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## I. CHAPTER FOCUS

Utility planning is a major factor in orderly development. A community must have adequate capacity in its utility systems before additional redevelopment or growth can be accommodated. The City of St. Charles provides a full range of municipal utility services including water supply and distribution, waste water collection and treatment, storm water and flood plain management and electrical service.

This Chapter attempts to integrate the general utility networks with the envisioned land use pattern and timing of development. The Comprehensive Plan does not provide detailed utility plans or engineering information. The Plan indicates City policies with respect to the maintenance and expansion of the utility systems. The Plan provides the long-range perspective on which mid- and short-range decisions are based.

## II. FINDINGS

### A. Water

The City of St. Charles derives its potable water supply from six wells plus one well on standby. The first water works was started in 1907, when the first public well was drilled. The City has continued to grow since then and the water supply facilities have been expanded over the years. The present water system consists of over 150 miles of water mains, two elevated storage tanks and several ground storage reservoirs, four deep sandstone wells and three shallow sand and gravel wells.

1. Water Supply

The City is presently pumping water from two aquifers, the deep Galesville sandstone aquifer and the shallow glacial drift aquifer. The deep formation has a depth of approximately 1,200 to 1,400 feet, while the shallow sand and gravel formation is generally between 100 and 300 feet. The Galesville formation is continuous throughout northeastern Illinois and is a source of water for many communities in the area. Declining water levels in the deep aquifers in recent years led to major changes in the metropolitan area, particularly in the efforts to distribute water from Lake Michigan. The use of Lake Michigan water by suburban communities has helped stabilize the Galesville formation and water levels are being restored. In addition, Elgin and Aurora are using the Fox River as part of their water supply and are no longer drawing as heavily from the deep aquifers.

The shallow glacial drift is a sand and gravel deposit in a buried bedrock valley. This formation is called the St. Charles aquifer and was previously referred to as the Newark Valley aquifer. The St. Charles aquifer generally extends from the east side of Elgin, down the east side of the Fox River, crosses the river near Crane and Country Club Roads and then runs southwesterly through Aurora and Yorkville. This shallow formation is generally recharged locally and continually replenishes itself. Preservation of the City's recharge areas is required to protect this water supply.

To evaluate the water supply in the proper context, four assumptions were established:

a) The population of St. Charles will continue to grow at a steady rate to meet the projected population of 35,547 in the year 2015.

b) The average daily consumption of water by residential customers will continue to increase. In 1966, the total average daily residential use was 759,990 gallons; in 1987 the total increased to 1,725,450 gallons. In 1994 the total was 2,191,550. It is estimated that this figure will increase to an average daily use

of more than 3.3 million gallons by the year 2015.

c) The quantity of water sold to non-residential customers will continue to increase, although at a slower rate than for residential customers. In 1976, this segment of the customer base used an average of 1,360,356 gallons per day or 53% of the average daily total. The usage has grown to 1,460,000 gallons per day, representing 40% of the average daily total.

d) Unaccounted-for water, which is the difference between the amount of water pumped and the amount of water sold, is approximately 9% of total pumpage. This figure is relatively low and reflects excellent management of the water system.

As the City continues to grow, additional water sources will be needed to meet the demand projected to the year 2015. Sand and gravel aquifers should continue to be the primary source of new water for St. Charles. Shallow wells are far more desirable than deep wells because of the high cost of pumping from the deep sandstone formation and because of potential treatment costs to meet U.S.E.P.A. drinking water standards for radionuclides. Also, the water from shallow aquifers may require less treatment to meet U.S.E.P.A standards.

2. Distribution

The existing St. Charles water system includes two separate but interconnected distribution systems. Each of these systems operates at its own hydraulic pressure; the difference is approximately 20 pounds per square inch. The low pressure system primarily serves the older part of the community located along both sides of the Fox River at the lower elevations. The high pressure system serves the newer parts of the community around the perimeter of the City, generally at higher elevations. The elevation of St. Charles varies from 680 feet near the Fox River to 810 feet at Red Haw Lane and Randall Road. If the system were to operate on a single hydraulic system with adequate pressure at the higher elevations, the pressure at the lower elevations would exceed 95 pounds per square inch which could damage water mains and private plumbing.

The two distribution systems are interconnected at many locations since they were originally constructed as a single system. The interconnections are normally closed by valves. There are seven locations where special pressure regulating valves have been installed to allow water to flow from one system to another automatically. If the low pressure system drops below a preset range, then one of these valves opens to permit water flow from the high pressure system into the low pressure system. The valves are bi-directional and will allow water to flow from the low pressure system to the high pressure system if the pressure in the high pressure system should fall below the pressure in the

low pressure system.

The area served by the low pressure system is nearly fully developed and no major change in the demand for water is anticipated. There are a few isolated areas where fire flow at the hydrants does not meet municipal code requirements. Although pressures are adequate downtown, as some residential uses are converted to commercial uses which require higher fire flows, the existing water system may not have sufficiently large mains to meet the fire flow requirements. The City will install new water mains on the Main Street bridge and along portions of the Main Street highway as part of the bridge reconstruction project in 1997.

The high pressure service area originated with the industrial park on the eastern edge of St. Charles. The low pressure water system could not provide adequate pressure and flow when the park was developed because of the distance from the 10th Street elevated tower and the elevation of the land. Over the years the high pressure service area was expanded to its present status, where it surrounds the older system and accounts for approximately 73 percent of total water sales.

Map 9 identifies the present service area of the water distribution system in St. Charles, as well as the potential future service area.

3. Water Storage

The volume of water storage in the system is adequate for the present population of the City. As the City grows, additional water storage will be required to insure that there will always be a reserve of water available to fight a fire and to meet the peak daily and hourly demands on the system. The St. Charles water storage network has assisted in attaining the Fire Department's Insurance Service Office (ISO) rating of Class 2. This rating places the St. Charles Fire Department in the one-tenth of one per cent of fire departments statewide. This level of storage will be maintained by constructing reservoirs in the vicinity of any new wells that are planned for the future.

A new reservoir on the west side near Illinois Route 31 could serve both the Thornley on the Fox and Red Gate wells. A new well (Well 13) and reservoir south of West Main Street and east of Water Tower #2 is planned to serve new development in the West Gateway area. A new reservoir in the far northeast section of St. Charles will also serve new development. New water reservoirs will maintain fire flow standards and be designed to be compatible with the surrounding area, within engineering and cost constraints.

## B. Sanitary Sewer

Wastewater service is provided by means of collection sewers, pumping stations and treatment. The main wastewater treatment plant is called the Fox River Plant and is located off of Riverside Drive in the southern section of the City. The Fox River Plant processes over 1.5 billion gallons of domestic and industrial wastewater annually. The Westside Plant is the former Illinois Youth Center (IYC) Plant on Route 38 which the City has agreed to purchase to serve the Westside Service Area. Phased expansion is planned to increase the Westside Plant capacity from .5 million gallons per day to 1.3 million gallons per day.

1. Sanitary Sewer Service Area

The 1995 service area is shown on Map 10 (Waste Water Utilities) as the area inside the Facilities Planning Area (FPA). The FPA boundary was established as part of the Area-Wide Water Quality Management Plan for northeastern Illinois, and essentially defines the sewer service area. This area includes the City of St. Charles plus Wildrose Subdivision. The FPA boundary was amended in 1991 to include the Illinois Youth Center in connection with the City's plans to acquire the Westside Plant.

Future Service Areas for the Fox River wastewater treatment plant and for the West Side wastewater treatment plant for the year 2015 are shown on Map 10. The limits of the Future Service Area were determined by comparing the anticipated design capacities of the trunk sewers and treatment plants to the expected waste water flow from anticipated development. One significant change to the Future Service Area since the 1990 Plan is the deletion of the Oliver-Hoffman property, which has been annexed to Wayne and West Chicago.

Potential annexations on the east side in DuPage County call for a change in the FPA. To the west and northwest there are areas which lie beyond the Future Service Area but within the St. Charles FPA. These areas have been developing with individual septic systems. Development in these areas is expected to continue with septic systems or alternative methods for waste water treatment, so serving them with City utilities is not anticipated.

The Westside Service Area, encompassing approximately 2,280 acres, is shown on Map 10. For the most part, this area can be served by gravity sewers carrying waste water to the Westside Plant. The City has entered into an agreement with the Illinois Department of Corrections to purchase the plant to serve the IYC and the rest of the Westside Service Area. This will reduce the projected peak and average flows in the existing west side sewer interceptors which connect to the Fox River Plant. The Westside Plant plays an important role in achieving certain goals and objectives of the Comprehensive Plan by giving the City greater control over the course of development to the west.

Most of the Westside Service Area lies within the Mill Creek watershed. Kane County has initiated efforts to coordinate land use planning and the extension of utilities among the various municipalities that have planning jurisdiction within the watershed. In 1992 the County had prepared a "Water Resources Utilization Study" for the 1000-acre "Mill Creek Demonstration Site" bounded by Route 38 on the north, Peck Road on the East, the C&NW railroad on the south and Brundidge Road on the west. This area includes the Westside Plant. The study explores wastewater treatment using wetlands for the distribution of treated effluent from wastewater plants in lieu of point discharge. It is recommended that the City work with the County in studying the feasibility of wastewater treatment alternatives and in developing a regional wastewater facilities plan within the watershed as opposed to fragmented planning by competing local agencies and developers.

In order to avoid "leap frog" development and its inefficiencies, sanitary sewers should only be extended to serve incorporated areas which can be connected to the existing system in a way that is cost effective for the wastewater utility. Therefore, not all properties within the existing Facilities Planning Area for St. Charles can or will receive sanitary sewer service.

As the distance from the waste water treatment facility increases, it is less likely that sanitary sewer service will be cost effective. A number of other factors are also involved, such as topography, interceptor sewer capacities and soil conditions. At some point there must be an "edge of service" line where municipal utilities end. At this point a transition occurs between municipal land use densities with municipal utilities and rural land use densities without municipal services. For properties that are on the edge and that wish to annex to St. Charles to obtain municipal sewer service, the burden is on the land owner to show that: a) St. Charles has the collection and treatment capacity in its system or the land owner will provide it; and b) there would be no hardship on any other part of St. Charles as a consequence of serving that area.

Wherever possible, sanitary waste water pumping or lift stations should be avoided and sanitary sewer extensions should be designed so that gravity alone will transport waste water to the treatment facility. In addition to the energy consumed by lift stations, there are maintenance and eventual replacement costs associated with the mechanical equipment.

2. Sanitary Sewer Collection

As the sanitary sewer system expands and matures, collection line improvements will be necessary. Six steps were completed to identify these improvements:

a. Residential waste water flows were calculated on a drainage basin level.

b. Commercial/industrial waste water flows were calculated on a drainage basin level.

c. Daily average flows were estimated. The assumption that each person produces waste water at the rate of 100 gallons per day was used. In 1994 daily total average flow for St. Charles was 4.31 million gallons per day.

d. Daily maximum flow was estimated. This is also referred to as peak flow.

e. Comparisons were made between actual measured flows and estimated flows. These comparisons were used to refine the estimating procedures.

f. Once the present and future waste water flows were estimated, these estimates were compared to the capabilities of the respective trunk sewers.

As a result of the above, the trunk sewers for which estimated future flows will approach or exceed capacity were identified. Surcharges, where estimated future peak flows exceed capacity, were calculated to identify the segments where a relief sewer will be required if additional demands are placed on the system. This study is updated periodically to fine tune system improvements.

3. Sanitary Sewer Treatment

The Fox River Plant has the capacity to meet the needs of the future service area (not including the westside service area) for the year 2015 provided that infiltration and inflow into the collection system are controlled through an on-going maintenance and removal program.

The cost of sludge treatment and disposal is a major concern for any treatment facility. In 1988 the Fox River Plant dewatered and disposed of approximately 650 cubic yards of sludge each month. In 1993 egg-shaped anaerobic digesters were constructed. These anaerobic digesters produce stabilized sludge which can be used for fertilizer and land application, reducing the need for landfill disposal. This saves handling and disposal costs and the stabilized sludge is healthier for the environment than untreated sludge.

The Westside Plant will be expanded in phases to serve the Westside Service Area. The Westside Plant currently has a capacity to serve 3500 P.E. (Population Equivalent) and is ultimately planned to serve about 14,000 P.E.

Treatment within the influence planning area (the year 2015 one and one-half mile jurisdiction area) consists of individual septic systems.. The City should work closely with the County in the review of alternative treatment systems such as land application. Caution should be taken so that such a system would not be detrimental to the environment, would have provisions for long term operation and maintenance, and would not alter the projected land use and density.

## C. Storm Water/Floodplain Management

The City is served by a well maintained storm water management system which includes a man-made collection system as well as floodplain adjacent to natural drainage channels and the Fox River. Preservation of existing floodplain areas is a critical element of the City's storm water management program.

There are numerous storm water storage basins throughout the City in recently developed areas. This storm water management system will be expanded as the City grows. The storm water management system also may be enhanced to solve flooding problems that now occur in isolated areas of the City. Where it is feasible to do so, regional storm water management facilities should be planned to serve larger portions of water shed, rather than individual projects, to provide more efficient and effective facilities.

### 1. Urban Storm Water

Storm water management is the public works function which deals with storm water, the excess rain water that does not soak into the ground but runs overland toward a natural water course. In St. Charles, this runoff finds its way into the Fox River and ultimately flows downstream into the Gulf of Mexico and re-enters the hydrologic cycle through evaporation.

The storm sewers in the City are generally designed to carry the runoff from a ten-year storm, or a storm with a 10 percent chance of occurrence in any given year. When the runoff from a rainfall event exceeds the capacity of the storm sewer system, it flows in the streets or through drainage channels. It is important to limit the amount of flow that can occur in any area to avoid excessive flooding of streets or other areas by constructing storm water storage basins or by utilizing green belts as drainage ways to convey this excess runoff without damage.

To minimize the impact of storm water runoff, the St. Charles Municipal Code requires storm water storage basins for new developments. These basins are designed to handle a storm with a 1 percent chance of occurrence in any given year. This storm is often called the "100 year storm" and it is defined by the Illinois State Water Survey based on rainfall records. Storm water is permitted to be released from a water storage basin at a rate of 0.15 cubic feet per second, per acre of tributary area. This rate is generally considered to

be compatible with the capacity of the natural streams and channels in the area.

In addition to reducing developed peak flow rates, wet and dry storm water storage basins help mitigate problems of pollution, soil erosion and siltation. It is recommended that storm water storage basins be contoured and landscaped to present a more natural appearance. The use of vegetation at storm sewer inlets and in open storm water drainage swales can also reduce the peak rate of runoff and improve water quality.

Due to impending National Pollutant Discharge Elimination System (NPDES) regulations, the quality of runoff has become a concern. It is anticipated that measures will need to be taken to address the quality of runoff. It is recommended that the City's ordinances be reviewed and updated annually to keep pace with regulations and emerging technology.

2. Regional Storm Water Management Facilities

Storm water facilities are governed by existing topography and the physical characteristics of land development. The Storm Water Map (Map 11) shows watershed divides, the direction of flow in the watersheds and the name of each watershed basin. Each watershed drains into a storm sewer or a drainage ditch, stream or creek, and then into the Fox River. Each new development is required to maintain watershed boundaries and the drainage patterns that existed prior to development.

Because storm water management is closely related to watershed boundaries rather than political or property boundaries, it is often advantageous to consider the development of a regional storm water management facility to serve a watershed or sub-watershed. The size of regional detention basins will be determined in part by the amount of flow that can be conveyed to a basin in streets and channels.

For regional storm water storage to function properly, the facility must be planned and constructed prior to the start of development within the tributary area. This means it is likely the City would have to assume the leading role by acquiring land and easements and building the improvements and develop a means to finance the land acquisition and improvements. Unlike wastewater and water utilities, enterprise budgeting is not available for stormwater systems. The State of Illinois does not recognize stormwater management as a utility function. Subregional drainage basins, where stormwater facilities are planned and constructed jointly by two or more adjoining property owners may be a more feasible alternative to regional facilities. Special service area financing can be used to fund the maintenance costs of drainage facilities, and can provide backup financing in case private maintenance is not sufficient.

The undeveloped areas on the perimeter of the City were evaluated to determine the viability of developing regional or subregional storage facilities. A detailed study and design report for each facility would be required to determine the size, shape and character of each storage basin. The general locations of the potential regional storage sites are:

- North of Countyline Subdivision on the west side of Kautz Road.
- Ferson Creek, north of Wildrose Subdivision.
- West of Randall Road and south of the railroad right-of-way.
- The 18-acre former IYC parcel on Peck Road north of Route 38.

3. Flood Plain Management

The City's Flood Plain Ordinance is based on NIPC's Model Flood Plain Ordinance. The ordinance reflects the minimum requirements of the Federal Emergency Management Agency (FEMA) for eligibility in the National Flood Insurance Program as well as the

requirements of the Illinois Department of Transportation Division of Water Resources concerning development affecting floodways. The preface to the Model Ordinance states:

> Flood plains and their associated stream, wetland and shoreline areas are among the State's greatest assets, because of multiple benefits related to environmental quality, natural resource management, and recreational opportunity. Flood plains are generally best able to provide these benefits if kept in a natural condition. Alterations of flood plains often have resulted in increased flood and stormwater hazards, reduced water quality, loss of habitat and recreational opportunities and poor aesthetics within communities.

It is the City's policy to preserve the natural characteristics of flood plains and their associated water bodies wherever possible.

## D. Electric Utility

The Electric Utility was started in St. Charles in 1892 when a generating station was built on 1st Avenue with the capacity for about 150 street lights and some residential service. The City stopped generating in 1926 and started buying electricity wholesale. The electrical system has continued to grow to the present time where it is serviced by six electrical substations, and meets a demand of 90 megawatts. The City of St. Charles receives electrical energy from Commonwealth Edison Company at three metering points. These are Kirk Road at the Aurora/Elgin right-of-way and the north end of 1st Avenue. The transmission voltage of the Electric Utility is 34.5 kilovolts and the distribution voltage is 12,470 volts. All new additions to the electrical system are installed underground where practical.

### 1. Distribution

The electric distribution system of St. Charles is in excellent condition. The Electric Utility recently converted the distribution system to 12kv. and all major components on the system are less than 10 years old with an expected useful life of well over 30 years. If substations are built on a timely basis as planned and transmission lines and metering points are installed when needed, the electrical system will be able to meet the projected population of 35,547 in the year 2015.

2. Substations

The City of St. Charles is presently receiving electrical energy from six power substations:

| | | |
|---|---|---|
| Substation No. 2 | North 12th Street | 8 megawatt load |
| Substation No. 3 | North end of 1st Avenue | 30 megawatt load |
| Substation No. 4 | North 9th Street at Railroad | 2 megawatt load |
| Substation No. 5 | Kirk Road and DuKane Drive | 30 megawatt load |
| Substation No. 6 | 14th Street & Prairie Street | 20 megawatt load |
| Substation No. 7 | Dunham Rd. at High School | 3 megawatt load |

The long range plan is to build Substation No. 8 on Peck Road, north of Route 38. This substation, when completed, will serve the population and industrial growth of the City through the year 2015.

3. Transmission

At the present time, the City maintains approximately seven miles of underground transmission lines and one mile of overhead transmission lines. These lines originate at the City's two main points of service and are installed in a conduit, cable-type system from the metering points to Substations No. 2, 3, 4, 5, 6 and 7. The transmission system is a very important part of the overall utility plan. As the load exceeds 100 megawatts, which is predicted within the next five to seven years, a new point of electrical service will have to be installed and transmission lines extended from the existing substations to the new metering point. Transmission lines are planned from the metering point in Substation No. 3 on the north end of 1st Avenue to Substation No. 7 on Dunham Road and from Substation No. 6 to the proposed substation on Peck Road (Substation No. 8).

As the electric load increases to 110 megawatts in beyond the year 2000, a new transmission line and distribution center will have to be built on the area of proposed station No. 8 on Peck Road. This station would be served with 138kv lines and serve 34.5 kv transmission east into the existing stations. If the plans now in progress are followed, the City should have adequate electrical capacity for all proposed developments into the year 2015.

## III. GOALS AND OBJECTIVES

**A. To provide a safe and reliable water supply which meets the future needs of St. Charles residents, industry and business for consumption and fire protection.**

1. Continue to aggressively acquire and develop potential well sites, particularly in those locations shown on the Water Service Area Map (Map 9).

2. Extend water service only to incorporated areas which are capable of being tied into the existing system.

3. Extend the large diameter transmission mains to complete loop networks particularly on the high pressure system; make required line improvements as shown on the water system map to improve water flow and where fire flows are deficient in low pressure areas.

4. Assure adequate water storage will always be available by constructing reservoirs in the vicinity of new wells: New water storage facilities are recommended at Well no. 12 (northwestern area) and Well No. 13 (West Gateway area), and construction or reconstruction of reservoirs at existing wells is recommended at Well Nos. 7 and 9.

5. Adopt and maintain a viable program of cross connection control and prevention.

6. Prepare and adopt a groundwater protection plan.

7. Develop a Capital Improvement Plan for water system improvements including significant replacement projects where roadway or bridge construction is planned.

**B. To provide an adequate sewage system, capable of meeting the present and future needs of the City's population, industry, and businesses.**

1. Consider providing wastewater collection and treatment services within the service areas as shown on the Waste Water Utilities Map (Map 10) and amend the Facility Planning Area as decisions are made to serve specific areas.

2. Extend sanitary sewer service only to incorporated areas which are capable of being tied into the existing systems.

3. Construct new relief or replacement sewers to meet the needs of the established service areas.

4. Expand the Westside Plant to serve projected growth within the Westside Service Area.

5. Work with the County in studying the feasibility of wastewater treatment alternatives and in developing a regional wastewater facilities plan within the Mill Creek watershed.

6. Maintain an ongoing sanitary sewer evaluation program to identify and eliminate extraneous inflow or recommend relief sewer projects.

7. Develop a Capital Improvement Plan for sanitary sewer improvements including an annual replacement and repair program.

**C. To provide the residents of St. Charles an effective, economical and environmentally sound storm water and flood plain management network.**

1. Preserve the natural characteristics of flood plains and their associated stream, wetland and shoreline areas wherever possible.

2. Develop regional or sub-regional storm water storage facility policies as part of the City's planning for future storm water management.

3. In cooperation with the Park District develop landscaping and secondary uses around detention/retention ponds; require new developments to provide more natural landscaping and contouring of detention/retention ponds.

4. Maintain a planning and maintenance program to maximize the efficiency of existing and future storm sewers and open channel conveyance systems.

5. Implement the annual review of City ordinances to keep pace with changing regulations particularly with respect to storm water quality.

6. Develop a Capital Improvement Plan for storm sewer improvements.

**D. To provide reliable electrical service while keeping rates competitive with other communities in northern Illinois.**

1. Develop long-range power supply options.

2. Coordinate the installation of the distribution system with the installation of new substations and extension of the transmission system.

3. Spread construction costs over an acceptable time range where capital

improvements would be paid for by connection fees and the rate base.

## IV. IMPLEMENTATION STATEMENT

The St. Charles water system provides a safe and reliable source of potable water. The City's treatment facilities insure meeting the Federal Safe Drinking Water Standards. Water storage facilities currently satisfy peak demand situations.

Waste water treatment is an advancing technology where new processes and equipment are constantly being developed. The refinement of computer modeling of treatment processes promises new efficiencies in both the design and operation of treatment facilities. At some future date it may be possible or necessary to refit the existing plant to incorporate an advanced treatment technology. Although this may allow some increase in the design capacity of the plant, this possibility should not be assumed in current planning.

With the exception of a few areas where storm water flooding causes problems, the City of St. Charles has a well developed system of storm water facilities that convey storm water runoff to the Fox River. Storm water management facilities serving future developments in the City will be similar to the facilities serving the City today, with the addition of more regional and sub-regional systems. As water quality standards develop City ordinances will need to be reviewed and updated.

The City of St. Charles maintains an excellent electrical service system, providing reliable and cost effective service to its residents. Further, developing and fostering long-range power supply options will keep the costs of energy as low as possible. As the City grows, the key to maintaining a quality system is to balance adequate power supply and distribution with system expansion.

Going beyond the Comprehensive Plan and its recommendations, the City should develop a comprehensive capital improvements plan. A capital improvements plan would merge the forethought and planning in the Comprehensive Plan with the realities of time and budget.

Over the last five years the City has accomplished a number of objectives to improve the quality and reliability of utility services including the following:

- Construction of the anaerobic digester at the waste water treatment plant
- Successful negotiation of an agreement for the acquisition of the Illinois Youth Center wastewater treatment plant and 18-acre site for a potential sub-regional stormwater detention basin and electric substation site.
- An upgrade of the Fire Department's ISO rating from Class 3 to Class 2.
- Rebuilding of the 34.5 kv line from Substation #3 on the east side to Substation #2 on North 12th Street.

- Completion Well No. 11 and reservoir were completed.
- Completion of the Fox River watermain crossing and connection to Well No. 5.

The five-year implementation plan for achieving the goals and objectives of this Chapter include:

1. Expand the Westside Plant, (expansion to be funded by new development) to serve the Westside Service Area.
2. Install an electrical transmission line from Substation No. 3 to Substation No. 7.
3. Complete a northerly Fox River watermain crossing and connection to Well Nos. 9 and 11.
4. Construct Well No. 13, including the potential to combine treatment and storage facilities from Well No. 7.
5. Implement an annual monitoring and analysis program for sanitary sewer interceptor flows.
6. Implement an annual sanitary sewer replacement/rehabilitation program.
7. Implement an annual analysis program for the water distribution network including a five-year calibration cycle.
8. Implement an annual water distribution replacement/enhancement program.