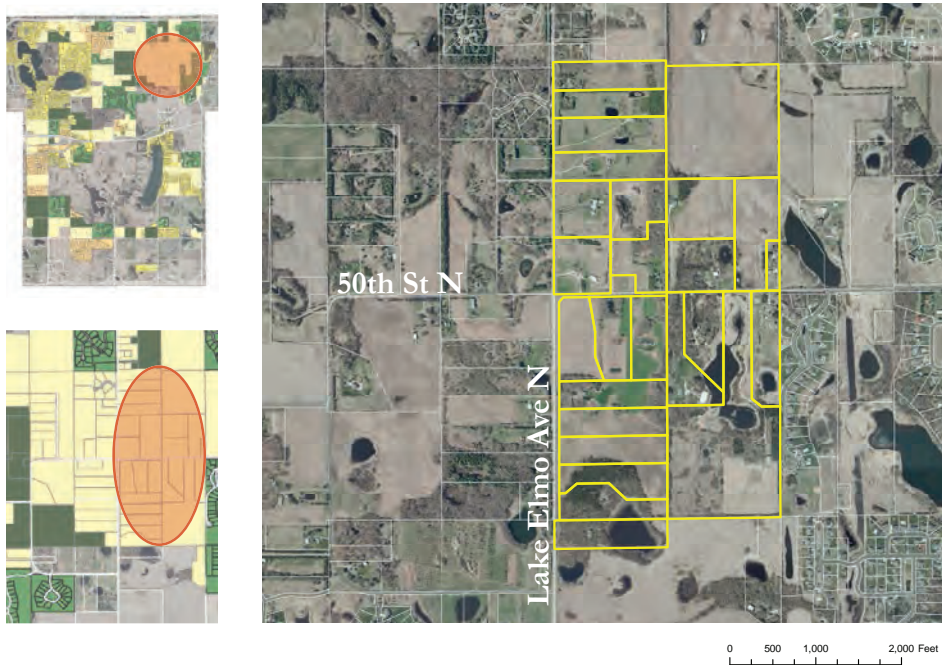
Rural Residential 6



Rural Residential 6 Totals

Zoning	RR	Water System Type	Private
Estimate Population	112 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	32	Estimate Cost of Water System Total	\$432,000
Mean Lot Size	8.29 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	265.1 acres		
Linear Feet of Road	11,373 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	355 feet	Estimate DWF (gal/day)	6,509 g/d
Estimate Cost of Road Reconstruction Total	\$1,286,454	Linear Feet of Pipe	11,373 feet
Estimate Cost of Road Reconstruction per Lot	\$37,077	Linear Feet of Pipe per Lot	355 feet
		Estimate Cost of Sanitary System Total	\$1,412,175
		Estimate Cost of Sanitary System per Lot	\$44,130

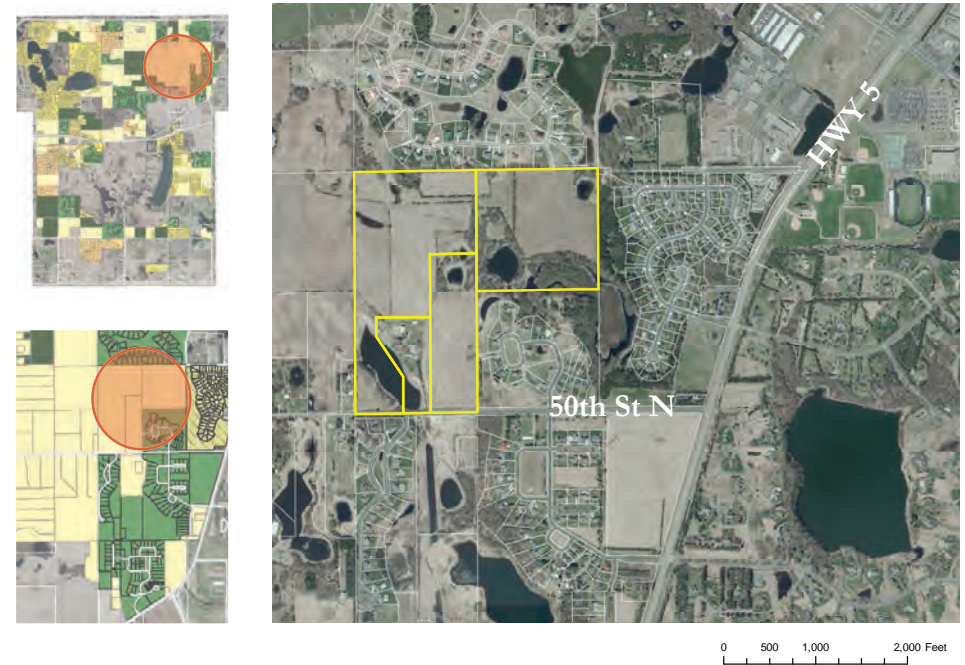
Rural Residential 7



Rural Residential 7 Totals

Zoning	RR	Water System Type	Private
Estimate Population	91 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	26	Estimate Cost of Water System Total	\$351,000
Mean Lot Size	12.44 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	324 acres		
Linear Feet of Road	8,357 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	321 feet	Estimate DWF (gal/day)	5,289 g/d
Estimate Cost of Road Reconstruction Total	\$871,760	Linear Feet of Pipe	8,357 feet
Estimate Cost of Road Reconstruction per Lot	\$33,529	Linear Feet of Pipe per Lot	321 feet
		Estimate Cost of Sanitary System Total	\$1,037,611
		Estimate Cost of Sanitary System per Lot	\$39,908

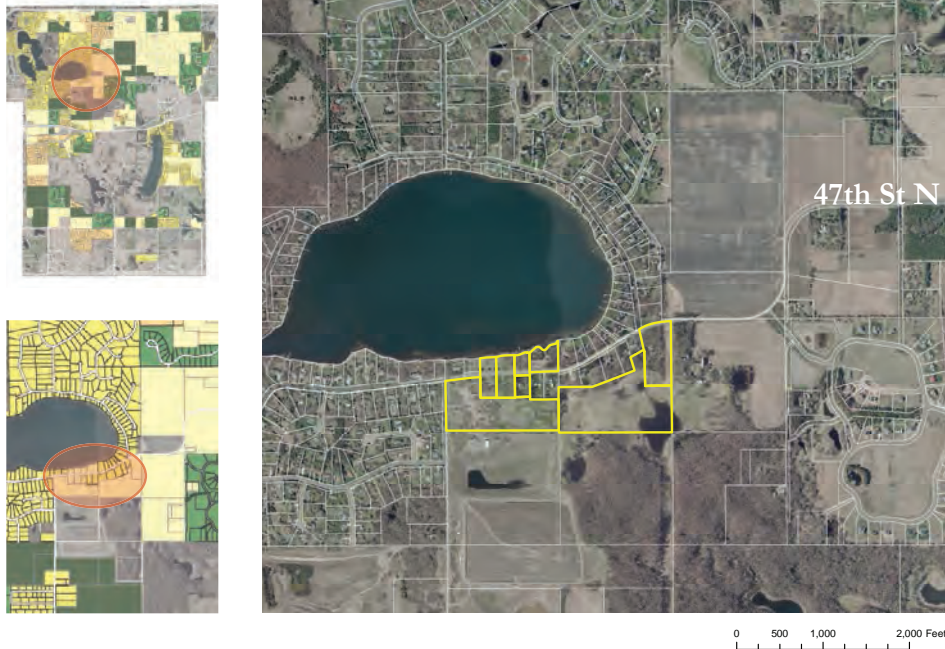
Rural Residential 8



Rural Residential 8 Totals

Zoning	RR	Water System Type	Private
Estimate Population	14 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	4	Estimate Cost of Water System Total	\$540,000
Mean Lot Size	30 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	120 acres		
Linear Feet of Road	1,326 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	331 feet	Estimate DWF (gal/day)	814 g/d
Estimate Cost of Road Reconstruction Total	\$138,287	Linear Feet of Pipe	1,326 feet
Estimate Cost of Road Reconstruction per Lot	\$34,572	Linear Feet of Pipe per Lot	331 feet
		Estimate Cost of Sanitary System Total	\$164,595
		Estimate Cost of Sanitary System per Lot	\$41,149

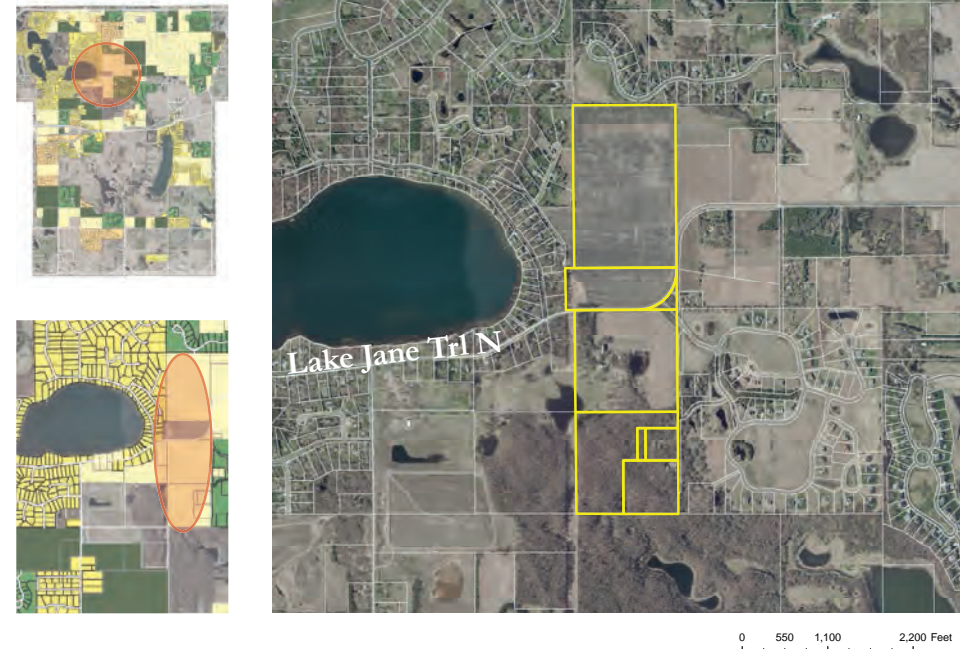
Rural Residential 9



Rural Residential 9 Totals

Zoning	RR	Water System Type	City
Estimate Population	18 persons	Linear Feet of Pipe	2,261 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	283 feet
Number of Lots	8	Estimate Cost of Water System Total	\$92,701
Mean Lot Size	5.66 acres	Estimate Cost of Water System per Lot	\$11,588
Sum of All Lot Sizes	45.3 acres		
Linear Feet of Road	1,719 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	215 feet	Estimate DWF (gal/day)	1,627 g/d
Estimate Cost of Road Reconstruction Total	\$179,297	Linear Feet of Pipe	1,719 feet
Estimate Cost of Road Reconstruction per Lot	\$22,412	Linear Feet of Pipe per Lot	215 feet
		Estimate Cost of Sanitary System Total	\$213,408
		Estimate Cost of Sanitary System per Lot	\$26,676

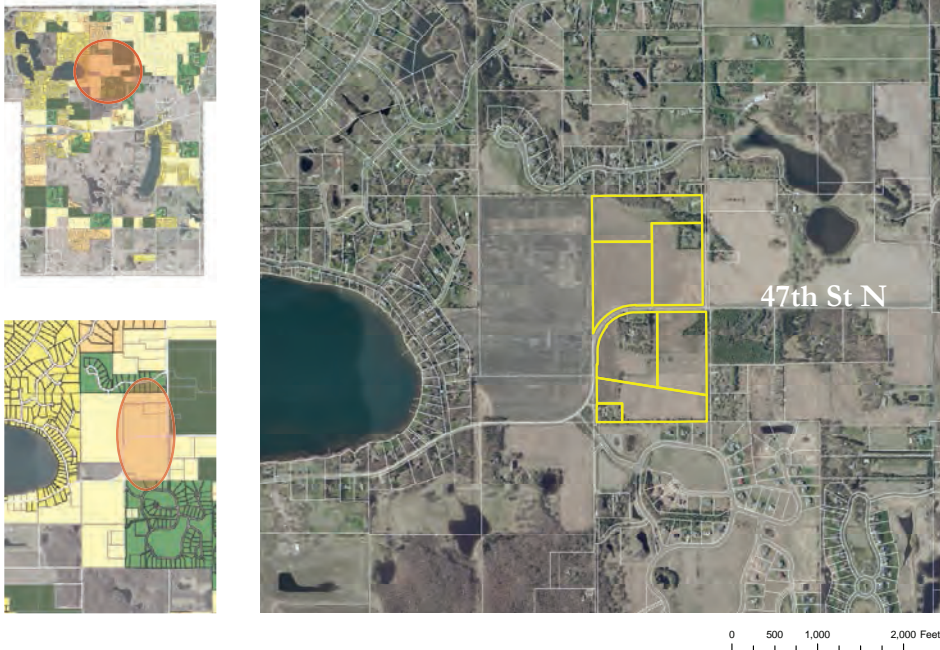
Rural Residential 10



Rural Residential 10 Totals

Zoning	RR	Water System Type	City/Private
Estimate Population	11 persons	Linear Feet of Pipe	2,032 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	2,032 feet
Number of Lots	8	Estimate Cost of Water System Total	\$96,812
Mean Lot Size	20.01 acres	Estimate Cost of Water System per Lot	City: \$83,312 Private: \$13,500
Sum of All Lot Sizes	160.1 acres		
Linear Feet of Road	2,245 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	279 feet	Estimate DWF (gal/day)	1,627 g/d
Estimate Cost of Road Reconstruction Total	\$233,103	Linear Feet of Pipe	2,245 feet
Estimate Cost of Road Reconstruction per Lot	\$29,138	Linear Feet of Pipe per Lot	279 feet
		Estimate Cost of Sanitary System Total	\$277,450
		Estimate Cost of Sanitary System per Lot	\$34,681

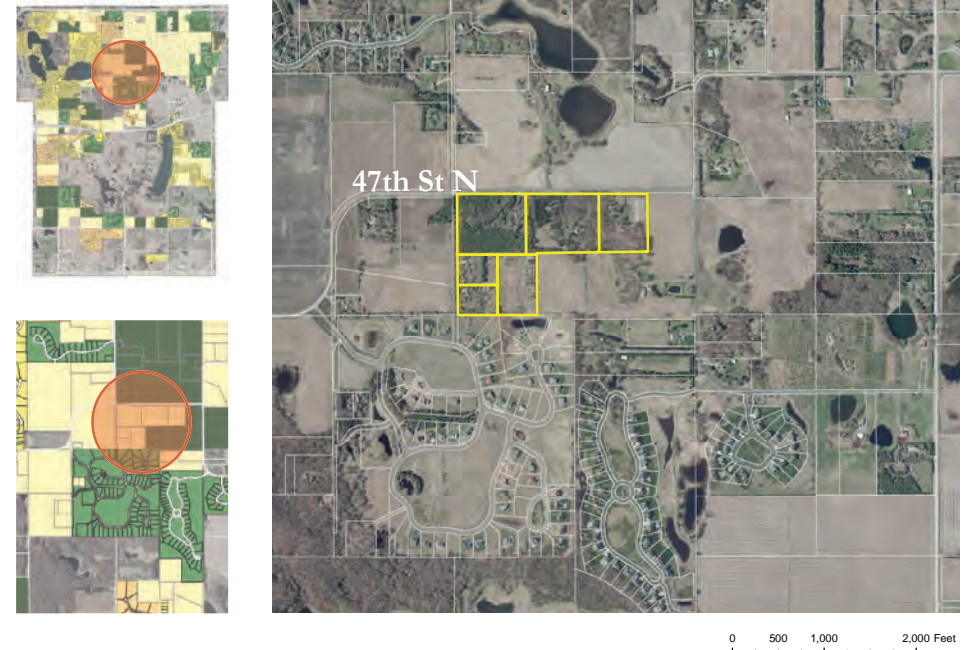
Rural Residential 11



Rural Residential 11 Totals

Zoning	RR	Water System Type	City
Estimate Population	14 persons	Linear Feet of Pipe	3,330 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	476 feet
Number of Lots	7	Estimate Cost of Water System Total	\$136,530
Mean Lot Size	10.67 acres	Estimate Cost of Water System per Lot	\$19,504
Sum of All Lot Sizes	74.7 acres		
Linear Feet of Road	2,030 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	290 feet	Estimate DWF (gal/day)	1,424 g/d
Estimate Cost of Road Reconstruction Total	\$211,770	Linear Feet of Pipe	2030 feet
Estimate Cost of Road Reconstruction per Lot	\$30,253	Linear Feet of Pipe per Lot	290 feet
		Estimate Cost of Sanitary System Total	\$252,058
		Estimate Cost of Sanitary System per Lot	\$36,008

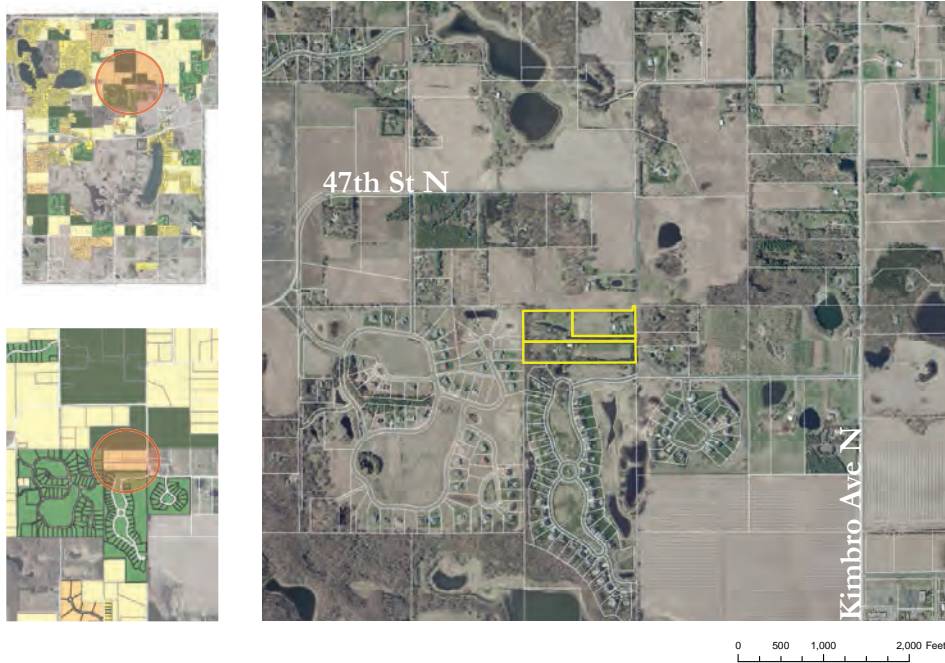
Rural Residential 12



Rural Residential 12 Totals

Zoning	RR	Water System Type	Private
Estimate Population	18 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	6	Estimate Cost of Water System Total	\$81,000
Mean Lot Size	7.28 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	43.7 acres		
Linear Feet of Road	2,130 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	355 feet	Estimate DWF (gal/day)	1,220 g/d
Estimate Cost of Road Reconstruction Total	\$222,202	Linear Feet of Pipe	2,130 feet
Estimate Cost of Road Reconstruction per Lot	\$37,034	Linear Feet of Pipe per Lot	355 feet
		Estimate Cost of Sanitary System Total	\$264,475
		Estimate Cost of Sanitary System per Lot	\$44,079

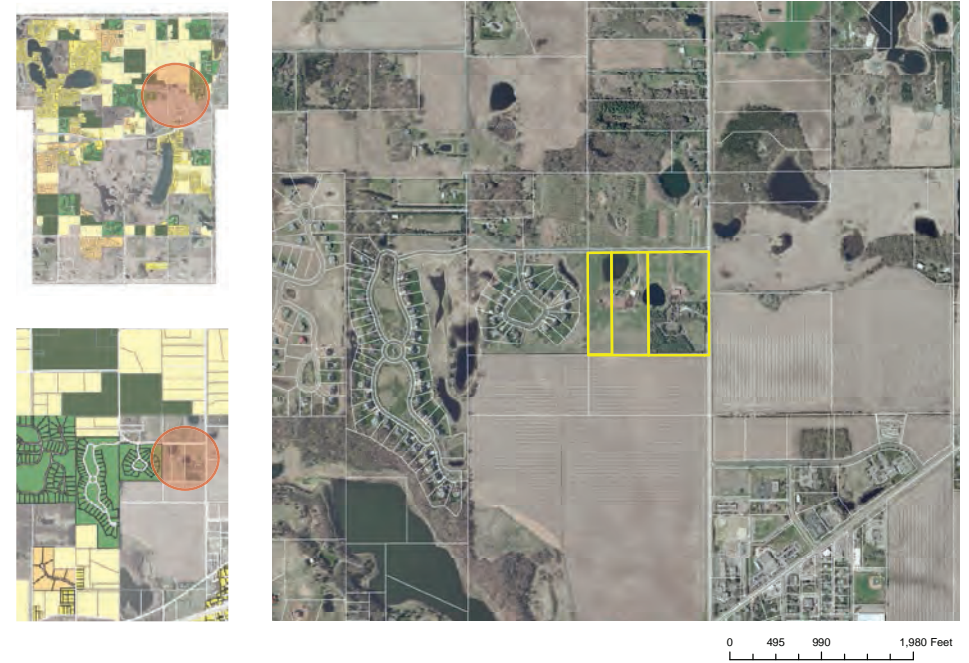
Rural Residential 13



Rural Residential 13 Totals

Zoning	RR	Water System Type	City
Estimate Population	11 persons	Linear Feet of Pipe	1,330 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	443 feet
Number of Lots	3	Estimate Cost of Water System Total	\$54,530
Mean Lot Size	6.11 acres	Estimate Cost of Water System per Lot	\$18,177
Sum of All Lot Sizes	18.4 acres		
Linear Feet of Road	408 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	136 feet	Estimate DWF (gal/day)	610 g/d
Estimate Cost of Road Reconstruction Total	\$42,563	Linear Feet of Pipe*	1,330 feet
Estimate Cost of Road Reconstruction per Lot	\$14,188	Linear Feet of Pipe per Lot	443 feet
		Estimate Cost of Sanitary System Total	\$165,142
		Estimate Cost of Sanitary System per Lot	\$55,047

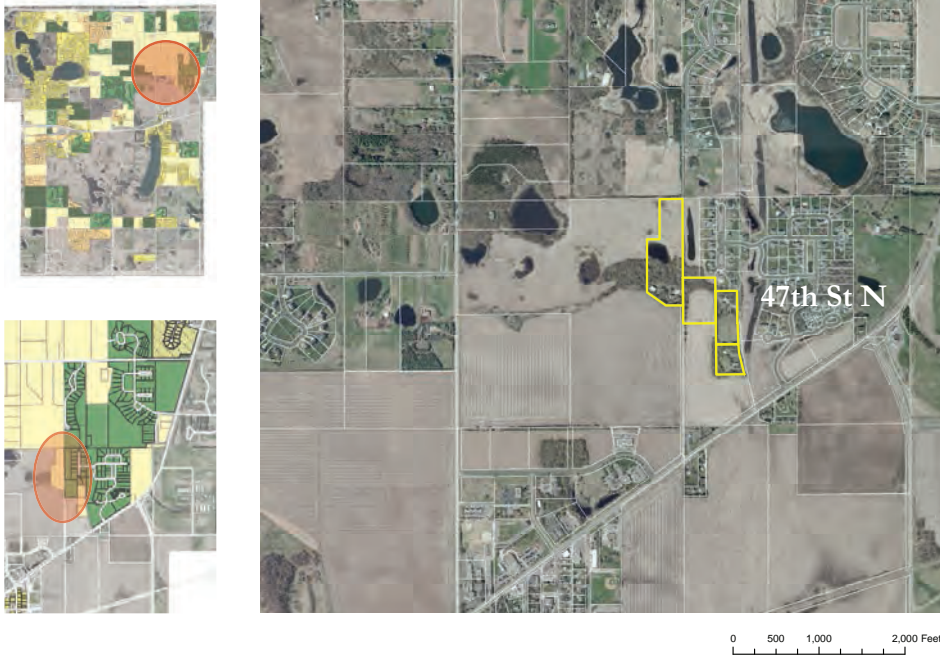
Rural Residential 14



Rural Residential 14 Totals

Zoning	RR	Water System Type	City
Estimate Population	11 persons	Linear Feet of Pipe	2,514 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	838 feet
Number of Lots	3	Estimate Cost of Water System Total	\$103,074
Mean Lot Size	11.13 acres	Estimate Cost of Water System per Lot	\$34,358
Sum of All Lot Sizes	33.4 acres		
Linear Feet of Road	2,500 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	833 feet	Estimate DWF (gal/day)	610 g/d
Estimate Cost of Road Reconstruction Total	\$260,800	Linear Feet of Pipe	2,500 feet
Estimate Cost of Road Reconstruction per Lot	\$86,933	Linear Feet of Pipe per Lot	833 feet
		Estimate Cost of Sanitary System Total	\$310,417
		Estimate Cost of Sanitary System per Lot	\$103,472

Rural Residential 15



Rural Residential 15 Totals

Zoning	RR	Water System Type	Private
Estimate Population	11 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	4	Estimate Cost of Water System Total	\$54,000
Mean Lot Size	5.11 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	20.4 acres		
Linear Feet of Road	1,000 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	250 feet	Estimate DWF (gal/day)	814 g/d
Estimate Cost of Road Reconstruction Total	\$104,320	Linear Feet of Pipe	1,000 feet
Estimate Cost of Road Reconstruction per Lot	\$26,080	Linear Feet of Pipe per Lot	250 feet
		Estimate Cost of Sanitary System Total	\$114,854
		Estimate Cost of Sanitary System per Lot	\$57,427

Rural Residential 16



Rural Residential 16 Totals

Zoning	RR	Water System Type	Private
Estimate Population	7 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	2	Estimate Cost of Water System Total	\$27,000
Mean Lot Size	11.30 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	22.6 acres		
Linear Feet of Road	925 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	463 feet	Estimate DWF (gal/day)	407 g/d
Estimate Cost of Road Reconstruction Total	\$96,496	Linear Feet of Pipe	925 feet
Estimate Cost of Road Reconstruction per Lot	\$48,248	Linear Feet of Pipe per Lot	463 feet
		Estimate Cost of Sanitary System Total	\$114,854
		Estimate Cost of Sanitary System per Lot	\$57,427

Rural Residential 17

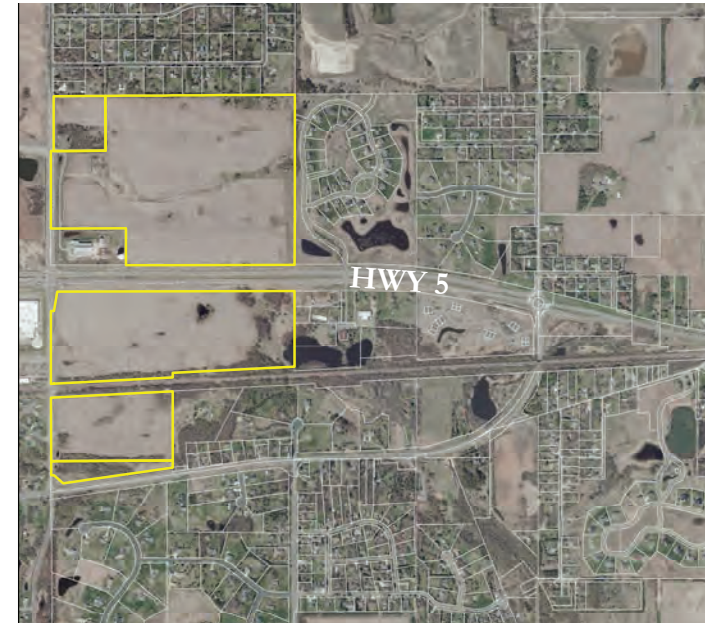


0 250 500 1,000 Feet

Rural Residential 17 Totals

Zoning	RR	Water System Type	Private
Estimate Population	3 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	1	Estimate Cost of Water System Total	\$13,500
Mean Lot Size	1.50 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	1.5 acres		
Linear Feet of Road	215 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	215 feet	Estimate DWF (gal/day)	203 g/d
Estimate Cost of Road Reconstruction Total	\$22,429	Linear Feet of Pipe	215 feet
Estimate Cost of Road Reconstruction per Lot	\$22,429	Linear Feet of Pipe per Lot	215 feet
		Estimate Cost of Sanitary System Total	\$26,696
		Estimate Cost of Sanitary System per Lot	\$26,696

Rural Residential 18

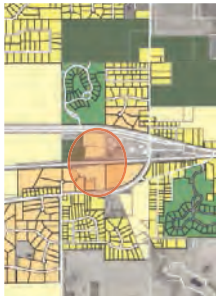


0 500 1,000 2,000 Feet

Rural Residential 18 Totals

Zoning	RR	Water System Type	City
Estimate Population	0 persons	Linear Feet of Pipe	5,868 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	1,174 feet
Number of Lots	5	Estimate Cost of Water System Total	\$240,588
Mean Lot Size	37.00 acres	Estimate Cost of Water System per Lot	\$48,118
Sum of All Lot Sizes	185.1 acres		
Linear Feet of Road	7,290 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	1,458 feet	Estimate DWF (gal/day)	1,017 g/d
Estimate Cost of Road Reconstruction Total	\$760,493	Linear Feet of Pipe	7,290 feet
Estimate Cost of Road Reconstruction per Lot	\$152,099	Linear Feet of Pipe per Lot	1,458 feet
		Estimate Cost of Sanitary System Total	\$905,175
		Estimate Cost of Sanitary System per Lot	\$181,035

Rural Residential 19

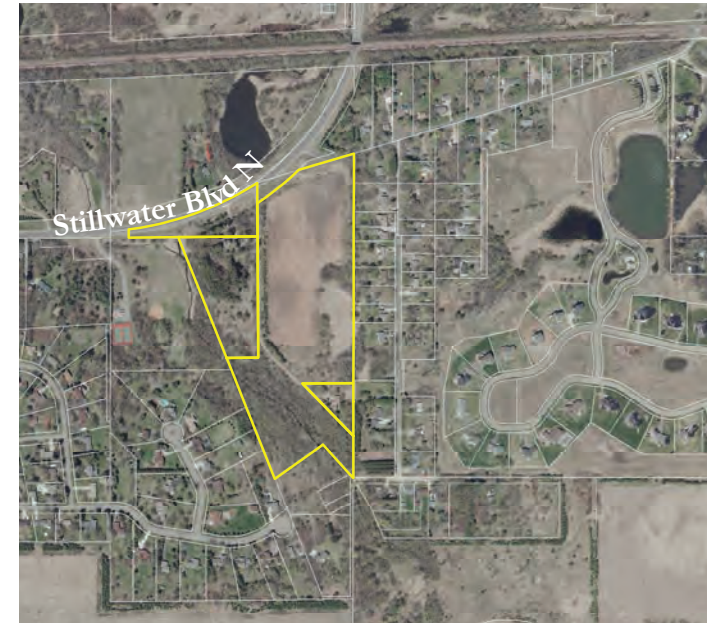
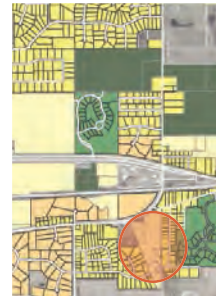


0 250 500 1,000 Feet

Rural Residential 19 Totals

Zoning	RR	Water System Type	Private
Estimate Population	4 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	3	Estimate Cost of Water System Total	\$40,500
Mean Lot Size	6.60 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	19.8 acres		
Linear Feet of Road	1,021 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	340 feet	Estimate DWF (gal/day)	610 g/d
Estimate Cost of Road Reconstruction Total	\$106,511	Linear Feet of Pipe	1,021 feet
Estimate Cost of Road Reconstruction per Lot	\$35,504	Linear Feet of Pipe per Lot	340 feet
		Estimate Cost of Sanitary System Total	\$126,774
		Estimate Cost of Sanitary System per Lot	\$42,258

Rural Residential 20

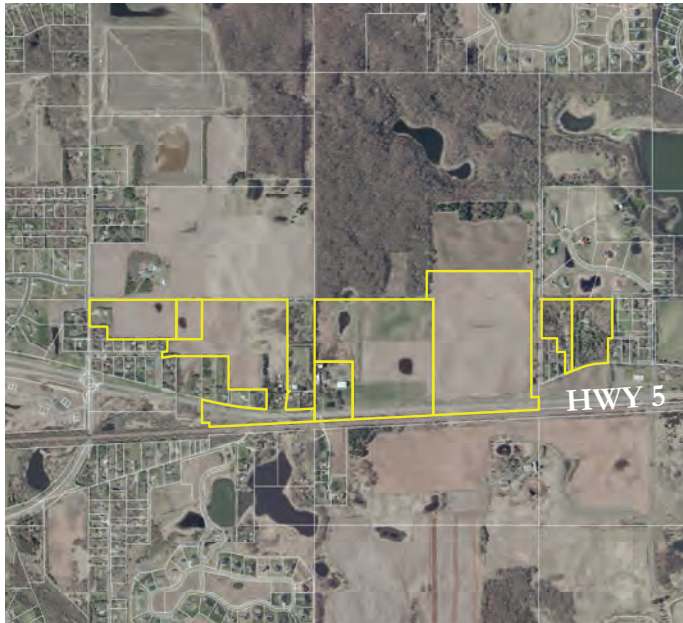


0 250 500 1,000 Feet

Rural Residential 20 Totals

Zoning	RR	Water System Type	City
Estimate Population	7 persons	Linear Feet of Pipe	1,150 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	288 feet
Number of Lots	4	Estimate Cost of Water System Total	\$47,150
Mean Lot Size	6.60 acres	Estimate Cost of Water System per Lot	\$11,788
Sum of All Lot Sizes	26.3 acres		
Linear Feet of Road	940 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	235 feet	Estimate DWF (gal/day)	814 g/d
Estimate Cost of Road Reconstruction Total	\$98,061	Linear Feet of Pipe	940 feet
Estimate Cost of Road Reconstruction per Lot	\$24,515	Linear Feet of Pipe per Lot	235 feet
		Estimate Cost of Sanitary System Total	\$116,717
		Estimate Cost of Sanitary System per Lot	\$29,179

Rural Residential 21

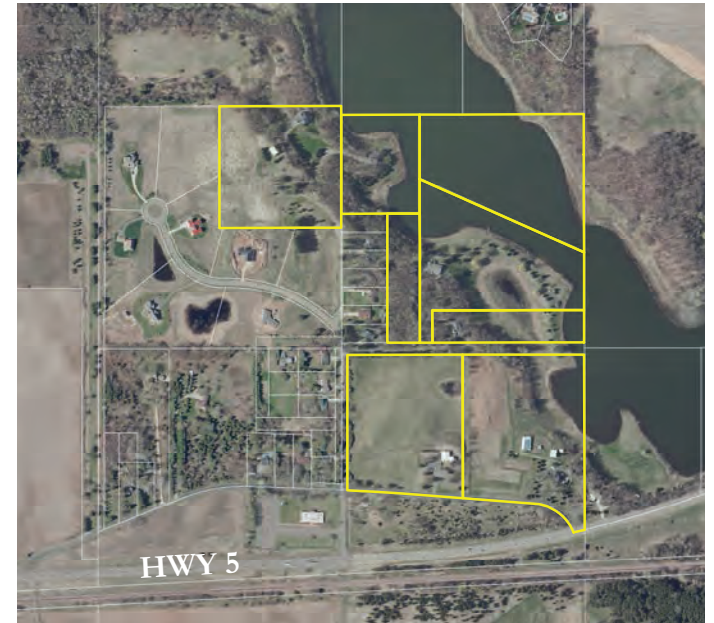


0 500 1,000 2,000 Feet

Rural Residential 21 Totals

Zoning	RR	Water System Type	City/Private
Estimate Population	18 persons	Linear Feet of Pipe	3,378 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	1,689 feet
Number of Lots	8	Estimate Cost of Water System Total	\$219,498
Mean Lot Size	18.00 acres	Estimate Cost of Water System per Lot	City: \$17,312 Private: \$13,500
Sum of All Lot Sizes	145.0 acres		
Linear Feet of Road	4,785 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	598 feet	Estimate DWF (gal/day)	1,627 g/d
Estimate Cost of Road Reconstruction Total	\$499,171	Linear Feet of Pipe	4,785 feet
Estimate Cost of Road Reconstruction per Lot	\$62,396	Linear Feet of Pipe per Lot	598 feet
		Estimate Cost of Sanitary System Total	\$594,138
		Estimate Cost of Sanitary System per Lot	\$74,267

Rural Residential 22



0 250 500 1,000 Feet

Rural Residential 22 Totals

Zoning	RR	Water System Type	Private
Estimate Population	21 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	8	Estimate Cost of Water System Total	\$108,000
Mean Lot Size	8.3 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	66.7 acres		
Linear Feet of Road	2,727 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	341 feet	Estimate DWF (gal/day)	1,627 g/d
Estimate Cost of Road Reconstruction Total	\$284,428	Linear Feet of Pipe	2,727 feet
Estimate Cost of Road Reconstruction per Lot	\$35,554	Linear Feet of Pipe per Lot	341 feet
		Estimate Cost of Sanitary System Total	\$338,540
		Estimate Cost of Sanitary System per Lot	\$42,318

Rural Residential 23

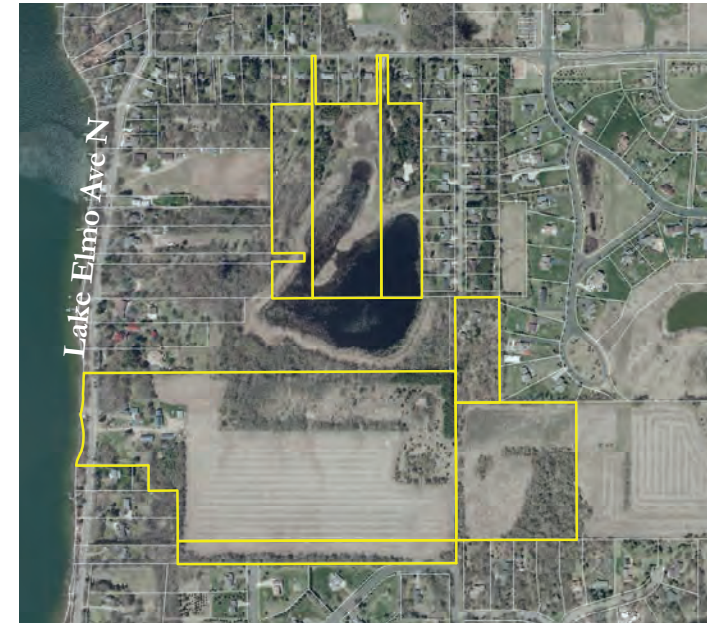


0 250 500 1,000 Feet

Rural Residential 23 Totals

Zoning	RR	Water System Type	Private
Estimate Population	3 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	1	Estimate Cost of Water System Total	\$13,500
Mean Lot Size	8.80 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	8.8 acres		
Linear Feet of Road	300 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	300 feet	Estimate DWF (gal/day)	203 g/d
Estimate Cost of Road Reconstruction Total	\$31,296	Linear Feet of Pipe	300 feet
Estimate Cost of Road Reconstruction per Lot	\$31,296	Linear Feet of Pipe per Lot	300 feet
		Estimate Cost of Sanitary System Total	\$37,250
		Estimate Cost of Sanitary System per Lot	\$37,250

Rural Residential 24



0 250 500 1,000 Feet

Rural Residential 24 Totals

Zoning	RR	Water System Type	Private
Estimate Population	14 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	7	Estimate Cost of Water System Total	\$94,500
Mean Lot Size	11.00 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	77.1 acres		
Linear Feet of Road	600 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	86 feet	Estimate DWF (gal/day)	1,424 g/d
Estimate Cost of Road Reconstruction Total	\$62,592	Linear Feet of Pipe	600 feet
Estimate Cost of Road Reconstruction per Lot	\$8,942	Linear Feet of Pipe per Lot	86 feet
		Estimate Cost of Sanitary System Total	\$74,500
		Estimate Cost of Sanitary System per Lot	\$10,643

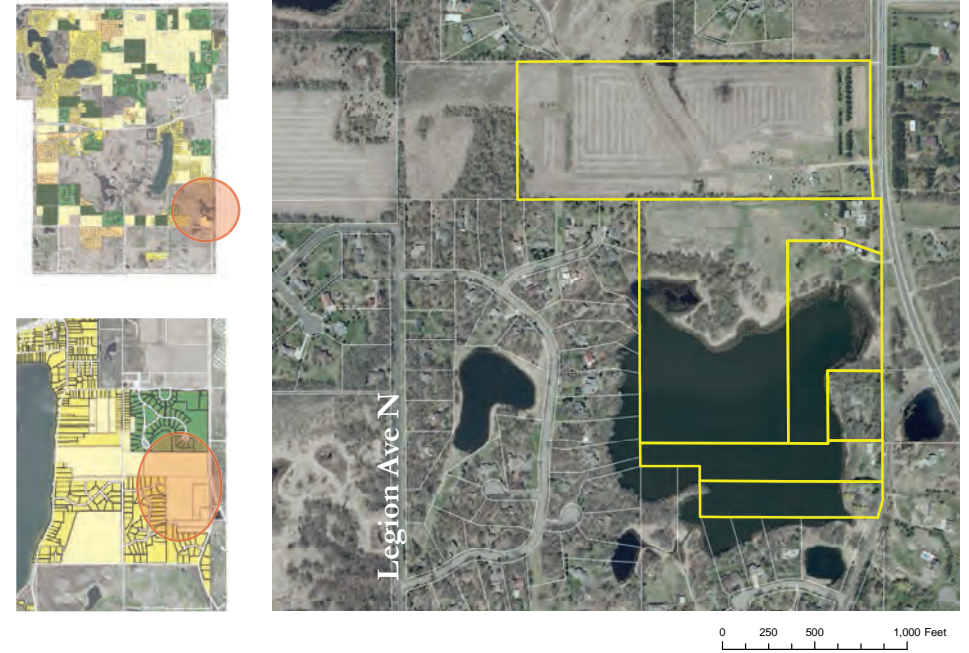
Rural Residential 25



Rural Residential 25 Totals

Zoning	RR	Water System Type	Private
Estimate Population	3 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	1	Estimate Cost of Water System Total	\$13,500
Mean Lot Size	57.20 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	57.2 acres		
Linear Feet of Road	1,590 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	1,590 feet	Estimate DWF (gal/day)	203 g/d
Estimate Cost of Road Reconstruction Total	\$165,859	Linear Feet of Pipe	1,590 feet
Estimate Cost of Road Reconstruction per Lot	\$165,859	Linear Feet of Pipe per Lot	1,590 feet
		Estimate Cost of Sanitary System Total	\$197,425
		Estimate Cost of Sanitary System per Lot	\$197,425

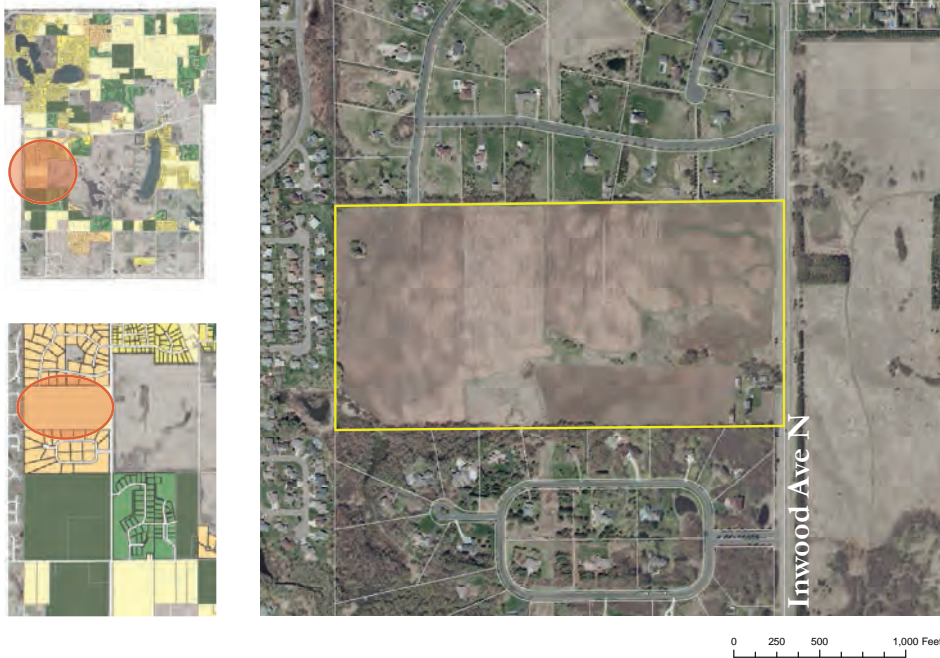
Rural Residential 26



Rural Residential 26 Totals

Zoning	RR	Water System Type	Private
Estimate Population	21 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	6	Estimate Cost of Water System Total	\$81,000
Mean Lot Size	13.80 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	82.7 acres		
Linear Feet of Road	1,050 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	175 feet	Estimate DWF (gal/day)	1,220 g/d
Estimate Cost of Road Reconstruction Total	\$109,536	Linear Feet of Pipe	1,050 feet
Estimate Cost of Road Reconstruction per Lot	\$18,256	Linear Feet of Pipe per Lot	175 feet
		Estimate Cost of Sanitary System Total	\$130,375
		Estimate Cost of Sanitary System per Lot	\$21,729

Rural Residential 27



Rural Residential 27 Totals

Zoning	RR	Water System Type	Private
Estimate Population	3 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N.A
Number of Lots	1	Estimate Cost of Water System Total	\$13,500
Mean Lot Size	78.00 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	78.0 acres		
Linear Feet of Road	1,330 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	1,330 feet	Estimate DWF (gal/day)	203 g/d
Estimate Cost of Road Reconstruction Total	\$138,746	Linear Feet of Pipe	1,330 feet
Estimate Cost of Road Reconstruction per Lot	\$138,746	Linear Feet of Pipe per Lot	1,330 feet
		Estimate Cost of Sanitary System Total	\$165,142
		Estimate Cost of Sanitary System per Lot	\$165,142

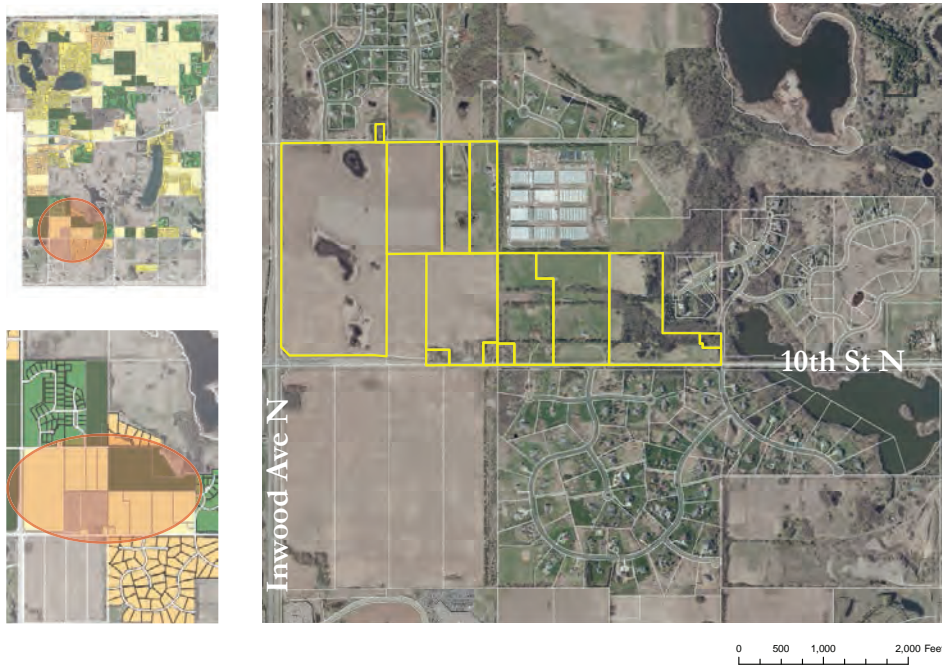
Rural Residential 28



Rural Residential 28 Totals

Zoning	RR	Water System Type	Private
Estimate Population	7 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	2	Estimate Cost of Water System Total	\$27,000
Mean Lot Size	11.80 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	23.5 acres		
Linear Feet of Road	760 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	380 feet	Estimate DWF (gal/day)	407 g/d
Estimate Cost of Road Reconstruction Total	\$79,283	Linear Feet of Pipe	760 feet
Estimate Cost of Road Reconstruction per Lot	\$39,642	Linear Feet of Pipe per Lot	380 feet
		Estimate Cost of Sanitary System Total	\$94,367
		Estimate Cost of Sanitary System per Lot	\$47,183

Rural Residential 29



Rural Residential 29 Totals

Zoning	RR	Water System Type	Private
Estimate Population	35 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	13	Estimate Cost of Water System Total	\$175,500
Mean Lot Size	16.5 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	214.8 acres		
Linear Feet of Road	10,236 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	787 feet	Estimate DWF (gal/day)	2,644 g/d
Estimate Cost of Road Reconstruction Total	\$1,067,820	Linear Feet of Pipe	10,236 feet
Estimate Cost of Road Reconstruction per Lot	\$82,140	Linear Feet of Pipe per Lot	787 feet
		Estimate Cost of Sanitary System Total	\$1,270,970
		Estimate Cost of Sanitary System per Lot	\$97,767

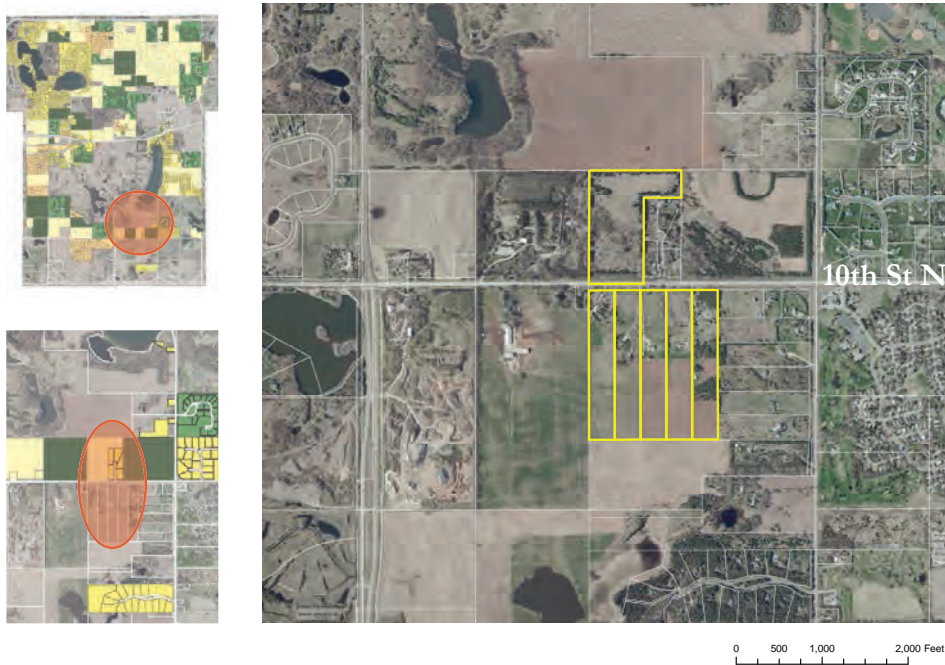
Rural Residential 30



Rural Residential 30 Totals

Zoning	RR	Water System Type	Private
Estimate Population	7 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	3	Estimate Cost of Water System Total	\$40,500
Mean Lot Size	11.7 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	35 acres		
Linear Feet of Road	2,543 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	848 feet	Estimate DWF (gal/day)	610 g/d
Estimate Cost of Road Reconstruction Total	\$265,286	Linear Feet of Pipe	2,543 feet
Estimate Cost of Road Reconstruction per Lot	\$88,429	Linear Feet of Pipe per Lot	848 feet
		Estimate Cost of Sanitary System Total	\$315,756
		Estimate Cost of Sanitary System per Lot	\$105,252

Rural Residential 31



Rural Residential 31 Totals

Zoning	RR	Water System Type	Private
Estimate Population	18 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	6	Estimate Cost of Water System Total	\$81,000
Mean Lot Size	13.7 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	82.3 acres		
Linear Feet of Road	1,500 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	250 feet	Estimate DWF (gal/day)	1,220 g/d
Estimate Cost of Road Reconstruction Total	\$156,480	Linear Feet of Pipe	1,500 feet
Estimate Cost of Road Reconstruction per Lot	\$26,080	Linear Feet of Pipe per Lot	250 feet
		Estimate Cost of Sanitary System Total	\$186,250
		Estimate Cost of Sanitary System per Lot	\$31,042

Rural Residential 32



Rural Residential 32 Totals

Zoning	RR	Water System Type	Private
Estimate Population	7 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	2	Estimate Cost of Water System Total	\$27,000
Mean Lot Size	19.00 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	38.0 acres		
Linear Feet of Road	1,525 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	763 feet	Estimate DWF (gal/day)	407 g/d
Estimate Cost of Road Reconstruction Total	\$159,088	Linear Feet of Pipe	1,525 feet
Estimate Cost of Road Reconstruction per Lot	\$79,544	Linear Feet of Pipe per Lot	763 feet
		Estimate Cost of Sanitary System Total	\$189,354
		Estimate Cost of Sanitary System per Lot	\$94,677

Agricultural Zoning



Agricultural Zoning

Zoning	A
Average Number of Lots	5
Estimate Average Population per Development	10 persons
Total Mean Lot Size	21 acres

Roads

Average Linear Feet of Road	3,337 LF
Average Linear Feet of Road per Lot	836 LF
Estimated Total Mean Road Cost	\$348,081
Estimated Mean Road Cost Per Lot	\$87,263

Agricultural Zoning Totals

Water

Estimated Total Mean Cost for Water Infrastructure	\$67,500
Estimated Mean Cost for Water Infrastructure per Lot	\$13,500

Sanitary System

Estimated Total Mean Linear Feet of Sanitary Sewer Pipe	3,337 LF
Estimated Mean Linear Feet of Sanitary Sewer Pipe per Lot	836 LF
Estimated Total Mean Cost of Sanitary Sewer Pipe	\$414,303
Estimated Mean Cost of Sanitary Sewer Pipe per Lot	\$103,865

Agricultural 1

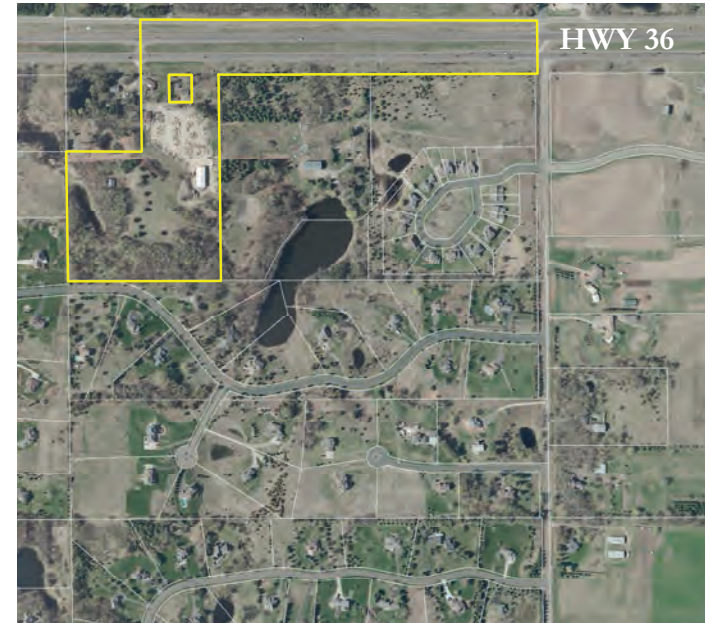
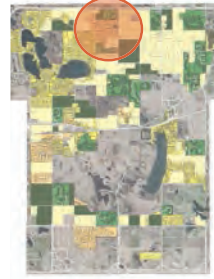


0 500 1,000 2,000 Feet

Agricultural 1 Totals

Zoning	A	Water System Type	Private
Estimate Population	7 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	3	Estimate Cost of Water System Total	\$40,500
Mean Lot Size	20.80 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	62.4 acres		
Linear Feet of Road	3,425 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	1,142 feet	Estimate DWF (gal/day)	610 g/d
Estimate Cost of Road Reconstruction Total	\$357,296	Linear Feet of Pipe	3,425 feet
Estimate Cost of Road Reconstruction per Lot	\$119,099	Linear Feet of Pipe per Lot	1,142 feet
		Estimate Cost of Sanitary System Total	\$425,271
		Estimate Cost of Sanitary System per Lot	\$141,757

Agricultural 2

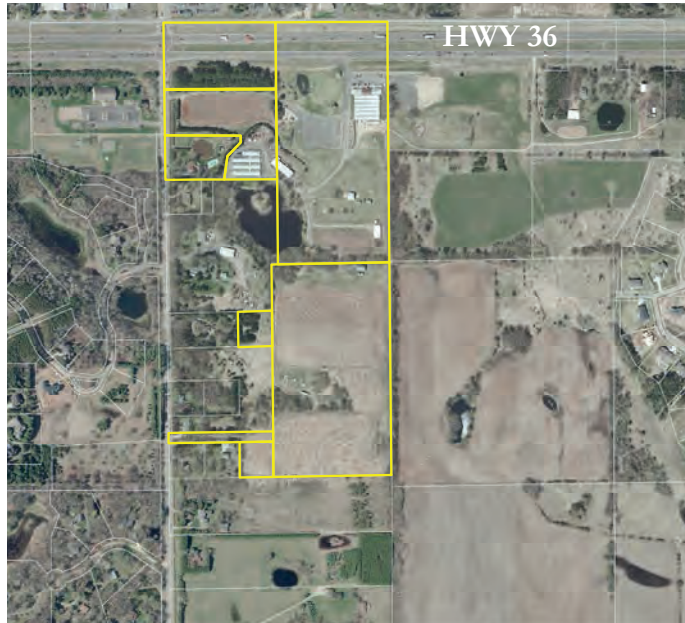
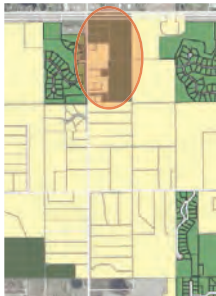


0 250 500 1,000 Feet

Agricultural 2 Totals

Zoning	A	Water System Type	Private
Estimate Population	7 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	2	Estimate Cost of Water System Total	\$27,000
Mean Lot Size	16.50 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	33.0 acres		
Linear Feet of Road	2,200 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	1,100 feet	Estimate DWF (gal/day)	407 g/d
Estimate Cost of Road Reconstruction Total	\$229,504	Linear Feet of Pipe	2,200 feet
Estimate Cost of Road Reconstruction per Lot	\$114,752	Linear Feet of Pipe per Lot	1,100 feet
		Estimate Cost of Sanitary System Total	\$273,167
		Estimate Cost of Sanitary System per Lot	\$136,583

Agricultural 3



0 250 500 1,000 Feet

Agricultural 3 Totals

Zoning	A	Water System Type	Private
Estimate Population	11 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	8	Estimate Cost of Water System Total	\$108,000
Mean Lot Size	7.3 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	58.4 acres		
Linear Feet of Road	2,105 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	263 feet	Estimate DWF (gal/day)	1,627 g/d
Estimate Cost of Road Reconstruction Total	\$219,594	Linear Feet of Pipe	2,105 feet
Estimate Cost of Road Reconstruction per Lot	\$27,449	Linear Feet of Pipe per Lot	263 feet
		Estimate Cost of Sanitary System Total	\$261,371
		Estimate Cost of Sanitary System per Lot	\$32,671

Agricultural 4



0 250 500 1,000 Feet

Agricultural 4 Totals

Zoning	A	Water System Type	Private
Estimate Population	11 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	3	Estimate Cost of Water System Total	\$40,500
Mean Lot Size	8.5 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	25.3 acres		
Linear Feet of Road	2,125 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	708 feet	Estimate DWF (gal/day)	610 g/d
Estimate Cost of Road Reconstruction Total	\$221,680	Linear Feet of Pipe	2,125 feet
Estimate Cost of Road Reconstruction per Lot	\$73,893	Linear Feet of Pipe per Lot	708 feet
		Estimate Cost of Sanitary System Total	\$263,854
		Estimate Cost of Sanitary System per Lot	\$87,951

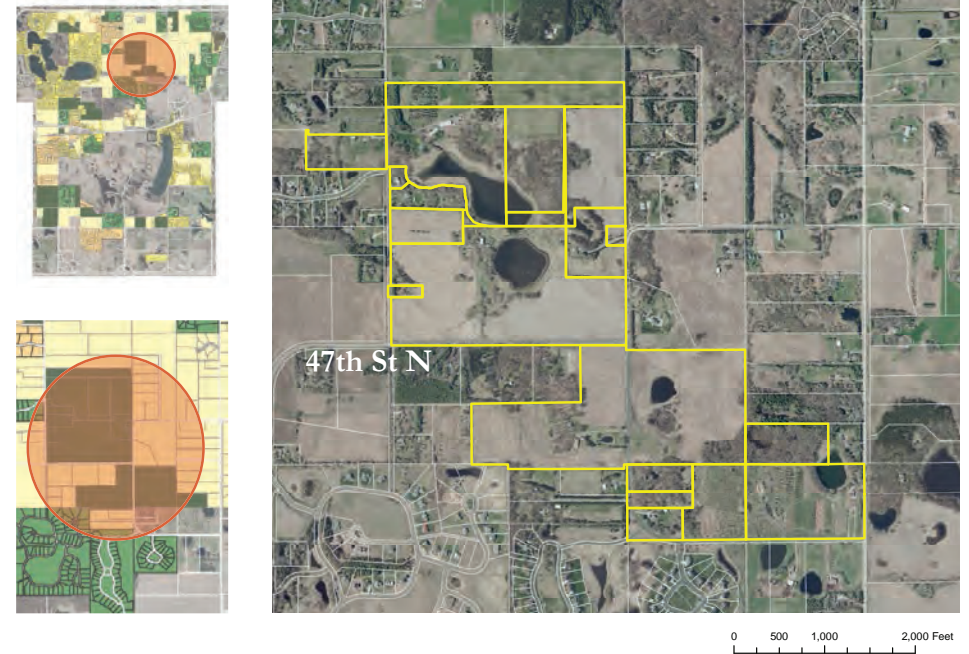
Agricultural 5



Agricultural 5 Totals

Zoning	RR	Water System Type	Private
Estimate Population	3 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	1	Estimate Cost of Water System Total	\$13,500
Mean Lot Size	0.96 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	0.96 acres		
Linear Feet of Road	570 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	570 feet	Estimate DWF (gal/day)	203 g/d
Estimate Cost of Road Reconstruction Total	\$59,462	Linear Feet of Pipe	570 feet
Estimate Cost of Road Reconstruction per Lot	\$59,462	Linear Feet of Pipe per Lot	570 feet
		Estimate Cost of Sanitary System Total	\$70,775
		Estimate Cost of Sanitary System per Lot	\$70,775

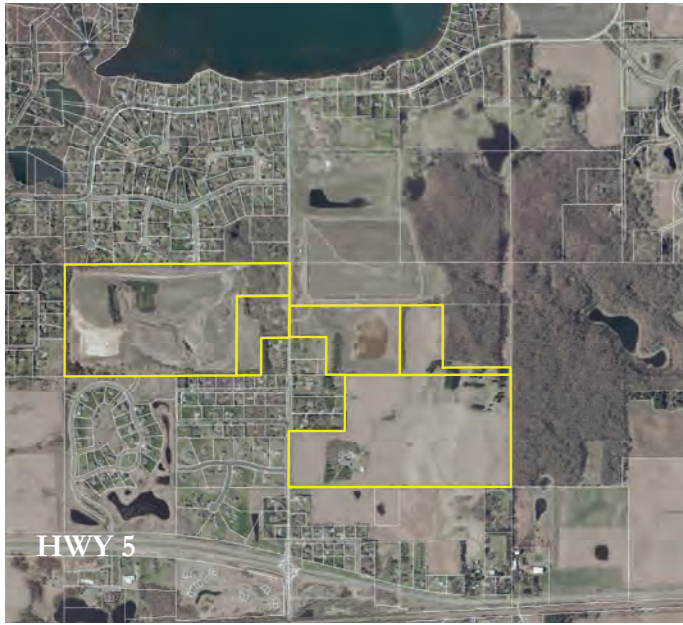
Agricultural 6



Agricultural 6 Totals

Zoning	RR	Water System Type	Private
Estimate Population	39 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	20	Estimate Cost of Water System Total	\$270,000
Mean Lot Size	15.7 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	313.7 acres		
Linear Feet of Road	10,990 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	550 feet	Estimate DWF (gal/day)	4,068 g/d
Estimate Cost of Road Reconstruction Total	\$1,146,477	Linear Feet of Pipe	10,990 feet
Estimate Cost of Road Reconstruction per Lot	\$57,324	Linear Feet of Pipe per Lot	550 feet
		Estimate Cost of Sanitary System Total	\$1,364,592
		Estimate Cost of Sanitary System per Lot	\$68,230

Agricultural 7

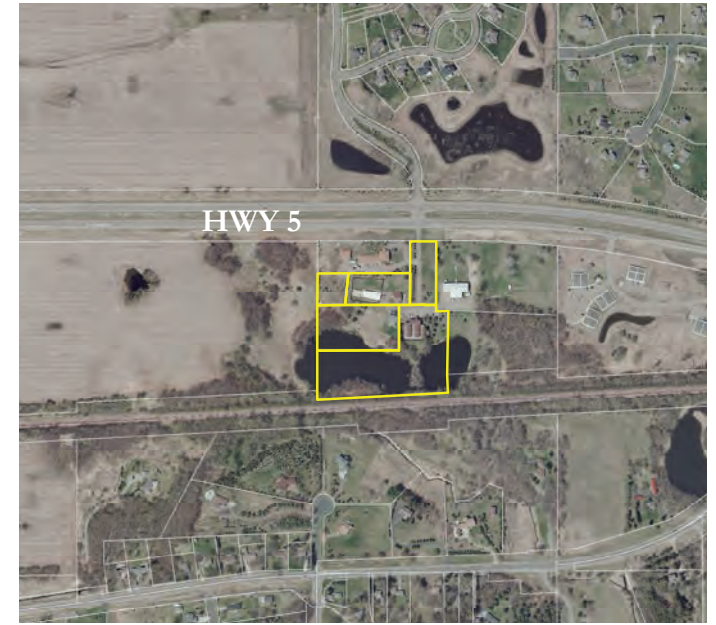
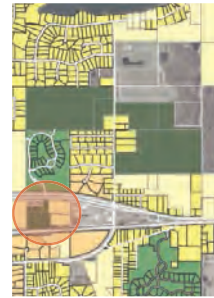


0 500 1,000 2,000 Feet

Agricultural 7 Totals

Zoning	A	Water System Type	Private
Estimate Population	3 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	5	Estimate Cost of Water System Total	\$67,500
Mean Lot Size	35.5 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	177.5 acres		
Linear Feet of Road	1,585 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	317 feet	Estimate DWF (gal/day)	1,017 g/d
Estimate Cost of Road Reconstruction Total	\$165,347	Linear Feet of Pipe	1,585 feet
Estimate Cost of Road Reconstruction per Lot	\$33,069	Linear Feet of Pipe per Lot	317 feet
		Estimate Cost of Sanitary System Total	\$196,804
		Estimate Cost of Sanitary System per Lot	\$39,361

Agricultural 8



0 250 500 1,000 Feet

Agricultural 8 Totals

Zoning	A	Water System Type	Private
Estimate Population	7 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	5	Estimate Cost of Water System Total	\$67,500
Mean Lot Size	2.3 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	11.4 acres		
Linear Feet of Road	150 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	30 feet	Estimate DWF (gal/day)	1,017 g/d
Estimate Cost of Road Reconstruction Total	\$15,648	Linear Feet of Pipe	150 feet
Estimate Cost of Road Reconstruction per Lot	\$3,130	Linear Feet of Pipe per Lot	30 feet
		Estimate Cost of Sanitary System Total	\$18,625
		Estimate Cost of Sanitary System per Lot	\$3,725

Agricultural 9

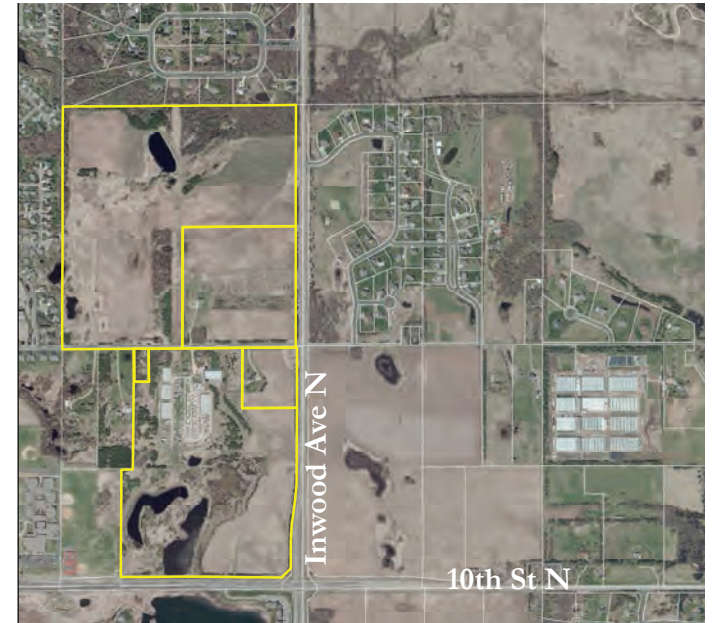


0 250 500 1,000 Feet

Agricultural 9 Totals

Zoning	RR	Water System Type	Private
Estimate Population	3 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	1	Estimate Cost of Water System Total	\$13,500
Mean Lot Size	40.0 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	40.0 acres		
Linear Feet of Road	1,360 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	1,360 feet	Estimate DWF (gal/day)	203 g/d
Estimate Cost of Road Reconstruction Total	\$141,875	Linear Feet of Pipe	1,360 feet
Estimate Cost of Road Reconstruction per Lot	\$141,875	Linear Feet of Pipe per Lot	1,360 feet
		Estimate Cost of Sanitary System Total	\$168,867
		Estimate Cost of Sanitary System per Lot	\$168,867

Agricultural 10

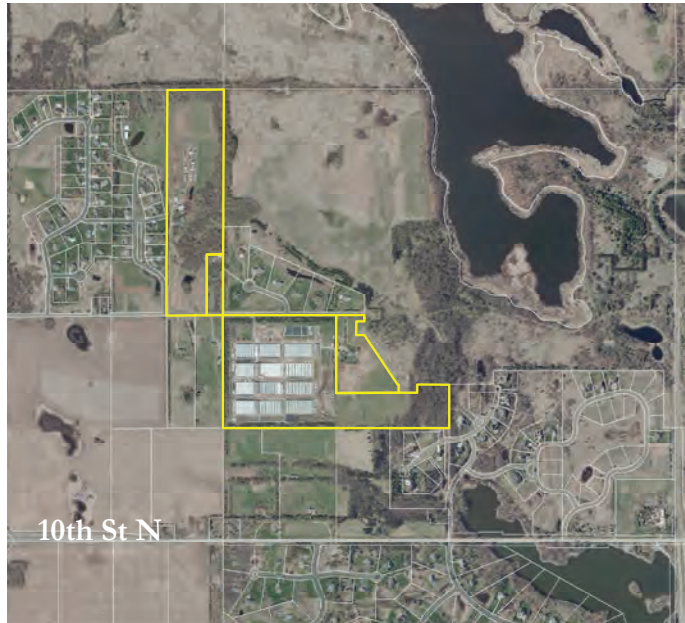
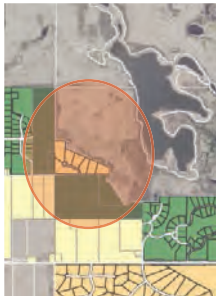


0 500 1,000 2,000 Feet

Agricultural 10 Totals

Zoning	RR	Water System Type	Private
Estimate Population	14 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	5	Estimate Cost of Water System Total	\$67,500
Mean Lot Size	51.6 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	258.0 acres		
Linear Feet of Road	7,150 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	1,430 feet	Estimate DWF (gal/day)	1,017 g/d
Estimate Cost of Road Reconstruction Total	\$745,888	Linear Feet of Pipe	7,150 feet
Estimate Cost of Road Reconstruction per Lot	\$149,178	Linear Feet of Pipe per Lot	1,430 feet
		Estimate Cost of Sanitary System Total	\$887,792
		Estimate Cost of Sanitary System per Lot	\$177,558

Agricultural 11



0 500 1,000 2,000 Feet

Agricultural 11 Totals

Zoning	A	Water System Type	Private
Estimate Population	11 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	4	Estimate Cost of Water System Total	\$54,000
Mean Lot Size	25.8 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	103.2 acres		
Linear Feet of Road	2,700 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	675 feet	Estimate DWF (gal/day)	814 g/d
Estimate Cost of Road Reconstruction Total	\$281,664	Linear Feet of Pipe	2,700 feet
Estimate Cost of Road Reconstruction per Lot	\$70,416	Linear Feet of Pipe per Lot	675 feet
		Estimate Cost of Sanitary System Total	\$335,250
		Estimate Cost of Sanitary System per Lot	\$83,813

Agricultural 12

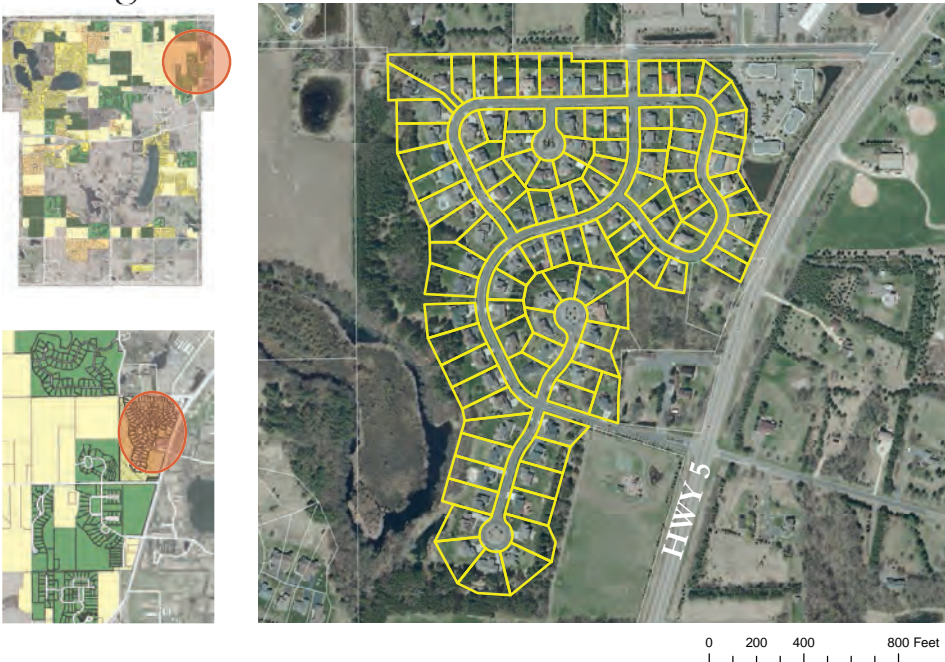


0 500 1,000 2,000 Feet

Agricultural 12 Totals

Zoning	A	Water System Type	Private
Estimate Population	7 persons	Linear Feet of Pipe	N/A
Secondary Access	Yes	Linear Feet of Pipe per Lot	N/A
Number of Lots	3	Estimate Cost of Water System Total	\$40,500
Mean Lot Size	32.5 acres	Estimate Cost of Water System per Lot	\$13,500
Sum of All Lot Sizes	97.4 acres		
Linear Feet of Road	5,680 feet	Sanitary System Type	Private
Linear Feet of Road per Lot	1,893 feet	Estimate DWF (gal/day)	610 g/d
Estimate Cost of Road Reconstruction Total	\$592,538	Linear Feet of Pipe	5,680 feet
Estimate Cost of Road Reconstruction per Lot	\$197,513	Linear Feet of Pipe per Lot	1,893 feet
		Estimate Cost of Sanitary System Total	\$705,267
		Estimate Cost of Sanitary System per Lot	\$235,089

Carriage Station

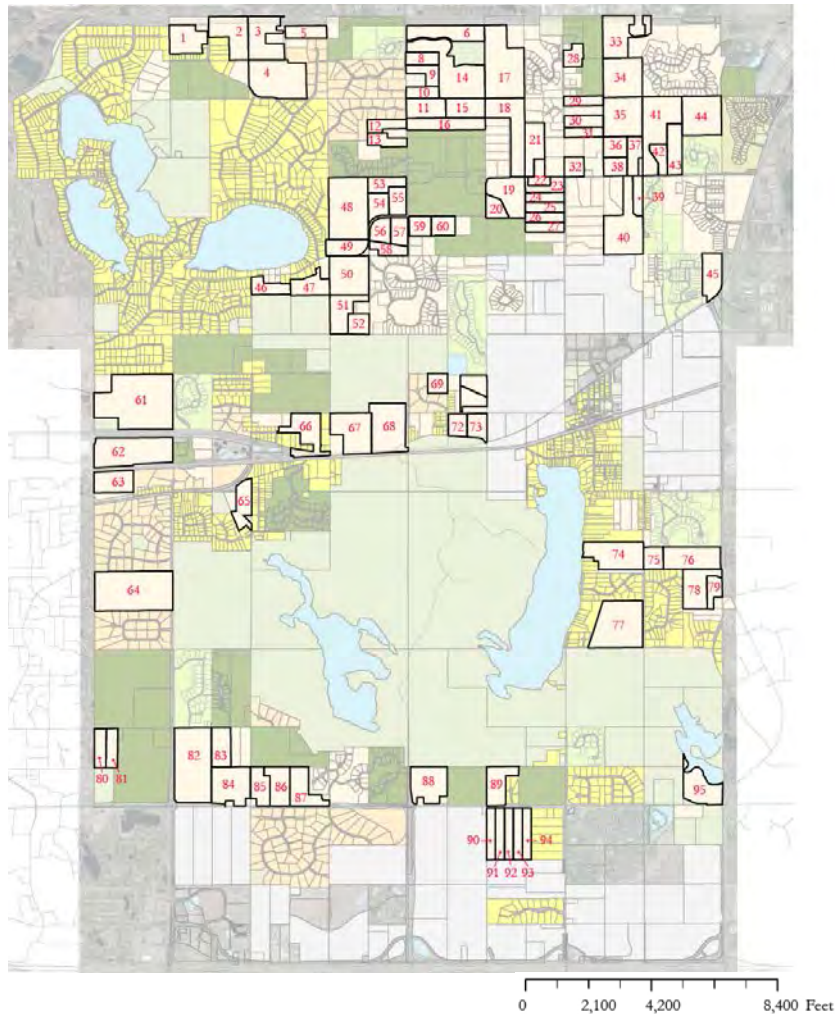


Carriage Station Totals

Zoning	R2-PUD	Water System Type	City
Estimate Population	382 persons	Linear Feet of Pipe	8,307 feet
Secondary Access	Yes	Linear Feet of Pipe per Lot	76 feet
Number of Lots	109	Estimate Cost of Water System Total	\$340,587
Mean Lot Size	0.38 acres	Estimate Cost of Water System per Lot	\$3,125
Sum of All Lot Sizes	40.9 acres		
Linear Feet of Road	6,256 feet	Sanitary System Type	Community
Linear Feet of Road per Lot	57 feet	Estimate DWF (gal/day)	2,2172 g/d
Estimate Cost of Road Reconstruction Total	\$358,424	Linear Feet of Pipe	5,897 feet
Estimate Cost of Road Reconstruction per Lot	\$9,405	Linear Feet of Pipe per Lot	54 feet
		Estimate Cost of Sanitary System Total	\$732,211
		Estimate Cost of Sanitary System per Lot	\$6,718

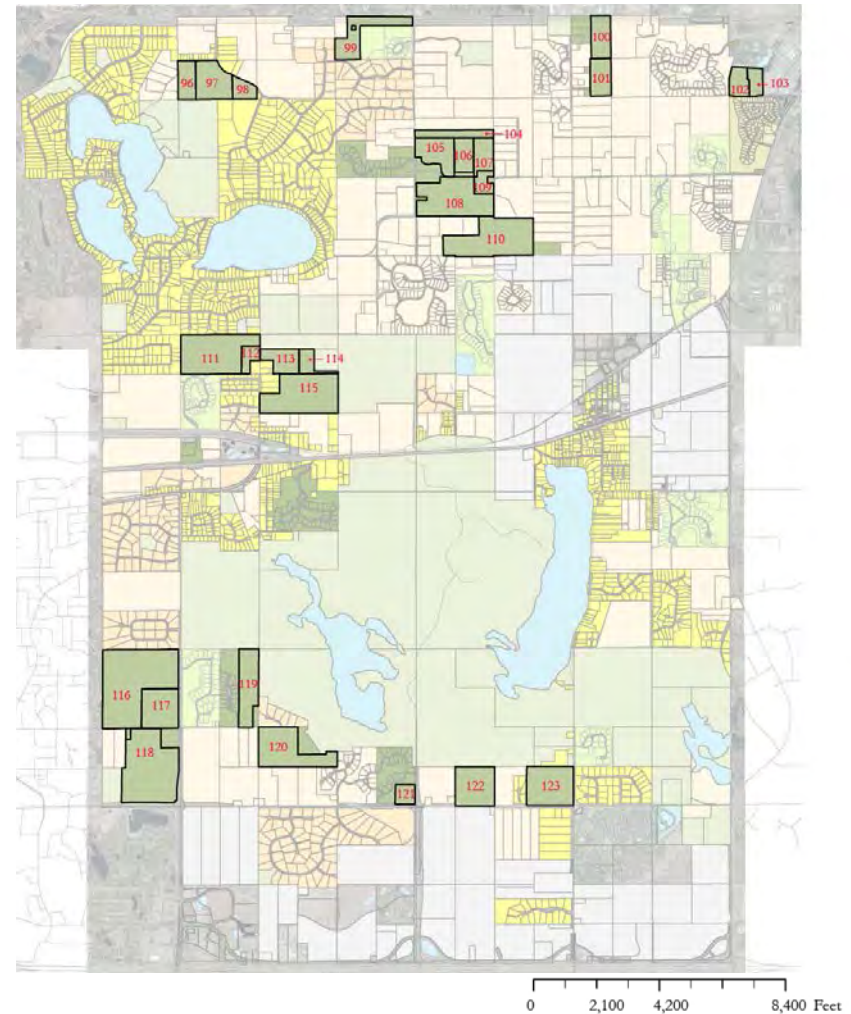
Rural Area Analysis: Scenario Study

Rural Residential Areas



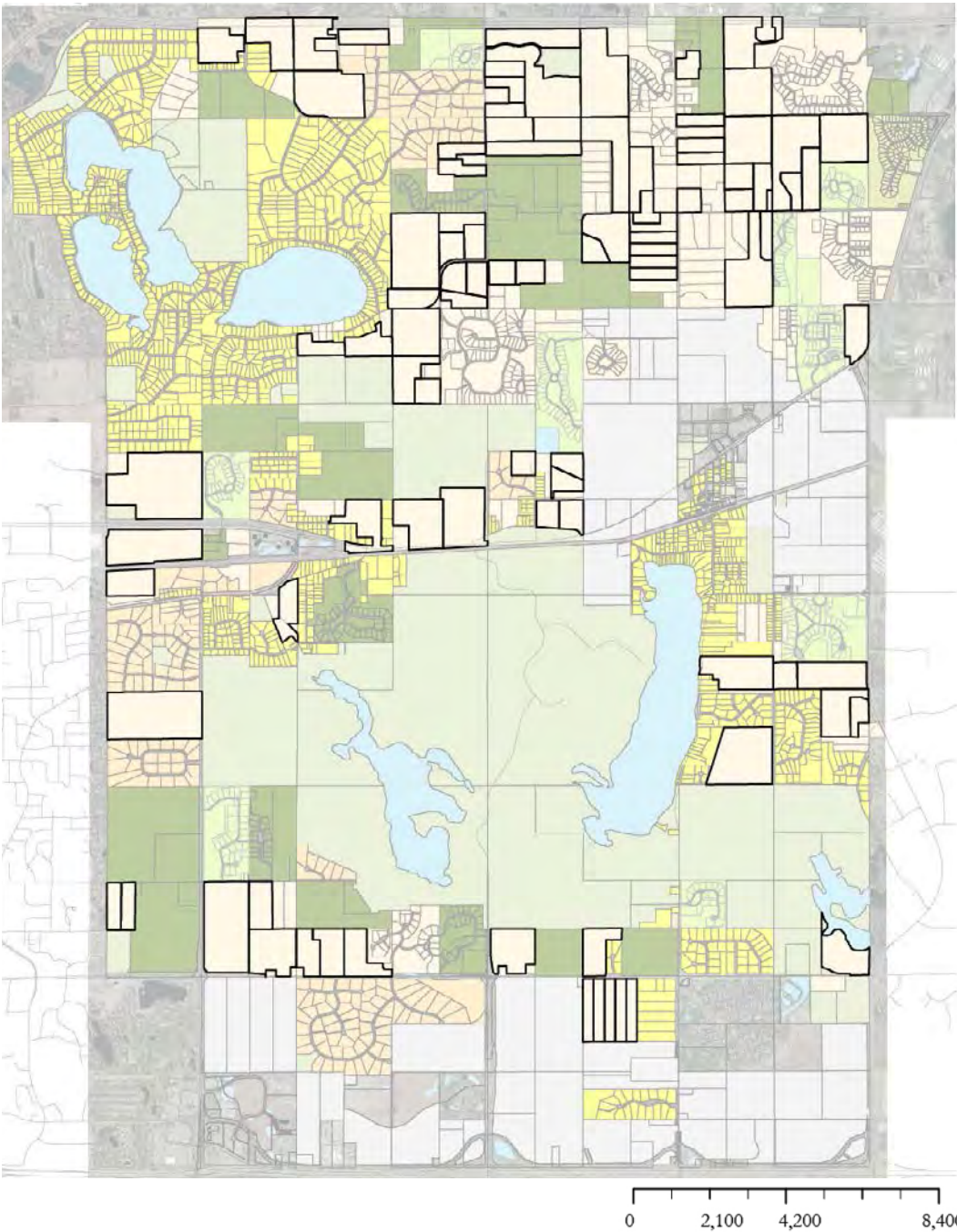
The scenarios created aim to generate numbers to predict populations, infrastructure totals, revenues, and expenditures, for hypothetical scenarios. The parcels included are all areas with Rural Residential or Agricultural zoning. The specific data for each parcel can be found in Appendix B at the end of this document.

Agricultural Areas



Four different scenarios were created: the first with all RR areas greater than 10 acres being subdivided to 2.5 acre lots. The second with all RR areas greater than 10 acres subdivided to 2.5 acre lots and all Agricultural areas greater than 40 acres subdivided into OP areas (18 units per 40 acres). The third with all RR areas and Ag areas greater than 10 acres subdivided to 2.5 acre lots, and lastly, all Ag areas greater than 20 acres subdivided into OP with 60% calculated open space.

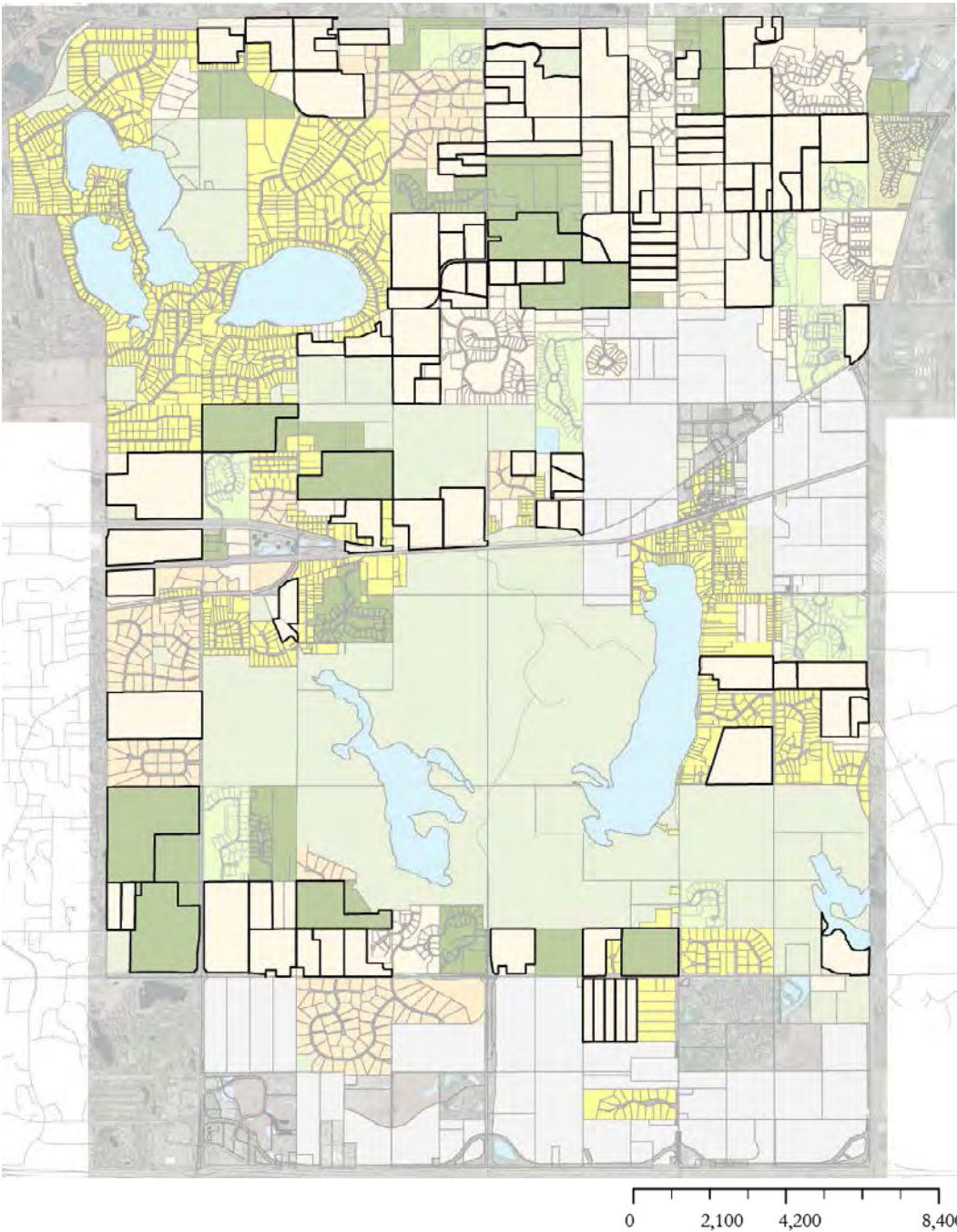
Scenario 1:



Rural Residential lots greater than 10 acres subdivided to 2.5 acre lots

Zoning	RR
Current Number of Lots	95
Number of Lots after Subdivision	839
Total Area :Sum of Current Acres	2,195.5 acres
Current Estimated Population	332 persons
Estimated Population After Subdivision	2,937 persons
Current Estimated Linear Feet of Road	40,755 LF
Estimated Linear Feet of Road After Subdivision	133,401 LF
Linear Feet of Additional Roads Needed	92,646 LF
Estimated Linear Feet of Sanitary Sewer Needed for Subdivision	133,401 LF
Estimated Cost of Sanitary Sewer Needed for Subdivision	\$16,563,958
Current Estimated Tax Capital Accrued	\$383,639
Tax Capital per Lot	\$4,038
Current Estimated Expenditure for Area	\$103,583
Current Balance After Expenditure for Area	\$280,056
Estimated Tax Capital After Subdivision	\$3,388,138
Estimated Expenditure After Subdivision	\$3,623,308
Estimated Deficit After Subdivision	(\$237,170)

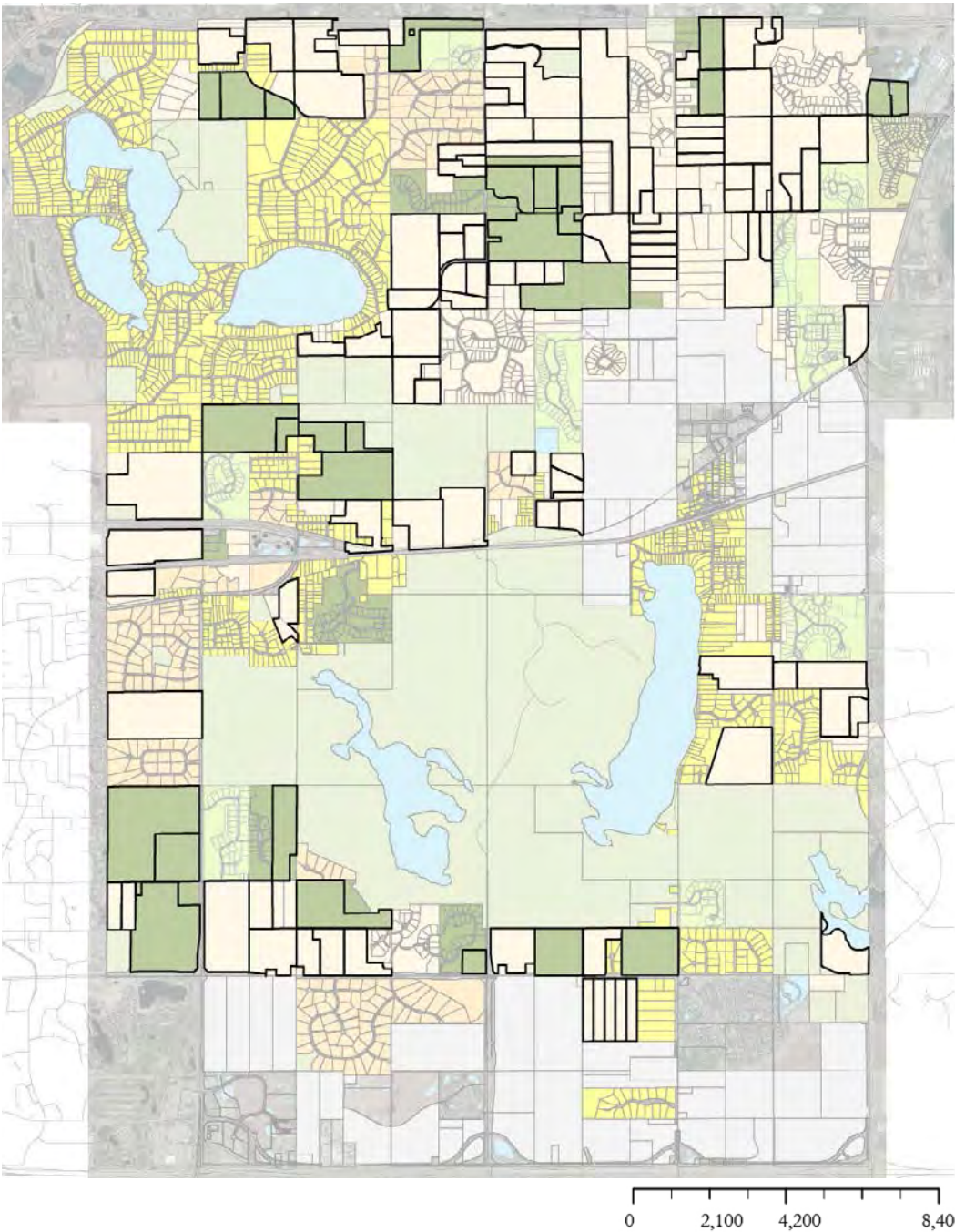
Scenario 2:



Rural Residential lots greater than 10 acres subdivided to 2.5 acre lots and
Agricultural lots greater than 40 acres subdivided to OP (18 units per 40 acres)

Zoning	RR and A
Current Number of Lots	103
Number of Lots after Subdivision	1,093
Total Area: Sum of Current Acres	2,722 acres
Current Estimated Population	360 persons
Estimated Population After Subdivision	3,825 persons
Current Estimated Linear Feet of Road	44,187 LF
Estimated Linear Feet of Road After Subdivision	173,787 LF
Linear Feet of Additional Roads Needed	129,600 LF
Estimated Linear Feet of Sanitary Sewer Needed for Subdivision	173,787 LF
Estimated Cost of Sanitary Sewer Needed for Subdivision	\$21,578,553
Current Estimated Tax Capital Accrued	\$448,520
Tax Capital per Lot	\$4,721
Current Estimated Expenditure for Area	\$121,100
Current Balance After Expenditure for Area	\$327,420
Estimated Tax Capital After Subdivision	\$5,160,341
Estimated Expenditure After Subdivision	\$5,521,564
Estimated Deficit After Subdivision	(\$361,224)

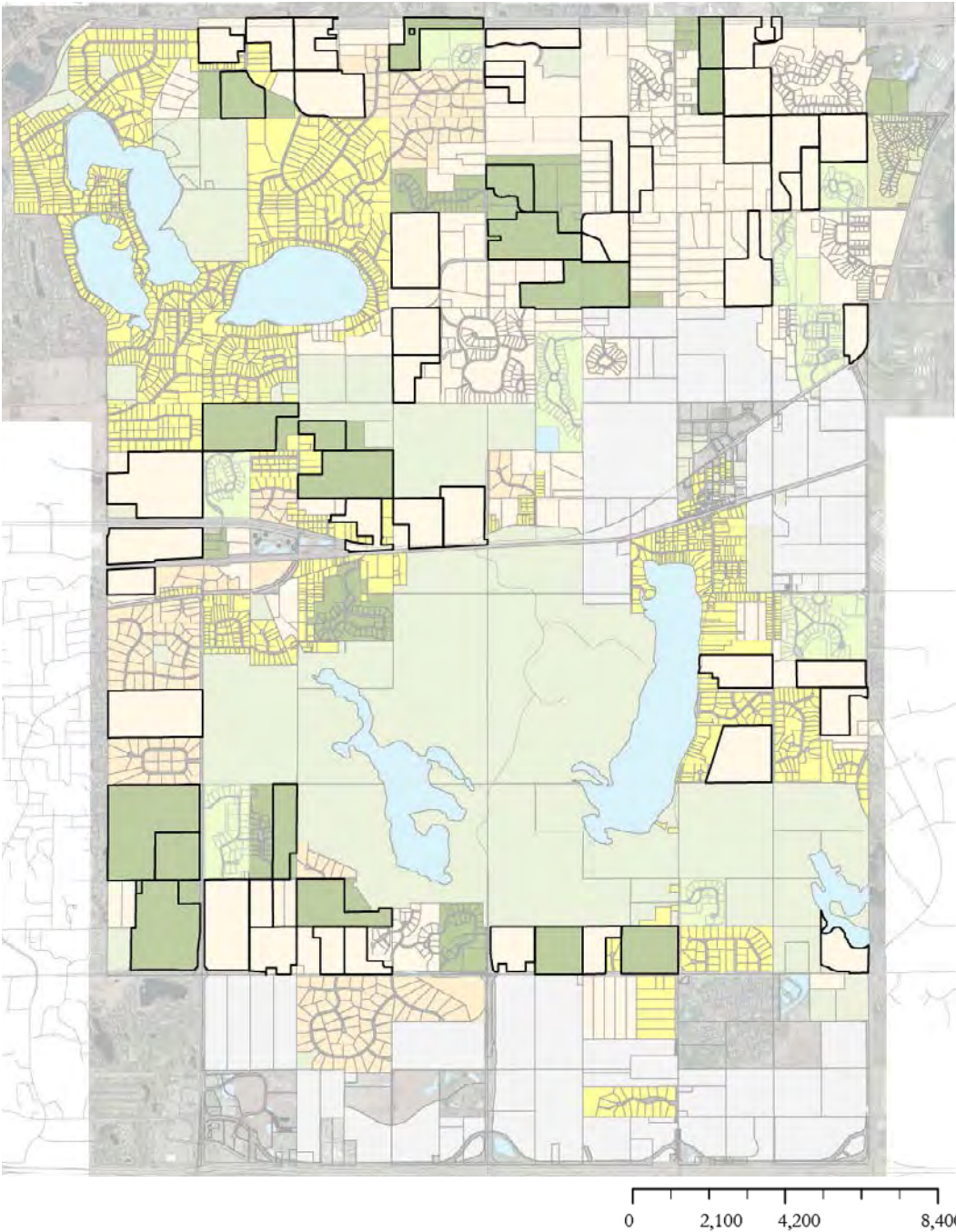
Scenario 3:



Rural Residential lots greater than 10 acres subdivided to 2.5 acre lots and
Agricultural lots greater than 10 acres subdivided to 2.5 acre lots

Zoning	RR and A
Current Number of Lots	123
Number of Lots after Subdivision	1228
Total Area: Sum of Current Acres	3198 acres
Current Estimated Population	430 persons
Estimated Population After Subdivision	4,298 persons
Current Estimated Linear Feet of Road	52,767 LF
Estimated Linear Feet of Road After Subdivision	195,252 LF
Linear Feet of Additional Roads Needed	142,485 LF
Estimated Linear Feet of Sanitary Sewer Needed for Subdivision	195,252 LF
Estimated Cost of Sanitary Sewer Needed for Subdivision	\$24,243,790
Current Estimated Tax Capital Accrued	\$516,028
Tax Capital per Lot	\$5,432
Current Estimated Expenditure for Area	\$139,328
Current Balance After Expenditure for Area	\$376,700
Estimated Tax Capital After Subdivision	\$6,670,341
Estimated Expenditure After Subdivision	\$7,137,265
Estimated Deficit After Subdivision	(\$466,924)

Scenario 4:



Rural Residential lots greater than 20 acres subdivided to OP and
Agricultural lots greater than 20 acres subdivided to OP (60% open space)

Zoning	RR and A
Current Number of Lots	57
Number of Lots after Subdivision	1,629
Total Area: Sum of Current Acres	2,376 acres
Current Estimated Population	200 persons
Estimated Population After Subdivision	5,702 persons
Current Estimated Linear Feet of Road	244,453 LF
Estimated Linear Feet of Road After Subdivision	259,011 LF
Linear Feet of Additional Roads Needed	234,558 LF
Estimated Linear Feet of Sanitary Sewer Needed for Subdivision	259,001 LF
Estimated Cost of Sanitary Sewer Needed for Subdivision	\$32,160,533
Current Estimated Tax Capital Accrued	\$194,096
Tax Capital per Lot	\$2,043
Current Estimated Expenditure for Area	\$52,406
Current Balance After Expenditure for Area	\$141,690
Estimated Tax Capital After Subdivision	\$3,328,236
Estimated Expenditure After Subdivision	\$3,561,212
Estimated Deficit After Subdivision	(\$232,976)

Conclusions:



New residential development built adjacent to existing urbanized areas is more cost-effective for local governments than new residential development in rural areas, or in areas without supporting infrastructure. It is in the City's best interest to fully utilize the City sanitary sewer system and cluster development around it. If subdivision is to occur in areas with rural zoning, it is fiscally advantageous to use open space preservation zoning and cluster development. The scenario study shows that with OP subdivisions, more lots can be created using a smaller footprint.

It is important to consider the agricultural sector when deciding to allow subdivision in rural areas. Development influences agricultural land prices and creates additional pressure for these lands to develop. Lake Elmo takes pride in its rural identity and the added pressure of development would compromise Lake Elmo's agricultural sector, sense of place, and rural identity.

Resources:

American Farmland Trust. "Farmland and the Tax Bill: The Cost of Community Services in Three Minnesota Towns," Northampton, MA: American Farmland Trust, 1994, accessed Sept 30, 2014, www.farmlandinfo.org/farmland-and-tax-bill-community-services-three-minnesota-cities.

American Farmland Trust. "Farmland Information Center Fact Sheet: Cost of Community Services Studies." Washington DC: AFT National Office, 2010, accessed Oct 6, 2014, www.farmlandinfo.org/sites/default/files/COCS_08-2010_1.pdf.

Colver, D., Phipps, T. T., & Shi, Y. J. "Agricultural land values under urbanizing influences," *Land Economics* 73(1997): 90.

Freedgood, Julia, Cost of Community Services Study: Making the Case for Conservation, contributing Tanner, L., Mailler, C., Andrews, A., Adams, M. (American Farmland Trust, Washington, 2002).

Gallagher, Patrick. "The environmental, social, and cultural impacts of sprawl." *Natural Resources & Environment* 15(2001): 219.

Heimlich, R. E., & Anderson, W. D. "Development at the Urban Fringe and Beyond: Impacts on Agriculture and Rural Land," Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 803. (2001).

Molinos-Senate, Maria, Hernandez-Sancho, Francesc, and Sala-Garrido, Ramon, "Economic feasibility study of wastewater treatment: A cost-benefit analysis," *Science of the Total Environment*. 408(2010): 4396-4402.

Plantinga, A. J., Lubowski, R. N., & Stavins, R. N., "The effects of potential land development on agricultural land prices," *Journal of Urban Economics* 52(2002): 561-581.

Standley, Laurel J, Rudel, Ruthann A., Swartz, Christopher H., Attfield, Kethleen R., Christian, Jeff, Erickson, Mike, and Brody, Julia G. "Wastewater-Contaminated Groundwater as a Source of Endogenous Hormones and Pharmaceuticals to Surface Water Ecosystems." *Environmental Toxicology and Chemistry*. 27(2008): 2457-2468.

Appendix A: Rural Area Inventory

Rural Area Infrastructure Analysis										
Land Use Type	Development	# of Lots	Mean Lot Size (Acres)	Total Size (Acres)	Linear Feet of Road	Lnr Ft. per Lot	Secondary Access?	Est. Total Road Cost	Road Cost per Lot	Water System Type
OP										
	Bluestem at Fields of St. Croix	14.00	0.08	1.12	868	62	No	142165	10155	City
	Discover Crossing	28.00	0.86	24.13	3345	119	No*	548112	19575	City
	Farms of Lake Elmo	32.00	0.82	26.22	6926	216	No	1134894	35466	City
	Fields of St. Croix I	46.00	0.74	36.53	7510	163	Yes	1230589	26752	Private
	Fields of St. Croix 2nd Addition	54.00	0.06	1.24	7476	138	No	1224935	22684	City
	Hamlet on Sunfish Lake	41.00	0.73	29.76	6630	162	No	1086392	26497	Private
	Heritage Farm	46.00	0.85	38.93	5991	130	No	981751	21342	City
	Meyer's Pineridge	21.00	0.10	20.79	3449	164	No	565088	26909	Private
	Parkview Estates	32.00	0.05	1.80	4598	144	Yes	753428	23545	Private
	Prairie Hamlet	16.00	0.45	7.16	1426	89	No	233714	14607	Private
	St. Croix's Sanctuary	62.00	0.83	51.87	7785	126	No*	1275650	20575	City
	Sunfish Ponds	16.00	0.81	12.95	1660	104	No	272008	17000	Private
	Tamarack Farm Estates	19.00	0.69	13.25	2044	108	No	334848	17624	Private
	Tana Ridge	20.00	0.77	15.34	3435	172	No	562859	28143	City
	Tapestry at Charlottes Grove	67.00	0.99	67.64	12090	180	No	1981067	29568	City
	The Homestead	19.00	0.86	16.44	6684	352	No	1095299	57647	Private
	Whistling Valley	43.00	1.02	43.81	7500	174	Yes	1228950	28580	City/Private
	Wildflower Shores	25.00	0.63	15.80	5216	209	No	854694	34188	City
	OP Average	33.39	0.63	23.60	5257	156		861469	25603	
RE										
	Arabian Hills	19.00	3.11	59.12	3049	160	yes	499544	26292	Private
	Beau Crest	16.00	1.84	29.49	1904	119	No	312022	19501	City
	Cardinal View	7.00	3.04	21.29	1400	200	No	229404	32772	Private
	Eagle Point Creek Estates	7.00	4.33	30.34	396	57	No	64889	9270	City
	Judith Mary Manor	12.00	3.08	37.01	2147	179	Yes	351807	29317	Private
	Lake Elmo Heights	40.00	2.56	102.39	6420	161	Yes	1051981	26300	City
	Lake Elmo Vista	10.00	3.25	32.53	1692	169	No	277251	27725	Private
	Midland Meadows	13.00	7.87	102.35	4504	346	Yes	738091	56776	Private
	Park Meadows	8.00	3.28	26.25	1290	161	No	211379	26422	City
	Rolling Hills	12.00	2.81	33.77	2943	245	Yes	482207	40184	Private
	Stonegate	64.00	2.80	179.19	10070	157	Yes	1650070	25782	Private
	Torre Pines	21.00	2.93	70.38	4150	198	No	656945	32382	Private
	RE Average	19.08	3.41	60.34	3330	179		543799	29394	

Appendix A: Rural Area Inventory

Linear Feet pipe- water	Linear Ft- water- per lot	Cost Total- water	Cost per lot- water	Septic System Type	Est. Population	Approx DWF (gal/day)	Linear Ft of Pipe	Lnr Ft Pipe Per Lot	Total Cost of Sanitary	Cost per lot=sanitary
793	57	32513	2322	Community	49	2848	616	44	76487	5463
3798	136	155718	5561	Community	98	5695	3659	131	454267	16224
6518	204	267238	8351	Community	112	6509	5425	170	673617	21051
		621000	13500	Community	161	9357	4417	96	548419	11922
5913	110	242433	4490	Community	189	10984	4112	76	510573	9455
		553500	13500	Community	144	8340	1903	46	236329	5764
6188	135	253708	5515	Private	161	9357	5991	130	743883	16171
		283500	13500	Private	74	4272	3449	164	428201	20391
		432000	13500	Private	112	6509	4598	144	570918	17841
		216000	13500	Community	56	3255	370	23	45942	2871
8665	140	355265	5730	Community	217	12611	7887	127	979243	15794
	0	216000	13500	Private	56	3255	1660	104	206117	12882
	0	256500	13500	Community	67	3865	2044	108	253735	13354
3635	182	149035	7452	Community	70	4068	1903	95	236329	11816
11452	171	469532	7008	Community	235	13628	7946	119	986688	14727
	0	256500	13500	Private	67	3865	6684	352	829975	43683
	0	580500	13500	Community	151	8747	6523	152	809939	18836
4731	189	193971	7759	Community	88	5085	2788	112	346177	13847
		307495	9760		117	6792	3999	122	496491	15116
		256500	13500	Private	67	3865	3049	160	378535	19923
1933	121	79253	4953	Private	56	3255	1904	119	236438	14777
		94500	13500	Private	25	1424	1400	200	173833	24833
600	86	24600	3514	Private	25	1424	396	57	49170	7024
		162000	13500	Private	42	2441	2147	179	266586	22215
6420	161	263220	6581	Private	140	8136	6420	161	797150	19929
		135000	13500	Private	35	2034	1692	169	210090	21009
		175500	13500	Private	46	2644	4504	346	559296	43023
2320	290	95120	11890	Private	28	1627	1290	161	160175	20022
		162000	13500	Private	42	2441	2943	245	365398	30450
		864000	13500	Private	224	13018	10070	157	1250358	19537
		283500	13500	Community	74	4272	4150	198	515292	24538
		216266	11245		67	3882	3330	179	413527	22273

Appendix A: Rural Area Inventory

Rural Area Infrastructure Analysis										
Land Use Type	Development	# of Lots	Mean Lot Size (Acres)	Total Size (Acres)	Linear Feet of Road	Lnr Ft. per Lot	Secondary Access?	Est. Total Road Cost	Road Cost per Lot	Water System Type
RS										
	Bergman Addition	11.00	0.42	4.60	1025	93	Yes	106928	9721	Private
	Berschen's Shores	24.00	0.67	16.00	2860	119	Yes	298355	12431	Private
	Bordners Garner Farmettes	48.00	1.42	67.89	5220	109	Yes	855349	17820	Private
	Darwin Acres	14.00	0.87	12.17	3432	245	No	358026	25573	Private
	David Nelson Estates	5.00	1.68	8.41	588	118	No	96350	19270	Private
	DeMontreville Highlands	140.00	1.18	83.87	8345	60	Yes	870550	6218	Private
	Down's Lake	2.00	1.51	3.02	767	384	Yes	80013	40007	Private
	Eden Park	55.00	1.20	66.12	4600	84	Yes/No	753756	13705	Private
	Fox Fire Estates	58.00	2.11	122.31	9199	159	Yes	959640	16546	Private
	Friedrich Heights	13.00	0.49	6.33	1171	90	No	122159	9397	Private
	Kenridge	25.00	0.69	17.38	3000	120	Yes	491580	19663	City
	Lake Elmo Park	73.00	0.57	45.03	3203	44	Yes	334137	4577	City
	Lane's Demontreville Country Club	87.00	0.56	48.63	6050	70	Yes/No	991353	11395	Private
	Oace Acres	121.00	0.98	118.58	13569	112	Yes	1415487	11698	Private
	Packard Park	21.00	1.57	33.09	3264	155	Yes	534855	25469	Private
	Springborn's Green Acres	31.00	1.82	56.54	5760	186	Yes	600883	19383	Private
	Tablyn Park	63.00	0.84	52.74	5920	94	Yes	617574	9803	City
	Tartan Meadows	38.00	1.60	60.84	4800	126	Yes	786528	20698	Private
	Teal Pass Estates	15.00	1.94	29.15	2304	154	Yes	377533	25169	Private
	The Forest	18.00	1.96	35.20	1675	93	No	274466	15248	Private
	Water's Bay	5.00	2.39	11.95	440	88	No	45901	9180	Private
	All other RS	241.00	1.50	358.50	33870	141	Varies	3533318	14661	Varies
	RS Average	50.36	1.27	57.20	5503	129		659306	16256	
RR										
	RR 1	18.00	12.46	224.34	3881	216	Yes	404878	22493	Private
	RR 2	9.00	24.42	219.82	2477	275	Yes	258369	28708	City
	RR 3	9.00	2.52	22.64	1700	189	Yes	177344	19705	Private
	RR 4	3.00	26.57	79.73	1630	543	Yes	170042	56681	City
	RR 5	7.00	14.30	100.16	1620	231	Yes	168998	24143	City/Private
	RR 6	32.00	8.29	265.12	11373	355	Yes	1186454	37077	Private
	RR 7	26.00	12.44	323.51	8357	321	Yes	871761	33529	Private
	RR 8	4.00	30.00	120.00	1326	331	Yes	138287	34572	Private
	RR 9	8.00	5.66	45.31	1719	215	Yes	179297	22412	City
	RR 10	8.00	20.01	160.10	2235	279	Yes	233103	29138	City/Private
	RR 11	7.00	10.67	74.72	2030	290	Yes	211770	30253	City
	RR 12	6.00	7.28	43.68	2130	355	Yes	222202	37034	Private
	RR 13	3.00	6.11	18.35	408	136	Yes	42563	14188	City
	RR 14	3.00	11.13	33.40	2500	833	Yes	260800	86933	City
	RR 15	4.00	5.11	20.44	1000	250	Yes	104320	26080	Private
	RR 16	2.00	11.30	22.61	925	463	Yes	96496	48248	Private
	RR 17	1.00	1.50	1.50	215	215	Yes	22429	22429	Private

Appendix A: Rural Area Inventory

Linear Feet pipe- water	Linear Ft- water- per lot	Cost Total- water	Cost per lot- water	Septic System Type	Est. Population	Approx DWF (gal/day)	Linear Ft of Pipe	Lnr Ft Pipe Per Lot	Total Cost of Sanitary	Cost per lot=sanitary
		148500	13500	Private	39	2238	1025	93	127271	11570
		324000	13500	Private	84	4882	2860	119	355117	14797
		648000	13500	Private	168	9764	5220	109	648150	13503
		189000	13500	Private	49	2848	3432	245	426140	30439
		67500	13500	Private	18	1017	588	118	73010	14602
		1890000	13500	Private	490	28477	8345	60	1036171	7401
		27000	13500	Private	7	407	767	384	95236	47618
		742500	13500	Private	193	11188	4600	84	571167	10385
		783000	13500	Private	203	11798	9199	159	1142209	19693
		175500	13500	Private	46	2644	1171	90	145399	11185
3384	135	138744	5550	Private	88	5085	3000	120	372500	14900
3203	44	131323	1799	Private	256	14849	3203	44	397706	5448
		1174500	13500	Private	305	17697	6050	70	751208	8635
		1633500	13500	Private	424	24613	13569	112	1684780	13924
		283500	13500	Private	74	4272	3264	155	405292	19300
		418500	13500	Private	109	6306	5760	186	715200	23071
5678	90	232798	3695	Private	221	12815	5920	94	735067	11668
		513000	13500	Private	133	7730	4800	126	596000	15684
		202500	13500	Private	53	3051	2304	154	286080	19072
		243000	13500	Private	63	3661	1675	93	207979	11554
		67500	13500	Private	18	1017	440	88	54633	10927
		3253500	13500	Varies	844	49022	33870	141	4205525	17450
		603971	12161		176	10244	5503	129	683265	16037
		243000	13500	Private	63	3661	3881	216	481906	26773
6970	774	285770	31752	Private	32	1831	2477	275	307524	34169
		121500	13500	Private	32	1831	1700	189	211083	23454
1396	465	57236	19079	Private	11	610	1630	543	202392	67464
1625	325	93625	11447 / 13500	Private	25	1424	1620	231	201150	28736
		432000	13500	Private	112	6509	11373	355	1412175	44130
		351000	13500	Private	91	5289	8357	321	1037611	39908
		54000	13500	Private	14	814	1326	331	164595	41149
2261	283	92701	11588	Private	18	1627	1719	215	213408	26676
2032	2032 (1 lot)	96812	83312	Private	11	1627	2235	279	277450	34681
3330	476	136530	19504	Private	14	1424	2030	290	252058	36008
		81000	13500	Private	18	1220	2130	355	264475	44079
1330	443	54530	18177	Private	11	610	1330	443	165142	55047
2514	838	103074	34358	Private	11	610	2500	833	310417	103472
		54000	13500	Private	11	814	1000	250	124167	31042
		27000	13500	Private	7	407	925	463	114854	57427
		13500	13500	Private	4	203	215	215	26696	26696

Appendix A: Rural Area Inventory

Rural Area Infrastructure Analysis										
Land Use Type	Development	# of Lots	Mean Lot Size (Acres)	Total Size (Acres)	Linear Feet of Road	Lnr Ft. per Lot	Secondary Access?	Est. Total Road Cost	Road Cost per Lot	Water System Type
Ag										
	Agricultural 1	3.00	20.80	62.40	3425	1142	Yes	357296	119099	Private
	Agricultural 2	2.00	16.50	33.00	2200	1100	Yes	229504	114752	Private
	Agricultural 3	8.00	7.30	58.40	2105	263	Yes	219594	27449	Private
	Agricultural 4	3.00	8.50	25.30	2125	708	Yes	221680	73893	Private
	Agricultural 5	1.00	0.96	0.96	570	570	Yes	59462	59462	Private
	Agricultural 6	20.00	15.70	313.70	10990	550	Yes	1146477	57324	Private
	Agricultural 7	5.00	35.50	177.53	1585	317	Yes	165347	33069	Private
	Agricultural 8	5.00	2.30	11.40	150	30	Yes	15648	3130	Private
	Agricultural 9	1.00	40.00	40.00	1360	1360	Yes	141875	141875	Private
	Agricultural 10	5.00	51.60	258.00	7150	1430	Yes	745888	149178	Private
	Agricultural 11	4.00	25.80	103.20	2700	675	Yes	281664	70416	Private
	Agricultural 12	3.00	32.50	97.40	5680	1893	Yes	592538	197513	Private
	Ag Average	5.00	21.46	98.44	3337	836		348081	87263	
Other										
	Carriage Station	109.00	0.38	40.93	6256	57	Yes	358424	9405	City

Appendix A: Rural Area Inventory

Linear Feet pipe- water	Linear Ft- water- per lot	Cost Total- water	Cost per lot- water	Septic System Type	Est. Population	Approx DWF (gal/day)	Linear Ft of Pipe	Lnr Ft Pipe Per Lot	Total Cost of Sanitary	Cost per lot=sanitary
		40500	13500	Private	7	610	3425	1142	425271	141757
		27000	13500	Private	7	407	2200	1100	273167	136583
		108000	13500	Private	11	1627	2105	263	261371	32671
		40500	13500	Private	11	610	2125	708	263854	87951
		13500	13500	Private	4	203	570	570	70775	70775
		270000	13500	Private	39	4068	10990	550	1364592	68230
		67500	13500	Private	4	1017	1585	317	196804	39361
		67500	13500	Private	7	1017	150	30	18625	3725
		13500	13500	Private	4	203	1360	1360	168867	168867
		67500	13500	Private	14	1017	7150	1430	887792	177558
		54000	13500	Private	11	814	2700	675	335250	83813
		40500	13500	Private	7	610	5680	1893	705267	235089
		67500	13500		10	1017	3337	836	414303	103865
8307	76	340587	3125	Community	382	22172	5897	54	732211	6718

Appendix B: Scenario Data: RR & A Inventory

Rural Area Scenario Study

Parcel Number	Land Use Type	Scenario	Total Size (Acres)	Subdivided Lots (2.5 Acres) S1&S2	Subdivided Lots (A to OP 18 lots per 40 Acres) S3	Subdivided Lots (RR & A to OP, per 20 Acres) S4	Current Estimated Population	Scenario Estimated Population	Tax Capital Accrued	Tax Capital Per Acre	Current Estimated Expenditure	Est. Expenditure if Residential	
1	RR	1, 2, 3,4	25.1	10			16	4	35	3326	133	898	3559
2	RR	1, 2, 3,4	31.9	12			21	4	42	4335	136	1170	4638
3	RR	1, 2, 3,4	33.7	13			22	4	46	2865	85	774	3066
4	RR	1, 2, 3,4	54.3	21			39	4	74	5351	99	1445	5726
5	RR	1, 2, 3	13.5	5				4	18	5160	382	1393	5521
6	RR	1, 2, 3,4	28.5	11			25	4	39	3511	123	948	3757
8	RR	1, 2, 3	10.7	4				4	14	3170	296	856	3392
9	RR	1, 2, 3	11.6	4				4	14	3709	320	1001	3969
10	RR	1, 2, 3	10	4				4	14	4302	430	1162	4603
11	RR	1, 2, 3	19.9	7				4	25	5319	267	1436	5691
12	RR	1, 2, 3	11	4				4	14	3040	276	821	3253
13	RR	1, 2, 3	10	4				4	14	4085	409	1103	4371
14	RR	1, 2, 3	58	23				4	81	7248	125	1957	7755
15	RR	1, 2, 3	19.9	7				4	25	8290	417	2238	8870
16	RR	1, 2, 3,4	23.5	9			15	4	32	5794	247	1564	6200
17	RR	1, 2, 3,4	64.6	25			43	4	88	7313	113	1975	7825
18	RR	1, 2, 3,4	41.3	16			27	4	56	9108	221	2459	9746
19	RR	1, 2, 3,4	30.5	12			20	4	42	4356	143	1176	4661
20	RR	1, 2, 3	10	4				4	14	4657	466	1257	4983
21	RR	1, 2, 3,4	22.4	8			14	4	28	661	30	178	707
22	RR	1, 2, 3	10	4				4	14	3733	373	1008	3994
23	RR	1, 2, 3	10.9	4				4	14	3511	322	948	3757
24	RR	1, 2, 3	10	4				4	14	5386	539	1454	5763
25	RR	1, 2, 3	10	4				4	14	1250	125	338	1338
26	RR	1, 2, 3	10	4				4	14	3038	304	820	3251
27	RR	1, 2, 3	10	4				4	14	3828	383	1034	4096
28	RR	1, 2, 3	10.3	4				4	14	3445	334	930	3686
29	RR	1, 2, 3	10	4				4	14	4336	434	1171	4640
30	RR	1, 2, 3	12	4				4	14	3496	291	944	3741
31	RR	1, 2, 3	10	4				4	14	2976	298	804	3184
32	RR	1, 2, 3	10	4				4	14	4000	400	1080	4280
33	RR	1, 2, 3,4	33.4	13			22	4	46	647	19	175	692
34	RR	1, 2, 3,4	39.8	15			26	4	53	1139	29	308	1219
35	RR	1, 2, 3,4	40	16			26	4	56	6990	175	1887	7479
36	RR	1, 2, 3	12.8	5				4	18	4679	366	1263	5007
37	RR	1, 2, 3	13.7	5				4	18	1365	100	369	1461
38	RR	1, 2, 3	11.2	4				4	14	3528	315	953	3775
39	RR	1, 2, 3	10	4				4	14	4513	451	1219	4829
40	RR	1, 2, 3,4	49.7	19			33	4	67	11138	224	3007	11918
41	RR	1, 2, 3,4	50	20			33	4	70	8737	175	2359	9349
42	RR	1, 2, 3	10	4				4	14	3650	365	986	3906
43	RR	1, 2, 3,4	20	8			13	4	28	2431	122	656	2601
44	RR	1, 2, 3,4	40	16			26	4	56	1790	45	483	1915
45	RR	1, 2, 3,4	21.6	8			14	4	28	4223	196	1140	4519
46	RR	1, 2, 3	13.9	5				4	18	5193	374	1402	5557
47	RR	1, 2, 3	18.2	7				4	25	196	11	53	210
48	RR	1, 2, 3,4	64.4	25			42	4	88	2133	33	576	2282

Appendix B: Scenario Data: RR & A Inventory

Rural Area Scenario Study

Parcel Number	Land Use Type	Scenario	Total Size (Acres)	Subdivided Lots (2.5 Acres) S1&S2	Subdivided Lots (A to OP 18 lots per 40 Acres) S3	Subdivided Lots (RR & A to OP, per 20 Acres) S4	Current Estimated Population	Scenario Estimated Population	Tax Capital Accrued	Tax Capital Per Acre	Current Estimated Expenditure	Est. Expenditure if Residential	
49	RR	1, 2, 3	16.6	6				4	21	549	33	148	587
50	RR	1, 2, 3,4	39.6	15			26	4	53	2936	74	793	3142
51	RR	1, 2, 3,4	23.4	9			15	4	32	1175	50	317	1257
52	RR	1, 2, 3	11.1	4				4	14	3002	270	811	3212
53	RR	1, 2, 3	12.8	5				4	18	4325	338	1168	4628
54	RR	1, 2, 3	12.8	5				4	18	848	66	229	907
55	RR	1, 2, 3	12.8	5				4	18	3425	268	925	3665
56	RR	1, 2, 3	12.8	5				4	18	2903	227	784	3106
57	RR	1, 2, 3	12.1	4				4	14	802	66	217	858
58	RR	1, 2, 3	10.6	4				4	14	702	66	190	751
59	RR	1, 2, 3	11.3	4				4	14	3215	285	868	3440
60	RR	1, 2, 3	11.7	4				4	14	3201	274	864	3425
61	RR	1, 2, 3,4	54.6	21			36	4	74	10783	197	2911	11538
62	RR	1, 2, 3,4	54.8	21			39	4	74	10822	197	2922	11580
63	RR	1, 2, 3,4	21.7	8			14	4	28	4286	198	1157	4586
64	RR	1, 2, 3,4	78.4	31			52	4	109	6712	86	1812	7182
65	RR	1, 2, 3	18.6	7				4	25	2790	150	753	2985
66	RR	1, 2, 3,4	30.4	12			20	4	42	5130	169	1385	5489
67	RR	1, 2, 3,4	37.1	14			24	4	49	2046	55	552	2189
68	RR	1, 2, 3,4	44.2	17			29	4	60	2651	60	716	2837
69	RR	1, 2, 3	10	4				4	14	5401	540	1458	5779
72	RR	1, 2, 3	10.8	4				4	14	3827	354	1033	4095
73	RR	1, 2, 3	12.5	5				4	18	3961	317	1069	4238
74	RR	1, 2, 3,4	38.3	15			25	4	53	4075	106	1100	4360
75	RR	1, 2, 3	11.2	4				4	14	2696	241	728	2885
76	RR	1, 2, 3,4	32.8	13			21	4	46	4656	142	1257	4982
77	RR	1, 2, 3,4	57.2	22			38	4	77	2477	43	669	2650
78	RR	1, 2, 3,4	27.2	10			18	4	35	4765	175	1287	5099
79	RR	1, 2, 3	10	4				4	14	3293	329	889	3524
80	RR	1, 2, 3	11.8	4				4	14	4094	347	1105	4381
81	RR	1, 2, 3	11.8	4				4	14	4000	339	1080	4280
82	RR	1, 2, 3,4	71.5	28			47	4	98	9461	132	2554	10123
83	RR	1, 2, 3,4	20	8			13	4	28	3740	187	1010	4002
84	RR	1, 2, 3,4	36.4	14			24	4	49	6256	172	1689	6694
85	RR	1, 2, 3	17.4	6				4	21	4902	282	1324	5245
86	RR	1, 2, 3,4	21.4	8			14	4	28	6601	308	1782	7063
87	RR	1, 2, 3,4	24	9			16	4	32	6162	257	1664	6593
88	RR	1, 2, 3,4	32	12			21	4	42	4248	133	1147	4545
89	RR	1, 2, 3,4	22.5	9			14	4	32	3643	162	984	3898
90	RR	1, 2, 3	12	4				4	14	3395	283	917	3633
91	RR	1, 2, 3	12	4				4	14	4672	389	1261	4999
92	RR	1, 2, 3	12	4				4	14	4404	367	1189	4712
93	RR	1, 2, 3	12	4				4	14	3849	321	1039	4118
94	RR	1, 2, 3	12	4				4	14	4184	349	1130	4477
95	RR	1, 2, 3,4	37	14			24	4	49	5623	152	1518	6017
96	A	3	17.9	7				4	25	4366			
97	A	3, 4	32.8	13			21	4	46	5022			
98	A	3	11.7	4				4	14	2434			

Appendix B: Scenario Data: RR & A Inventory

Rural Area Scenario Study

Parcel Number	Land Use Type	Scenario	Total Size (Acres)	Subdivided Lots (2.5 Acres) S1&S2	Subdivided Lots (A to OP 18 lots per 40 Acres) S3	Subdivided Lots (RR & A to OP, per 20 Acres) S4	Current Estimated Population	Scenario Estimated Population	Tax Capital Accrued	Tax Capital Per Acre	Current Estimated Expenditure	Est. Expenditure if Residentail
99	A	3, 4	32.7	13			21	4	46	8971		
100	A	3, 4	21.5	8			14	4	28	3370		
101	A	3, 4	20	8			13	4	28	568		
102	A	3	14	5				4	18	4532		
103	A	3	10.3	4				4	14	4299		
104	A	3	16.2	6				4	21	452		
105	A	3, 4	29.5	11			19	4	39	2921		
106	A	3	17.2	6				4	21	320		
107	A	3	17.3	6				4	21	566		
108	A	2, 3, 4	65.2	26	28		43	4	91	2914		
109	A	3	10.1	4				4	14	1976		
110	A	2, 3, 4	73.5	29	31		49	4	102	5335		
111	A	2,3, 4	67	26	29		44	4	91	19336		
112	A	3	10	4				4	14	2785		
113	A	3, 4	20.1	8			13	4	28	0		
114	A	3	11.1	4				4	14	323		
115	A	2, 3, 4	69.4	27	30		46	4	95	3651		
116	A	2, 3, 4	116.6	46	51		77	4	161	5636		
117	A	3, 4	37.3	14			24	4	49	4136		
118	A	2, 3, 4	93.8	37	41		62	4	130	14007		
119	A	3, 4	36.8	14			24	4	49	3662		
120	A	2, 3, 4	53.3	21	23		35	4	74	12084		
121	A	3	10	4				4	14	3949		
122	A	3	39.8	15			26	4	53	12856		
123	A	2, 3, 4	47.6	19	21		31	4	67	1918		
SUM			1002.7	389				98	1362	132389		

