

City of Fitchburg

Northeast

Neighborhood Plan



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engineering solutions for a working world
and the Fitchburg Planning Department -

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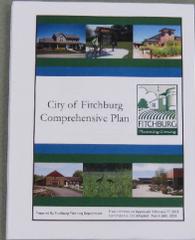
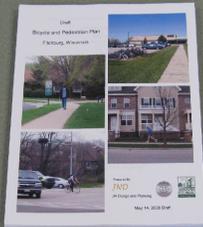
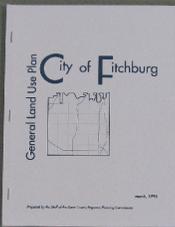
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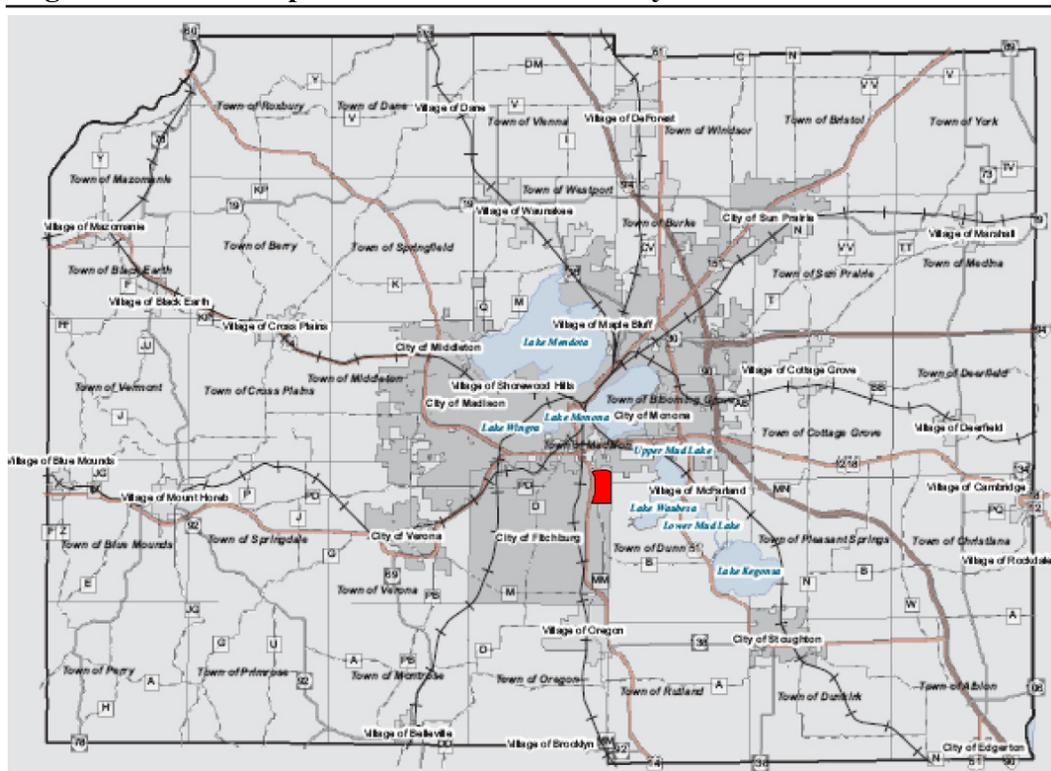
Introduction and Background



Introduction and Background

The City of Fitchburg has a history inextricably tied to the expansion of the Madison Metropolitan Area within Dane County. A governmental, educational and cultural hub of south central Wisconsin and the entire State, the metropolitan area has grown to meet the demands of those activities. Immediately adjacent to Madison, Fitchburg residents and businesses are just minutes from the State Capitol and the campus of the University of Wisconsin-Madison. The well-defined transportation corridors that link Fitchburg to Madison also link Madison with communities to the south of Fitchburg. The Fitchburg to Madison routes are not the only significant transportation influence impacting growth in Fitchburg. Major highways frame Fitchburg on the north (US Highway 12-18), east (US Highway 14), and on the west (US Highway 18-151), allowing an easy reach to Fitchburg from all four directions.

Figure 1 - 1: Municipalities within Dane County



Source: Dane County Comprehensive Plan, 2007.

The metropolitan influence on Fitchburg can be easily seen in the style and extent of new development in the City. High tech and research industries are extensions of the University's influence and provide employment for the urban professionals, many of whom live in the new residential developments. Those developments range from multiple-family dwellings for young professionals to urban scale single-family housing for growing families. New retail establishments reflect the needs of both young professionals and families constantly on the go.

The relationship between the City and the surrounding environs can be seen in relative increases in population of the City and Dane County. Between the 1990 and 2000 Census counts, Dane County experienced a 16% population gain. Using the State of Wisconsin population estimates, the County grew 25% from 1990 to 2005. Likewise, Fitchburg experienced increases of 31% between 1990 and 2000 and 45%

between 1990 and 2005.

Accordingly, while being part of the regional growth, Fitchburg recognizes its own population growth rate has been above the County rate, and proactive steps are needed to insure that the rate of growth remains manageable and follows the adopted set of Planning Goals and Policies as established in the Comprehensive Plan of the City.

Future Urban Development

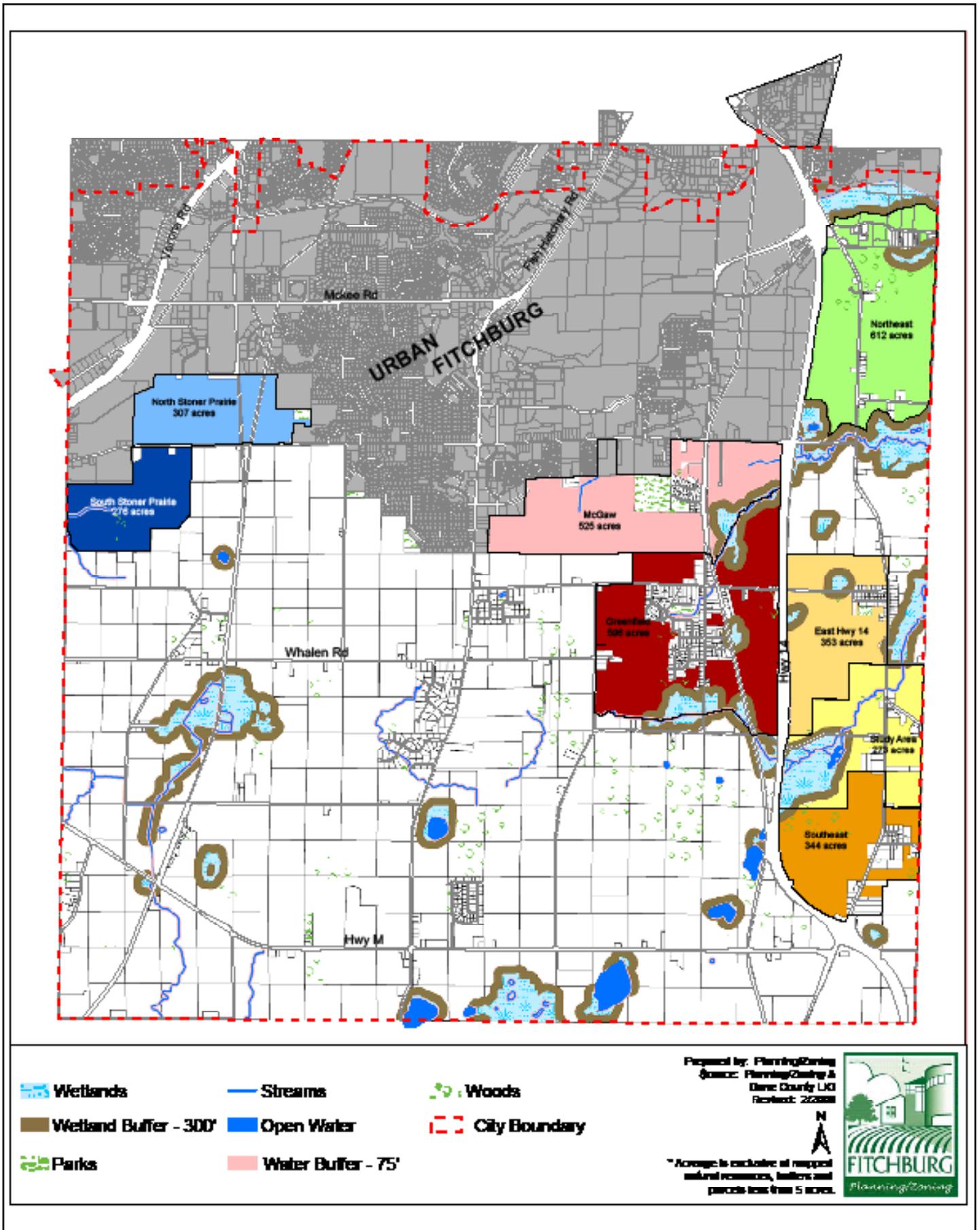
To provide proactive planning for the future, in June 2004, the City adopted Appendix H of the 1995 General Land Use Plan (Fitchburg, 1995) that was called the Future Urban Development Area study (FUDA). The FUDA identified several homogenous neighborhoods within the City, accessible to urban services, and located adjacent to established developed areas. The Northeast Neighborhood Planning Process began in 2005 under the 1995 General Land Use Plan's Appendix H. This Appendix clearly noted that the extension of urban services into a FUDA neighborhood must not occur until completion of a comprehensive study of land uses took place, following a thorough analysis of the land conditions and the many factors that serve the land uses. The study, called a neighborhood plan, provides guidance for rational decision making when development proposals are received from the private sector, so that the City is proactive to development and not reactive. Although the recommendation of land uses is the predominant result of a neighborhood plan, the plan provides recommendations on how to provide services for those land uses. These services include the capacity and extension of sanitary sewers, storm sewers, and a public water supply. It may also recommend street patterns, park and school sites, existing site conditions needing preservation, and so on.

Even prior to the establishment of the FUDA policy, the City had a strong track record of neighborhood planning. In 2002, the City adopted the Nine Springs Green-Tech Village Neighborhood Plan. Located between USH 14 and Syene Road, and north of Lacy Road, the plan recommended the combination and/or a mix of a high tech business center with residential and commercial uses. The Green-Tech Village area is now part of a development plan that implements the neighborhood plan.

The City commenced the planning process for the Northeast Neighborhood, one of the FUDA neighborhoods, in 2005. In the meantime, the city adopted a new Comprehensive Plan (Fitchburg, 2009). This new plan re-evaluated the FUDA study of 2004 and established a long term (50+ year) growth boundary which is identified in Figure 1-2 "Future Urban Development Area." The Comprehensive Plan also limits the amount of development that may occur to no more than 75 acres per year on an average annual basis, in order to further control urban sprawl. The Comprehensive Plan will be used to guide the development of neighborhood plans, and any urban service area amendments.

The Northeast Neighborhood has been extended to the south to have its southern

Figure 1 - 2: Future Urban Development Area



Introduction and Background

border being co-terminus with Swan Creek east of County Trunk Highway MM (CTH MM). Swan Creek and its associated wetlands are crucial water resources that are to be protected with a 300 foot wetland buffer/environmental corridor.

The Northeast Neighborhood Plan

The Northeast Neighborhood is east of the Nine Springs Green-Tech Village Neighborhood. Officially, Larsen Road to the east, Nine Springs Creek to the north, USH 14 to the west and the Lacy Road/Swan Creek corridor to the south bound the neighborhood. It encompasses approximately 922 acres, or slightly over 1.4 square miles.

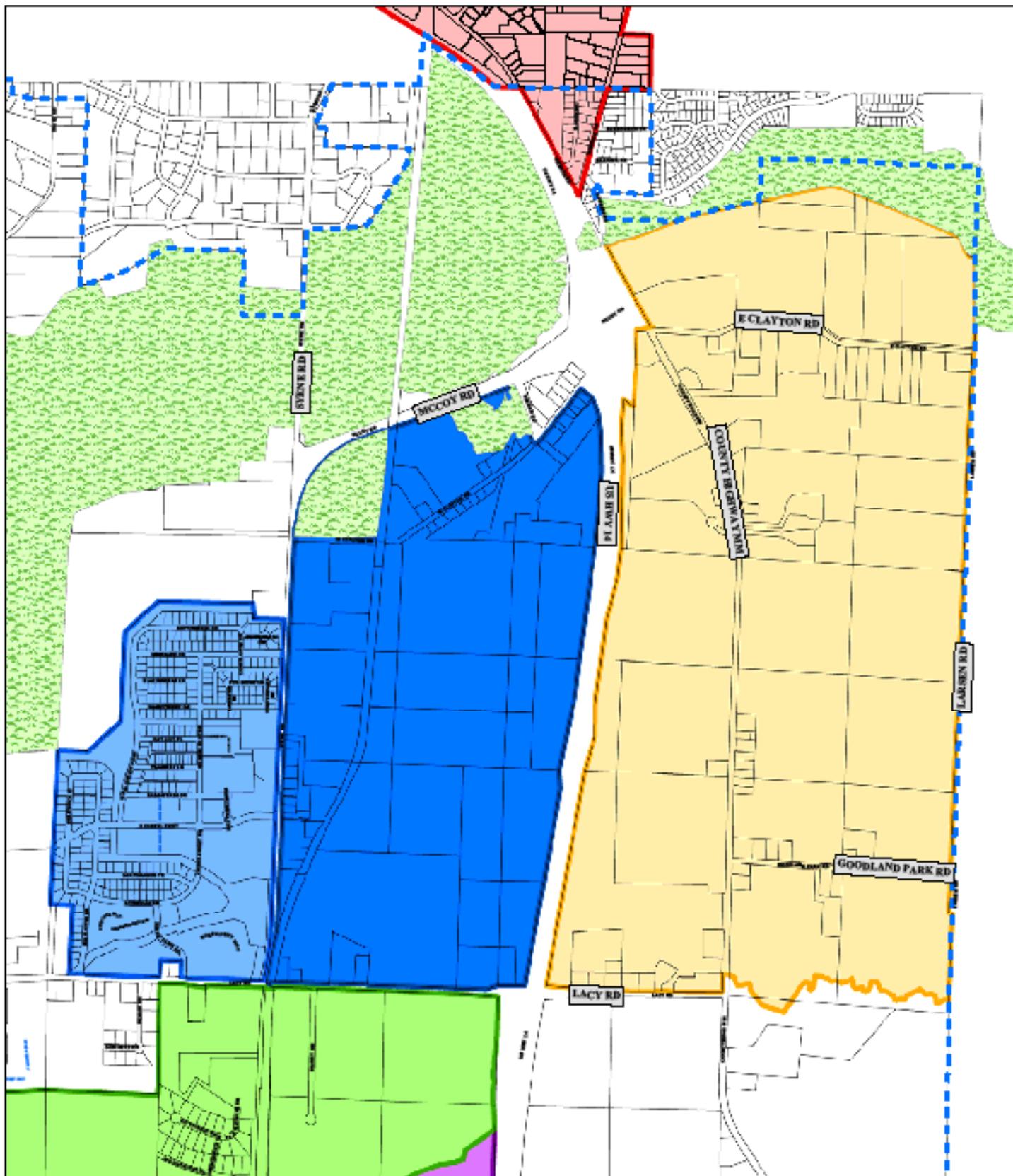
Neighborhoods in Fitchburg or elsewhere are never exactly the same, and the Northeast Neighborhood has unique characteristics that shape the plan. USH 14, which dominates the west side of the neighborhood and the proposed new USH 14 interchange north of Lacy Road are planning issues that are addressed in this plan. (This new interchange and the road leading up to it will be called “interchange road” within this plan, as a formal name has not been assigned.) CTH MM bisects the neighborhood parallel to USH 14. A mixture of highway business uses and homes located on large lots dot the CTH MM frontage. Additional homes on large lots front Clayton Road, Lacy Road and Goodland Park Road. Similar era (1950-1970) homes exist adjacent to the neighborhood in the Towns of Blooming Grove and Dunn, along the eastern side of Larsen Road.

Diversity of the landscape will be a factor requiring serious consideration as the Northeast Neighborhood is planned and developed. Just as major transportation routes frame the neighborhood, drainage patterns dominate the landscape. The neighborhood has two distinct drainage basins, with the environmental corridors of Nine Springs Creek to the north and Swan Creek to the south. Nine Springs Creek is part of the regional preservation area known as the Dane County Nine Springs E-Way (E-Way). Between the low points to the north and south are a mix of steep slopes with dense woodlands, upland wetlands and relatively flat farm fields. This diversity provides an opportunity for the creation of an exciting place.

Northeast Neighborhood Plan Process

The Northeast Neighborhood planning process involved input from the public, stakeholders, and other jurisdictions, to accomplish the creation of a neighborhood plan that will achieve the goals and policies of the City. Many pieces of information were considered including transportation, environmental and external factors. Two written newsletters were mailed to property owners in the neighborhood and others in the vicinity; copies are available within the public record (and may be available for download from the City of Fitchburg’s website). At four points during the study, Public Informational Meetings were held to engage the public and stakeholders so that they could provide meaningful direction. Attendance at each of the four meetings ranged between 60 and 100 people. Written comments received at, and subsequent to, those meetings are part of the public record and may be found on

Figure 1 - 3: Northeast Neighborhood Plan



- | | | |
|-------------------------|------------------------|-----------------------------|
| Neighborhoods | Northeast Neighborhood | Nine Springs E-way Corridor |
| Greenfield Neighborhood | Southdale - T. Madison | City Limits |
| Green Tech Village | Swan Creek Subdivision | |
| McGaw Neighborhood | | |


 PREPARED BY: PLANNING&ZONING
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 CREATED: 7/2009



Introduction and Background

the City of Fitchburg's website. The comments indicated significant concern relative to development of this area. In addition, special interests and landowners provided competing visions in early 2008. The plan commission established a Northeast Neighborhood Land Use Committee to work through the competing plans and varied issues that were presented. This committee began meeting in April of 2008 and worked to the end of 2009 to provide a refined neighborhood plan.

The general purpose of the plan is to provide a rational basis for decision-making by the City when the private sector proposes a development/redevelopment opportunity to the City. It is incumbent upon the City to be prepared when property owners decide to sell or change the land use of their property. This plan, therefore, will provide direction to the City at the time when development or a change in land use is proposed.

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Opportunities and Issues



Issues and Opportunities

The Northeast Neighborhood has wide-ranging opportunities and issues that must be thoroughly considered while planning for future development. This process will help shape the platform for which land use decisions can be discussed and decided. Our consideration of opportunities and issues of importance in the Northeast Neighborhood is organized on a topical basis, as follows:

- Population
- Housing
- Schools
- Education Levels
- Employment Characteristics
- Income Levels
- Land Use
- Topography
- Natural Features
- Urban Service Area (USA)
- Transportation
- Parks and Open Space

Population

According to the US Bureau of the Census (Census), the population of Fitchburg was 20,501 in 2000 and reached an estimated population of 23,420 by 2008. Based on these numbers, the City experienced an increase of 2,919 residents over eight years. Fitchburg experienced a 14.2 percent growth from 2000 to 2008 according to the State of Wisconsin - Department of Administration. This means that the City of Fitchburg is growing faster than both the City of Madison and Dane County.

Figure 2 - 1: Population Estimates

	2000	2008	Numeric	Percent
Municipality	Census	Estimate	Change	Change
City of Fitchburg	20,501	23,420	2,919	14.2%
City of Madison	208,054	226,650	18,596	8.9%
Dane County	426,526	471,559	45,033	10.6%

Source: Wisconsin Department of Administration: January 1, 2008 Final Population Estimates.

These population growth numbers are aggregated for the whole City. However, because of limitations on land division and development outside the Urban Service Area (USA), population growth was concentrated within areas served by municipal sewer and water. The Northeast Neighborhood is not within the USA; so little population growth can be expected to have taken place within the neighborhood over the past decade.

Municipal utility services, such as sanitary sewer and water, are available within an USA. For that reason, these areas are permitted to develop into dense urban neighborhoods as opposed to the limitations placed upon rural development. If

the USA is expanded to include the Northeast Neighborhood it can be expected that development will occur at densities greater than would otherwise be the case if the area were to remain rural. With inclusion in the USA, the percentage of City population growth occurring in the Northeast Neighborhood would increase significantly, increasing the demand for other City services such as police and fire in the Northeast Neighborhood.

According to the Fitchburg General Land Use Plan, as of 1990, the population within the County Trunk Highway MM (CTH MM) corridor was 527 people. However, the CTH MM corridor is not synonymous with the Northeast Neighborhood. The Northeast Neighborhood is limited to the northern portion of the CTH MM corridor.

In 2003, the Dane County Regional Planning Commission calculated demographic forecasts for the City of Fitchburg through 2030. These forecasted population projections are used in the City of Fitchburg's Comprehensive Plan (Fitchburg, 2009). The Dane County Regional Planning Commission figures indicate that Fitchburg will grow faster than calculated by the Wisconsin Department of Administration.

Figure 2 - 2: Fitchburg Population Projections

Year	Population	Percentage change
1970	4,704	-
1980	11,973	154.53%
1990	15,648	30.69%
2000	20,501	31.01%
2010	25,477	24.27%
2020	30,431	19.44%
2030	35,386	16.28%

Source: U.S. Bureau of the Census, 2000; Dane County Regional Planning Commission, 2003; and Fitchburg Comprehensive Plan, 2009.

Opportunities and issues relative to population growth: It can be expected that the City of Fitchburg will be able to meet most, if not all, of its 2030 population growth within the current USA, the McGaw Park Neighborhood, and in the Northeast Neighborhood. Because most of the land in the Northeast Neighborhood is held as large undeveloped tracts at this time, the opportunity exists to plan for appropriate densities to accommodate a portion of the overall growth for the long-term benefit of the citizens of Fitchburg. A key question that will require further analysis by the Plan Commission is how to balance growth in the current USA, McGaw Park Neighborhood and the Northeast Neighborhood, but yet meet service demands and not exceed the Comprehensive Plan growth limitations.

Housing

The number of dwelling units in the City of Fitchburg increased over 29 percent from 1990 to 2000, with the addition of over 1,863 units. The value of houses in Fitchburg also increased dramatically over that same ten-year period. According to the 2000 Census, the median housing value increased 84.7 percent, from \$95,800 to



Issues and Opportunities

\$176,900.

Figure 2 - 3: Occupancy and Median Housing Value Change

	1970	2000	% Change
Occupied Housing Units	6,399	8,262	29.1%
Owner-occupied median housing values	\$95,800	\$176,900	84.7%

Source: U.S. Bureau of the Census, 2000.

The number of dwelling units in Fitchburg reached 8,262 as of the 2000 Census. Approximately 45 percent, or 3,738, of all dwelling units in the City of Fitchburg were owner-occupied. The Census also revealed that there were more renter-occupied dwelling units than owner-occupied units in Fitchburg in 2000. As can be seen in the table below, this is a higher proportion than the City of Madison or the County as a whole. The ratio of owner-occupied to renter-occupied housing in the entire City may not reflect the ratio within the Northeast Neighborhood. Based on a review of property ownership records, it appears that improved properties in the Northeast Neighborhood have higher levels of owner occupancy than does the city as a whole, which is expected due to the fact that they are predominantly single-family homes.

Figure 2 - 4: Housing Occupancy

	City of Fitchburg		City of Madison		Dane County	
	Dwelling Units	Percentage	Dwelling Units	Percentage	Dwelling Units	Percentage
Owner occupied	3,738	45.2%	42,496	47.7%	99,895	57.6%
Renter occupied	4,524	54.8%	46,523	52.3%	73,589	42.4%
Total	8,262		89,019		173,484	

Source: U.S. Bureau of the Census, 2000.

The City has expressed the desire to provide a higher level of owner-occupied to renter-occupied housing for new neighborhoods, but at transit friendly densities. This can be achieved through careful land use planning and controls on future residential development in the City. Projections indicate that the City will, on average, approach 200 new dwelling units per year through 2030.

Figure 2 - 5: Projected Dwelling Units

Year	Total Households		Projected Households		
	2000		2010	2020	2030
City of Fitchburg	8,662		10,672	12,933	14,843

Source: U.S. Bureau of the Census, 2000; and Dane County Regional Planning Commission, 2003.

Opportunities and issues relative to housing: The City of Fitchburg is home to a vigorous housing market, exhibiting both high levels of new development and increases in per-unit value. As non-residential development in the Nine Springs Green-Tech Village neighborhood occurs to the immediate west, it can be expected that housing demand for areas in close proximity will increase. Careful consideration must be given to determining appropriate densities and housing types for any

future residential growth that may occur upon the expansion of the USA to include portions of the Northeast Neighborhood.

Schools

The Northeast Neighborhood is divided between the Oregon and Madison school districts. The Oregon School District encompasses the majority of the Northeast Neighborhood. Enrollment in the Oregon School District appears to vary in a cyclical fashion. This school district rapidly increased in enrollment in the early 2000's and then began to plateau. Recent figures indicate that the number of school-aged children may be on the rise again. Expansions and improvements are being made throughout the school district, including the recent construction of a new school and a multitude of capital improvements to the existing schools.

Only a small part of the Northeast Neighborhood is within the Madison School District. This land is located north of E. Clayton Road and most of this area is owned by the City of Madison or Dane County. Because much of this land is part of an extensive wetland ecosystem and is under public ownership, it is highly unlikely that major future development will occur in the part of the Northeast Neighborhood located within the Madison School District. Residents of this area have expressed a clear desire to remain in the Oregon School District.

Opportunities and issues relative to schools: It is vital that future development within the Northeast Neighborhood be designed and paced in such a way that it is not a detriment to the well being of either school district's operations. For the Madison School District, little demand for district services is forecast from growth in the Northeast Neighborhood. On the other hand, future residential growth served by the Oregon School District will impact the Oregon School District enrollment. Fitchburg's desire to increase City-wide rates of owner occupancy may result in higher levels of school-age population growth than would otherwise result. Deliberate pacing and open lines of communication with the school district are encouraged.

Education

The general levels of educational attainment for residents of a municipality merit consideration relative to land use and economic development. For example, this information may provide insights as to the type of careers people have and the amount of expendable income in an area. The higher the levels of educational attainment, the more likely expendable income is present due to the direct correlation with increased earning power. Over two-thirds of the adult residents of Fitchburg have had some college experience, over a quarter have a bachelor's degree and 16% have graduate or professional degrees; these numbers are relatively high.

Issues and Opportunities

Figure 2 - 6: Educational Attainment

Less than 9th grade	232	1.8%
9th to 12th grade, no diploma	798	6.2%
High school graduate (includes equivalency)	2,497	19.3%
Some college, no degree	2,857	22.1%
Associate degree	1,114	8.6%
Bachelor's degree	3,379	26.1%
Graduate or professional degree	2,065	16.0%
Total	12,942	100.0%

Source: U.S. Bureau of the Census, 2000.

Opportunities and issues relative to education: It is clear that the general population of the City of Fitchburg is well educated. For the Northeast Neighborhood, this higher-than-average general education level has its most direct land use planning implications for the residential sector. It is likely that the City of Fitchburg will experience continuing demand for higher value housing to satisfy the better educated, more affluent population. Because of its convenience and proximity to the Nine Springs Green-Tech Village, the Northeast Neighborhood may be an appropriate location for housing of this type.

Employment

Census data regarding occupations show big changes have occurred over the ten-year period between 1990 to 2000. Over the course of this decade, the City has experienced a sizeable decrease in the number of residents involved in sales and office, farming, fishing, and forestry, and construction, extraction, and maintenance occupations. At the same time there has been a large increase in the number of people involved in management, professional, service, and production, transportation, and material moving occupations. Because it is unlikely that such a large proportion of the resident population made significant adjustments in their career paths over the course of a decade, it must be assumed that a high proportion of the population growth the city experienced was the in-migration of adults with established careers in certain sectors. Of course some parts of the occupation shift parallel a general realignment of occupation sectors, such as the ongoing national growth trend in the service sector. The vast majority of land in the Northeast Neighborhood is currently being farmed. Once developed, the Northeast Neighborhood is likely to be home to more people engaged in professional, management, service, and production occupations.

Figure 2 - 7: Occupation Analysis

Occupation	1990	2000	% Change
Management, professional, and related occupations:	3,454	5,150	49.1
Service occupations:	1,032	1,701	64.8
Sales and office occupations:	3,863	3,082	-20.2
Farming, fishing, and forestry occupations	176	37	-79
Construction, extraction, and maintenance occupations:	788	586	-25.6
Production, transportation, and material moving occupations:	727	1,212	66.7
Total:	10,040	11,768	17.2

Source: U.S. Bureau of the Census, 2000.

Opportunities and issues relative to occupations: As the Nine Springs Green-Tech Village is developed immediately west of the planning area, it can be expected that the trend toward management and professional occupations will be reflected in any future population growth in the Northeast Neighborhood. The convenience of USH 14 will only be enhanced with the addition of the planned interchange at the western edge of the neighborhood, increasing the appeal of the area as a residential location for workers who are employed elsewhere in the Madison metropolitan area.

Income

The median income for the individual residents and households of Fitchburg is slightly higher than that of the City of Madison and Dane County as a whole. This may be a direct result of the higher levels of educational attainment for the residents of the City.

Figure 2 - 8: Median Income Comparison

	City of Fitchburg	City of Madison	Dane County
Individual	\$25,641	\$21,222	\$25,081
Household	\$50,433	\$41,941	\$49,223

Source: U.S. Bureau of the Census, 2000.

Opportunities and issues relative to income: Because the City of Fitchburg has higher income levels than the City of Madison and the County as a whole, residents of Fitchburg can support, and are likely to demand, higher quality development and public amenities. Due consideration must be given to maintaining quality of life for all affected residents relative to any proposed new development.

Land Use

Nearly all of the existing land uses in the Northeast Neighborhood have been a part of Fitchburg, and more specifically the Northeast Neighborhood for an extended period of time. The operations and locations of these uses must be considered prior to planning land uses for the remainder of the neighborhood. Existing uses are able

Issues and Opportunities

to remain at their current locations. It is when individual land use changes occur that the planned uses in the Northeast Neighborhood Plan come into effect.

The majority of land in the Northeast Neighborhood is held by a relatively small number of property owners. Several of the property owners in the Northeast Neighborhood control large parcels and/or multiple parcels. Most of the large tracts are presently used for agricultural purposes and the smaller lots are single-family residential properties. The planning area is home to several businesses; those are located along CTH MM. The existing businesses include a motel and a former towing service.

A borrow pit located between CTH MM and USH 14 is in the process of being filled with clean materials, and may have the potential to accommodate additional long range future development. Parts of the planning area are comprised of upland woods, wetlands, steep slopes, and other factors that impede development. Land uses adjacent to the Northeast Neighborhood must be reviewed to ensure that all future development within the Northeast Neighborhood is compatible. There are several municipalities bordering the Northeast Neighborhood. The City of Madison is toward the north, the Town of Blooming Grove and the Town of Dunn are on the eastern border, the Nine Springs Green-Tech Village Neighborhood is to the west, and rural Fitchburg lies to the south.



Separating the City of Madison and the City of Fitchburg is a large open area that is comprised of environmentally sensitive land, most of which is part of an extensive wetland complex associated with Nine Springs Creek. The environmental lands are part of both the Dane County Nine Springs E-Way (E-Way) and the Capital Springs State Recreational area. As previously mentioned, the City of Madison and Dane County own the majority of land immediately north of East Clayton Road.

An area north of the Northeast Neighborhood has been included in the City of Madison, City of Fitchburg, and Town of Madison Cooperative Plan. By 2023, the lands under the Town of Madison jurisdiction will be attached to either the City of Madison or the City of Fitchburg as detailed in the Cooperative Plan. The area south of the Beltline between USH 14 and Rimrock Road will become part of the City of Fitchburg.

The Town of Blooming Grove borders the City of Fitchburg for approximately three-quarters of a mile at the City's northeast corner. These are large parcels ranging in size from 2.5 acres to 34 acres. By comparison, the Town of Dunn is much more densely developed as it abuts Fitchburg. The Town of Dunn has a residential neighborhood immediately east of Larsen Road. These residential lots range from one-quarter to 1.2 acres in size. A large undeveloped parcel lies south of the residential areas.

USH 14 is the western boundary of the Northeast Neighborhood. Directly west of USH 14 is an area identified by the City as Nine Springs Green-Tech Village. A Neighborhood Plan was completed for the Nine Springs Green-Tech Village in 2002. A large mixed use complex is planned for the Green Tech Village area. Through this study and a transportation study for the northeastern portion of Fitchburg, it has been determined that a new USH 14 interchange and an interchange road is needed.

Issues and Opportunities

Immediately west of the Nine Springs Green-Tech Village is the Swan Creek subdivision.

Opportunities and issues relative to land use: Portions of the Northeast Neighborhood are already developed with residential uses, as is much of the east side of Larsen Road immediately adjacent to the planning area. It is likely that these properties will remain in their current use. Though planning in the immediate proximity of existing homeowners will merit special consideration, extensive areas throughout the planning area are still held in large tracts, providing an opportunity to plan cohesive development that is likely to take place in a coordinated manner. Remediation of the borrow site may be necessary prior to redevelopment of that property, and several sites will remain undeveloped due to natural resource constraints such as wetlands, proximity to wetlands, steep topography, or mature tree canopy.

Topography

The geological action of glaciers left elevation changes of over 150 feet within the neighborhood. Several parts of the Northeast Neighborhood have very steep slopes including hills and ridges of glacial topography mainly part of a recessional moraine or drumlin area.

Opportunities and issues relative to topography: There are significant challenges for the Northeast Neighborhood in regards to the existing topography. The steep slopes may not only hinder the future development of certain areas because of cost constraints, but may also, if developed, have associated environmental impacts. Environmental impacts may include stormwater runoff and erosion that may cause difficulties for future development. The City currently requires public sanitary sewer for all new development and does not permit the use of permanent public lift stations. This means that portions of the planning area are likely to remain undeveloped because of topographic challenges to the provision of gravity flow sewer.

Natural Features

Dane County efforts have preserved an environmental corridor known as the E-Way, one of the most delicate natural resources in the area. The E-Way is located immediately north of the Northeast Neighborhood. The natural areas contribute significantly to preserving the purity of drinking water, recharging the aquifer, as well as maintaining integral portions of our ecosystem.

The Nevin Hatchery, to the west of the planning area, is also supplied by natural groundwater. The Nevin Hatchery, which is managed by the Wisconsin Department of Natural Resources, is located along tributaries to the Nine Springs Creek. The natural springs allow the fish hatchery to continue operations without additional chemicals. This is due to clean natural spring water. It is vital that development in the Northeast Neighborhood adequately protect both ground and surface water resources from contaminants in order to assure that chemical-free operations at the hatchery can be maintained.



Nine Springs Creek is located immediately to the north of the Northeast

Issues and Opportunities

Neighborhood. The creek is nearly surrounded by municipally owned lands in the Northeast Neighborhood. As a result of agricultural operations and development upstream from the Northeast Neighborhood, Nine Springs Creek has been negatively impacted. Future development must ensure that further negative impacts to the creek are mitigated.

Located in the southern portion of the planning area, and forming the south planning boundary east of CTH MM is Swan Creek. Swan Creek and the associated significant wetlands flow east into Lake Waubesa. The wetlands on the Pasley property are in good condition according to a study that the landowner had completed of the wetlands.



Just to the east, in the Town of Dunn, is a large wetland complex that extends from Larsen Road to the southwestern edge of Lake Waubesa that contains fens, sedge meadows, shallow marsh and shrub carr. The wetland complex is over 500 acres and is located within the South Waubesa Wetlands State Natural Area. The Dane County Parks and Open Space Plan on page 53 (Dane County Parks Commission, 2006) recommends expanding its designated South Waubesa Marsh Natural Resource Area along Swan Creek to as far west as USH 14.

Isolated wetland pockets, many degraded by farm activity, also exist in the planning area, the largest being north of Goodland Park Road and just west of Larsen Road. A smaller area of wetlands and open waters exists in the southwest corner of the planning area. Because of its proximity to the planned USH 14 interchange special consideration must be given to the protection of natural resources in this area.

Many of the areas of steep slopes in the Northeast Neighborhood are heavily wooded, meriting special consideration on both accounts.

Opportunities and issues relative to natural resources: While much of the planning area consists of gently rolling open farm fields, environmentally sensitive lands and delicate habitats comprise a significant portion of the Northeast Neighborhood and areas immediately adjacent to the Northeast Neighborhood, in the form of woodlands, steep slopes, wetlands and open water. Some of these areas are already protected through public ownership, while others are vulnerable to potential future development impacts. Every effort must be maintained to protect the wetland complexes to the north, east, and south of the Northeast neighborhood, and due consideration must be given to protection or appropriate utilization of other environmentally sensitive land and adjacent developable land elsewhere in the Northeast Neighborhood.

Urban Service Area

The City has a defined Urban Service Area (USA), which is the area that currently receives, or has the ability to receive, public sewer. The Northeast Neighborhood is not within the USA at the present time. Even if the Northeast Neighborhood were to be included in the USA, parts of the area could not be developed without City policy changes. The City of Fitchburg does not allow permanent lift stations for sanitary sewers. Therefore, the areas within the Northeast Neighborhood that could potentially be added to the USA must be able to be served by a gravity-type

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system. However, a private grinder station may be allowed for limited uses, such as an institutional use.

Water service for the Northeast Neighborhood is as important as the sanitary sewer system. Water flow is not only an amenity that residents enjoy for everyday living, but essential for emergencies such as house fires. A complete system of municipal wells and water towers provides this water flow to those parts of the City within the USA. Allocation of sufficient area for these utility needs must be provided at appropriate locations within the Northeast Neighborhood. Crucial to the water supply is the location of appropriate linkages to the existing water system.



The Planning area is currently beyond the four minute fire department drive time. A fire station siting study recently completed by the Fire Department calls for the relocation of each of the existing fire stations. One of the relocated stations, when operational, will better service this neighborhood.

Opportunities and issues relative to the Urban Service Area (USA): Until such time as the USA is expanded to include the Northeast Neighborhood, or portions thereof, the development potential of the neighborhood is limited. At the point in time that the City amends the USA to include land in the Northeast Neighborhood, it can reasonably be expected that development may occur in those areas with access to public utilities. Water system and fire service challenges exist in providing appropriate service to the neighborhood, and may affect the development timing of the area. The City Comprehensive Plan favors development of areas that can be served by gravity flow sewers.

Transportation

Multimodal transportation is a reality in the City of Fitchburg, and may expand to include yet one more mode if the Fitchburg/Oregon rail line is activated at a future date. Motor vehicle transportation is predominant in the planning area, and key to any plan for future growth and development is establishing patterns of connectivity for future through-streets. The Capital City Bike Trail offers residents the option of bicycling across the City for necessary transportation or for recreation. While the planning area has extensive open land, once developed, the neighborhood will be small enough to have realistic pedestrian accessibility throughout. Enhancements to the bicycle network will also be incorporated.



Past planning efforts have concluded that an interchange at a future intersection of USH 14 and interchange road would be beneficial to the City of Fitchburg. The addition of an interchange will elevate the level of motor vehicle activity throughout portions of Fitchburg, including the Northeast Neighborhood. An increase in vehicle activity often correlates with an increase in pedestrian traffic. The Nine Springs Green-Tech Village will surely increase both pedestrian and vehicular traffic in the Northeast Neighborhood.

Vehicular transportation will likely increase along CTH MM as any future Fitchburg or outlying development occurs, as noted in the Northeast Fitchburg Transportation Study. Significant improvements along the existing roadways with accompanying sidewalks or walkways may also promote and enhance future developments.



Issues and Opportunities

Public transportation is available in portions of Fitchburg through the Madison Metro Transit System. A portion of Fish Hatchery Road is included in several separate bus routes. The Northeast Neighborhood is not currently served by public transportation. The nearest bus route is just north of the Northeast Neighborhood. The Transportation 2020 Study has identified USH 14 as a route for a regional express bus line during both the start up and full system phases. A park and ride facility located at the future interchange was not included in the Study. However, an additional stop for the regional express bus would benefit both the City of Fitchburg as well as the entire region.

The Nine Springs Green-Tech Village will use a rail system developed along the city owned railroad line. If a rail system for the region is developed, a stop in the Nine Springs Green-Tech Village will also enhance the Northeast Neighborhood.



USH 14 and CTH MM are parallel and within about one-quarter to one-third mile of each other. This presents significant challenges for connectivity of lesser classified streets and land uses. For example, residential land use has been placed away from USH 14 to avoid highway noise being a nuisance to residents.

Opportunities and issues relative to transportation: The City of Fitchburg is well endowed with multi-modal transportation availability. Any plan for future development in the Northeast Neighborhood must maintain and enhance current levels of service provision including motor vehicle, bicycle, and pedestrian connectivity while improving public transportation. The USH 14 interchange will have a transformative impact on its immediately adjacent lands and influence the character of a large part of the planning area. Opportunities for economic development initiatives, including interchange dependant service businesses, will be provided in the vicinity of the interchange. Efforts must be made to maintain pedestrian and bicycle connectivity between the Northeast Neighborhood and the Nine Springs Green-Tech Village, with sufficient amenities and enhancements to insure its continuing use.

Parks and Open Space



Realizing that parks and open space for recreation and quality of life are important amenities, the City is in the process of creating a long-term vision as expressed through its Comprehensive Parks, Open Space, and Recreation Plan¹ and the recently conceived Conceptual Parks and Open Space Proposal². The Comprehensive Parks, Open Space, and Recreation Plan, along with the Land Division Ordinance, ensure that sufficient lands are set aside to accommodate future residents with recreational and open space areas.

The Comprehensive Parks, Open Space and Recreation Plan provides guidance to the Park Commission for amount, type and location of active recreation land

1. The City of Fitchburg rewrote its 2000 Plan for Open Spaces and Recreation, which was adopted and retitled Comprehensive Park, Open Space and Recreation Plan.

2. The Conceptual Parks and Open Space proposal is an open space planning tool best described in Bartell and Dentice, 2008. This proposal has been incorporated, in parts, into this plan and in the plan the area included is known as the Northeast Neighborhood Green Space Area.

Issues and Opportunities

relative to population. The Comprehensive Parks, Open Space, and Recreation Plan includes neighborhood, area, and community parks. Each of the three levels of parks has standards pertaining to area, facilities, and the number of residents served by each park. There are no parks in the Northeast Neighborhood prior to this plan. However, there are several community parks, which are larger parks that service more than a single neighborhood, that include the Northeast Neighborhood within their service radii. McGaw Park is part of the Fitchburg Park System and is located approximately one mile from the Northeast Neighborhood. Capital Springs Centennial State Park and Recreation Area, Goodland Park and Lake Farm Park are also in close proximity to the Northeast Neighborhood, however these parks are not part of the Fitchburg Park System nor are they within the City limits. These community parks have more amenities than neighborhood parks. (The Northeast Neighborhood will require parkland in order to afford recreational opportunities for its future residents.)



The Neighborhood Plan provides general guidance for possible park locations based on population and walkability from residential areas. To maintain walkability and spacing goals, the Northeast Neighborhood will likely need to provide several future neighborhood parks. Future development must incorporate park and open space at sizes and locations acceptable to the Park Commission. The City is amenable to accepting some of the dedicated land that is otherwise undevelopable as long as recreational opportunities or other public purposes exist on the land; however, the City reserves the right to refuse particular land donations that are not consistent with the City's land acquisition goals. Any required park support not provided through the dedication of land would be obtained as a fee-in-lieu of dedication. The park locations in the Northeast Neighborhood Plan are general locations and the Parks Commission will have ultimate review on the size, type and location of park land.



Another aspect of planning for this area, and the overall City, is the Parks and Open Space Proposal (Bartell and Dentice, 2008), which is an outgrowth of the Moraine Edge Park concept that was first advanced several years ago. Acknowledged by Council resolution R-84-08, this proposal is a long-term planning tool. The Proposal may take decades to come to fruition. The Conceptual Parks and Open Space Proposal is incorporated in the Comprehensive Parks, Open Space and Recreation Plan.

The Conceptual Park & Open Space Proposal was drafted using a resource-based methodology. Existing natural and cultural resources data were inventoried and mapped to determine areas most sensitive to development. This includes the following resources:

Environmental Resources

- Forest resources
- Steep slopes & moraines
- Wetlands
- Water resources
- Hydric soils
- Dane County environmental corridors
- Groundwater recharge
- Prime farmland

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- Endangered/rare species and significant natural features and plant communities



Cultural and Historical Resources

- Indian trails, camps, mounds
- Historic buildings/sites
- Territorial roads and lead trails
- Scenic resources
- Public land
- Railroad corridors

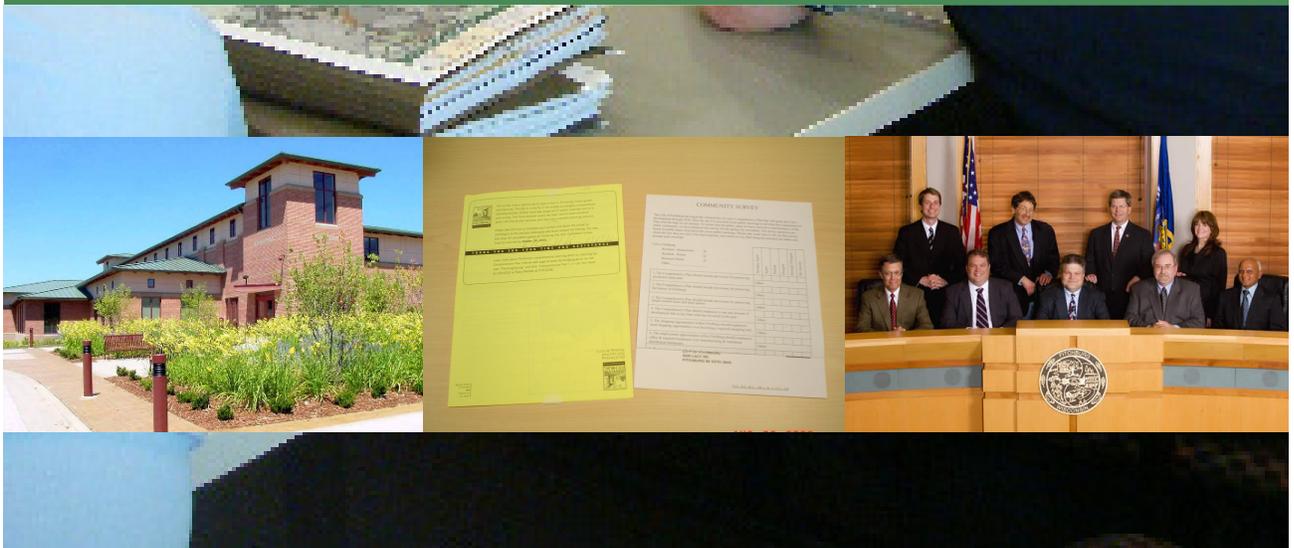
Opportunities and issues relative to parks and open spaces. The opportunity exists to plan for a cohesive and well-connected neighborhood with appropriate locations for parks and open spaces identified in advance of future development. Pedestrian and bicycle connectivity can be coordinated with the planning of neighborhood and community-scale parks throughout the Northeast Neighborhood. Preservation, whether private or public is worthy of consideration for areas toward the northern portion of the planning area, in order to preserve this significant woodland habitat. Areas will be identified to aid in achievement of the goals expressed in the varied parks and open space planning documents.

Summary

In conclusion, the initial review of opportunities and issues in the Northeast Neighborhood illuminates the fact that this area exhibits a high degree of potential from a variety of angles, although there are a few significant restrictions that may effect the timing of neighborhood entry into the urban service area. Intensive residential and non-residential development are planned for the west side of USH 14. Because the Northeast Neighborhood is immediately adjacent to the E-Way on the north and rural density lands to both the east and south, it seems most likely that open spaces or residential uses will be developed between Larsen Road and CTH MM and more intensive residential and business uses between CTH MM and USH 14. At this time, identification of future street patterns and lands that should be considered for future public acquisition is essential. The Northeast Neighborhood has a bounty of opportunity in its future and, once some significant service issues have been resolved, will have few issues to constrain its success. A phasing and timing plan will be important in balancing the challenges and opportunities presented, particularly to ensure adequate public services for this neighborhood. Timing may not be tied so much to specific dates as to occurrence of certain events.



Goals and Policies



Goals and Policies

Goals and policies ultimately guide the planning process. These goals and policies will ensure that all future development reflects the collective interests of City of Fitchburg residents as well as concerned residents of neighboring communities. Goals and policies have been thoroughly discussed and evaluated for the entire City by Fitchburg residents and concerned neighbors prior to this neighborhood plan.

Goals are broad statements that reflect the desired outcome of the planning process. The City has identified the Northeast Neighborhood as an area for possible future growth. Therefore, the goals for the Northeast Neighborhood are consistent with the goals of the 1995 General Land Use Plan, the Future Urban Development Area (FUDA) study, and the Comprehensive Plan.

Policies are specific steps associated with an individual goal and, when collectively attained, result in the success of the individual goal. Where the goals of the entire City should reflect the goals of the Northeast Neighborhood, the policies of the entire City may not reflect the policies of an individual neighborhood. Specific guidelines have been generated to reflect the neighborhood and help to ensure the success of the Northeast Neighborhood Plan.

General Community Development



To attain a pattern of community development that includes environments suited to a variety of needs, including privacy, productivity, convenience, beauty, sustainability and diversity.

To develop a compact urban community that is both visually and functionally distinct from its agricultural surroundings.

- Encourage development that is compatible with adjacent land uses.
- Ensure that, when the Northeast Neighborhood is completely built-out, it is an interconnected neighborhood; mandate that future development proposals consider implications of their development on neighboring properties.
- Ensure that future development uses appropriate measures to properly manage stormwater runoff such as site or regional detention/infiltration areas, while incorporating an emphasis on stormwater quantity and quality.
- Strive for a balanced neighborhood by providing for a variety of land uses.
- Ensure phasing program is to be consistent with the Comprehensive Plan.

Residential/Housing

To provide for balanced residential growth in the City with a variety of housing types, to promote decent housing and a suitable living environment for all residents, regardless of age, income or family size, and to encourage an adequate supply of affordable housing in each new urban neighborhood.

- Promote a mix of housing sizes and styles to allow all residents the option of locating in the Northeast Neighborhood.
- Promote a mix of densities that transition from higher density to lower density to ensure that the least dense areas abut neighboring low-density uses and rural communities.
- Encourage a compact residential neighborhood and development pattern that is transit friendly.
- Promote cluster development to help the preservation of environmentally sensitive areas.



Economic Development

To locate commercial and industrial uses in planned business or highway commercial districts in a convenient, safe, and attractive manner to provide goods and services for the Fitchburg area.

- Promote compact commercial and mixed-use activity centers development nearest the planned interchange to allow for easy access to and from the business areas.
- Encourage clustered mixed-use centers, and avoid strip commercial development.
- Promote compact neighborhood commercial or commercial uses that will compliment existing and future development within the Northeast Neighborhood, and adjoining land use.
- Encourage greater floor area ratios and taller buildings with structured or underground parking.
- Promote an average 50% Floor Area Ratio (using FAR as defined in LEED-ND standards), except where a lower FAR may be allowed in the B-P land use category.
- Encourage siting of industrial/manufacturing uses in areas adjacent to or near activity centers and that are accessible from residential areas, but are visually and functionally distinct from the other areas yet compatible with other uses.
- Promote clean industrial/manufacturing uses in the Northeast Neighborhood.
- Promote economic development activities that complement uses in Green Tech Village.

Agriculture

To maintain agriculture as a significant economic activity within the City.

To preserve prime agricultural land as a resource for the use and benefit of current and future generations.

- Promote reasonably dense developments to ensure the protection of



Goals and Policies

prime agricultural lands elsewhere in the City.

- Encourage creation of community garden sites in residential areas to best serve neighborhood residents, particularly multi-family and small lot single family areas.

Community Identity

To preserve historic, cultural, aesthetic, geological and natural resources that strengthen Fitchburg's community identity and to prevent development that would destroy such resources or values.

- Protect cultural and historic features within the Northeast Neighborhood.
- Encourage development that incorporates existing natural features in the Northeast Neighborhood

Parks, Open Space and Environmental Protection

To recognize that the natural environment is an integrated unit composed of interacting land, water, and air resources, and living organisms, and to ensure that the health and stability of the ecosystem are maintained.



To focus on the preservation of forested areas to maintain canopy, which helps reduce stormwater runoff, mitigate heat island effects, aids water infiltration, and reduces the level of air pollution.

To regard all land as an irreplaceable resource, and to ensure that its use does not impair its value for future generations.

Provide permanent open space throughout the City for outdoor recreation and environmental protection.

- Implement the Comprehensive Park, Open Space, and Recreation Plan to ensure the whole neighborhood is sufficiently served with parks and open spaces for recreational uses.
- Recognize valued natural, cultural, and historic assets.
- Acknowledge the former Indian Trail that ran north-south across the Northeast Neighborhood.
- Protect wetlands, steep slopes, forested areas, wildlife movement and habitat and other environmentally and culturally sensitive areas from degradation due to stormwater runoff, erosion, or other adverse effects from development, by providing corridors of sufficient width.
- Incorporate multi-use trails for non-vehicular access to future parks and open spaces as well as the existing City parks and trail networks.
- Integrate parks and open spaces into future development.
- Preserve and protect heritage and specimen trees.
- Encourage restoration of prairies, woodlands and savannahs in open space areas not subject to other uses.



- Encourage restoration of degraded wetlands.

Community Facilities

To provide community facilities for the use and service of the residents of the City of Fitchburg. The facilities are the taxpayers' capital investment. They can take the form of sites, buildings, or other improvements that are considered either essential for municipal operation or the public interest and fall into the following groups: public, governmental, or administrative buildings and grounds; schools and grounds for education; recreational buildings and grounds including parks and open spaces; and publicly owned utilities, including sanitary sewer and water.

Provide the total community, including existing and future developments, with adequate and efficient public services.

- Limit development to areas that can be added to the Urban Service Area (USA), while upholding the City policy of avoiding lift stations for sanitary sewer.
- Preserve a site to accommodate the potential for a new school, if the appropriate school systems deem necessary.
- Promote the location of sufficient wells and water towers in areas not detrimental to springs and other groundwater to not only serve the neighborhood with drinking water, but also to be able to guarantee sufficient water volume and pressure for fire protection.
- Ensure the provision of adequate public services to the neighborhood prior to entry into the urban service area.
- Phase development with the capability to sufficiently provide the required services for the neighborhood.



Transportation

To provide a safe, convenient and efficient transportation system compatible with desired patterns of area-wide development.

- Connect streets for new development to Larsen Rd so that residents to the east may use transportation and other facilities in and out of the neighborhood.
- Promote a multi-modal transportation network, including the Capital City Bike Trail, a potential park-and-ride, the potential expansion of the Madison Metro Transit System, the potential creation of a light rail immediately west of the Northeast Neighborhood, and multi-use trails throughout for non-vehicular traffic.
- Promote a user-friendly road network throughout the Northeast Neighborhood stemming from the planned E. Cheryl/interchange road/ US Highway 14 (USH 14) interchange that will ease future traffic congestion on County Trunk Highway MM (CTH MM).
- Promote development of sufficient density to sustain the need for public



Goals and Policies

transportation and/or a park-and-ride.

- Provide for a street network of complete streets meeting the needs of pedestrians, bicyclists, motorists, and transit users.
- Assure that transit is planned to effectively serve the proposed residents within one-fourth mile of a transit stop.
- If possible, extend transit as development is phased in.
- Promote multi-use trails to link varied land uses within the Neighborhood.

Storm Water



Provide for a higher level of storm water management for the neighborhood than currently required under city codes to better assure the protection of the important natural resources that exist in the planning areas watersheds. The following are the minimum goals established for storm water management within the Northeast Neighborhood. These standards represent the minimum goals to be achieved. Nothing herein contained, shall prevent the establishment of more restrictive standards for storm water management or erosion control as may be devised through ordinance or other policy of the City.

- Minimize changes to storm water runoff volume.
- Minimize the potential for downstream water course morphology or habitat quality impacts.
- Provide multiple points of treatment and infiltration of runoff as close to the impervious surfaces as possible. Integrate storm water management techniques through the neighborhood.
- Incorporate storm water management and maintenance approaches that address specific urban pollutants and provide for long term performance.
- Maintain post construction peak flow rates at or below existing conditions.



Systems Analysis



To plan for future land use within the Northeast Neighborhood, it is essential to understand and evaluate the potential services available to the area to meet the future needs of such development. A systems analysis for the City of Fitchburg includes many of the essential services provided by the City for its residents. These services include the water distribution system, sanitary sewer system, and storm water controls. Other local services of importance are police, fire, EMS, and road maintenance services. More regional systems provide other essential services for future development including the public school system, both public transit and the transportation system, and power. To place the systems analysis in context, this section begins with a natural systems analysis.

Natural Resource Inventory and System Analysis

In 2007, concern was expressed by the Plan Commission over the nature of the steep slope and wooded area in the north part of the study area. To address this concern, the City contracted with Ruckert Mielke to provide a resource analysis for this area to determine sensitivity and, what if any, development potential exists. Ruckert Mielke conducted the study with assistance from Natural Resources Consulting (NRC). The following is excerpted, with edits, from the formal Ruckert-Mielke report entitled: “Northeast Neighborhood Specific Inventory and Resource Analysis” (Ruckert-Mielke, 2008). A full copy of this study may be found at <http://www.city.fitchburg.wi.us/planning_zoning/NortheastNeighborhood.php>

Background

Natural and man-made limitations identified through the neighborhood planning process resulted in a more detailed analysis of the neighborhood including a conceptual storm water management study, an internal analysis of the water supply system, a traffic study, and The Northeast Neighborhood Specific Inventory and Resource Analysis.

The Specific Inventory and Resource Analysis is part of the overall planning process for the Northeast Neighborhood that includes the heavily wooded area in the northern portion of the neighborhood. The study area consisted of those properties within the wooded area on which the property owners granted access permission. Concerns that surfaced at the Public Hearing for the Northeast Neighborhood Land Use Plan became the genesis of this study. More specifically, this Specific Inventory and Resource Analysis addressed the potential for future development within the woodlot in the northern portion of the neighborhood and identification of the heritage trees for the City of Fitchburg Parks Department.

The purpose of the Specific Inventory and Resource Analysis was to identify the environmental significance of the natural features within the woodlot, the potential impacts of development on these resources, and parameters or conditions that must be followed for development to occur in a manner that is sensitive to the natural environment.

Figure 4 - 1: Northeast Neighborhood



Source: Natural Resource Consulting, Inc.

Figure 4 - 2: Study Area with Forest Communities



Source: Natural Resource Consulting, Inc.

System Analysis

Please see the complete report of the “Northeast Neighborhood Specific Inventory and Resource Analysis,” for fieldwork and sampling data.

The Specific Inventory and Resource Analysis includes an array of natural features, including the trees, woody and herbaceous plants, slope and soil erosion capability, soil moisture and nutrient regime, landforms, native animal species, threatened or endangered species, ecological habitat, and any other significant features or resources.

Tree Inventory

A tree inventory was completed for the woodlot in the Northeast Neighborhood from a sampling of locations throughout the woodlot. The sampling locations consisted of areas roughly 50-feet in diameter where all trees with a diameter at breast height (dbh) greater than 4” were measured, analyzed, and documented. The tree inventory includes tree species, size, crown class, and an assessment of the health of each tree. The study area was divided into three separate tree communities that represent the entire woodlot. Each of the communities has specific characteristics that represent the growing conditions of the trees and plants. The three communities include a dry mesic forest, pine plantation, and disturbed mesic forest.

1. Dry Mesic Forest

Background Information

The majority of the study area has been identified as a dry mesic forest. The dry mesic forest is approximately 60 acres. A mesic upland forest typically grows on hilly or sloping areas on moderately moist soils with high nutrient content. A dry mesic forest then, is typically known as an upland forest that is slightly drier than a mesic forest, and that has a canopy that is more open than a typical mesic upland forest.

Analysis

Twenty sampling locations were established throughout the dry mesic forest community with 130 live trees studied and analyzed. A wide variety of trees were sampled in the species, size, and crown class; however, the canopy is dominated by large white, red, and bur oak trees ranging in size from three to 50 inches in diameter at breast height.

The most prevalent tree species indicated in the sampling of the dry mesic forest include black cherry, white oak, shagbark hickory, box elder, and black locust. Each of the five most prevalent tree species accounted for at least ten percent of the tree cover.

Of the 130 trees identified in the sampling, only fifteen percent of the trees were identified as non-native species. These species included black locust (10%) and common buckthorn (5%).

Overall, there is nearly an even ratio of the desirable and undesirable trees

in the dry mesic forest community. In terms of development impact, for the purpose of this study a desirable tree is defined as a healthy non-invasive native tree that is worthy of preservation because it contributes to the environmental significance of the woodland community. Many of the desirable tree species have been indicated to be in good health, with some exceptions. The trees considered to be undesirable were those species identified as non-native or invasive, and those having unsightly characteristics including bent structure, many dead branches, and side sprouts.

Using the diameter at breast height, the trees can be placed into separate classes. Classes include trees from four to 14.9 inches, fifteen to 31.9 inches, and 32 inches and greater. Using the size classes, tree density is calculated for an average number of trees per acre. The four to 14.9 inch size class has a density equivalent to 102 trees per acre within the community. There are 28 trees per acre in the fifteen to 31.9 inch size class, and roughly one tree greater than 32 inches for every two acres.

2. Pine Plantation

Background Information

The pine plantation community is adjacent to the southeastern portion of the dry mesic forest community. A pine plantation typically consists of a single species or a variety of species of pine trees planted in distinct rows with distinct spacing. Pine plantations are typically planted, maintained, and harvested for profit; however, the pine plantation community in the Northeast Neighborhood does not appear to be a venture based on compensation due to the relatively small acreage (approximately four acres).

Analysis

The analysis of the pine plantation community consisted of two sample plots near the center of the community. Two pine tree species, red pine and white pine, were found in the community roughly distributed equally.

All of the pine trees sampled fell into the first size class of between four and 14.9 inches in diameter at breast height. Seventeen trees were sampled and when calculated into density per acre there are 127 pine trees per acre.

3. Disturbed Mesic Forest

Background Information

The disturbed mesic forest is approximately two acres and is similar to a mesic forest based on the soil and growing conditions of a mesic forest. The distinguishing factor that alters a mesic forest to become a disturbed mesic forest is the lack of desirable tree species. These desirable trees, if ever present, have been harvested or died and undesirable trees have populated the community.

Analysis

There were only two species of trees identified in the disturbed mesic forest, box elder and silver maple. Both tree species are native, but are not considered to be desirable tree species because of weak growth structures, disease problems, and invasive tendencies. Of the trees found in the disturbed mesic forest community, only the silver maple tree, which has the dominant crown, is healthy. The box elder trees were noted to consist of stump sprouts and bent poor quality trees.

Of the thirteen trees sampled, all of the box elder trees had a diameter at breast height in the range of four to 14.9 inches and the silver maple tree measured 15.5 inches in diameter at breast height.



Heritage Trees

Heritage trees are estimated to be at least 200 years old. The City of Fitchburg is in the process of trying to identify locations of such trees within the City so that they can be preserved appropriately. White and bur oak trees are considered Heritage Oaks if the diameter at breast height is at least 38 inches. Pin, black, and red oak trees must have a dbh of 42 inches to be considered a Heritage Oak. Five Heritage Oaks meet these criteria in the study area. All five of the Heritage Oaks are located in the dry mesic forest community. In addition, a plains cottonwood tree and a silver maple tree with diameters greater than 50 inches have been identified as Heritage Trees.

Large, healthy oak trees that do not meet the Heritage Oak classification have also been identified as specimen trees. There are 23 large and healthy oak trees within the dry mesic forest community that are not classified as Heritage Oaks, but are considered worthy of being preserved and identified as specimen trees. These trees range from 27.5 inches to 38 inches in diameter at breast height. Please see the complete report of the “Northeast Neighborhood Specific Inventory and Resource Analysis” for the locations of the Heritage and Specimen Trees.

Herbaceous Plants and Woody Shrub Inventory

The understory of the woodlot offers a large expanse of area that is able to support a variety of herbaceous plants and woody shrubs. A preliminary review of the spring ephemeral vegetation was conducted in April and May, followed by further analysis in September to identify the species and surface cover of each species. The inventory area was determined by identifying four one-meter quadrants within each of the tree inventory sample plot radii. The shrubs and herbaceous plants were inventoried within each of the three woodland communities.

1. Dry Mesic Forest

Of the understory within the dry mesic forest, more than 43 percent of the ground is bare and non-vegetated. More than four percent of the ground cover consisted of coarse woody debris. The most prominent herbaceous vegetation is non-native garlic mustard, covering more than 25 percent of the ground. Other notable native species include broad-leaf enchanter's-nightshade, wild geranium, and may-apple. Non-native species account for

almost one-third of the total understory throughout the entire community. Some of the most prevalent species are garlic mustard, honeysuckle, and buckthorn

The northwest portion of the woodlot is dominated by garlic mustard where it reaches an average percent cover of roughly 63 percent in specific sampling locations. It is noted that this is an area where the owner previously ran horses and the native plants were most likely eliminated as a result.

Along the northern portion of the community, the non-native and invasive shrubs make up approximately 64 percent of the cover in specific sampling locations. These shrubs include honeysuckle and buckthorn.

In the southern portion of the community, west of the pine plantation, the non-native, invasive shrub cover is minimal and the herbaceous understory vegetation is plentiful. This area of the community supports the highest density of native herbaceous vegetation including wild geranium, broad-leaf enchanter's-nightshade, and may-apple.

2. Pine Plantation

The understory of the pine plantation community is more than 56 percent bare ground and non-vegetated. Of the herbaceous vegetation, the non-native species only account for less than five percent of the total understory. The most dominant native species found in the pine plantation is the broad-leaf enchanter's-nightshade covering roughly 35 percent of the ground area.



3. Disturbed Mesic Forest

The disturbed mesic forest is known as a community where quality trees have been harvested or died and undesirable native trees populated the disturbed areas. The area covered by understory herbaceous plants is nearly divided evenly with roughly 28 percent of both native and non-native species. Almost 44 percent of the total ground area is non-vegetated or covered with coarse woody debris.

Slope and Soil Erosion Capability

Physically, future development is dependent upon the slope of the land and the ability of the soil to remain stable and resist erosion. Generally the majority of the study area slopes downward from southwest to northeast; however, the southeastern portions of the woodlot slope downward towards the southeast.

Based on the characteristics of the soil classes, the study area consists of slopes ranging from steep (12 to 20 percent slopes) to areas nearly level. The soils in the study area that are typically the steepest are found in the western portion of the woodlot. These steep areas transition into more gentle slopes, eventually leading to nearly flat lands in the northeast corner of the study area.

Coinciding with the slope characteristics of the soils are the soil erosion capabilities.

System Analysis

The soils found on steep slopes are also known to be erosion hazards. Similar to the transition of slope characteristics, the soils in the western portion of the study area are highly susceptible to erosion, lessening in susceptibility as the slopes decline.

Soil Moisture and Nutrient Regime

The water capacity and fertility characteristics of the soils in the study area appear to be directly related to one another. Typically where water capacity is high the soils are very fertile, and where there is a moderate amount of water capacity the soils are moderately fertile. The only exception in the study area is in the Wacousta soils in the far northeast corner of the study area where the water capacity is high but the fertility is low. Other conditions that may affect these Wacousta soils are the land being nearly flat, the water table seasonally at the surface to less than a foot below the surface, and water permeating the soil at a moderately slow rate. Hydric soils and soils that may have hydric inclusions have been identified near the wetland in the dry mesic forest. The soils near the wetlands are also known to have a very shallow depth to groundwater. Seasonally the depth to groundwater is less than one foot from the surface. See Figure 4-3 on the following page for more detail of the soil characteristics.

Native Animal Species

Native animals are obviously not confined only to the boundaries of the study area. Therefore, testimonials and site observations were used to identify the animal species in the study area. These animal species include white-tailed deer, raccoon, gray squirrel, American robin, gray catbird, wild turkey, common crow, blue jay, white-breasted nuthatch, and downy woodpecker.

Based on the unconfined nature of wildlife and the seasonal migrations that wildlife endure, the study area offers habitat typical for many other common animal species. A list of additional species that could inhabit the study area full-time or seasonally is included in the complete report.

Threatened or Endangered Species

The State of Wisconsin Department of Natural Resources (DNR) Bureau of Endangered Resources completed a review of the Study Area and proximity with the Natural Heritage Inventory (NHI) to identify potentially endangered flora and fauna. Three endangered resources have been documented in the area including wetland communities identified as calcareous fen, shrub-carr, and southern sedge meadow. Based on the common species found in each of the three separate wetland communities and the inventory of understory species in the study area, it does not appear as though any of the three endangered wetland communities are located in the study area.

Historical records of rare species known to occur in the vicinity of the study area showed a possible existence of eleven rare plant species if appropriate habitat still exists. A comparison of the plant species database and the inventory of understory species in the study area shows that none of the rare plant species were identified in the study area. The DNR notes “the lack of additional known occurrences does

Figure 4 - 3: Soil Characteristics

	Location	Typical Slope	Fertility	Water Capacity	Permeability	Depth to Water Table	Erosion	Primary Concerns
Dodge	South-central	6-12%	High	High	Moderate	More than 5 feet	Severe hazard	Erosion control, improvement of organic matter, cultivating surface layer, fertility
Kidder	Far west	12-20%	Medium	Medium	Moderate		More than 5 feet	Erosion control, improvement of organic matter, cultivating surface layer, fertility
McHenry	Western	12-20%, 6-12%	Medium	Medium	Moderate	More than 5 feet	Very severe hazard	Erosion control, conserving moisture, improvement of organic matter, cultivating surface layer, fertility
Military	Extreme south-central	6-12%	Medium	Medium or low	Moderate	More than 5 feet	Severe hazard	Root zone restricted due to soil depth, erosion control, water capacity
Sable	North-central	0-3%	High	High	Moderate	Less than 1 foot	None	Hydric soil
St. Charles	Central and north-central	0-15%	High	High	Moderate	Between 3 and 5 feet	Moderate	Erosion control
Troxel	Far	1-4%	High	High	Moderately	Between 3	Moderate	Gullying, flood

Source: Natural Resource Consulting and Ruckert-Mielke, 2008



System Analysis

not preclude the possibility that other endangered resources may be present.” Also, “absences of an NHI occurrence in a specific area should not be used to infer absence of rare species.” Therefore, simply because the rare and endangered species were not identified in the understory inventory does not definitively mean that there are not any rare or endangered species in the study area.

Ecological Habitat



The ecological habitat, or the interaction between vegetation and animals, is not unique to the study area. The woodlot within the Northeast Neighborhood offers a relatively large tract of moderate quality habitat; however, the study area in conjunction with the Dane County Nine Springs E-Way (E-Way) corridor to the north offers a plentiful and diverse habitat for wildlife.

Habitat diversity within the study area is deteriorating due to the encroachment of non-native species, which will affect the numbers of species the habitat can support. Future restoration and maintenance of the habitat will help with maintaining the diverse wildlife species currently living or visiting the study area.

The dry mesic forest community within the study area has a mature oak canopy with a moderate quality floristic community that is being intruded upon by non-native plant species. Great restoration potential exists for the habitat, but it could prove challenging due to the invasive plant species and segmented land ownership. There are many landowners within or abutting the study area that could affect the overall quality of the habitat. The pine plantation and disturbed mesic forest communities have been categorized as having low quality floristic communities.

Any other Features or Resources

A wetland is located in the northeastern portion of the dry mesic forest community. The wetland boundaries were delineated by the Wisconsin Wetland Inventory (WWI) in addition to an analysis of the aerial photo by Natural Resources Consulting, Inc. The exact boundaries of the wetland are slightly different between the two studies; however, a perennial natural spring identified in the northern portion of the dry mesic forest community may contribute to the base flow of a perennial/intermittent waterway extending northeast into the wetland area.

Future Development

The purpose of the Specific Inventory and Resource Analysis was to determine the potential for future development within the woodlot located in the northern portion of the Northeast Neighborhood. Based on the natural resources data presented in this study, it appears that there are limited development opportunities in the woodlot; however, development opportunities are discussed for each community separately.

1. Dry Mesic Forest

The dry mesic forest community consists of a mature overstory canopy with moderate floristic quality of the understory vegetation. Also found in the dry

mesic forest community are soils with slopes that are characteristically steep with significant hazards related to erosion. This community is also subject to storm water flows, leading to flooding in the lower elevations thereby increasing the potential for erosion on the hillsides. Existing vegetation cover currently partially stabilizes the soil and buffers the effects of significant rain events. Future development in the dry mesic forest will also disturb this buffer and decrease soil stability.

Installing streets and utilities through the dry mesic forest community will lead to major disturbances in the ecological habitat. Erosion issues would require increased engineering and structural components to create stable roadways and utility connections, thereby increasing development costs and potentially causing a strain on Fitchburg's economic condition.

The dry mesic forest community should remain natural area with an emphasis on restoring and maintaining the woodlot. Property owners throughout the dry mesic forest community should independently create a plan that focuses on restoring and maintaining the woodlot. It appears that the boundaries of the dry mesic forest may extend beyond the limits of the delineated community and the study area. While restoring and maintaining the dry mesic forest community, the characteristics of the dry mesic forest community that extend from the study area should also be preserved and enhanced on the previously developed properties.

Future restoration projects to protect the dry mesic forest community could allow passive recreational opportunities. The passive recreational opportunities could include trails, overlooks or vistas, signs or markers identifying the Heritage Trees, etc. Passive recreation will allow visitors to view the natural environment along with the wildlife within the woodlot.

Fieldwork for an addendum to the original site evaluation was completed on October 7, 2008 for the wooded area south of the Dry Mesic Forest near the center of the Northeast Neighborhood as shown on the following map. This area adjacent to the tilled agricultural fields is identified as a disturbed mesic forest dominated by black locust, box elder, and common buckthorn – all undesirable tree species and subcanopy. Future development and disturbance should be limited to the areas of disturbed mesic forest to preserve the dry mesic forest community to the greatest extent.

2. Pine Plantation

The pine plantation community lacks the mature tree canopy and floristic quality found within the understory of the dry mesic forest. Based on the soil characteristics of the pine plantation community, the soils are relatively steep, but not quite as steep as the dry mesic forest. Erosion is a hazard that persists through the pine plantation community.

Development in the pine plantation community is possible based on the low quality of the existing vegetation. Developing the pine plantation community would cause limited impacts to the floristic diversity. The soil characteristics

System Analysis

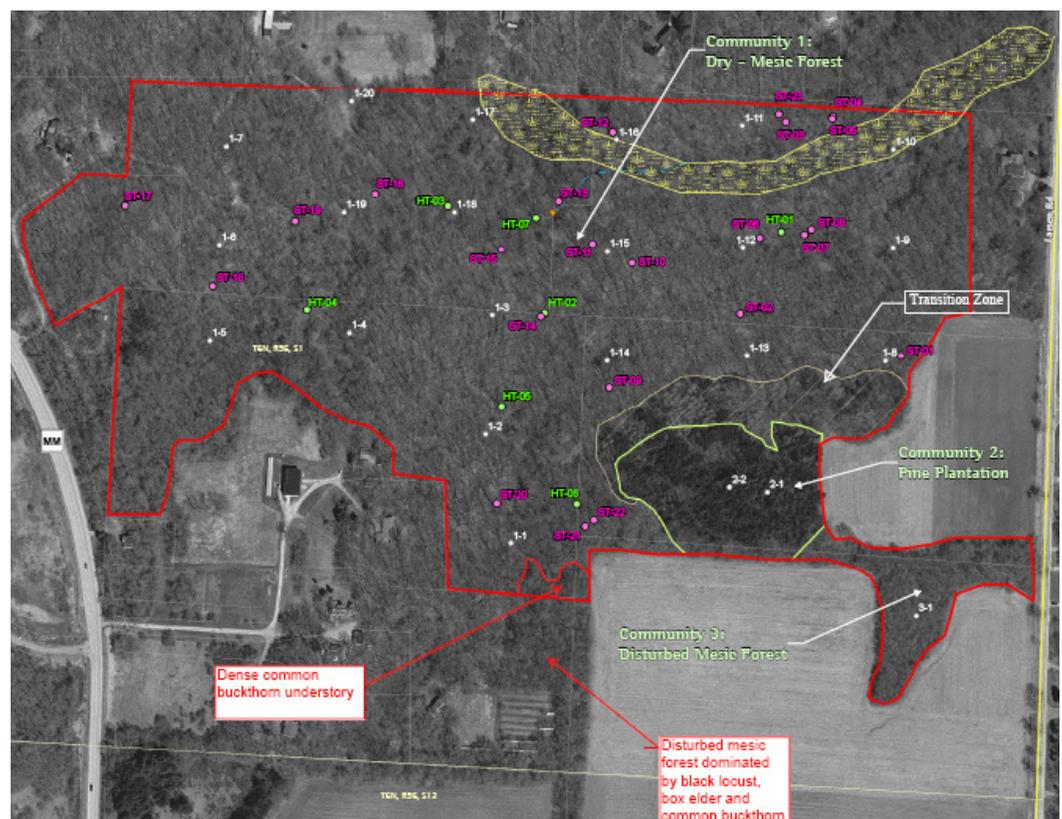
may be more of a limiting factor for development. All future development in the pine plantation community will require extreme erosion controls.

3. Disturbed Mesic Forest

The disturbed mesic forest community, similar to the pine plantation community, does not have the mature tree canopy or floristic understory quality of the dry mesic forest community. Soil characteristics indicate that there is a low to moderate hazard relating to erosion. A portion of the disturbed mesic forest community is located on a soil that has characteristics of a hydric soil.

Future development in the disturbed mesic forest community would have limited impacts to the floristic diversity within the community. Development on the Sable Series of soils will require further site investigation to ensure the water content of the soil and the groundwater depth are suitable for development. All future development in the disturbed mesic forest community will require erosion control methods to eliminate disturbance to surrounding areas.

Figure 4 - 4: Specific Inventory Study Area



Source: Natural Resource Consulting, Inc.

While Figure 4-4 shows a transition zone, the original NRC report did not provide delineation for this area. On May 13th, 2009, NRC provided information clarifying the transition zone. They concluded that “development of this area would not

significantly impact a unique or high quality forested community.” However, the soils (McHenry, and St. Charles) in the transition area will present a major erosion challenge. Therefore, any development in the transition area will need to be low impact and appropriately address the challenges presented by soil conditions.

Conclusion

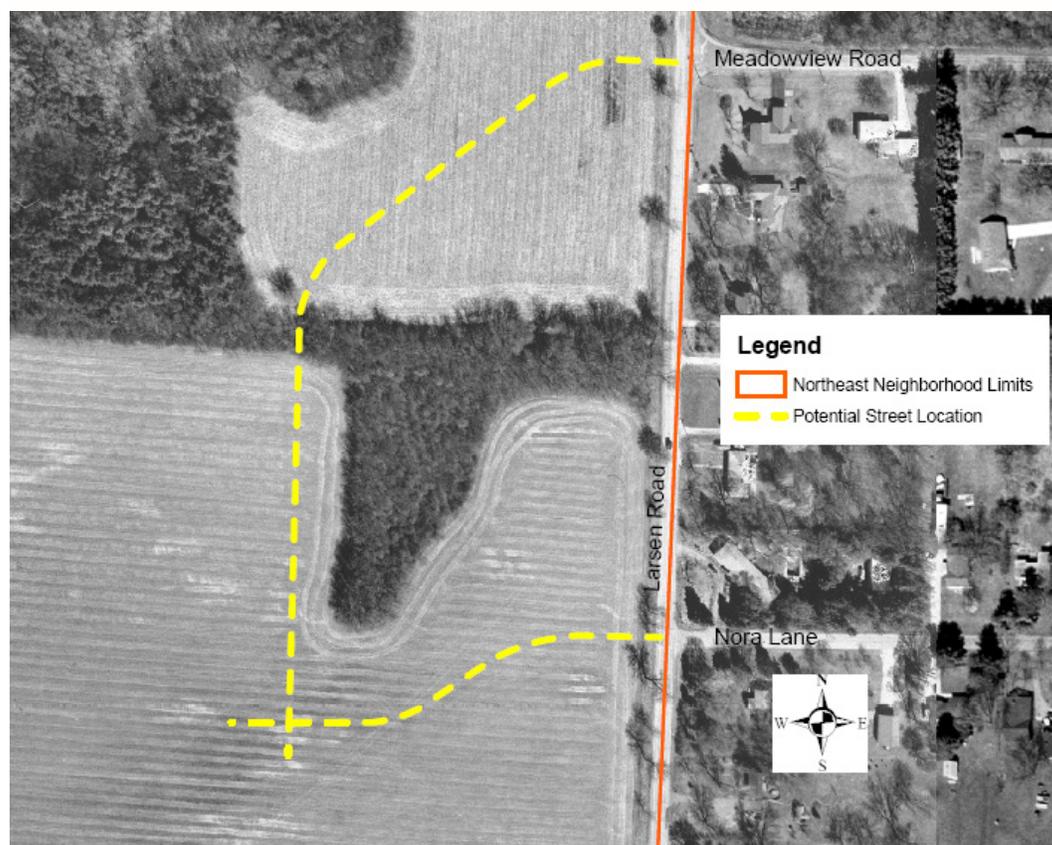
Development in the woodlot area would reduce the quality and quantity of habitat available for wildlife. Deer, turkey, and other species with a low tolerance for human activity will be inclined to move to other available habitat in the general area. Therefore, future development should be prohibited in the dry mesic forest community and efforts should be made to preserve the high quality tree canopy and diverse understory flora.

According to the DNR the Waubesa Wetlands, which is one of the highest quality and most diverse wetlands in southern Wisconsin, is located within two miles of the project site. A DNR representative noted, “Because the State Natural Area is not directly adjacent to your development project, I do not expect any impacts to the SNA as a result of project related disturbance.”

Future development must include buffer areas to preserve the significant natural resources found within the Northeast Neighborhood including the wetlands, woodlot, and Heritage Trees. Creating buffers around the Heritage Trees is vital to the health of their root systems. Each Heritage Tree should be evaluated by a licensed arborist, and preservation and buffering plans should be individually developed for each tree.

A street pattern accompanied by utilities would be needed with future development to allow for the transportation needs of the development. Based on the information provided and previously stated, there should not be any development in the dry mesic forest community; however, based on the lower quality tree canopy and understory vegetation in the other two woodland communities in the project area, a limited street network that intersects Meadowview Road and Nora Lane extending into the Northeast Neighborhood is feasible, so long as significant buffering of the dry mesic forest community is included as a component of the development. Due to the shape, size, and characteristics of the pine plantation and disturbed mesic forest communities, the road network could traverse these communities without causing major disturbances. From the southern edge of the pine plantation and disturbed mesic forest communities the road network could extend through the Northeast Neighborhood to County Trunk Highway MM (CTH MM), Goodland Park Road, and Larsen Road.

Figure 4 - 5: Potential Street Location



Source: Natural Resource Consulting, Inc.

Overall, based on the natural resources inventory and analysis, development should be prohibited in the dry mesic forest community. Future development of the pine plantation, transition, and disturbed mesic forest communities should be limited to low impact residential development. The significant natural resources and habitat within the dry mesic forest community, including the mature tree canopy and understory vegetation, the natural spring, Heritage Trees, wetlands, and wildlife habitat should be preserved. Extending buffer areas from those resources, and including erosion and storm water controls, to development in adjacent areas are also necessary to prevent negative impacts from the development. The land adjacent to the woodlot must also be developed with low impact residential uses as a transition to more intensive land uses.

Storm Water Drainage

The existing land use in the area contained within the Northeast Neighborhood plan is primarily agricultural with smaller areas containing single-family homes, woods and wetlands. Runoff from the site is tributary to Lake Waubesa through a series of existing culverts, ditches and open channels. Several of these existing drainage ways pass through either the Town of Dunn, the City of Madison, or the Town of Blooming Grove, as this entire area drains to the east. Runoff from the southern portion of the plan area drains to the south and eventually into Swan Creek. Swan Creek collects runoff from both the City of Fitchburg and the Town of Dunn and

is tributary to Lake Waubesa. Runoff from the northern portion of the plan area drains into Nine Springs Creek, another tributary of Lake Waubesa that passes through both the City of Madison and the Town of Blooming Grove. Development in the area, without proper planning and controls, could cause an increase in peak runoff rates and volumes and be detrimental to water quality. The preliminary drainage analysis has been created to address these issues.

The primary goals of the preliminary drainage analysis are to design the layout to fit the existing site, protect environmentally sensitive areas, keep post construction peak flow rates at or below existing conditions, remove pollutants from the storm water, infiltrate clean water to reduce post construction runoff volume and recharge groundwater, and prevent flooding or damage to downstream properties.

Planning will follow the existing topography to the maximum extent possible as well as phase construction to avoid large grading operations that could contribute to construction sediment leaving the site. Storm water runoff under proposed conditions will generally follow natural drainage patterns. Exceptions shall be made where the storm water can be redirected to avoid areas experiencing existing downstream runoff problems or where site conditions do not allow for necessary water quality or quantity reductions. Environmentally sensitive areas will be identified and protected.

Land use maps for the area identify several wetland complexes across the property. Further wetland categorizing was conducted on the Pasley property that is located south of Goodland Park Road. A March 29, 2006 letter prepared by Biologic Environmental Consultants, LLC of Fitchburg (Anderson, 2006), Wisconsin describes the wetland on that property to be a sedge meadow with some small inclusions of fresh (wet) meadow (See Appendix C). This wetland complex was considered to be in very good condition with a good complement of native wetland species, very few invasive species and requiring only a limited amount of targeted management to help it thrive. The March 29, 2006 letter also mentions the following, "Although not observed during the site visit, it's possible that a portion of the wetland maybe a rare and unique type of wetland called a calcareous fen." These wetland complexes serve important functions and shall be protected with any proposed development plans through the use of setbacks and/or buffers. Hydrology to these areas shall be designed to maintain as close as possible existing flow rates to those areas. In addition, steps will be taken to protect the quality of the runoff entering these environmentally sensitive areas.

Increases in impervious surfaces are common with development and typically result in increases to peak runoff rates. To meet both DNR and City of Fitchburg storm water ordinance requirements, peak post construction storm water rates will be restricted to pre-development rates. This will be accomplished through the use of regional or on-site storm water detention facilities along with other infiltration and recharge methods. These facilities will also be designed as wet ponds to meet runoff water quality requirements.

Water that has been treated for water quality or water that is considered clean (rooftop) can be infiltrated. Based on the existing soil conditions and proposed land use, we will identify the best treatments for meeting infiltration requirements.



System Analysis

Regional or private infiltration facilities may be utilized.

Conveyance facilities and overland flow paths will be designed to allow a variety of development alternatives while providing protection from flooding up to a minimum of a 100-year recurrence storm event. The storm water management facilities will be designed to dissipate runoff at rates that will not contribute to downstream flooding problems. This could involve redirecting runoff from certain basins to different drainage paths in areas where downstream flooding problems occur. Infiltration and sensible planning will also contribute to smaller volumes of storm water runoff that need to be treated and conveyed to downstream waterways.

The Northeast Neighborhood Plan will be designed to meet storm water regulatory requirements for water quantity and quality as well as protect the environmentally sensitive areas. The following storm water and erosion control standards represent the minimum standards for this development as devised through the work of the Land Use Committee. Nothing herein contained shall prevent the establishment of more restrictive standards for storm water management or erosion control as may be devised through ordinance or other policy of the City.

Storm Water and Erosion Control

Storm Water - Performance Standards

- Post-development peak runoff rate shall not exceed the pre-development peak runoff rate for the 2-, 10-, 100-year 24-hour design storm events.
- Development sites shall maintain a recharge rate of 7.6 inches/year under post-development conditions, and maintain a post-development annual stay-on volume of at least 90% of the pre-development annual stay-on volume. This criterion is based on the desire to maintain baseflow discharge to streams and wetlands.
- The exclusions and exemptions defined in State and County standards shall apply, except that no exemptions from infiltration requirements for areas where the soil infiltration rate is less than 0.6 in/hr will apply. This criteria is based on recognition that water quality treatment and runoff volume reduction through evapotranspiration may be feasible with biofiltration systems even in areas of low-permeability soil. The maximum size of effective infiltration areas where soil infiltration rate is less than 0.6 in/hr is 4% of the total development site.
- Thermal Control: Reduce temperature of storm water runoff within watershed prior to discharge to creeks or similar water bodies.
- Storm water infiltration and treatment Best Management Practices (BMP) designs shall limit ponding duration to 24 to 48 hours, a time period deemed appropriate for plant survival. This criterion is based on the importance of vegetation survival to sustainable infiltration area performance, and the importance of not directing too much runoff to individual biofiltration areas.
- Post Construction TSS Water Quality: Total Suspended Solids (TSS) load shall be reduced by 80% based on an average annual rainfall, as compared to no controls, and 60% for a five year 24 hour event.
- Oil and Grease Control: Potential for oil or grease, first 0.5 inches of runoff treated (commercial and industrial) using the best available technology.

- Phosphorous: Demonstrate a reduction of existing agricultural phosphorous loading to creeks or similar water bodies by at least 50% at fully developed, stabilized conditions.
- “In-line” wet ponds in areas of perennial stream flow or spring flow should be avoided, to provide thermal protection for streams during dry weather (baseflow) conditions. Baseflow augmentation through storm water infiltration practices will also provide dry weather thermal benefits. There may be certain situations where in-line ponds are the BMP.
- Conveyance of storm water through stream and wetland buffers shall be accomplished by open, vegetated drainage swales to the extent practicable. Outfalls to water bodies shall be designed to disperse water and avoid concentrated discharges.
- City staff shall have flexibility in reviewing and approving storm water management plans to address site-specific challenges, such as the potential for groundwater-driven flooding, unsuitable soil conditions, or limited space for storm water management facilities.

Plan review procedures used by the City should allow for variance from the criteria listed above due to unique site-specific issues, and also allow for the evolution of design practices and regulatory programs in the future. An example of a variance that may be appropriate is in situations where maintaining the 90% of the pre-development stay-on volume results in groundwater recharge rates in excess of 7.6 inches per year that may cause concerns about groundwater-driven flooding downgradient, in which case the City may conclude that maintaining the 7.6 in/yr recharge rate, alone, is an appropriate criterion.

Figure 4 - 6: Storm water management performance standards

Issue	Northeast Neighborhood Standard
Peak Discharge	Maintain pre-development peak discharge for the 2-, 10-, and 100-year, 24-hour design storms
Infiltration	Maintain at least 90% of the pre-development infiltration volume.
Groundwater Recharge	Maintain an average recharge rate of at least 7.6 inches per year.
Water quality: oil and grease	Treat the first 0.5 inches of runoff for oil and grease.
Phosphorous	Demonstrate a reduction of existing agricultural loading by 50% at fully developed, stabilized conditions.
Thermal mitigation	Reduce temperature of storm water to all discharge points to a creek or similar waterbodies. This may be accomplished through storm water infiltration and vegetated buffers. Avoid in-line wet ponds in areas of perennial flow.

Note: Adopted in part from Teska Associates et al, McGaw Park Neighborhood Plan, June 9th, 2009 (p 5-22).

Erosion Control - Performance Standards

- Soil Erosion during Construction: Soil erosion during construction (or activity requiring land disturbing permits) is to use the RUSLE2 model to limit soil loss to five tons per acre annually. If this model is not available, the current USLE model at the county standard of 7.5 tons/acre annually may be used in its place.
- Inspection every week or after every rain event, whichever is more

System Analysis

frequent.

- City staff should be the main inspectors, with use of city contractors or limited term city employees, in time of high construction activity.
- Building Inspection staff should review their enforcement methods and determine what they can do to provide more scrutiny and enforcement. The committee suggested that every inspector observe sites and note irregularities as they travel around the city and follow up for correction.

The above stormwater and erosion control requirements are the recommendations of this plan. However, more stringent requirements may be put in place by other review bodies (such as the Capital Area Regional Planning Commission) or by local ordinance or by other governmental agency regulations. It is not necessary to update this plan to recognize more stringent storm water or erosion control requirements that may arise.

Parks and Open Space System

Parks and open space offer recreational areas that have a profound positive effect on peoples' lifestyles. The City of Fitchburg has rewritten the plan for open space and recreation which is retitled the Comprehensive Parks, Open Space and Recreation Plan (Fitchburg Parks). This plan outlines the City's guidelines for providing these recreational areas for current and future residents of Fitchburg.



A network of recreational trails currently exists throughout the City. The Capital City Bike Trail extends through the Northeast Neighborhood north of interchange road. The proposed Heritage Circle Trail runs in a north-south direction west of US Highway 14 (USH 14). This proposed trail, if connected, would meet the Capital City Trail.

As future development occurs, recreation and open space will be provided for as outlined in the subdivision ordinance. The parks and open space plan indicates the types, sizes, and general locations of future parks. Trail connections to existing trails and additional trails for both transportation and recreation shall also be included. These trails could parallel new and existing roadways, environmental corridors, parks and open space areas, and drainage ways.

In addition, the City of Fitchburg acknowledged work on the Conceptual Parks and Open Space Proposal (Bartell and Dentice, 2008). The Conceptual Parks and Open Space Proposal (Bartell and Dentice, 2008) identifies a large system of open space that might be considered for protection. It would connect areas of important natural, cultural, and historical resources, while also providing for wildlife movement and habitat. Land within the Park and Open Space designation may remain privately owned, or may become public, through purchase, dedication, donation, or by other agreeable terms between the property owner and the City. Within the Conceptual Park and Open Space Proposal (Bartell and Dentice, 2008) there is a planning boundary, which is to be implemented over time as future land use decisions and alterations occur. The Conceptual Park and Open Space Proposal Area originally created by the Parks Department and the Parks Commission has been refined in

the Northeast Neighborhood through the efforts of the Northeast Neighborhood Land Use Committee and is referred to as the Northeast Neighborhood Green Space. Part of this area is subject to change in use from open space to another use, following a process detailed in Chapter 5, Land Use.

Transportation System Analysis

The existing road network is sufficient for the current land uses. The Northeast Fitchburg Transportation Study (KL Engineering and HNTB, 2002) was completed prior to the Northeast Neighborhood planning efforts that indicated future development toward the south would cause the need for road improvements to CTH MM. Therefore, if development occurs throughout the Northeast Neighborhood and elsewhere, this road network may likely need some level of capacity improvements.

The Northeast Fitchburg Transportation Study also revealed a need for a new interchange with USH 14 and interchange road. This full diamond-shape interchange is planned for the near future. Along with the new interchange, the study recommended the closing of two ramps at the USH 14 interchange with McCoy Road. The ramp from northbound USH 14 to McCoy Road will be closed along with the ramp from McCoy Road to southbound USH 14. Any future road pattern must accommodate the planned changes for the new interchange.



If future development occurs in the Northeast Neighborhood, an efficient road network is essential. An easy access to and from the area for new and existing land uses as well as emergency vehicles must be considered. There has also been very strong public opinion, regarding future traffic in the area, that must be considered. To address these concerns, the plan attempts to direct traffic to CTH MM and USH 14.

An extension of interchange road that connects with Larsen Road to the east offers the residents from the Town of Dunn an easy route to traverse the Northeast Neighborhood to enter onto USH 14. This road will also allow for access to and from any future development in the Northeast Neighborhood. Interchange road will connect to CTH MM and eventually head north to Larsen Rd. The intersection of this street with CTH MM could see a variety of design options such as traffic signals or a roundabout. Sufficient land area for a roundabout at CTH MM and interchange road will be required to be dedicated or provided to retain the possibility for roundabout construction. It is anticipated that there will be no driveway access to interchange road from CTH MM east to the park shown in the center of the interchange road. This restriction may be applied to other sections of interchange road as well.

USH 14 acts as a boundary for east/west roads for the entire region. To properly serve any future development that may occur along the western portion of the Northeast Neighborhood, a north-south roadway between USH 14 and CTH MM would suffice. This possible roadway would also allow for an additional north-south route. Because of WisDOT regulations, this potential route would need additional

approvals from the State.

The current alignment of East Clayton Road causes multiple intersections to be within a close proximity of each other. The plan shifts the roadway connection with CTH MM to the south as depicted on the Future Land Use Map.

The north-south road just west of CTH MM is identified on the Future Land Use Map in a dashed manner to indicate a possible, although desired, street. This street provides an important internal land use connection for the development area west of CTH MM, but the connection has to be balanced with the open space. The Land Use chapter of this plan notes that the NEN Green Space may see some adjustment based on detailed resource planning. At the time that sufficient additional resource planning is accomplished, the Plan Commission will decide whether or not the street connection is to be undertaken based on the resources in the area and any additional land that is to be developed. The connection may take a course different than the dashed line shown on the Future Land Use Map. If the street connection is not feasible, connection of the two street dead ends to CTH MM will be necessary. The dead end on the current Foseid property could be made at the location of the already dedicated cul de sac, while the location of the dead end on the current Osborn property will require additional evaluation for a desired location.

As development determinations are made in the current Werth family area east of CTH MM, it is desirable to connect the development to CTH MM, in order to provide the an additional access point to CTH MM, other than interchange road. This street connection will need to be further evaluated as detailed planning and information is provided.

Street connections shown in the plan are provided to indicate a desired linkage and the locations may change based on additional detailed planning.

As noted in the Land use section, certain existing homes, particularly those along CTH MM, may see some redevelopment. Drive access will need to be evaluated at the time of redevelopment planning and possibly moved off CTH MM at the time of redevelopment.

Existing homes, regardless of any redevelopment occurs, on the east side of CTH MM between Goodland Park Road and interchange road may see, at some point in time, their drive access relocated to a street anticipated to be constructed to the east side of each of these properties.



Public Transportation System

The City of Fitchburg currently contracts with Madison Metro to operate a public transportation system. The Madison Metro Transit System provides public transportation to areas within the City of Fitchburg.

Transit route efficiency should be designed into the new neighborhood by utilizing the following design considerations:

- Ingress and egress from neighborhoods should not negatively impact directness of service. Loops that enter and exit at one location should be avoided.
- Ingress and egress from neighborhoods should not require left-turns onto thoroughfares or collectors.
- Walking distances within a neighborhood should be reasonable without forcing the creation of a circuitous bus route to maintain a quarter mile standard and avoid an excessive amount of turning movements.
- Streets with planned bus routes should be constructed with appropriate asphalt mix and (perhaps) should be slightly wider if on-street vehicle parking is anticipated.
- High density dwellings should front on streets that are planned for bus routes.
- Bus stop locations should be anticipated along with shelter locations.
- Bus layover locations should be planned and anticipated in residential areas.

Additional public transit routes or route extensions that would serve the Northeast Neighborhood are possible in the future. A process to add routes to the Madison Metro Transit System begins with residents that live in the proposed area to be served. Because additional routes create added expenses for the City, residents requesting transit routes would need to contact their alderperson and work with the Transportation and Transit Commission for this process to begin.

The Nine Springs Green-Tech Neighborhood Plan included a rail transportation system along the city owned railroad corridor west of USH 14. Rail service would most effectively be provided as part of a reorganized, integrated, rail/bus system.

Water System

The City of Fitchburg Public Works Department operates and maintains the City's water distribution system. In Fitchburg, water is pumped from the ground and stored. This system allows for a sufficient amount of water to be available for daily use for residents as well as for emergencies.

The preliminary water distribution system analysis is based on the Fitchburg Utility District No. 1, Water System Capacity Analysis dated April 2005, input from City staff and general water distribution system planning practices. Since only preliminary land uses have been determined, actual flow rates and sizes of required infrastructure were not evaluated for the system analysis.

The water distribution system is divided into three separate areas or pressure zones. The Northeast Neighborhood area is located within the northeast pressure zone of the City.

Currently, the northeast pressure zone is a sub-zone to the east zone because of the absence of a dedicated pressure zone water supply and storage facilities. The City of Fitchburg built a new water supply well, No. 11, near the intersection of Lacy Road and Jones Farm Drive. The new well will ultimately supply water to the northeast pressure zone and the Northeast Neighborhood. In the interim, however, it is primarily intended to provide additional water supply to the east pressure zone.



System Analysis

The development of the Northeast Neighborhood can be served by an additional water supply well proposed to serve the Nine Springs Neighborhood. A potential location for the proposed water supply well is near the intersection of West Clayton Road and Herman Road. The cost of the new well would be included in the City's capital improvements utility budget whereas infrastructure costs would be borne by the benefiting parties, such as property owners, developers, and rate payers.

The city is considering changing its assessment policy. It is reviewing impact fees to recover the cost of water infrastructure such as wells, transmission mains and towers. The water distribution piping between the well and future development within the Northeast Neighborhood Plan area would be paid for by the developers, as would any water supply piping for new development. At this time, it has been determined that a well will not be placed in this neighborhood and, consequently, no well is indicated on the land use plan map. The Utility will likely have to bear the cost to construct water mains to serve the neighborhood. Some level of development in the Green Tech Village (to have water reach USH 14) is highly preferable to avoid construction of mains through undeveloped land. More than one water main connection to the neighborhood is necessary to provide some redundancy in service, although water quality concerns may suggest only one watermain for an interim period of time.



A new water storage tower will be required within the northeast pressure zone along with the new well. It will provide the emergency water supply and fire flow storage requirements for the zone and will also provide additional system reliability. An area for the water storage tower, on the drumlin between USH 14 and CTH MM, is shown on the Future Land Use Map. The cost of the new tower will also be paid by utility ratepayers as may be programmed in the City's capital improvements budget or by a cost recovery fee.

In addition to the water storage tower and supply well, water transmission mains will be needed to move water from Well No. #11 and the east pressure zone to the Northeast Neighborhood Plan area. Water distribution infrastructure through or within undevelopable lands, such as the USH 14 crossing, will be accomplished either as special assessments against the benefiting properties, collected from the developers or customers upon attachment to the system, or institution of some other cost recovery method.

Sanitary Sewer System

The urban service area of Fitchburg is part of the Central Urban Service Area in Dane County. Sanitary wastewater from this urban service area is treated at the Madison Metropolitan Sewerage District (MMSD) Nine Springs Treatment Plant. This area is served by MMSD's Nine Springs Valley Interceptor. All sanitary wastewater treatment services shall be accomplished by MMSD.

In 2017 a final plat for part of the Terravessa development was approved by the Common Council. This plat meets a number of overall goals identified in the Comprehensive Plan, including, but not limited to:

its close relationship to the Fitchburg-Oregon rail corridor (a principle used in determining the Urban Growth Boundary), the close relationship to downtown Madison, and its compact urban-level density (intended to be greater than a net of 15 dwelling units per acre at build out).

If only gravity sanitary sewer were provided, 1,500 feet of sewer would exist at a depth of 30 feet or more. Construction and maintenance of sanitary sewer at these depths is very difficult, requiring easements of at least 40 feet and technically difficult, multistage trenching.

Analysis shows that such depths are not avoidable. Therefore, to achieve the other benefits of compact urban development near the Fitchburg-Oregon rail corridor, an exception to the Comprehensive Plan prohibition of permanent lift stations is granted for the Terravessa plat.

Using only gravity flow sanitary sewer remains an overarching principle in development of the Comprehensive Plan. The proposed force main and additional gravity lines shall be engineered at depths no greater than necessary to service lands intended for development in the Northeast Neighborhood in the settlement of the lawsuit Fitchburg Lands LLC vs DNR.

Public School System

Three separate school districts serve the City of Fitchburg. The Northeast Neighborhood is part of both the Madison School District and the Oregon School District. The Madison School District serves the western portion of the Northeast Neighborhood that lies north of East Clayton Road. Most of this land is under Dane County ownership, will likely remain undeveloped, and will not put additional strain on the Madison School District.

The remainder of the Northeast Neighborhood is served by the Oregon School District. Future development in the Northeast Neighborhood would add students to the Oregon School District, but would not cause extensive strain on the School District due to capacity issues. It is the desire of the Oregon School District to keep the Northeast Neighborhood in their District and there is no identified need for a school site at this time.

Electric System

Much of the northern portion of the City of Fitchburg receives its power from the Madison Gas and Electric Company. Future development within the Northeast Neighborhood will not present a challenge or a problem for providing power from the Madison Gas and Electric Company.



Public Safety

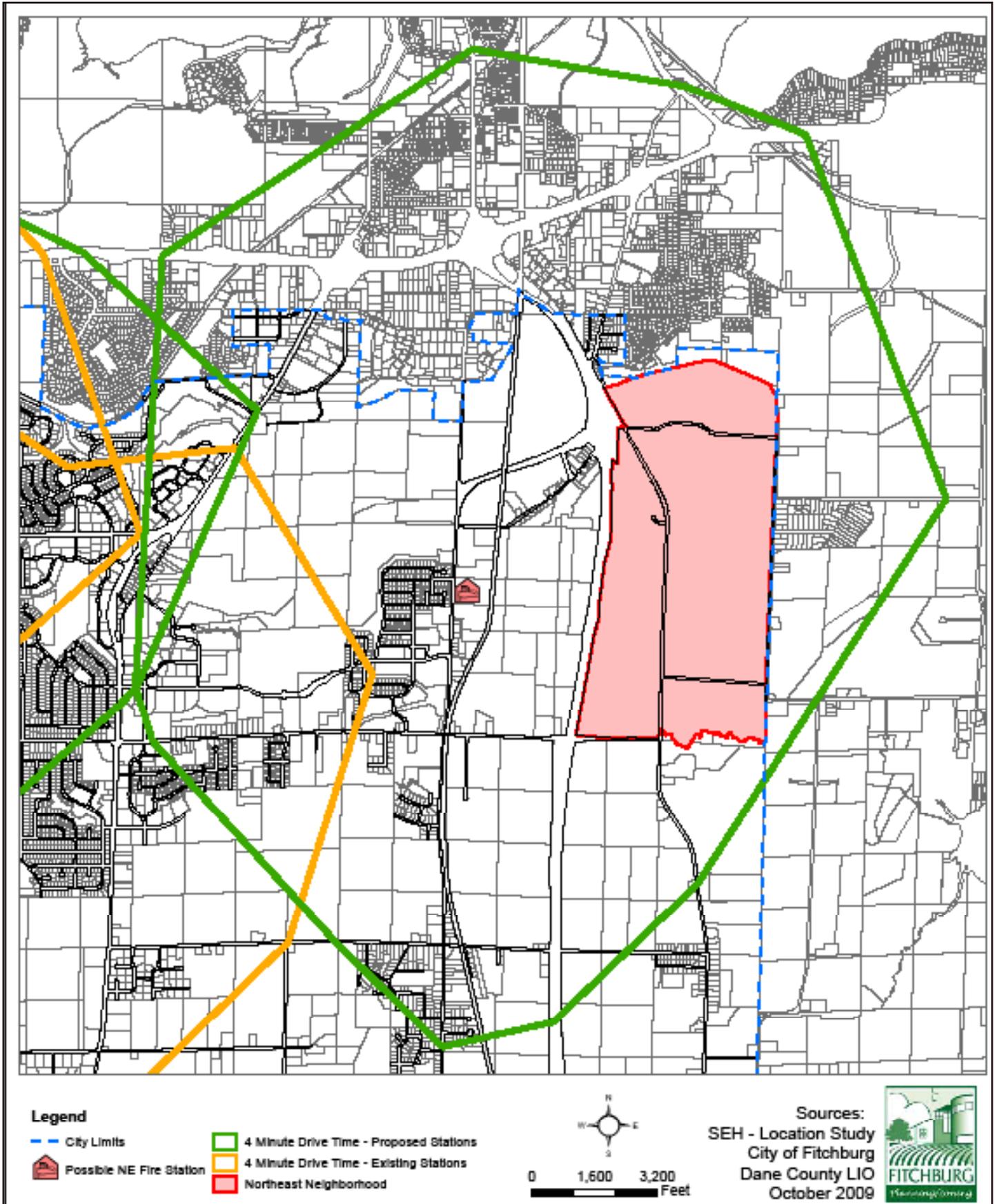


The City of Fitchburg provides its own fire and police departments, but shares emergency medical services, via the Fitch-Rona Emergency Medical Services (EMS), with the City and Town of Verona. Police services are headquartered at the Fitchburg City Hall, on Lacy Road at Research Park Drive. Fitch-Rona EMS currently operates out of two locations: Fitchburg Fire Station No. 2/Fitch-Rona EMS at Kapec Road and King James Way, and also on Venture Court in the City of Verona. Fitchburg Fire, in addition to operations at Fire Station No. 2, also operates out of Fire Station No. 1 located at Lacy Road and Osmundsen Road.

The Fire Department has been evolving, from its original purpose of fighting fires to a wider range of sophisticated fire and safety service. In addition to response to fire calls, each station may respond to EMS calls. Fire fighters assigned to both units often operate as first responders on EMS calls. This reduces response times for EMS calls originating from either Fire Station No. 2 or the Venture Ct location. Medical transport is handled by Fitch-Rona EMS.

A Fire Station and EMS unit location study was completed in early 2009 for the City of Fitchburg by the engineering and architectural firm of Short Elliott and Hendrickson (SEH, 2009). This study recommends that both fire stations be relocated. Fire station No. 2 is to be relocated first to a location in the vicinity of McKee Road and Seminole Highway. Construction of relocated station 2 is expected to occur in 2011 at the earliest. Fire station No. 1 is expected to be relocated about two years after the relocation of station No. 2, to the vicinity of Syene Road and East Cheryl Parkway. The relocation of station No. 1 is critical to provide suitable four minute target drive time to the Northeast Neighborhood. Figure 4-7 indicates the four minute drive time range from current and possible fire station locations.

Figure 4 - 7: Northeast Neighborhood
Fire Department 4-Minute Drive Time



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Land Use



Land Use



The Northeast Neighborhood is approximately 922 acres in size. The boundaries of the neighborhood are:

- West: US Highway 14 (USH 14)
- East: Larsen Road
- North: Nine Springs Creek
- South: Lacy Road between USH 14 and County Highway MM (CTH MM); and Swan Creek east of CTH MM to Larsen Road

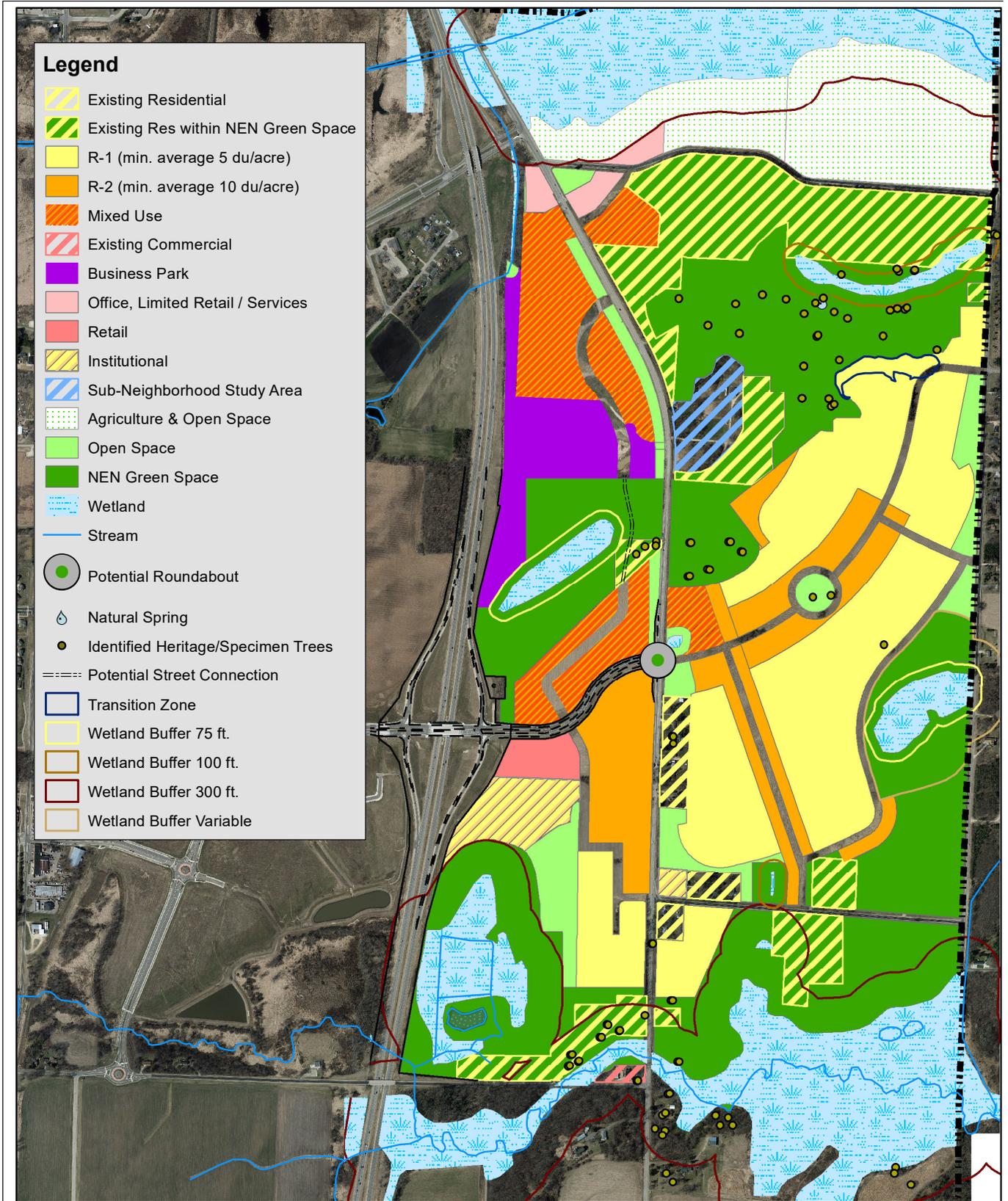
The neighborhood currently consists of farmland, residential, waterways, wetlands, steep wooded lands, and street right-of-ways.

As identified during the Future Urban Development Area (FUDA) process and Comprehensive Plan adoption, and then demonstrated during the opportunities and issues chapter of this plan, the Northeast Neighborhood as a whole has potential from nearly every angle, although some restrictions are present, particularly as to public service timing. Nonetheless, over the course of the planning process it has become clear that a number of factors merit special consideration and sensitivity with regard to the planning of future land uses within the Northeast Neighborhood if any of it is selected to enter the City of Fitchburg's Urban Service Area (USA). The future land use plan detailed in this document was prepared with careful consideration of those factors, as well as the City's relevant goals and policies. See Future Land Use Map (Figure 5-1).

The Northeast Neighborhood depicted in the future land use plan is comprised of a number of distinct, but interconnected components that together, create a cohesive whole. To create interest, walkable destinations vary from the wooded hills of the north-central part of the neighborhood to the mixed use center at the crossroads of CTH MM and interchange road to the small parks and open space in the southeastern corner of the neighborhood. Each of the neighborhood's known natural resources are identified for preservation. The neighborhood's "vital statistics" will be detailed in this chapter, but first an outline of some key considerations and notes on the plan:

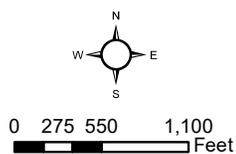
- The neighborhood is designed to respect the City's policies with regard to residential development at urban densities that are transit ready, while allowing a variety of residential types. The Neighborhood Plan establishes minimum density levels, therefore, providing the broadest possible variety of residential densities and housing types, ranging from mixed-use and multi-family to single-family (attached and detached).
- Consistent with good planning principles, density and intensity of proposed land use within the neighborhood declines from west to east, with the exception of small areas of R-2 land use near the neighborhood central park. The principal location of residential density is in the vicinity east of CTH MM along the corridor of the interchange road. In the western most part of the neighborhood, business, retail and institutional uses are dominant, as would be expected in an area with direct access to a major highway. At the other end of the spectrum, open space is planned along the southern portion of Larsen Road frontage out of respect for the need to allow for infiltration

Figure 5 - 1: Future Land Use Map



Northeast Neighborhood Future Land Use

November 2009
Amended August 22, 2017



Sources:
Natural Resources Consulting, Inc.
Ruekert-Mielke
Schreiber Anderson Associates
City of Fitchburg
Dane County LIO



Land Use

and filtration of all surface runoff as well as buffering of the developed Northeast Neighborhood from the less intensively developed and protected parts of the neighboring Towns. With consideration of the sensitivity of the Dane County Nine Springs E-way (E-Way) and Swan Creek, preservation of wetlands and a 300-foot buffer/environmental corridor area is intended for the northernmost and southernmost perimeter of the neighborhood. Density within residential areas abutting the buffer/environmental corridor is planned to be developed at the minimum average density for that land use category.

- East of CTH MM those living and working in every part of the neighborhood should have ready access to public parkland, never being more than a quarter mile away. Another public park in the western part of the neighborhood will be available to residents of the multi-family development west of CTH MM, whereas those in the mixed-use area adjacent to the drumlin could be served by the open space it affords. Neighborhood parks will be sited in accordance with procedures outlined here and within the Comprehensive Park, Open Space and Recreation Plan through specific agreements during the comprehensive development plan or plat process.



- With respect for the wishes of current Northeast Neighborhood residents, their lots or residential areas are indicated on the plan as “existing residential” and are primarily abutted by R-1, R-2 or future park and open space uses. Different land uses may be considered if the existing residents are interested in the potential of redevelopment of their properties. Redevelopment would only occur after a detailed redevelopment plan is developed. It is not the intent to require an amendment to the neighborhood or comprehensive plan and its land use map for any alterations that may occur as a result of more detailed planning.

- In consideration of the natural resources found in the north part of the neighborhood, this area is considered as part of the Green Space stretching across the width of the neighborhood. The portions of the Green Space located in the Environmental Corridor have further restrictions. Environmental corridors often consist of wetlands, waterways, some steep sloped land, and particular areas with a dense tree canopy, or specimen trees.

- It is intended that all wetlands in the planning area be preserved, untouched aside from restoration due to prior degradation, when appropriate. Wetland buffer widths are suggested and graphically depicted.

- It is proposed that limited development take place in proximity to the E-Way or north of East Clayton Road. Approximately two acres of office, limited retail and service is the only development planned just north of the current East Clayton Road. This area will be tied to 2.5 acres of office, limited retail and service once East Clayton is realigned to go south and intersect with CTH MM.

- It is proposed that the drumlin between USH 14 and CTH MM and the bordering wetland to its north be preserved as open space with the exception

of any grading necessary to create a north-south road through that portion of the neighborhood to provide for internal connectivity of business operations and a secondary means of access for emergency vehicles. This could be preserved as private or as public open space. Much of this area is included in the NEN Green Space, although this area is subject to further definition through determinations made in accord with the process set forth in the NEN Green Space discussion below (page 5-10).

- Consistent with City policy, development is not proposed for areas that cannot be served by gravity flow sewer, with the exception of one location where the City may allow for a private grinder station for a single institutional use. In the southwest part of the neighborhood, outside the wetland and wetland buffer, an area is identified for a single-institutional user, a type of development that may be acceptable to the City. This location would have particularly good highway access, being served by a nearly-direct route to USH 14, and may be highly desirable to a large user of a type the City may desire. This location has potential both for economic development and for educational use. Development areas based on gravity flow sewer are estimated, but are thought to represent maximum sewerable area.

The following section of the plan outlines each of the land uses shown on the proposed Future Land Use Map. Future land uses for the Northeast Neighborhood include residential, business/commercial, institutional, sub-neighborhood study area, open space, and transportation land uses. The Future Land Use Map may see alterations through more detailed planning, and it is not the intent of this plan to require an amendment to this plan or the Comprehensive Plan to accommodate such adjustments. The minimum established densities, however, shall not be altered except by an amendment to this plan.

Residential

The residential land uses identified in the Northeast Neighborhood Plan include the following:

Existing Residential

Existing residential land uses are located adjacent to transportation corridors such as Goodland Park Road, East Clayton Road, Lacy Rd and CTH MM. These existing residential uses comprise approximately 99 acres of land. The land use plan does not propose to alter the existing residential uses, except for one lot west of CTH MM which falls within the proposed R-2 land use, possibly for two lots on Goodland Park Rd (described later in this section) and for homes fronting the east side of CTH MM south of interchange road and north of Goodland Park Road (also described later in this section). Approximately 89 acres of existing residential falls within the proposed Green Space.



Existing residential sites owned in 2009 by Ed Korn (4812 Goodland Park Rd) and

Land Use

David and Barbara Ward (4816 Goodland Park Rd) may be either, or a combination of, R-1, R-2, and/or open space, subject to final determination by the Plan Commission. Current residential development along the east side of CTH MM designated “Existing Residential” on the land use map due to the desires of the property owners. However, this area may be changed to R-1, R-2, or mixed use at a later date with approval of a redevelopment plan, provided the land use decision properly depends on what ultimately is developed to the east. It is not the intent to require an amendment to this plan or the Comprehensive Plan to affect the possible land use alteration noted in this paragraph.

Residential R-1

Approximately 95.4 net acres of the Northeast Neighborhood have been identified as residential R-1. The residential R-1 is to include primarily single-family homes developed at a minimum average density of five dwelling units per acre (du/acre). Developed at this minimum average density, a minimum of 477 homes is planned to be developed. The R-1 residential areas are located within the eastern portion of the neighborhood. Two single-family areas are located in the southwestern portion of the neighborhood along CTH MM to provide a low intensity use near the environmental corridor for Swan Creek. R-1 residential uses are also strategically located adjacent to existing residential uses to help mitigate conflict between new development and old and to help preserve the value of existing homes. Being set at a minimum of five du/acre, there is the possibility of other than single family residential land use types in this designated area. For example, there could be two-family, or multi-family units located here.

There are two main areas that, while identified as R-1 residential with a minimum of five du/acre on the Land Use Map, may experience development levels of less than five du/acre. First, is the residential land uses planned for the pine plantation and transition zone lands identified in the Natural Resource Inventory and System Analysis described in Chapter 4. Development in the pine plantation and transitional zone will need to be sensitive to slope and other resource factors, hence cluster development likely presents the optimal development option for land development in the pine plantation and the transition areas. If developed at less than five du/acre, these areas could have density offset by adjoining R-1 land to meet the overall minimum five du/acre goal. Second, is the area located west of CTH MM in and near the Croft property. This area may also see land use density of less than the required five du/acre due to its close proximity to the wetlands and existing rural residential home sites. This site does not contain sufficient R-1 land area to offset the reduced use, so offsets in other R-1 areas may be required to reach minimum density.

Residential R-2

Residential R-2 land uses are located along major street networks to act as a buffer to R-1 land use. R-2 residential is also designated around the central open space extending to the parks and open space boundaries to the north and south. The R-2 category allows a variety of residential developments at different intensities to reach the minimum average density of ten du/acre. A minimum of 401 residential units

are necessary under this land use category on 40.1 net acres.

R-2 allows, but does not require, limited retail or live-work on corner lots.

Mixed-Use

A potential center of the Northeast Neighborhood is the mixed-use area east of CTH MM that is envisioned as having retail or service uses on the first floor of multi-story buildings with residential or offices uses located above. Commercial and residential mixed uses are also designated in the area west of CTH MM north of the interchange road. In Fitchburg, developments of this type are typically in the range of eight to twenty dwelling units per acre. With roughly 39 net acres of land designated as mixed use, 50% or 19.5 acres may be attributed to residential. Between 155 and 388 dwelling units are likely.



Figure 5 - 2: Residential Land Uses

Category	Acres	Net Acres	DU/Acre		Total DU's	
			Min.	Target	Min.	Target
Existing Residential *	98.7	98.7	--	--	--	--
R-1 (min. average 5 du/acre)	134.3	95.4	5.0	8.0	477	763
R-2 (min. average 10 du/acre)	56.5	40.1	10.0	16.0	401	641
Mixed-use**	27.7	19.39	8.0	20.0	155	388
Total (excluding existing Residential)	218.5	154.89	--	--	1033	1792

* Also includes existing residential that is part of NEN Green Space.

** Mixed use totals 55.4 acres. Projections split this acreage by 50% for residential (27.7 acres) and 50% business/commercial (27.7 acres), though acreage may vary after development.

Future residential development proposed for the Northeast Neighborhood includes a wide range of housing types. Because of the many housing types offered through this Northeast Neighborhood Plan, a broad variety of future residents could be expected. The Northeast Neighborhood can expect a minimum of 1,033 future dwelling units, with the possibility of developing 1,792 future dwelling units or more with the land use designations in the neighborhood. This development pattern would result in a minimum residential density of 6.6 du/acre, with the possibility of a residential density of 11.6 du/acre or higher. No maximum density has been established in this neighborhood plan, although maximum densities could be set under comprehensive development plans, or zoning.

Business/Commercial

Lands have been designated for a variety of business or commercial land uses in the Northeast Neighborhood. There are areas for smaller retail and service industries as well as an area for a business park including larger businesses, offices, or light

Land Use

industrial uses. The business/commercial uses include the following:

Existing Commercial



One existing commercial site is located at the intersection of Lacy Road and CTH MM. This site is located within the environmental corridor for Swan Creek and the use for this site will need to maintain a low intensity in order to not have a drastic impact on the natural resources within the area.

Business Park

A large area west of CTH MM has been identified as a business park. Approximately 19.7 acres of land encompasses the business park, which is intended to be developed as a mixture of professional offices, specialized manufacturing, or other non- nuisance light industrial uses. Office and commercial service designations are to provide at least a 50% Far Area Ratio (FAR), if not greater, although specialized manufacturing and non-nuisance light industrial uses will be considered at a lower percentage provided it is at least greater than 25% FAR.

The principles of conservation design should be applied to the business park area and strive for a density of at least 0.5 FAR (using the LEED-Neighborhood Design definition). Design of the business park should take into account the environmental corridor and integrate that corridor in the planned use.

Currently, much of that area is in the process of being filled and compacted in a transition from its prior use as a borrow-pit to its future use as developable acreage.

Office, Limited Retail / Services

The entrance to the Northeast Neighborhood along CTH MM and East Clayton Road is a small area of office, limited retail, and services. These land uses account for approximately 6.4 acres of the neighborhood.

Retail

Roughly 5.3 acres of strictly retail and service business uses is located immediately south of the planned interchange on USH 14. This retail and service portion of the neighborhood is immediately adjacent to dense R-2 residential and a large single institutional use.

Mixed-Use

Approximately 55.4 acres are identified as mixed-use, of which 27.7 acres may be attributed to business/commercial activity. As previously discussed, the mixed-use area typically includes smaller retail and service type businesses on the first floor of a multiple floor building with residential and office units above. Mixed-use may also include a horizontal mix, where there are single uses in separate but adjacent buildings, provided that they are integrated within a comprehensive development plan. The mixed-use on the east side of CTH MM would be the focal point

of this neighborhood. It is a commercial area with adjacent greenspace and a surrounding residential density that would be able to support the businesses. The mixed-use area west of CTH MM may be the focal point of the western portion of this neighborhood. Residential density with retail and service uses may create an atmosphere full of energy and movement that visitors and residents would enjoy.

Figure 5 - 3: Business/Commercial Land Uses

Type	Size (acres)
Existing Commercial	1.3
Mixed-use (neighborhood commercial) *	27.7
Office, Limited Retail and Services	6.4
Retail/Services	5.3
Business Park	19.7
Total (excluding existing commercial)	60.4

* Mixed use totals 55.4 acres. Projections evenly split this acreage between residential and business/commercial. Acreage may vary after development.

Institutional

Institutional land uses typically include land owned by the municipality, school districts or non-profits and facilities that provide services for residents such as police/fire stations, city hall, wells, schools, parks, playgrounds, churches, etc. It is not anticipated that there will be a need for significant amounts of land in the Northeast Neighborhood for institutional uses to serve the anticipated population. Consequently, there are only two institutional land uses in the neighborhood, and both utilize only small amounts of land.

The first is a City-owned parcel at the northeast corner of CTH MM and Goodland Park Road. There are no plans for utilization of that land at this time. If this land was sold, its land use designation may change to accommodate the buyer, however the use would need to accommodate the surrounding land uses.

The second institutional land use is an 11.3-acre single institutional use south of the new interchange. This area cannot be serviced by gravity flow sewers and lift stations are not allowed in the City. It is anticipated that the City will, however, allow a single use to be developed and constructed in such a way that a single, private, grinder pump would be utilized to service the area. This area adjoins a wetland buffer and so ownership may include part of the buffer area, although any use in the wetland buffer is to be consistent with the Comprehensive Plan.

Figure 5 - 4: Institutional Uses

Goodland Park Road Institutional	1.4 acres
Single Institutional Use	11.3 acres
Total	12.7 acres

Sub-Neighborhood Study Area

Study Area Map



This area requires further analysis as to what types of land use(s) may be allowed. The sub-neighborhood study will examine natural resource issues, such as topography, soils, groundcover, tree growth and water management along with transportation and connectivity, utility and land use relationships. The special study is to be completed by or for the landowner(s).

An amendment to the Comprehensive Plan is not required if the sub-neighborhood study has been approved by both the Plan Commission and Common Council. If the sub-neighborhood area is part of a land division or sees a change in use, the Northeast Greenspace requirements will come into play for the existing dwellings. No land use change or land division may occur for the sub-neighborhood study area until the study has been fully approved by the Plan Commission and Common Council.

Open Spaces

Parks and open spaces provide immeasurable benefits to future residents and the environment that should accompany all future development. There are several types of parks and open spaces that may differ in land use, or simply the ownership of the land. The different types of park, and open spaces include the following:

Agriculture and Open Space



Agriculture/Open Space Preservation is designated for approximately 69.3 acres of land adjacent to the E-way wetland buffer. This land has been farmed for generations and agricultural use is anticipated to continue indefinitely at this location. Dane County owns a parcel of land north of East Clayton Road. Future development on this parcel of land is highly unlikely. This land is designated as open space. The Uphoff farmland, north of East Clayton Rd, is protected from development by a Dane County conservation easement.

Open Space

There are approximately 33.2 acres of land indicated as open space, which is outside of the Northeast Neighborhood Green Space. This land could become publicly owned active recreation land, although it could remain in private ownership, depending on the Parks Commissions approval as parkland dedication during the platting process. This area includes the Nine Springs Creek environmental corridor and the landscape buffers along CTH MM adjacent to existing residential uses.

Park and open space must be dedicated to the City in conjunction with any new residential development. The City of Fitchburg Zoning Ordinance, 2009 (Land Division Ordinance) requires that 2,900 square feet of open space per dwelling

unit be dedicated for this purpose. Based on the potential future target residential densities, a minimum of 104.9 acres would be required for the amount of residential development depicted in this future land use plan map. The open space designated for potential parks is short of the required parkland dedication. The Parks Commission, however, has the option of allowing dedication of parts of the Northeast Neighborhood parks and open space lands for passive recreation or to take a fee in lieu of dedication.

Northeast Neighborhood (NEN) Green Space

The NEN Green Space, which is approximately 219 acres, is intended to provide a continuous corridor of open space through portions of the Northeast Neighborhood by connecting areas of important natural, cultural, and historical resources. This open space category includes, but is not limited to, the steep slopes, and dry-mesic forest for the area east of CTH MM in the north part of the planning area; the Swan Creek, and other wetland area environmental corridors in the southern and eastern portions of the planning area; and the drumlin and related land area west of CTH MM. Land within this area is primarily under private ownership. The Green Space within the Northeast Neighborhood planning area is based, in part, on additional studies, input, and analysis by the Northeast Neighborhood Land Use Committee of the original Conceptual Parks and Open Space Proposal (Bartell and Dentice, 2008) prepared by the City of Fitchburg Park Department. Upon adoption of the Northeast Neighborhood Plan as an appendix to Fitchburg's Comprehensive Plan (Fitchburg, 2009), the alterations accomplished by the Northeast Neighborhood Land Use Committee to the Northeast Neighborhood Green Space will be deemed an amendment to the Conceptual Park and Open Space Proposal as set forth by the City Parks Department. Land use within environmental corridors, or buffers, shall be consistent with the Comprehensive Plan, and other guidelines as set for in this plan. The Green Space is not by itself an environmental corridor or buffer area, although environmental corridor or buffer area(s) may overlay the Green Space, in which case the more restrictive regulation or plan guidance shall apply. The following provisions also apply to this boundary.

Existing Dwellings and Uses

It is the intent of this plan that there is to be no increase in density or a change to a higher level land use for any property within the Green Space. The existing lawful uses of property, including any current or future structures related to such use, is allowed. Building sites on legal lots of record, but which are currently vacant may be developed to a use consistent with the appropriate zoning for that site. Lot line adjustments may occur among adjoining property owners, but any land division accomplished to create additional building sites or change to a higher level land use is to be subject to the provisions in the following section. Location in the Green Space is not intended to preclude construction, renovation, remodeling or other similar activity for uses legally established on the effective date of this plan.

Change in Use or Land Division

If a property that is covered in whole or in part by the Green Space is subject to a land division or a rezoning in order to create a higher intensity land use, or to create additional building sites, the area would need to be adjusted (in accord with the provisions noted below) to allow the new development or change to a higher



Land Use

intensity land use. Any existing uses and structures on property affected by the rezoning or land division, which remain in the Green Space, are to be subject to the following provisions, which may need to be implemented through an overlay zoning district:

1. Site and building improvements or alterations may see up to 20% lot coverage. (As used herein, lot coverage means building footprints, patios, decks, hard surface/gravel driveways, hard-surface walks and the like.) See Appendix B for an aerial photo interpretation estimate of existing lot coverage.
2. Site and building improvements or alterations exceeding 20% of the lot coverage may occur, but in such case Plan Commission approval is necessary. In acting on any application, the Plan Commission shall base its decision on the harmony of the design with the existing site and its fit with existing improvements, the nature of the work, and how well the application insures minimal site disruption. Furthermore, the Plan Commission shall review the application to assure that the proposed work will not negatively impact woodlots, native vegetation such as heritage or specimen trees; unique, valued or important under story vegetation; erosion susceptibility; surface water, groundwater, or wetland resources; limits intrusion into steep slope (12% or greater) areas, or other pertinent resources. Applicant will provide the appropriate plans and documents to allow an informed decision. Review shall assure consistency with this plan, Comprehensive Plan, Comprehensive Plan for Parks, Open Spaces and Recreation, and the Parks and Open Space proposal, as well as codes or other policies that may affect the property.
3. Where the standards of other policies, ordinances or plan documents are more restrictive, the more restrictive standard shall apply.

Boundary Adjustments

Specific resource studies have not been completed for all land in the Green Space, and therefore, the Green Space may be adjusted to either increase or decrease the area. Land covered by the dry mesic forest designation, but excluding the transition area, identified in the “Specific Inventory and Resource Analysis” accomplished by Ruckert-Mielke (for part of the wooded area east of CTH MM in the north portion of the planning area) shall not be subject to adjustment or removal from the Parks and Open Space Area. Adjustments to the boundary shall assure that the main principles of City Plan documents (such as this plan, the Comprehensive Plan, Comprehensive Parks, Open Space and Recreation Plan, and the Conceptual Parks and Open Space Proposal) are not compromised. Adjustments to the boundary will consider the resources present in the area including, but not limited to, wildlife corridors, water features and wetlands with their respective environmental corridors, soil capabilities, steep slopes, and woodlots (including any under-story habitat condition). The resources are to be properly and sufficiently protected. However, a minimum Green Space corridor width of at least three hundred feet is to be maintained.

Depending upon the results of the resource studies, the boundary may be expanded or require a width greater than 300 feet. Determination will be dependant upon

City review and acceptance of specific resource studies completed by the owner dealing with woodlots, steep slopes, water features and wetlands with their respective environmental corridors, flood areas, habitat conditions, soil capabilities, and other pertinent resource analysis that may be necessary to carry out the intent of the Conceptual Park and Open Space proposal. Such action and adjustment may occur prior to the time of the Comprehensive Development Plan, platting, zoning or other relevant government action. City review is likely to consist of the Plan Commission, Parks Commission and Resource Conservation Commission based on the required studies, and the principles set forth in this neighborhood plan, the Comprehensive Plan and the Parks and Open Space Proposal. If an adjustment is made to reduce the Green Space area or change the boundary, then the Plan Commission shall determine the appropriate land use for that area by evaluation of the neighborhood plan, utility service, street access, and other related or relevant planning methods. Likewise, if there is any increase in the size of the area, then such area will be considered as part of the Green Space. It is not the intent to require an amendment to this neighborhood plan as part of the Comprehensive Plan to effect alterations to the Green Space and to the establishment of another land use option. Action on amendments to the Green Space, however, shall lie with the Common Council after recommendation by the Plan Commission, Parks Commission and Resource Conservation Commission.

If additional land is removed from the Green Space, then street extensions may be required to be provided, such as linking the north-south street west of CTH MM north of interchange road, and connection to CTH MM across what is referred to as the Werth property. No road or utility construction should occur within the dry mesic forest community.

It is not the intent of this document to require amendments to this plan or modifications to the Conceptual Parks and Open Space Proposal for any adjustments or decisions made under the Existing Uses and Structures, Change in Use or Land Division, or Boundary Adjustment sections discussed above.

Dry Mesic Forest Area

Ruekert Mielke completed a “Specific Inventory and Natural Resource Study (Ruekert-Mielke, 2008)” for part of the wooded area near the north end of the Northeast Neighborhood and east of CTH MM. This study denoted a large area as being dry-mesic forest community, much of which has been placed within the Green Space. The dry-mesic forest community as used herein does not include the transition area defined by Natural Resource Consulting which was a sub-consultant to Ruekert Mielke. The dry mesic forest community is not developable as the report notes: “Installing streets and utilities through the dry-mesic forest community will lead to major disturbances in the ecological habitat.” Therefore, it is not the intent of this plan to see an increase in density or change to a higher level land use for any land within the identified dry-mesic forest community (see figure 4-4 of this plan). Existing dwellings and related buildings in the dry-mesic forest community will be treated as part of the Green Space.

Wetlands

There are approximately 135.1 acres of wetlands within the Northeast

Land Use

Neighborhood which are sufficiently buffered by the designated open space. The wetland buffers have been identified in the storm water study indicating that there are three levels of wetland buffers that should be utilized.

The following will comprise the minimum environmental corridors in the neighborhood:



- A 300-foot wetland buffer has been included for the wetlands associated with the E-Way and Swan Creek. These are significant environmental features therefore they require additional buffer area to preserve and protect those two waterways.
- Wetlands associated with Swan Creek and their related buffers from USH 14 east to the City border are designated in the Dane County Parks and Open Space Plan 2006—2011 as a Natural Resource Area Boundary (NRAB).
- A 100-foot wetland buffer has been applied to the wooded wetland south of East Clayton Road and the wetland immediately north of Goodland Park Road. This wetland is undisturbed, but is not directly connected to a waterway.
- A 75-foot wetland buffer has been applied to the disturbed wetlands that do not grow plant life known to wetlands. These wetlands are mostly located in farm fields that are often planted and cultivated. The wetland north of Goodland Park Road, and just west of Larsen Road, which is a farmed wetland, is buffered by 75 feet on the west side with an expanded buffer on the north and south sides to provide an area equivalent to that of a 300 foot buffer. This wetland holds water in times of wet weather. More detailed evaluation of the frequency, duration and extent of the water ponding condition may lead to alteration in the R-1 land uses and street locations. This wetland shall be restored.
- A 75-foot wetland buffer has been applied to three other wetlands. First is a farmed wetland located just east of CTH MM. The second is an isolated wetland located between USH 14 and CTH MM, north of the drumlin. The third is a small wetland north of Goodland Park Road and is a dredged, farmed wetland. This wetland should be restored.

Additional environmental corridors may be added at the time of the urban service area amendment document.

Figure 5 - 5: Parks, Open, and Green Spaces

Type	Size (acres)
Agriculture/Open Space Preservation	69.3
NEN Green Space	219.1
NEN Green Space with existing residential	89.4
Open Space	33.2
Wetlands	135.1
Total	546.1 acres of open space

Transportation

Future travel to, from, and through the neighborhood is dependent on the transportation network provided. There are many facets to the transportation network that require evaluation in order to plan for efficient travel for the future residents and visitors. The transportation network for the Northeast Neighborhood involves both vehicular and non-vehicular transportation. Vehicular transportation involves a network of streets whereas the non-vehicular transportation includes both streets and trails.



The goal for the transportation network is to provide a safe, convenient, and efficient transportation system compatible with desired patterns of area-wide development. The objectives created for the transportation network ensured the City that the goal would be met with future development. The objectives include:

- Promote a multi-modal transportation network, including the Capital City Bike Trail, the expansion of the Madison Metro Transit System, the creation of a light rail immediately west of the Northeast Neighborhood, and multi-use trails throughout for non-vehicular traffic.
- Promote a user-friendly road network throughout the Northeast Neighborhood stemming from the planned E. Cheryl/Lacy Road/USH 14 interchange that will ease future traffic congestion on CTH MM.
- Promote dense development that will sustain public transportation.

The street network begins with the future interchange on USH 14. The intersection has been planned by the City and Wisconsin Department of Transportation to alleviate the traffic congestion at the current McCoy Road interchange. The interchange connects the Nine Springs Green-Tech Neighborhood with the Northeast Neighborhood. The interchange road extending from the interchange past CTH MM is the main road into the Northeast Neighborhood. The interchange road should prohibit driveway access to the residential land uses on both sides, so alleys or an internal street network will need to service these properties.

North of the interchange road a proposed street will run parallel to CTH MM on the west side. This road is potentially planned to be connected through the Northeast Neighborhood Green Space to alleviate traffic from CTH MM and providing an easy connection of the business park area to the mixed use center. The alignment of this road may change depending on the engineering and ensuring least impact to the environmental corridor.

East of CTH MM the road network has only one main connection to CTH MM via the interchange road. If development/redevelopment of the Werth properties

Land Use

occurs, a road connection through the Northeast Neighborhood Green Space may be constructed to connect with CTH MM. This connection will help alleviate the number of vehicles on the interchange road accessing CTH MM and provide for another secondary emergency access.

Two to three new intersections have been created with Larsen Road. These intersections are necessary to allow connections to the neighborhood and beyond.

The interchange road will intersect with Larsen Road and will turn into Meadowview Road in the Town of Dunn. This connection will also allow residents from the Town of Dunn to access not only the retail opportunities in the Northeast Neighborhood, but also the interchange with USH 14 and western Fitchburg.

East Clayton Road divides the developed area of the neighborhood from the land being preserved for environmental concerns, except for a small parcel in the west corner. Currently, there is insufficient distance between the McCoy and East Clayton Rd intersections with CTH MM; this contributes to hazardous conditions for both cyclists and motorists. Therefore, an alternative alignment is illustrated for East Clayton Road (see figure 5-1). The alternative is to relocate East Clayton Road south to create additional separation between intersections. The southern alternative will not encroach the wetland area and will allow the Capital City Bike Trail to remain on the north side of East Clayton Road. Existing topography may create challenges for this alternative, but is expected to significantly increase the safety of the intersections.



Roundabouts have been incorporated into the transportation network. Only two roundabouts have been identified; however, there may be opportunities for additional roundabouts throughout the neighborhood. From west to east along the interchange road through the neighborhood, the first roundabout intersects CTH MM where residential uses meet public park and open space and retail uses in the mixed-use area and the second roundabout is a central park for the predominantly residential neighborhood.

Possible Location of a Grade Separated Path



The bike and pedestrian transportation network begins with the Capital City Bike Trail that traverses the northern portion of the neighborhood from west to east. Trails will need to be incorporated throughout the neighborhood for intended use for both recreation and transportation. The trails should be positioned as north-south trails to effectively serve as transportation routes connecting to the Capital City Bike Trail. A grade separated shared use path at USH 14 should be considered, as recommended by the “2008 Bicycle and Pedestrian Plan, Fitchburg, Wisconsin.” This path will require cooperation by property owners or developers on both sides of USH 14. Multiple trail routes through the neighborhood and environmental corridors will ensure that all residents have easy access to them.



Implementation



Introduction

The implementation of this plan involves a sequence of specific actions that must be completed to be able to fully utilize the information within this land use plan. These actions have been divided into three categories based on the timing in which they should occur.

Placemakers Option



The first category includes actions that must be completed immediately for the plan to become effective. The second category reflects ongoing efforts that the City must undertake to promote the Plan's success. The third category identifies areas that should be monitored and acted on if there are any changes.

In order for future development to be approved it must meet the intent and standards set forth in the Zoning Ordinance. The City is in the process of re-writing its zoning code, and zoning must be consistent with the Comprehensive Plan, of which this is a part. It will not be a requirement to amend this plan to identify the new zoning districts and their relation to land use categories. Developers are encouraged to use the form-based zoning district which is expected to become part of the City's Zoning Code through the zoning code rewrite process, provided that the environmentally sensitive and open space land identified in the plan are not compromised. The form-based zoning district being developed by Placemakers, as well as the Placemakers alternate design for the Par Fore property presented at the zoning code rewrite charrette provide desirable features.

Category 1

- Sometime after adoption of this Northeast Neighborhood Plan, but prior to any urban service amendment, the City must create a detailed phasing plan that relates to the sanitary sewer and water services as well as the completion of the US Highway 14 (USH 14) interchange. This phasing plan will be required by the CARPC for an adjustment to the sewer service area especially since the sanitary sewer and water will not be extended from the same direction. Sanitary sewer will be extended from the northeast and water from the west. Based on a memorandum of 9-21-09 from the Director of Public Works, Paul Woodard, the first phase is expected to approximately be the northern 1/3 of what was the Par Fore property (See Appendix C). Other phasing aspects will be created with a more detailed phasing plan prior to or with an urban service adjustment request. The phasing plan will guide the inclusion in the urban service area. Any inclusion in the urban service area may be phased.

Par Fore Map



- The entire Northeast Neighborhood is in the Madison Metropolitan Sewerage District, but not in the Urban Service Area (USA). Some time after adoption of this Plan, the City will need to apply for an adjustment to the urban service area with the Capital Area Regional Planning Commission (CARPC) the agency responsible for reviewing such requests and developing

a recommendation before forwarding them to the Wisconsin Department of Natural Resources (WDNR) for consideration. Approval from WDNR is required to expand the USA before sanitary sewer can serve future development in the Northeast Neighborhood.

- Officially map the desired location for both road, utility easements, and other important public facilities in order to ensure that these locations are protected. The detailed route of the sanitary sewer and water must be thoroughly planned to be certain that the best route is utilized.
- Promote the area to potential business owners, residents, and visitors.

Category 2

- With development proposals, the parcels must be rezoned in such a way that the integrity of this plan is preserved. By effectively guiding future developments by rezoning the properties to correlate with the plan, the City has the authority to control the outcome of the development.
- The City must enforce development standards throughout the entire Planning Area that would make the City a desirable and safe place to live, work, and play. The City has the authority through the land division ordinance to require utilization of deed restrictions – one of the tools used to enforce development standards.
- As future development occurs in the Northeast Neighborhood, the City has the responsibility to provide sound reviews that demonstrate the importance of open space for the future residents of Fitchburg as provided in the City Ordinance. Park dedication including passive and active recreation should be within a reasonable distance (one-quarter mile) of residential units.
- An effort has been made by the City to provide a multi-use trail system to accommodate both the recreational users and transportation users. Additional interconnecting multi-use trails that become integrated into the extensive network that currently exists will continue to provide the recreational and transportation opportunities.
- Public transit should be a reasonable distance (one-quarter mile) of residential units.
- A transportation study was undertaken by the Madison Area Transportation Planning Board, the designated Metropolitan Planning Organization for the Madison urban area. The City will utilize this study's findings, when reviewing future development proposals in the Northeast Neighborhood. This will ensure that the adjacent neighborhoods remain attractive locations to live with regard to transportation impacts.

Implementation

- Highway access is an important issue regarding safety of motorists, cyclists, and pedestrians. When development occurs, the City must analyze all highway access related to site distances, speed, and traffic volume in order to maximize safety for all transit users.
- The protection and preservation of the environmental corridors, critical open spaces, and connected or isolated natural resource areas must remain important for the City and surrounding areas to continue to gain from the environmental benefits. The City must protect and enhance the vast array of natural resources present in the neighborhood, control the storm water, and ensure that there are proper open spaces for future residents. An overlay district may be an appropriate measure.
- Public transportation is a viable means of traveling throughout the area if a station or depot is within walking distance of those who wish to use a bus. As future development creates the demand for public transportation, the City should work to expand the public transportation routes to include the Northeast Neighborhood. A route through the future Nine Springs Green-Tech Neighborhood to City Hall and route into the downtown of the City of Madison may likely be the most desired routes. Service is important at initial build out, when residents and employers are making transportation choices.
- The planned interchange on USH 14 into the neighborhood will likely provide an efficient transportation route that residents and visitors will be able to utilize. The City should continue pursuing this interchange to make the area more desirable for those who work or wish to relocate their business in the Northeast and Nine Springs Green-Tech Neighborhoods.
- Require developers to use the best site-specific information, either already available or obtained from further field testing and evaluation, to consider the potential effects of increased groundwater recharge on down-gradient areas, and propose potential mitigation methods, if necessary. This work should be performed by an appropriate groundwater professional and reviewed by City staff.

Category 3

- The City-owned railway corridor within a mile of the Northeast Neighborhood has been considered for a high volume public transportation system. A multi-jurisdictional effort is required for a rail system of this magnitude. The City should remain an active participant in its planning to ensure that stops enhance the economic development of the Northeast and Nine Springs Green-Tech Neighborhoods.
- Encourage the updating of the regional groundwater model in a manner to better provide information on the effects of groundwater recharge on down-gradient areas. Groundwater effects from development may better be described after the update to the regional groundwater model has been used

to study the NEN area. With the delay in the request for an urban service adjustment for this neighborhood, due to fire station relocation and the need for development in Green Tech Village, there may exist an opportunity to have this updated groundwater model and additional study completed prior to any urban service request for this neighborhood. City staff should annually evaluate new information that becomes available relative to increased recharge effects on the water table and down gradient areas. If this model, or other detailed information on the effects of recharge areas, is available prior to any request for inclusion of any or part of the NEN into the Urban Service Area, City staff is to use the model to review the effects of recharge on down-gradient areas, and evaluate the results to provide recommendations, if any, on potential plan alterations to the Resource Conservation Commission and the Plan Commission.

This plan is to be used as a guide for future development. The ultimate success of this plan will result from both policy decisions and development reviews in the future. The main policy decision is when the City expands the urban service area to include the Northeast Neighborhood. Development reviews includes the day-to-day planning operations that will guide the final appearance of the neighborhood. Overall, this plan is an evolving document that can be modified, in accordance with the Comprehensive Plan process, in the future to adjust to changing conditions throughout the City and region. In addition to other aspects of the plan, it can be expected that this implementation section will be subject to alteration or addition as the urban service adjustment request(s) are drafted and that request(s) proceeds through the approval process.

Consistency

This plan is being adopted as an appendix to the City of Fitchburg Comprehensive Plan, and reflects a more refined level of planning than provided in the Comprehensive Plan. It is believed that this plan is consistent with the Comprehensive Plan, but if any inconsistency is identified between the Comprehensive Plan and the Northeast Neighborhood Plan, it should be interpreted in favor of the more specific Northeast Neighborhood Plan.

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Text, Map and Graphic References

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Photographic References

All photographs not explicitly mentioned otherwise below were taken by Kristin McConnell, Intern for the Planning and Zoning Department, 2008-2009.

Front Cover

Top Center: Taken by Dennis Sornson, 2008. Larsen Road Wetland.
Bottom Right: Provided by Dana Dentice, Fitchburg Park Department, showing several heritage oak trees in the Northeast Neighborhood.

Introduction and Background Cover

Large Photograph: Dane County Land and Information Office. Aerial Image. 2007.

Issues and Opportunities Cover

Large: Taken by Dennis Sornson, 2008. Larsen Road Wetland.
Bottom Left: Photograph provided by the McConnell Family

Page 2 - 7

Photograph provided by the McConnell Family

Page 2 - 10

Top: Photograph provided by Lois Endres, Fitchburg Department of Public Works.

Page 2 - 11

Bottom photograph provided by Dana Dentice, Fitchburg Parks Department

Page 2 - 12

Top: Photograph provided by Dana Dentice, Fitchburg Parks Department
Bottom: Photograph provided by Susan Sloper, Fitchburg Planning Department

Goals, Objectives and Policies Cover

Bottom Left: City of Fitchburg - Department of Economic Development
Bottom Right: City of Fitchburg

Page 3 - 1

Natural Resources Consulting, Inc. 2007. Wetland Delineation Report: Par Fore Property. City of Fitchburg, Dane County Wisconsin. 12/21/2007.

Page 3 - 2

Bottom: Photograph provided by the Department of Economic Development.

Page 3 - 3

Top: Provided by Dana Dentice, Fitchburg Park Department, showing several heritage oak trees in the Northeast Neighborhood
Bottom: Taken by Dennis Sornson, 2008. Larsen Road Wetland.

Systems Analysis

Large Photograph: Provided by Dana Dentice, Fitchburg Park Department, showing several heritage oak trees in the Northeast Neighborhood
Bottom Center: Photograph provided by Lois Endres, Fitchburg Department of Public Works
Bottom Right: Photograph provided by JN Design and Planning. Originally printed in the 2008 Bicycle and Pedestrian Plan: Fitchburg, Wisconsin.

Page 4 - 5

Bottom: Photograph provided by Ed Bartell, Fitchburg Forester

Page 4 - 6

Natural Resources Consulting, Inc. 2008. Natural Resources Inventory and Analysis. Executive Summary. Northeast Neighborhood. City of Fitchburg. 9/25/2008.

Page 4 - 20

Bottom: Photograph provided by Lois Endres, Fitchburg Department of Public Works.

Page 4 - 22

Top: City of Fitchburg - Department of Economic Development

Land Use Cover

Large Photograph: Natural Resources Consulting, Inc. 2007. Wetland Delineation Report: Par Fore Property. City of Fitchburg, Dane County Wisconsin. 12/21/2007.

Page 5 - 7

Photograph provided by the McConnell Family

Page 5 - 13

Top: Taken by Dennis Sornson, 2008. Larsen Road Wetland.

Implementation Cover

Bottom Left: Fitchburg Department of Economic Development
Bottom Right: Photograph provided by Lois Endres, Fitchburg Department of Public Works

Appendix A Cover

Large Photograph: Provided by Ed Minihan, Town of Dunn Chairman. Bottom Left and Middle: Photographs provided by the McConnell Family, showing the Dunn Town Hall.
Bottom Right: Photograph provided by Ed Minihan, Town of Dunn Chairman.

Appendix C Cover

Large Photograph: Provided by Lois Endres, Fitchburg Department of Public Works.
Bottom Middle: Provided by Lois Endres, Fitchburg Department of Public Works.

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NEN Appendix A:
Meadowview Drainage



This appendix provides information on drainage issues for the Town of Dunn Meadowview area.

Town of Dunn Clerk Rosalind Gausman Transcript

The [Meadowview] plat was approved in 1954 before land use planning. The plat includes a low wet area through the middle of the subdivision which is at an elevation insufficient to properly drain the area. Under today's standards, this plat never would have been approved in this location.

Several homes in the area have problems of water in their basements and have installed sump pumps that run constantly.

Septic systems failed due to the elevation to ground water and the area was added to the Madison Sewer District in 1973.

In 1988 the town acquired easements in the lowest area between Meadowview Road and Nora Lane and constructed a drainage ditch to help alleviate the problem of standing water and lack of drainage. That ditch provided some relief for normal rain events, but it was not effective for heavy rains or rainfalls lasting long periods. Also at that time the ditch along the south side of Meadowview Road was deepened.

In 2000 twenty-three properties in Meadowview experienced flooding, and six of them reported property damage due to the flooding. Pictures of the flooded area were included in the June 12, 2000 letter to Fitchburg [follows]. The town's engineer, Town & Country Engineering Inc. evaluated the conditions and made recommendations to the town in letter dated June 5, 2000 [follows].

In May of 2001 the town engineer recommended [follows] a study of the area be done to assess the hydrologic conditions which resulted in the flooding and investigate alternative approaches to alleviate the severity and or frequency of the flooding. We contracted with Earth Tech to do the study and assessment. Their report is attached.

The town engineer recommended we clean out and straighten an existing ditch from Nora Lane to the drainage ditch on county owned property. The US Army Corps of Engineers and the Wisconsin DNR reviewed the proposed solution and issued the necessary permits. Both agencies are very familiar with the history of flooding in this area.

In 2002 the town purchased additional easements between Nora Lane and the drainage ditch on the county property to the south east of Meadowview.

In the winter of 2003-04 the town reconstructed and cleaned out a drainage ditch to the south to help speed up the exit of water in a rain event. This improved drainage ditch to the south will help speed up the surface water exit from the area but it will not prevent the flooding during heavy or prolonged rainfalls.

June 12th Letter



TOWN OF DUNN • 4156 COUNTY ROAD B, MCFARLAND, WI 53558
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E-mail: towndunn@chomis.net

Phone: (608) 835-5611
or 255-4219
FAX: (608) 835-5700

June 12, 2000

To: City of Fitchburg, Public Works Director
Blooming Grove, Public Works Director
Dane County Parks Department - Jim Mueller
Dane County Land Conservation - Kevin Connors

From: Ed Munitan, Town of Dunn Chairman

Re: Discussion of drainage problems in Meadowview Subdivision

I am requesting your assistance to help find a solution to relieve some of the flooding conditions in the northwest corner of the Town of Dunn. The town is interested in a water basin study for this area, which includes portions of Fitchburg and Blooming Grove.

As you can see from the enclosed pictures, the Meadowview Subdivision had severe flooding from surface run-off this spring. Please attend a meeting to discuss this issue on June 30th at 10:00 A.M. at the Dunn Town Hall, 4156 County Road B. If you are unable to attend, please ask a representative of your department or municipality to attend in your place. Please bring any information or drainage studies you may have involving this water basin. Thank you.

cc: Warren Myers, Town & County Engineering (Dunn engineer)



Source: Scanned image of photographs originally provided in the June 12, 2000 letter from the Town of Dunn. Color images were scanned June 22th, 2009.

May 18th Letter

TOWN & COUNTRY
ENGINEERING, INC.

MAY 21 2001

5225 VERTONA RD BLDG 4
PO BOX 24401
MADISON, WI 53744-1451
(608) 273-8350 (fax) 273-8391
(e-mail) townncountry@chc.net

May 15, 2001

Ms. Roz Gausman, Clerk Treasurer
Town of Dunn
4156 C.T.H. B
McFarland, WI 53558

Subject: Meadowview Area Drainage Problems

Dear Roz:

This letter will confirm our telephone conversation of May 11, 2001 regarding the Meadowview drainage problems in the Town of Dunn on the east side of Lake Waubesa. You had indicated to me that the Town Board had committed to do a hydrologic analysis of the drainage problem in this area. I see two possible levels of hydrologic analysis which could be done, and I will describe them in the following paragraphs. First, however, I would like to summarize the situation as we see it.

The situation that exists in the Meadowview area is best summarized with the words "poor drainage". We have in the past defined some possible improvements which would not be prohibitively expensive. Our recommendations focused on the construction of new drainage channel south from the low point on Nora Road, through private property, to connect to the drainageway which proceeds further south through the county property toward Swan Creek and Lake Waubesa. This would have been in conjunction with a clean-out project of the drainage channel in the County-owned property. The channel was never constructed because the affected property owners refused to provide easements for its construction. The channel would shorten the path of discharge from the low point in the Meadowview area to the drainageway, and we still feel that such a channel is the best opportunity to improve the situation without spending a large amount of money. Unfortunately, some of the homes in the Meadowview area were built in locations where building should never have taken place because of the high ground water and poor drainage conditions. Because of the flat slopes through the wetlands downstream of this area and the vegetation-choked waterways it is unlikely that improvements can be made to totally rectify the situation.

In terms of studies there are two approaches which could be taken. The first approach to hydrologic analysis is to perform what is commonly called a TR-55/TR-20 analysis on the drainage basin draining to the Meadowview area. This is the type of model description of which we provided to you some time ago for your communications with the neighboring City of Fitchburg. (A TR-55/TR-20 analysis is sometimes used to generate the runoff characteristics for a subsequent HEC-II analysis, which is the second approach, as discussed in the next paragraph.) TR-55/TR-20 analyses are commonly used to predict peak runoff rates from larger storms, and are often used in the design of detention facilities. Such analyses can also be used as a tool to regulate development and changes in land use in the upper parts of the drainage basin in order to avoid worsening a poor drainage or flooding situation in the lower parts of the drainage basin. The difficulty in the Meadowview case is that much of the area draining into the Meadowview area is under the jurisdiction of government entities other than the Town of Dunn. However, the performance of a TR-55/TR-20 type analysis would provide a tool which the Town of Dunn could use in communicating to adjacent governmental bodies regarding proposed development projects which would impact the runoff situation in the Meadowview area. A TR-55/TR-20 analysis would also provide the tools necessary to design a detention pond which could reduce the peak rate of runoff to the Meadowview area.

The second approach is to treat the accumulations of water as a flooding situation. This approach would require the performance of what is known as a HEC-II analysis in order to establish 100 year return



Ms. Ros Gausiran, Clerk-Treasurer
Town of Dunn
Subject: Meadowview Area Drainage Problems
May 18, 2001
Page 2

frequency flood levels. The logical extension of this analysis is the creation of a formal flood plain map for this area and the adoption of this map through the Wisconsin Department of Natural Resources and the Federal Emergency Management Agency (FEMA) to a low regulation of any land disturbances within the floodplain. However, it would not be surprising if the residences with the worst water back-up complaints would end up with parts or all of their properties within the designated flood plain. Such a designation would probably lower property values and would restrict the activities which the property owners could undertake, in terms of new building construction. It might also result in the requirement from lending institutions that expensive flood insurance through FEMA be carried for these properties.

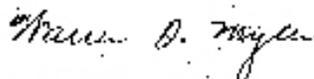
Both of these studies can be expensive. The HEC-II floodplain type study which quantifies the ability of the drainage system to take water away from the point of collection will be the more expensive of the two. Town & Country Engineering, Inc. is proficient in TR-55/TR-20 studies and is recognized as one of the leaders in the engineering profession in stormwater management for small watersheds. However, we do not perform HEC-II analysis for floodplain definition and zoning work.

During our telephone conversation we discussed the feeling of some of the complainants that the Town and its Engineer have not fully evaluated the Meadowview situation and that another engineer might have a different perspective on the problem. This certainly is a situation in which a second engineering opinion could be obtained. Should the Town Board decide to seek a second engineering opinion in this matter we would strongly support that endeavor. The engineer we discussed, Jim Bachhuber of Earth Tech, is a very capable and experienced individual in the stormwater management field. We would be more than happy to share with Jim, or with another engineer of the Town Board's choosing, the information we have in our files, our findings and our opinions on this situation. Please be assured that our interests are in maximizing the benefits to the Town and its residents. We would cooperate with such an effort in whatever way we could.

At some point, unfortunately, we believe it will be necessary for the residents of the area to come to grips with the reality of the situation. It is our opinion that the reality is that significant improvement in the drainage of water away from the Meadowview area, other than by those methods which we have already defined, would be extremely expensive and physically very, very difficult. This may well prove to be one of those situations in which it is less expensive to buy and demolish a number of houses which experience the worst of the water back-ups than to construct physical facilities which will truly solve the problem.

If we can help in any way with the Town's efforts toward a resolution of the Meadowview problem please feel free to call upon us:

Very truly yours,
TOWN & COUNTRY ENGINEERING, INC.



Warren O. Myers, P.E.
President

WOM:dds
67036A, G. UNRESOLVED FOR 01-01 Meadowview Drainage Ltd. Co.

November 26th Letter

M E M O

Date: November 26, 2001

To: Rosalind Gausman
Clerk Treasurer
Town of Dunn

cc: Warren Meyers, P.E.;
Town & County Engr. Inc.

From: Jim Bachhuber, P.H. and Caroline Brandt, BIT

Subject: Technical Memo on Meadowview Residential Area Flood Study
Earth Tech Project No. 45880

Background:

A residential area in the northwestern corner of the Town of Dunn has experienced periodic flooding from heavy rain events and during snowmelt periods. The Town contracted with Earth Tech to assess the hydrologic conditions which result in the flooding, and investigate alternative approaches to alleviate the severity and/or frequency of the flooding. The residential area of concern is located south of Meadowview Road and east of Larson Road. Several possible conditions are suspected as causing the flooding including: 1) the relatively low elevation of the area, 2) the flat slopes and overgrowth of vegetation in the drainage ditches, 3) development from the neighboring city of Fitchburg, 4) the driveway culverts along Meadowview Road, and 5) a culvert on the main drainage channel between Meadowview Road and Goodland Park Road.

Earth Tech performed a computer simulation of the drainage network. The purpose of the simulation was to assess existing flooding and determine potential impacts on flood elevations from several alternative management approaches. The alternatives are described in the "Alternatives Analysis" section of this memo.

Modeling Summary:

Earth Tech used XP-SWMM (Stormwater Management Model using the eXPert system interface) program distributed by XPS Software Corporation.

The specific steps to conduct the modeling were:

1. Obtain topographic data from available sources. For this project, Earth Tech utilized the available data and plans from the town records, a Town & Country survey, digital contour maps, and orthographic photos for the town of Dunn, city of Fitchburg, and town of Blooming Grove (Source: Fly Dane 2000 Project).
2. Identify key drainage points: Earth Tech identified key points in the drainage system such as (1) the ditch running North/South between Nora Lane and Meadowview Road, (2) the culverts along the South side of Meadowview Road running underneath the driveways and View Road, (3) the culvert crossing under Meadowview Road from the Main Channel to the farm field in Blooming Grove, (4) the culvert under the driveway about 2/3 down the Main Channel, and (5) the culvert crossing under Goodland Road from the Main Channel out of the studied area.
3. Delineate the drainage areas (watersheds) to each drainage point: Earth Tech delineated the watersheds,

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(an area of land in which all water eventually flows to one point) using contour data, made available through the Town of Dunn and from the Dane County Land Information Office. Eleven (11) watersheds were delineated. The delineated watershed boundaries were field verified.

Table 1 lists the watersheds and their corresponding area. Figure 1 shows the entire project area and the boundaries of the eleven watersheds.

Table 1. Watershed Area

Watershed	Area (ac)
1	60.33
2	25.12
3	33.11
4	150.54
5	9.35
6	13.6
7	21.9
8	227.5
9	27.8
10	55.45
11	28.43

4. Obtain channel geometry data and condition: Earth Tech obtained the data for the geometry and condition of the channels (culverts and ditches) from available maps, Town & Country surveying, and field measurements. All culverts were modeled free of debris and assigned entrance and exit loss coefficients of 0.7 and 1.0 respectively. Drainage ditches were modeled using their existing conditions per field inspection September 21, 2001. A Manning's "n" is required as input for this model. The "n" value defines a channels roughness and depends on several physical properties. The higher the Manning's n value, the slower the water is able to flow through it. A Manning's n of 0.024 was used for corrugated metal, 0.020 for asphalt, 0.030 for areas with mowed grass, 0.080 for areas with moderate vegetation, and 0.120 for areas with heavy vegetation.

5. Input model hydrologic factors to the watersheds: For this application of the model, Earth Tech utilized SCS runoff hydrology. The SCS runoff hydrology relies on representative area curve numbers, time of concentration, and subbasin (watershed) characteristics to determine runoff quantities (hydrographs, peak flow, and volume of runoff) for specific design rain events.

Subbasin characteristics are defined by land use, type of soil, and slope of the land. Land use was derived from air photos and a field visit. Soil data was obtained from the Dane County Soil Survey (published by USDA-NRCS). Slopes of the watersheds were taken from of the 2- and 10-foot contour maps.

The curve numbers were calculated using TR-55 (Technical Release 55), developed by the Soil Conservation Service. When developing representative curve numbers, TR-55 takes into account the different land uses and soil types of each subbasin to determine a representative curve number for the subbasin.

Time of concentration was calculated based on flow paths derived from ArcView GIS Version 3.2a, a desktop geographic information system distributed by ESRI, and obtained from calculations performed by using TR-55. TR-55 uses the watershed's slopes and land use to determine a time of concentration for the subbasin.



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Table 2 shows the composite curve number and time of concentration used for each watershed.

Table 2. Watershed Curve Number and Time of Concentration

Watershed	Curve Number	Time of Concentration (min)
1	81	22.2
2	77	20.4
3	77	32.4
4	79	30
5	74	25.2
6	80	33.6
7	80	37.8
8	78	31.6
9	78	21.5
10	79	31.8
11	79	22.2

6. Obtain rainfall values for design storms: Rainfall quantities were obtained from Dane County's Stormwater Management Ordinance. Rainfall quantities are based upon a statistical analysis of the amount of rain that is calculated to fall for a given recurrence interval, or probability of occurring. For example, the 2-yr. 24-hr storm is a storm that has an average recurrence interval of once every two years. It assumes a certain average amount of rain, or amount of rain greater than it, is going to fall in 24 hours. XP-SWMM model was run for the 2-, 10-, and 100- year 24-hour SCS type II storms.

Table 3 provides a summary of the precipitation values used.

Table 3: Precipitation Data (Design Rain Storms)

Recurrence Interval	Precipitation (inches)
2 - Year 24 Hour	2.9
10 - Year 24 Hour	4.2
100 - Year 24 Hour	6.0

7. Enter final model factors: The drainage network was modeled to allow temporary ponding behind culverts. Road overtopping was permitted to occur; all water was first routed through culverts with remaining water (if any) flowing over the road. The culverts and ditches were assumed to be empty at the beginning of the model runs. The top two drainage areas along the main channel were modeled as detention basins to replicate the properties of the existing wetlands. The drainage area north of Meadowview road was also modeled as a detention basin to mimic the existing subbasin properties.

Results:

Existing Conditions

Initially, the model was run to replicate the runoff and flooding conditions that could be expected under



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existing conditions for the each design rain-storm. Results are summarized below for three key locations in the project area. The entire model was checked for stability under each storm event and for road overtopping at all culvert locations. Table 4 summarizes the results.

For purposes of this study the term "Depth of Flooding" (used in Tables 4-7) means the maximum depth of water above the general ground elevation near each site. The ground elevation varies slightly in these areas, however an elevation of 866.6 was used for ground elevation at the first two sites (Nora Lane and south of Meadowview Road) and 864.0 for the third site (culvert 2/3 of the way down the main channel).

**Table 4: Summary of Modeling Results
Existing Conditions**

Location and Description	Rain Event		
	2-year (2.9")	10-year (4.2")	100-year (6.0")
Ditch from Nora Lane N to Meadowview Road			
Max. Water surface elevation (ft)	866.1	867.0	868.0
Max. Flow rate (cfs)	16.1	19.3	28.1
Max. Depth of Flooding (ft) ¹	0	0.4	1.4
South Ditch along Meadowview Road			
Max. Water surface elevation (ft)	864.6	864.8	865.7
Max. Flow rate (cfs)	11.6	14.2	37.7
Max. Depth of Flooding (ft) ¹	0	0	0
Culvert 2/3 down Main Channel			
Max. Water surface elevation (ft)	863.0	863.5	864.1
Max. Flow rate (cfs)	24.7	27.8	31.6
Max. Depth of Flooding (ft) ²	0	0	0.1

¹ Depth of flood water above elevation 866.6

² Depth of flood water above elevation 864.0

Alternative Management Analysis

After the model was successfully constructed to replicate the existing conditions, a series of alternative management measures were simulated with the model. As part of an alternative analysis, the potential for allowing more efficient drainage from the flooded area was examined with the following 7 alternatives:

- a) Mow existing vegetation in the drainage ditches from Nora Lane to Meadowview Road and along the south side of Meadowview Road to the Main Drainage Channel.
- b) Enlarge culverts along the south side of Meadowview Road to accommodate the maximum flow.
- c) Concrete line the drainage ditches from Nora Lane to Meadowview Road and along the south side of Meadowview Road.
- d) Concrete line the drainage ditches (as in c) and enlarge the existing culverts (as in b) to accommodate the maximum flow along the ditch.
- e) Enlarge the culvert 2/3 down the Main Channel.
- f) Store water in a detention basin north of Meadowview Road.
- g) Build a new drainage ditch connecting to the present drainage ditch at Nora Lane and convey the water south through the existing wetlands to connect up with the main drainage channel.



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Tables 5 - 7 provide a summary of the results for the three design storms.

**Table 5: Impacts on Flood Conditions
2-yr Storm Event**

Location and Description	Management Alternative						
	(a) mow ditches	(b) enlarge Meadowview culverts	(c) concrete line channels	(d) do (b) and (c)	(e) enlarge Main Channel culvert	(f) detention basin	(g) new south channel
Ditch from Nora Ln N to Meadowview Rd							
Change in Water surface elevation (ft)	-0.1	-0.5	-0.1	-1.1	0	-0.1	-1.7
Change in Max. Flow rate (cfs)	-0.5	4.7	-0.8	4.6	0	0.4	-2.7
Change in Depth of Flooding (ft)	0	0	0	0	0	0	0
South Ditch along Meadowview Road							
Change in Water surface elevation (ft)	0	0.4	0	0.4	0	-0.5	-0.3
Change in Max. Flow rate (cfs)	0.2	17.2	0.3	20.1	0	1.3	-7.8
Change in Depth of Flooding (ft)	0	0	0	0	0	0	0
Culvert 2/3 down Main Channel							
Change in Water surface elevation (ft)	0	0.1	0	0.1	0	-0.1	0
Change in Max. Flow rate (cfs)	0	0	0.1	0.1	4.1	-0.1	-0.2
Change in Depth of Flooding (ft)	0	0	0	0	0	0	0

**Table 6: Impacts on Flood Conditions
10-yr Storm Event**

Location and Description	Management Alternative						
	(a) mow ditches	(b) enlarge Meadowview culverts	(c) concrete line channels	(d) do (b) and (c)	(e) enlarge Main Channel culvert	(f) detention basin	(g) new south channel
Ditch from Nora Ln N to Meadowview Rd							
Change in Water surface elevation (ft)	0	-0.8	0	-1.3	0	-0.1	-1.9
Change in Max. Flow rate (cfs)	-0.1	17.8	0.3	21.1	0	0.9	6.7
Change in Depth of Flooding (ft)	0	-0.4	0	-0.4	0	-0.1	-0.4
South Ditch along Meadowview Road							
Change in Water surface elevation (ft)	0	0.8	0	0.9	0	-0.5	-0.1
Change in Max. Flow rate (cfs)	0.1	37.6	0.2	46.2	0	1.5	-7.2
Change in Depth of Flooding (ft)	0	0	0	0	0	0	0
Culvert 2/3 down Main Channel							
Change in Water surface elevation (ft)	1.3	0	0	0	-0.1	-0.2	0
Change in Max. Flow rate (cfs)	12.3	0.1	0	0	3.8	-1.6	-0.1
Change in Depth of Flooding (ft)	0	0	0	0	0	0	0



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**Table 7: Impacts on Flood Conditions
100-yr Storm Event**

Location and Description	Management Alternatives						
	(a) mow ditches	(b) enlarge Meadowview culverts	(c) concrete line channels	(d) do (b) and (c)	(e) enlarge Main Channel culvert	(f) detention basin	(g) new south channel
Ditch from Nora Ln N to Meadowview Rd							
Change in Water surface elevation (ft)	0	-1.1	-0.1	-1.5	0	0	-2.4
Change in Max. Flow rate (cfs)	0.6	26.7	1.2	35.1	0	0.8	31
Change in Depth of Flooding (ft)	0	-1.1	-0.1	-1.4	0	0	-1.4
South Ditch along Meadowview Road							
Change in Water surface elevation (ft)	-0.1	0.6	-0.1	0.7	1	-0.5	-0.7
Change in Max. Flow rate (cfs)	1	38.6	1.4	55.7	0	-0.6	-29.1
Change in Depth of Flooding (ft)	0	0	0	0	0	0	0
Culvert 2/3 down Main Channel							
Change in Water surface elevation (ft)	0	0	0	0	-0.1	-0.3	0
Change in Max. Flow rate (cfs)	-0.2	-0.1	-0.2	-0.1	6.4	-2.1	-0.2
Change in Depth of Flooding (ft)	0	0	0	0	-0.1	-0.1	0

Cost Comparison

A cost comparison of each alternative based on estimated unit costs was analyzed. Costs were estimated based on unit costs of similar projects in Wisconsin and from standard engineering estimating references. Table 8 summarizes these results.

**Table 8: Cost Comparison of Alternatives for Area between Nora Lane and Meadowview Road
100-yr Storm Event**

Scenario	Flood Elevation	Change from Existing Flood Conditions	Ground Elevation	Estimated Cost	Estimated Cost/ Ft. of Flooding Reduced
Existing Conditions	868.0	0	866.6	N/A	N/A
a) mow ditches	868.0	0	866.6	\$2,400-\$3600	\$0
b) enlarge Meadowview culverts	866.9	1.1	866.6	\$21,000-\$31,000	\$23,411
c) concrete line channels	867.9	0	866.6	\$62,000-\$94,000	\$1,300,679
d) do (b) and (c)	866.5	1.5	866.6	\$80,000-\$120,000	\$71,458
e) enlarge culvert 2/3 down Main Channel	868.0	0	866.6	\$3,900-\$5,800	\$0
f) detention basin	868.0	0	866.6	\$26,000-\$39,000	\$0
g) new south channel*	865.6	2.4	866.6	\$14,000-\$21,000	\$12,374

* Cost does not include costs associated with acquisition of land



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Conclusions

Overall, it can be concluded that the water from the neighboring city of Fitchburg does not contribute to the flooding at Nora Lane. In addition, the culvert 2/3 down the Main Channel does not contribute to flooding. The main causes of flooding were concluded to be the characteristics of the drainage ditches (the relatively flat slopes and overgrowth of vegetation) and the relatively small sizes of the culverts along Meadowview Road. These two factors greatly reduce the flow of water from Nora Lane to the Main Channel which in turn causes the water to back up and flood the area.

Table 4 indicates that the modeling analysis does show flooding in the area of Nora Lane during the 10-year and 100-year events. The model is most useful as a tool to predict the *relative* positive impacts the management alternatives will have on flood elevations from the selected design storms. The results of this analysis are shown in Tables 5-7. The alternatives with the most significant impact on decreasing flood elevations are:

- Alternative (d) concrete lining the drainage ditches and enlarging the existing culverts to accommodate the maximum flow along the ditch and
- Alternative (g) building a new drainage ditch connecting to the present drainage ditch at Nora Lane and convey the water south into the existing wetlands to connect up with the main drainage channel.

Alternative (b), enlarging culverts along the south side of Meadowview Road to accommodate the maximum flow also had a significant effect, even though it did not appear to completely reduce the flooding from the storms analyzed.

DOCUMENT2

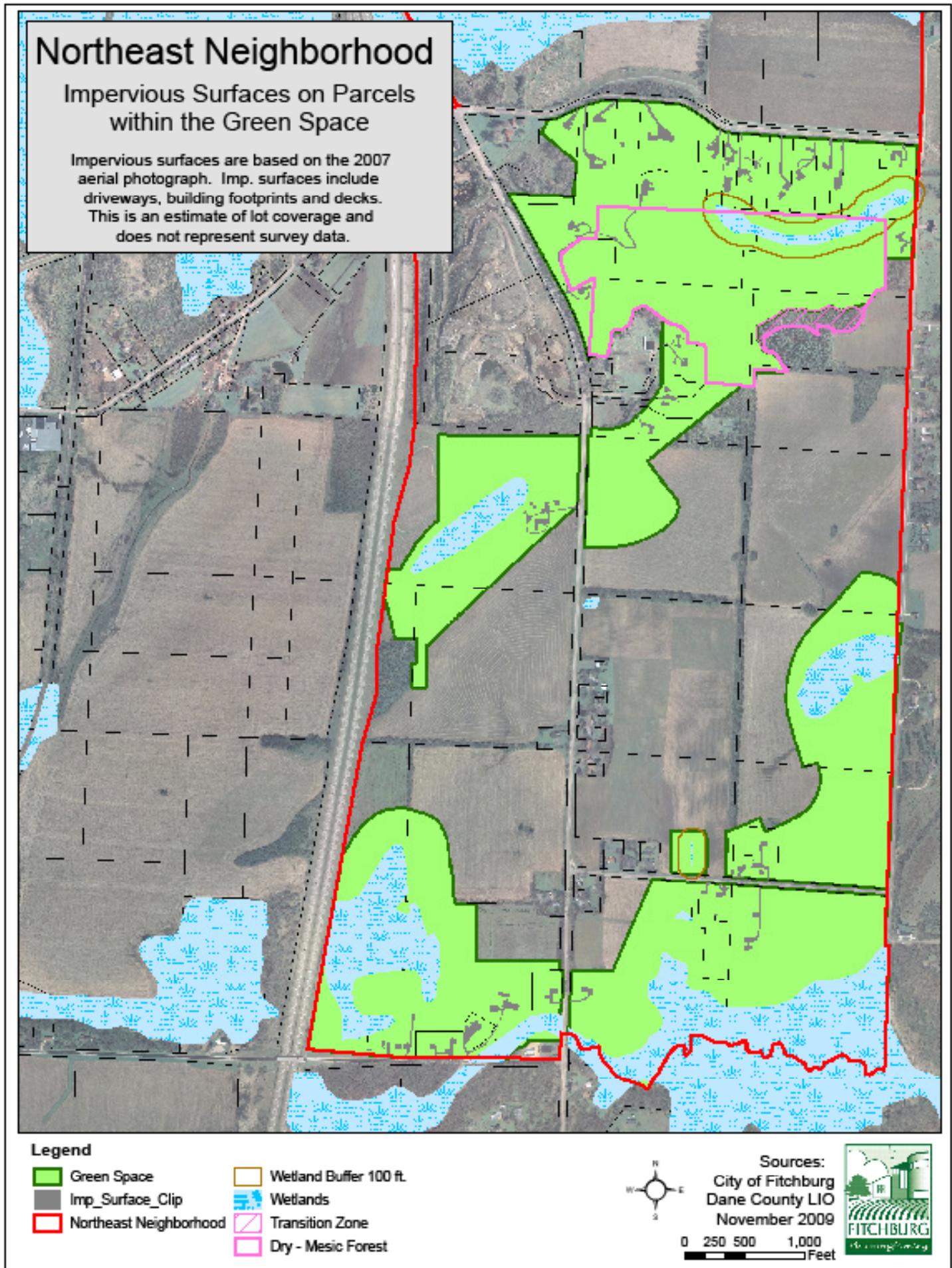
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NEN Appendix B:
Green Space Impervious Surfaces



This appendix provides information on existing lot coverages for existing uses within the Northeast Neighborhood Green Space. This appendix is referred to within the Land Use Chapter on page 5-11.



Impervious Surface Calculations for the Properties within the: Northeast Neighborhood Green Space

A	B	C	D	E	F	G	H	I
1	Parcel	Total Parcel	Imp. Areas in Green Space	Parcel in Green Space	% Imp. in Green Space			
2	060991480008	1.46	0.333	1.46	15.96%			
3	060991480002	2.9	0.302	2.90	10.41%			
4	060991480704	1.78	0.132	1.78	7.54%			
5	060991481909	28.44	0.178	18.68	0.93%			
6	060991481363	6.4	0.331	6.40	5.18%			
7	060991484002	5.88	0.632	3.88	0.54%			
8	060991399732	1.99	0.133	1.99	7.69%			
9	060991397942	1.33	0.398	1.33	29.97%			
10	060991398112	53.88	0.430	42.08	1.07%			
11	060991481263	1.84	0.084	1.84	4.58%			
12	060991481101	1.5	0.236	1.90	13.47%			
13	060991390009	2.22	0.211	2.22	9.50%			
14	060991397812	8.97	0.301	0.97	20.72%			
15	060991483012	48.82	0.334	42.41	0.67%			
16	060991487004	8.57	0.089	0.37	12.11%			
17	060991480743	8.93	0.161	0.93	17.31%			
18	060991481269	1.73	0.477	1.73	27.57%			
19	060991481808	2.97	0.281	2.92	9.41%			
20	060991480107	1.87	0.069	1.07	6.45%			
21	060991384163	28.99	0.983	26.99	3.35%			
22	060991383404	3.49	0.631	3.49	0.89%			
23	060991397908	1.67	0.176	1.67	10.54%			
24	060991397301	8.97	0.131	0.97	13.51%			
25	060991380203	8.93	0.169	0.93	18.17%			
26	060991280007	45.16	0.593	31.17	1.91%			
27	060991480802	41.29	0.162	29.91	0.54%			
28	060991480406	1.48	0.339	1.48	22.91%			
29	060991397712	1.81	0.100	1.01	9.98%			
30	060991380107	2.89	0.446	2.09	21.34%			
31	060991397307	8.99	0.170	0.99	17.17%			
32	060991399419	8.66	0.630	0.66	7.50%			
33	060991481007	2.9	0.303	2.90	10.57%			
34	060991481307	2.8	0.231	2.80	8.98%			
35	060991480203	8.72	0.134	0.72	21.30%			
36	060991487402	4.74	0.139	2.81	4.93%			
37	060991487212	1.81	0.121	1.32	9.17%			
38	060991482812	2.14	0.092	1.33	7.48%			
39	060991483712	21.38	0.070	16.99	0.41%			
40	060991483712	3.41	0.169	2.32	7.28%			
41	Column C	Total parcel acreage.						
42	Column D	The number of impervious surface areas within the Green Space						
43	Column E	The number of acres of the parcel that is within the Green Space						
44	Column F	The impervious surface areas within the Green Space as a percent of the parcel area within the Green Space						

Disclaimer: The lot coverage was based on a 10/21/2009 interpretation of 2007 aerial photography. This is an estimate of lot coverage and does not represent survey data.



NEN Appendix C: Correspondence



This appendix provides correspondence concerning wetlands and potential sanitary sewer service areas.

March 29, 2006

Brian Pasley
2722 County Road MM
Fitchburg, WI 53711

Dear Brian,

Thank you for the recent opportunity to visit your rural Fitchburg property and to walk with you through your wetland. As described in more detail below, your wetland is in very good condition, has a very good compliment of native wetland species, very few invasive species, and needs only a limited amount of targeted management to help it thrive.

Below is a summary of my observations and several management recommendations.

Methods

A visit lasting approximately 1.25 hours was made on March 28, 2006. During the visit the majority of the wetland was meander-walked from east to west and then north to south. During the walk a list was made of the observed species, and management needs and opportunities were noted.

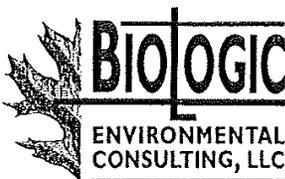
Wetland Classification

The majority of the wetland appears to be *sedge meadow*. In addition, there are some small inclusions of *fresh (wet) meadow* where the sedges are less abundant and are grasses more abundant. Sedge meadow and fresh (wet) meadow are two of the four types of inland fresh meadows found in Wisconsin. *Low prairie* and *calcareous fen* are the other two types.

The Wisconsin Wetland Association's website (<http://www.wiscwetlands.org/index.htm>) provides the following information on inland fresh meadows.

Inland fresh meadows are wetland communities with nearly 100 percent vegetative cover composed of perennial forbs, grasses, and sedges growing on saturated soils. Standing water is usually present only during floods and snowmelt.

Plants in inland fresh meadows include species found in other [wetland] communities, such as the annuals of seasonally flooded basins, and emergent aquatics of marshes. Scattered, small, individual shrubs or trees may be present. The forbs, grasses and sedges of inland fresh meadows can tolerate inundation [flooding] to a greater degree than most woody species, but they suffer if inundation during



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the growing season lasts for more than one or two weeks. Because these wetlands lack standing water during most of the growing season, they are often called “dry marshes.”

Inland fresh meadows have important water quality functions. They trap sediments and assimilate nutrients. They retain stormwater and floodwater. They provide habitat for many species, including sandhill crane, ring-necked pheasant, common snipe, sedge wren, small mammals and white-tailed deer. The abundance of small mammals supports predators such as mink, fox and raptors such as the northern harrier. The seeds from plants with daisy-like flowers (Asteraceae) found in these meadows are an important fall and winter food source for songbirds.

Although not observed during the site visit, it’s possible that a portion of the wetland may be a rare and unique type of wetland called a *calcareous fen*. Fens form where there is groundwater discharge (seepage or springs) rich in calcium and magnesium bicarbonates and sometimes calcium and magnesium sulfates. (This is why I asked you if you were aware of any springs.) These compounds precipitate out at the surface, creating harsh, alkaline soil. Only calcium-tolerant plants, known as *calciphiles*, can survive these conditions. The reason I suggest the possibility of a fen is that the majority of the soil within the wetland is Wacousta silty clay loam. Wacousta is “alkaline throughout the profile” with “free lime present at a depth of less than 20 inches” (Dane County Soil Survey, Glocker and Patzer 1978).

Existing Vegetation

The observed species are listed below. Nonnative species are underlined. It is very important to note that this is not an exhaustive list because it is based on one visit made during the dormant season. With two or three additional visits made during the growing season I believe the list could easily grow to over 120 species.

Forbs (wildflowers): New England Aster (*Aster novae-angliae*), great blue lobelia (*Lobelia siphilitica*), smartweed (*Polygonum spp.*), giant goldenrod (*Solidago gigantea*), marsh aster (*Aster lanceolatus*), angelica (*Angelica atropurpurea*), wild mint (*Mentha arvensis*), bull thistle (*Cirsium vulgare*), great water dock (*Rumex orbiculatus*), dogbane (*Apocynum cannabinum*), blue vervain (*Verbena hastata*), swamp thistle (*Cirsium muticum*), and cattail (*Typha sp.*)

Graminoids (grasses, sedges, rushes): Blue-joint grass (*Calamagrostis canadensis*), prairie cord grass (*Spartina pectinata*), tussock sedge (*Carex stricta*), reed canary grass (*Phalaris arundinacea*), green bulrush (*Scirpus atrovirens*), wool grass (*Scirpus cyperinus*), Kentucky bluegrass (*Poa pratensis*), Dudley’s rush (*Juncus dudleyi*), and many other native sedges that are difficult to field identify this time of year.

Trees and Shrubs: Bur oak (*Quercus macrocarpa*), willow (*Salix spp.*), box elder (*Acer negundo*), honeysuckle (*Lonicera spp.*), multiflora rose (*Rosa multiflora*), black ash (*Fraxinus nigra*), big tooth aspen (*Populus grandidentata*), red osier dogwood (*Cornus stolonifera*), and silver maple (*Acer saccharinum*).

Ferns: Sensitive fern (*Onoclea sensibilis*).

Overall, the wetland is in very good ecological condition. It appears to be very diverse and ecologically intact. The abundance and cover of the native species greatly exceeds that of the nonnative species over almost the entire wetland, a very important consideration and increasingly rare situation in southern Wisconsin.

There are a few invasive species that warrant prompt attention. Of greatest concern is reed canary grass. Reed canary grass is extremely aggressive. If left unchecked it will spread throughout the wetland, displacing the native species until few, if any, are left. At present, it occurs both as a nearly monotypic stand, principally at the north end, and as mixtures with native species.

Using Dane County Interactive Mapping Application (<http://dcimap.co.dane.wi.us/dcimap/index.htm>) and a 2005 aerial photo, I estimated that the reed canary grass covers approximately 1.75 acres of the approximately 16.0 acre wetland, although the actual amount may be higher since some areas may not have been visible on the air photo. It is most abundant at the north end, in the area that was previously cropped.

Honeysuckle is the other invasive species of concern. It is much less abundant than the reed canary grass, but still warrants prompt attention.

Willow, red osier dogwood, and a variety of trees have gained a toehold and will continue spreading unless they are controlled. While they are native species, their normal abundance in a sedge meadow is relatively low. The lack of fire has allowed them to survive. Where they have formed dense thickets, they shade they cast has reduced groundlayer diversity (sedge meadow species generally prefer full sun).

Management Recommendations

Proper management will encourage the native species and discourage the nonnative species. The greatest management needs are to:

1. **Reintroduce fire.** The burn you have planned for this spring will be a good start. It will reduce shrub cover, remove the thatch that suppresses short plants, and rejuvenate the native vegetation. Fire has also been shown to reduce the number of reed canary grass seeds, although it is not very effective in controlling the grass itself.

It is best to divide the wetland into two or three burn units and burn them on a rotating basis, rather than burn the entire wetland at once. This allows adult insects and insect eggs that over-winter on plants and in the thatch layer to survive. If you must burn the entire wetland, try to schedule the burn for a day when the humidity is high, the fuel is slightly damp, and the temperature is cool so that the burn will be spotty in order to provide refugia for animals and insects.

2. **Control the reed canary grass.** The reed canary grass must be controlled or it will continue spreading, possibly over the entire wetland. Herbicide is the only practical

way to do this. Use a grass specific herbicide, such as Vantage®, so that sedges and forbs won't be harmed. Expect that it will take three or more years to start to achieve a measure of control.

If after one or two years of application in the north end of the wetland where the reed canary grass has formed a nearly monotypic stand, there hasn't been a noticeable improvement in the diversity and abundance of the native vegetation then this area could be blanket-sprayed with a nonspecific herbicide (e.g. Rodeo®) and replanted.

- 3. Control the encroaching trees and shrubs.** Focus first on eliminating the honeysuckle since it is an invasive species. Next, focus on the smaller, discrete tree and shrub clumps since they are relatively easy to remove and their removal will prevent the loss of groundlayer vegetation. Next, focus on the larger, denser patches. Note that it isn't necessary or desirable to completely eliminate the brush. Many butterflies require willow and dogwood for food. Rather, the goal should be to reduce its abundance to less than ten percent of the wetland's area.

Cut brush can be left where it falls, although cutting it into smaller pieces will hasten its decay and make it less visible. Larger trees may need to be removed since they will create a large debris pile that could smother the wetland vegetation. During winter when the ground is frozen is an ideal time to clear brush because soil disturbance will be minimized and access is easy, although the work can be done anytime except during spring sap flow.

Cut stems need to be treated with a herbicide to prevent resprouting. Girdling is a slower, but chemical-free method for killing trees. Some of the resulting dead trees can be left standing to provide food and nesting site for wildlife.

Summary

You are the lucky owner of a diverse, very high quality sedge meadow that likely has more than 120 native plant species. Reed canary grass and spreading brush pose the greatest threats to the wetland's health.

Please let me know if you have any questions about the ecology or management of your wetland. Thank you for choosing BioLogic.

Sincerely,



Michael P. Anderson

BioLogic Environmental Consulting, LLC
Brian Paisley Wetland Assessment
March 29, 2006

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MEMO

CITY OF FITCHBURG DEPARTMENT OF PUBLIC WORKS

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To:	Tom Hovel, City Planner
From:	Paul Q. Woodard, P.E., Director of Public Works
Date:	September 21, 2009
Subject:	Northeast Neighborhood Phasing

This is in response to the request for a comparative cost analysis for phasing the NEN development. The primary public utility infrastructure needed to allow this development to proceed is water and sanitary sewer. The stormwater facilities would be built by the developer with each phase.

The traffic study for this neighborhood did not show a need for capacity expansion of any existing roads. So transportation expansion is not a factor for phasing. The interchange was assumed to be in prior to development of the NEN. If it is not, there is sufficient capacity on CTH "MM" to accommodate the increase traffic from the NEN in the early phases. If it is decided to begin development prior to the interchange, the model should be rerun without the interchange to see if there is a limit that would need to be set on the amount of land for development. Swan Creek, with over 500 dwelling units so far, has not had a significant impact to Syene Road. If the Par For property develops first we would expect a similar impact on "MM" as the proposed dwelling units in the Par For property are similar to Swan Creek.

Sewer and water service to the NEN is problematic because they have to be brought in from two different directions.

Sanitary Sewer

There are three primary sewers needed to serve this neighborhood as shown on Map A. The Larsen Road interceptor, an interceptor from MMSD lines on CTH "MM" south to East Clayton (MM interceptor) and a connection to the MMSD manhole at the east end of East Clayton. Under our assessment policy the cost of the interceptors is allocated to the entire service area. The utility or developer will front the initial interceptor cost.

Larsen Road Interceptor

Segment	Distance (feet)	Cost
L1 to L2 to L3	2704	\$400,000
L3 to L4 to L5	3344	\$250,000
L5 to L6	402	\$30,000
L5 to L7	1225	\$90,000

The Larsen Road interceptor serves a large area of the NEN. Below is a chart showing the vacant parcels and approximate areas.

Property	Area	% of Total Area
Par For	254	67.5
Osborn	53.84	14
Other & existing right of way	41.66	10.5
Showers	22.23	5.8
Croft	6.73	1.7
Paisley	2.15	0.5
Total	380.61	100

The Paisley, Croft and Shower parcels are small in service area. The cost to extend sewer to these properties prior to development of the Par For properties is not practical due to the expense. It would cost approximately \$680,000 to extend sewer from the MMSD manhole on Meadowview Road to the Osborn property. However, placing the sewer across the Par For property prior to development is problematic. The sewer location across the Par For property can not be determined until it is platted. Otherwise the sewer likely will be in conflict with the street layout.

CTH "MM" Interceptor

Segment	Distance	Cost
MM1 to MM2	722	75,000

The CTH "MM" interceptor serves approximately 182 acres. To extend the sewer to the north part of the Osborn property as a local sewer would cost an additional \$300,000.

East Clayton Connector

Segment	Distance	Cost
EC1	N/A	N/A

We did not analyze or examine the service area for the East Clayton connector due to the small service area and the fact that most of the land is already developed or planned not to be developed as part of the NEN plan.

Water

There are two primary transmission mains for water for the NEN as shown on Map B. One is the easterly extension of East Cheryl Parkway along interchange road to CTH "MM". This main will connect to a future main on "MM" that will go north to East Clayton Road and west on West Clayton to Nine Bark. From MM1 to MM2 on the map, the main will be connected either through the Osborn or Par For property.

Transmission Mains

East Cheryl Parkway

Segment	Distance	Total	Assessable Cost	*Non Assessable Cost
EC to "MM"1	6127	\$650,000	\$450,000	\$200,000

West Clayton

Segment	Distance	Cost	Assessable Cost	*Non Assessable Cost
NB to EC	6568	\$650,000	\$150,000	\$500,000
EC to "MM"2	2945	\$300,000	\$10,000	\$290,000

*Based on anticipated changes to Assessment Policy

The East Cheryl water main is the shortest extension to serve the larger areas of proposed development in the NEN. The West Clayton extension just to East Clayton could serve the properties in the “MM” interceptor area. But it is cost prohibitive to only serve 182 acres. It would also not create enough demand to create the turnover in the system. Without enough usage in the main, the water gets “old” and stagnant. Any main extensions need to serve enough area to create enough turnover in the water main. That is the advantage of the East Cheryl extension. It is shorter in distance and serves a larger developable area. Once there is sufficient demand in the NEN, the West Clayton loop will be needed to provide redundancy in the system. The issue with the East Cheryl extension is that the water main needs to be extended from East Cheryl Parkway and Syene Road across Green Tech Village, the interchange and interchange road to CTH “MM”. Similar to the sanitary sewer issue, placing water main across the Green Tech lands prior to development is problematic. The exact location and depth of the water main won’t be known until the roads are designed, which is after the Comprehensive Development Plan is approved.

Development of the NEN will need to wait until Green Tech has at least had the watermain extended to the interchange (the interchange road from the interchange to CTH “MM” is being designed as part of the interchange plan, the location and depth needed for the watermain is known). To extend the water main on West Clayton Road to the north line of Osborn and Par For properties would cost approximately \$950,000. There are a few issues with this proposed extension. Due to the length of the watermain, there will be quantity issues until enough units of residence are built. The holding cost is another issue. There are larger costly segments of the West Clayton watermain that are not assessable under the current policy. Under the proposed changes to the policy, there will be even less that can be assessed on a front footage basis. If an impact fee is created, the utility can recover some of these costs in the future. If an impact fee is not created, the non assessable front footage costs of the watermain will need to be assessed to the entire NEN as area charge.

Conclusion

Based on the sewer and water extension costs needed to serve the NEN, only the larger parcels should be considered in the phasing decision. This reduces the choice as to whether the Osborn property or Par For property should be the first phase of development. Given the issues of extending the sewer across the Par For and Shower properties to serve the Osborn property, it is preferred to develop the northerly third of the Par For property starting at “MM” and working easterly to Larsen Road. Because Par For has the largest area of the Larsen Area interceptor, they should be responsible for the initial cost of the interceptor. The watermain across Green Tech would be paid for by the developer of Green Tech. The section of watermain along interchange road from the interchange to CTH “MM” would be paid for by the Utility initially and deferred assessed against the Osborn property. The approximately \$200,000 to place the watermain under USH 14 at the interchange would be paid for by the Utility and recovered from the proposed impact fees.

