

**Preliminary Systems Analysis
Northeast Neighborhood Plan
City of Fitchburg**

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. More regional systems provide other essential services for future development including the public school system, both public transit and the transportation system, and power.

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, Wisconsin describes the wetland on that property to be a sedge meadow with some small inclusions of fresh (wet) meadow. This wetland complex was considered to be in very

good condition with a good compliment 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 construction rates. This will be accomplished through the use of regional storm water detention facilities. These facilities will also be designed as wet ponds to meet runoff water quality requirements. Potential storm water facility locations are shown on Exhibit 1. Sizing will be completed once land uses are identified.

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. 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 Storm Water Drainage Exhibit shows the potential redirection of runoff from the large drainage basin west of Larsen Road just north of Goodland Park Road to a basin just south. The runoff from this basin currently drains through a culvert under Larsen Road approximately 2000 feet north of Goodland Park Road and enters the ditch downstream of Meadowview subdivision. Although this water does not directly affect that subdivision, reduced flows to this ditch could potentially allow water from the subdivision to flow out more quickly because of reduced tailwaters in the ditch. The potential redirection to the culvert under Goodland Park Road would direct the water into a separate tributary of Swan Creek than the one that drains the Meadowview Subdivision. A potential redirection of runoff from existing conditions would most likely require additional storm water easements or environmental corridors.

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.

Parks and Open Space System

Parks and open space offer recreational areas that have a profound affect on peoples' lifestyles. The City of Fitchburg is in the process of creating a Park and Open Space Plan. 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 East Clayton Road. The proposed Heritage Circle Trail runs in a north-south direction west of US Highway 14. This proposed trail would meet the Capital City Bike Trail if constructed.

If future development occurs, recreation and open space will be provided for as outlined in the subdivision ordinance. The draft 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 as well as recreation should also be included. These trails could parallel new and existing roadways, environmental corridors, parks and open space areas, and drainage ways.

Transportation System Analysis

The existing road network is sufficient for the current land uses. The Northeast Fitchburg Transportation Study 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 would likely be inadequate for the amount of vehicle traffic that would use the roads.

The Northeast Fitchburg Transportation Study also revealed a need for a new interchange with US Highway 14 and East Cheryl Parkway. 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 US Highway 14 interchange with McCoy Road. The ramp from northbound US Highway 14 to McCoy Road will be closed along with the ramp from McCoy Road to southbound US Highway 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. Several potential road projects would be able to address these considerations. Because future land uses have not been determined, the road projects illustrated on Exhibit 2 are very conceptual.

First, a single connector road that extends from Goodland Park Road to East Clayton Road will allow users to travel north and south while not using Larsen Road. This road should ease the concern regarding additional traffic on Larsen Road.

Second, an extension of East Cheryl Parkway 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 US Highway 14. This road will also allow for access to and from any future development in the Northeast Neighborhood.

US Highway 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 US Highway 14 and CTH MM would suffice. This possible roadway would also allow for an additional north-south route for vehicles. 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. A realignment of East Clayton Road that would meet McCoy Road will allow for a single intersection to serve the traffic from all directions. Due to environmental concerns, this may be a challenging alternative to the existing road network.

Public Transportation System

The City of Fitchburg does not currently operate a public transportation system. The Madison Metro Transit System provides public transportation to limited areas within the City of Fitchburg. The bus routes that currently serve the City of Fitchburg are undergoing a renumbering and rerouting process.

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 are added expenses for the City, residents requesting transit routes would need to contact their alderperson for this process to begin.

Currently, Route 42 services an area immediately north of the Northeast Neighborhood on weekdays. Due to the rerouting process underway, this route will remain in service under a new route number.

The Nine Springs Green-Tech Neighborhood Plan included a rail transportation system along the old railroad corridor west of US Highway 14. This would provide a second public transportation system that would allow people to travel between Fitchburg and the City of Madison.

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 land uses are still unknown, actual flow rates and sizes of required infrastructure were not evaluated for this preliminary 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 (See Exhibit 3). The Neighborhood will be the catalyst of the creation and development of the northeast pressure zone and the required water distribution infrastructure necessary to provide safe, effective and efficient water to the area residents.

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 is in the process of designing and building a new water supply well, No. 11, which will be located near the intersection of Lacy Road and Syene Road. The new well can supply water to the northeast pressure zone and the Northeast Neighborhood; however, it is primarily intended to provide additional water supply to the east pressure zone.

Therefore, with the development of the Northeast Neighborhood, an additional water supply well will be necessary to properly serve the plan area and the northeast zone. A potential location for the proposed water supply well is near the intersection of Larsen Road and Goodland Park Road shown on Exhibit 3. The well will be the primary supply source of potable water to the plan area. The cost of the new well will be included in the City's capital improvements budget where infrastructure costs are borne by ratepayers. The water distribution piping between the well and future development within the Northeast Neighborhood Plan area will be paid for by the developers.

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. A potential area for the water storage tower is shown on Exhibit 3. The cost of the new tower will also be paid by the ratepayers in the City's capital improvements budget.

In addition to the water storage tower and supply well, water transmission mains will be needed to move water from Well #11 and the east pressure zone to the Northeast Neighborhood Plan area. The potential route for the water transmission main is shown on Exhibit 3. Water distribution infrastructure through or within undevelopable lands, such as the US Highway 14 crossing, shall be recorded as special assessments against the benefited properties and collected from the developers or customers upon attachment to the system in accordance with the City's ordinance.

Sanitary Sewer System

The Madison Metropolitan Sewerage District (MMSD) services the entire City of Fitchburg. If future development occurs in the Northeast Neighborhood, all sanitary sewerage flow would be collected and then treated by MMSD at the Nine Springs Valley Wastewater Treatment Plant.

Therefore, new gravity sanitary sewer collection mains and trunk sewers must coincide with any future development to convey the waste from the Northeast Neighborhood into the existing MMSD interceptor collection system.

The preliminary system analysis was based on system and capacity information provided by MMSD regarding the interceptors shown on Exhibit 3 and topographic information provided by City Staff. Other criteria considered for the sanitary sewer system analysis included construction methods, depth of sewer main versus adding additional serviceable lands, and the wetland/environmental buffers. Exhibit 4 depicts the areas within the plan area that can be serviced via gravity sewers. The areas depicted as non-serviceable areas are primarily because of elevation or wetland/environmental buffer areas.

Public School System

Three separate school districts serve the City of Fitchburg. The Northeast Neighborhood is part of the Madison School District and 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 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

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.

American Transmission Company (ATC) is currently in the process of studying all information to provide a route to transmit power between the Village of Rockdale and the western portion of the Town of Middleton. The City of Fitchburg lies between the two municipalities and may be affected by the new transmission lines project. At this point in their process, ATC is studying several alternative routes that could provide this transmission route. The Northeast Neighborhood may be affected by one of the alternative routes. This alternative route includes a north-south transmission line that would be constructed near the US Highway 14 right-of-way. Further information regarding dates of future open houses may be obtained through the American Transmission Company website.