IX. Infrastructure and Utilities

The City of Cortland's infrastructure is typical for a community of its size. This infrastructure also provides the potential for future opportunities, improvements, expansion, and change. Infrastructure and utilities are categorized into five primary groups as detailed following: water supply/fire protection system, wastewater disposal, fuel sources, stormwater management, and electricity/telephone/TV.

WATER SUPPLY AND FIRE PROTECTION SYSTEM

The City of Cortland provides public water throughout the entire City, and has done so since at least the early 1900's. The public water supply serves the residents and businesses within its limits, but also has emergency connections to several other municipalities. The City also provides water to portions of the Town of Cortlandville via an intermunicipal agreement. The source of the City's water is a group of three wells located on the Water Works property adjacent to Broadway on the west side. The production capacity of these wells is very high. Well #3 produces 2,300 gallons per minute (GPM), Well #4 produces 3,600 GPM, and Well #5 produces 3,000 GPM. Each of the wells draws from the highly productive Cortland-Homer-Preble Sole Source Aquifer which is part of the entire Homer-Cortland valley and its typical sand and gravel deposits (see Section II. *Natural Resources* for more information regarding the Sole Source Aquifer). Despite the excellent water source, it is important to note that all of the City's wells are in one location, which makes the City's water supply vulnerable. An alternate, back-up location may need to be identified. An air stripper system was installed in the past to address an earlier contamination, but it never needed to be used.

There is more than sufficient water capacity to meet the present needs of the City. The average daily usage for the City is typically 2.0 million gallons per day (GPD), with a range of static pressure between 35psi (SUNY college hill and Ridgeview Avenue) and 85 psi in all other areas within the City. Based on the consumption data from the approximate 5,200 service connections, "lost water" (unaccounted for water) is estimated at 25%, although recent improvements may have reduced this number. This volume is fairly typical for systems of this age, however, a preferred target number would be 10%. There are three storage tanks serving the system. One is a three million gallon concrete tank located on Saunders Road in the Town of Cortlandville. The other two are 1.25 million gallon (each) steel bolted tanks located on the SUNY campus.

The storage tanks are served directly by 24" transmission mains from the wells. Otherwise, the pipe sizes for the network of water mains typically ranges from 6" to 16", with

some very limited areas being served by 4" mains. The original mains were typically cast iron, and more than half subsequently have been replaced with ductile iron. For the most part, the distribution system provides good fire flows. This is validated by a recent Fire Protection Rating of "A". City fire hydrants are in generally satisfactory condition and are replaced as needed. While most of the water distribution system is looped, there are some dead-end mains on several streets. It is difficult to maintain proper disinfection on dead-ended mains and they require routinely flushing. The City attempts to loop dead-ended mains as time and funds permit.

Ensuring that a safe and reliable public water supply is available to the community is critical and the City must diligently maintain their water system. There are no urgent issues regarding the overall condition of the system, but there are several items that need to be monitored and/or addressed in the future. Some of the more important are: (1) the amount of "lost water" that continues to be documented even though the City has actively addressed this issue for many years; (2) the need to continue to replace the old original cast iron water mains and/or mains that are undersized; (3) consideration of an alternative well site; (4) continued efforts to modify the system so as to eliminate dead-end mains wherever possible, (5) continued compliance with all mandated requirements and regulations; (6) continuing to ensure adequate fire protection, particularly in the downtown; and (7) protection of the aquifer recharge area.

An issue of prime importance that has received recent attention is the protection of the aquifer recharge area. A recent source water assessment of the system by the NYS Health Department concluded that the City's supply is "highly susceptible" due to the highly permeable nature of the aquifer, and the close proximity of land uses and activities to the wells. Unfortunately, much of the recharge area is located outside the City in the Town of Cortlandville. The City has little or no influence on development in the Town that my negatively impact its water source. The City needs to work closely with the Town of Cortlandville in order to ensure the long-term safety of the water supply (see also Section II. *Natural Resources*). All of these issues must be reviewed in conjunction with any anticipated growth and development in specific locations within the City, so that adequate plans can be prepared to meet those potential future demands.

WASTEWATER DISPOSAL

The City of Cortland is served by a central wastewater treatment plant (first installed in 1939), and a comprehensive network of collection mains throughout the City. The present plant utilizes both activated sludge and nitrification treatment methods. At some point in the future the plant will be required to upgrade to include biological nutrient removal as well.

Collection System - All of the streets within the City are served by sewer mains ranging in size from 8" to 48". The original piping is vitrified clay, and over the years portions have been replaced with various materials, including asbestos cement, ductile iron, and PVC. Due to elevation changes in the City, there are four wastewater pump stations owned and operated by the City.

The conditions and issues surrounding the collection system in Cortland are typical of most upstate communities. The primary concern is the deterioration of mains, which contribute to the high volumes of "clean" water that is collected and then treated. Under wet weather conditions the volume treated can balloon from seven millions gallon per day (MGD) to more than 20 MGD. This excessive Inflow and Infiltration (I&I) is fully recognized by the City, and a strategic plan for addressing the issue was developed a number of years ago. The City has taken aggressive steps to improve this situation with the South Main Street improvement project completed in 2006, and a nearly completed I&I removal project which has targeted many of the worst conditions. A detailed review of the specific mains associated with these projects is beyond the scope of this plan but the City should continue to identify and remediate I&I sources.

Wastewater Treatment Plant – The Treatment Plant is in fairly good condition with upgrades having taken place in the mid 1970's and 1990's. The plant treats an average daily flow of seven MGD which is well above the output of public water (2.0 MGD). However, the City treatment facility also treats the wastewater from the Villages of Homer and McGraw, and the Town of Cortlandville, which accounts for part of the excess flow, however, as detailed previously, infiltration and inflow is a continuing concern.

There will likely be a need for additional improvements and upgrades in the near future. A key driving force behind these mandated changes is the ongoing study and evaluations associated with the Chesapeake Bay Initiative, a detailed assessment of all wastewater discharges entering the watershed. It is possible that additional treatment and removal of both nitrogen and phosphorus will be required. The plant will also likely need upgrades to remain in compliance with its SPEDES permit. The plants digesters are in need of replacement. The costs of these upgrades could approach or exceed $10 million. At least $40,000 is currently needed to determine the best solution for addressing replacement of the plants digesters.

STORMWATER MANAGEMENT

Stormwater collection in the City issue is addressed through both built and natural elements as detailed below.

Built Collection System - Within the City, the major streets and State highway routes are served by a closed stormwater collection system (catch basins, culverts, etc.). There is a traditional network of storm sewers ranging from 12" pipes up to 6'x6' box culverts to catch basins located along most of the streets. The system collects the runoff into a closed system which eventually discharges into the Tioughnioga River. The collection system works satisfactorily, but there are issues of concern where the runoff from heavy downpours cannot be adequately handled. The City has addressed some of these problems via stormwater

replacement projects completed in the Kennedy Parkway area and from Cortland Regional Medical Center to the Otter Creek/West Branch area. More information regarding on-site stormwater management can be found in Section XIV. *Land Use and Zoning*.

Natural Collection System - In addition to the built collection system, there are several creeks that pass through the City that also gather and remove stormwater and play an important role in the City's stormwater management. These include Dry Creek and Otter Creek (both from the west) and two branches of Perplexity Creek, both of which enter the City from the south. These creeks gather surface runoff from adjacent development and eventually deposits it into the Tioughnioga River. At varying times there have been localized flooding issues associated with these open creeks. Several improvements (culvert/bridge replacements) have taken place to remedy critical concerns, and additional work is planned for property within the Water Works to further mitigate problems. More information regarding flooding can be found in Section II. *Natural Resources*.

FUEL SOURCES

At present, the City of Cortland is served by a network of natural gas piping provided by NYS Electric and Gas. Consequently, most, if not all, homes and other establishments are connected to the system and do not rely on any combination of fuel oil, propane gas, coal, and/or wood as the primary source of fuel energy. However, with significant increases in fuel costs, more people are considering and implementing alternative energy sources

ELECTRICITY and TELECOMMUNICATIONS

The City of Cortland is served with electricity and cable TV by National Grid and Time Warner, respectively. Satellite television service is also available. A number of companies provide land-line telephone service. Cell phone coverage in the City is adequate and broadband internet service is available. There does not appear to be any unique service delivery or capacity problems with any of them. There have been concerns in the community regarding the lack of offerings provided by local cable coverage, and the City has been without a franchise agreement with National Grid for a number of years.

With continuous technological development, many alternatives are now available compared to these traditional services. For example, more and more people are now utilizing cell phones only and no longer have land-lines to their homes. SUNY Cortland has eliminated land-lines in all dormitories. There is also a continuing consolidation of services, with traditional television cable companies offering phone service, and telephone companies providing high speed internet. Such consolidations will undoubtedly continue, with electricity, television, and phone service more closely intertwined. The City should remain cognizant of emerging trends and work to ensure that City residents and businesses have access to the most current technologies.

GOALS AND IMPLEMENTATION MEASURES

GOAL 41: Insist that adequate fire protection is available and that additional proactive measures are taken to insure that the downtown area and other dense neighborhoods will not be subject to a destructive fire.

IMPLEMENTATION MEASURES**:**

A) Conduct a comprehensive "worst case scenario" evaluation of the downtown fire protection system (location and number of hydrants, fire flows, pipe sizes, etc.).

B) Conduct a risk assessment of the existing buildings based on their sprinkler systems, alarms, construction materials and their present uses to determine the fire risk.

C) Pursue, promote, and assist in the installation of sprinkler systems, firewalls, and alarms in the buildings where needed.

GOAL 42: Improve the efficiency and effectiveness of the existing water system.

IMPLEMENTATION MEASURES**:**

A) Continue to pursue all measures of identifying leaks so as to reduce the "lost water" volume associated with the present water system.

B) Develop a phased capital project improvement plan to identify and replace all undersized or deteriorated water mains and to loop dead-end mains.

C) Implement a Geographic Information System to map City roadways, utilities, conditions, maintenance schedules, etc. (see also Section XV. *Development Management*).

GOAL 43: Ensure the long term safety and reliability of the public water system.

IMPLEMENTATION MEASURES:

A) Continue to evaluate the "upgradient" risks and coordinate with the Town of Cortlandville on an Aquifer Protection District (see also Section II*. Natural Resources*).

B) Evaluate potential alternate location for a back-up water source location.

C) Continue to work with the Town of Cortlandville in identifying areas where City water service could be extended to serve Town residents and businesses.

D) Recognize, promote and educate the public about the value of the water supply and the Sole Source Aquifer designation.

GOAL 44: Continue to repair and replace sewer mains and investigate "unauthorized" discharges so as to reduce inflow and infiltration.

IMPLEMENTATION MEASURES:

A) Regularly review the most current "inflow and infiltration" data and develop a phased approach to reduce.

B) Continue to TV sewer mains and prepare a phased plan to repair priority locations.

GOAL 45: Upgrade Wastewater Treatment Facility as needed and consider alternative ownership/management due to service area and future demands.

IMPLEMENTATION MEASURES:

A) Complete mandated upgrades as per Chesapeake Bay Initiative and other State and federal agencies.

B) Plan additional upgrades and seek funding as needed to ensure adequate capacity for future needs and to protect natural resources.

C) Examine value of alternative operational approaches and cost sharing.

D) Ensure that all substances and chemicals accepted for treatment at the waste water treatment plant can be adequately treated, will not damage the treatment plant facilities, and will not release pollutants into the watershed.

GOAL 46: Seek creative alternative uses for stormwater runoff that can benefit the community.

IMPLEMENTATION MEASURES:

A) Investigate and develop information concerning re-use of stormwater collected at residential properties such as rain gardens, re-directed downspout flows, rainwater irrigation system.

B) Allow utilization of green infrastructure such as vegetated swales, porous pavement, and natural stormwater management to reduce flooding risk and improve water quality.

C) Develop educational brochure for public distribution to educate the public and urge the use of green infrastructure.

(See also Section II. *Natural Resource*s for related implementation measures)

GOAL 47: Seek alternative power sources to generate electricity and develop a phased program to initially serve small facilities (Public Works, City Hall, etc.)

IMPLEMENTATION MEASURES:

A) Investigate the upcoming legislation associated with the new law increasing the "Net Metering" for businesses and municipalities who utilize renewable energy sources.

B) Remain current on all forms of renewable energy sources that could benefit and be applicable to the City.

GOAL 48: Relocate overhead power lines to underground locations where possible.

IMPLEMENTATION MEASURES:

A) Develop regulations to require installation of underground power lines for new development and major redevelopment projects, including burying of service lines from main lines to buildings.

B) Pursue funding sources and other opportunities to bury/relocate overhead power lines within the City when opportunities possible.

GOAL 49: Ensure the most efficient delivery of high tech, internet and wireless communication and similar systems to residents.

IMPLEMENTATION MEASURES:

A) Identify a knowledgeable staff member to periodically monitor the latest developments, statewide and nationally, on the technical and legal/jurisdictional issues concerning provision of Wi-Fi (wireless Internet) on a community wide basis.

B) Identify a knowledgeable staff member who will attend periodic seminars/workshops which focus on the issue communitywide wireless internet service.