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POTABLE WATER ELEMENT

Introduction

The City of North Port Public Utilities Department currently provides potable water utility service to approximately 17,750 water connections. The City purchased the utility systems from the now defunct General Development Corporation through their subsidiary, General Development Utilities, in 1992. The City has completed several system expansion and improvement projects since that time in an effort to better serve the customers of the City of North Port. The City of North Port has been experiencing rapid growth in recent years, and the City's Planning and Zoning Department projects that the City's population will grow to approximately 136,000 people by the year 2030. This growth will be spurred by the proposed large scale developments in the former Taylor Ranch, which is now referred to as the Thomas Ranch or West Villages Improvement District (WVID), and Panacea areas, while the older platted lots of the City of North Port are continuing to be developed.

Most of the areas currently served by City of North Port utilities are located within or near the old City core area. The City Utilities Department also serves areas outside of the City limits in unincorporated Sarasota County, including high density mobile home parks, for a total of about 3,180 customers. Many residents/businesses outside of this core currently utilize private wells for potable water. The groundwater for these private wells are sourced from the Intermediate Aquifer System and associated aquifers. The City of North Port's ultimate goal is to expand the City's water system to service most areas of the City, but not including the agricultural estates section of the City.

Per the 1997 City of North Port Comprehensive Plan, the City of North Port Utilities Department has developed and accepted a Utility Master Plan (Black & Veatch, June 2005) to formalize the expansion of the utilities in a uniform manner and not the haphazard way in which it was done previously. This Utility Master Plan will be updated a minimum of once every five (5) years, and may be amended to include other criteria, such as the ability to put in water and sewer infrastructure along with other City infrastructure such as roadways and sidewalks.

To help realize this goal of city-wide water service the City of North Port is requiring all large scale developments to bear their share of the cost to engineer and construct the water systems. This is done with the requirement that all developers will enter into a "Developer's Agreement" with the City of North Port, the developer will then bear the cost of engineering and developing the needed systems for their developments. For very large scale developments, such as WVID (Thomas Ranch), these agreements may include the engineering, development, and construction of a water treatment plant, which will then be dedicated to the City of North Port for its use and maintenance, thereby mitigating the initial development cost to the City of North Port.

Legislation

Under Public Law 93 523, the "Safe Drinking Water Act," the federal government established water quality standards for the protection of water for public use, including operating standards and quality controls for public water supply systems. This law directed the Environmental Protection Agency (EPA) to establish minimum drinking water standards which are divided into

"primary" standards, or those required for public health, and "secondary" standards, those recommended for aesthetic qualities.

In accordance with federal requirements, the Florida Legislature adopted Chapter 403.850, Florida Statutes (F.S.), the "Florida Safe Drinking Water Act." The Florida Department of Environmental Protection (FDEP) is the state agency responsible for implementing this act and has established rules classifying and regulating public water systems under Chapter 62-550, Florida Administrative Code (F.A.C.). The primary and secondary standards of the "Safe Drinking Water Act" are mandatory in the State of Florida.

The Southwest Florida Water Management District (SWFWMD) has adopted rules under Chapter 40D 2, F.A.C., and is responsible for the management of water resources within a sixteen-county region to protect the supply necessary to meet existing and future water demands. Additional regulations relating to the operation of community and non-community public water supply systems are set forth within Chapter 10D 4, F.A.C.

Chapter 62-251, F.A.C., provides criteria for: delineating wellhead protection areas; restrictions, including prohibition and regulation of certain substances, activities, and facilities in wellhead protection areas; and establishes permitting requirements, compliance review inspections, and enforcement procedures.

The 2005 Legislature expanded the local government comprehensive plan requirements to strengthen coordination of water supply planning and local land use planning. This is accomplished through continued coordination with the SWFWMD Regional Water Supply Plan (RWSP,) which addresses the water supply facilities necessary to serve existing development, and new growth for which the City of North Port is responsible.

The City of North Port has enacted Ordinance No. 03-14, which requires all residents, business establishments included, if they are currently on private wells to hook into the City of North Port potable water service within 365 days (one year) of the service becoming available to the neighborhood.

Relationship to 2005 Evaluation and Appraisal Report (EAR)

The City's Evaluation and Appraisal Report, which was adopted in 2005, did list two specific items, and one related item, pertaining to potable water in the list of major issues identified by the citizens of the City of North Port, City Staff, the Planning and Zoning Advisory Board, and the City Commission.

The first issue is that the City should be more aggressive in extending potable water and sanitary sewer service throughout the City. The concern is the proliferation of wells and septic systems that have followed the growth of this platted lands community, and the ultimate impact upon the environment and public health. The City's utility master planning processes will be utilized to accomplish these goals, as will be indicated in the revised goals, objectives, and policies in this Comprehensive Plan.

The second major issue was finding water resources to support the growth projected for the City of North Port, to ultimate build-out. The City has been using the utility master planning processes to aid in identifying sources of potable water. Besides existing sources, the utility master plan process has called on the City to look at its canal system as a source (currently being implemented) and ground water sources. Regionalism will play a major role in the City's future through interconnects and shared facilities. Coordination with the Southwest Florida Water Management District (and consistency with the regional water supply plan) and other appropriate agencies will be implemented.

A third major issue is certainly related to the provision of, and protection of, a source of potable water – that is, the continuation of the Myakkahatchee Creek initiative. As noted throughout this Comprehensive Plan, it is the City's ultimate goal to assemble at least the first two tiers of property along each side of the creek north of U.S. 41 to create a linear park that would also serve to protect this valuable potable water resource and better maintain the function of the floodplain.

Utilities Master Planning

The 1997 Comprehensive Plan for the City of North Port mandated the development and acceptance of a Utility Master Plan to guide the expansion of the utility system. The City of North Port developed master planning tools that provided guidance for the expansion of the utility system as well as directed a capital improvement plan based on anticipated flows and anticipated population projections. The platted nature of the City of North Port necessitated such a guide.

One component of the Utility Master Plan was to formalize guidelines and rankings to direct the provision of service into neighborhoods as they begin to build-out. This Comprehensive Plan will add policy language requiring an assessment of overall neighborhood initiatives as another parameter for consideration when extending utility service to existing neighborhoods.

In addition to updating the 2005 Utility Master Plan (Hazen & Sawyer, April 28, 2008), the City also completed a Reuse Master Plan (Brown & Caldwell, April 28, 2008) which included the planning concepts for design and the expansion of the existing reuse system.

Regulatory Compliance

1. Potable Water

As with much of southeastern United States, southwest Florida has experienced a major drought since 2006. In December of 2006, the FDEP issued a variance of secondary standards for all water purveyors in the State of Florida. In June of 2007, the City of North Port also received from FDEP a five (5) year variance for exceeding certain secondary standards because of the continued drought situation. The City of North Port has generally been in compliance with secondary standards; however, there have been instances of exceeding secondary standards within the parameters of the variance. The City of North Port is developing a plan and program with regulatory agencies to consistently meet all regulatory standards even during times of drought.

The City does not currently have any wellhead sites; all of the water for the City is derived from surface water sources or the PR/MRWSA. The City is currently studying the feasibility and location of possible wellhead sites to be used to supplement those existing sources. Once determined, this Comprehensive Plan will be amended to include those sites.

The City of North Port withdraws raw surface water from the Myakkahatchee Creek for treatment at the Myakkahatchee Creek Water Treatment Plant (WTP) under a SWFWMD consumptive water use permit (WUP #20002923.010). This permit allows for the withdrawal of an annual average quantity of 4.4 million gallons per day (mgd) and a peak monthly quantity of 6.0 mgd.

The Myakkahatchee Creek WTP operating data for the years 1999 through 2007 indicates that the plant has remained in compliance with the current permitted annual average and peak monthly withdrawal limits over this time frame. The highest annual average and peak monthly withdrawal quantities that have occurred during this time frame are 1.4 mgd (2003) and 3.483 mgd (March 2007) respectively.

In addition, the Myakkahatchee Creek WTP operating data for the years 1999 through 2007 indicate that the plant has maintained compliance with the requirements of the Safe Drinking Water Act (SDWA) as enforced by the U.S. Environmental Protection Agency (EPA) and the FDEP, with the exception of secondary standards as explained above. Based on a review of the monthly operating reports, it appears that the plant is able to maintain compliance with regulatory requirements, and it is anticipated that the plant is capable of continued operation within the required parameters in the short-term future.

The City also receives 1.192 mgd average annual daily flow (AADF) and 3.146 mgd peak month, with increases in the AADF to 2.7 mgd by 2011 from the PR/MRWSA, which is used to supplement the City's existing water facilities.

2. Regional Water Supply Coordination

Southwest Florida Water Management District

The Southwest Florida Water Management District (SWFWMD) is charged with the management, protection, and enhancement of water and water-related natural resources in the region in accordance with the Water Resources Act (Chapter 373, Florida Statutes). SWFWMD is also responsible for developing a Regional Water Supply Plan, a requirement resulting from state laws that were adopted in 1997 which specifically amended Chapter 373, Florida Statutes. The regional water supply planning requirements were again amended as a result of the passage of Senate Bill 444 during the 2005 legislative session in order to encourage better communication between water planners, city planners, and local utilities. Included in this coordination and conservation is ongoing communication with the SWFWMD.

The Regional Water Supply Plan provides a framework for future water management decisions regarding the health of the hydrologic system and the system's ability to meet long-term water resource demands. SWFWMD's Regional Water Supply Plan addresses a ten-county planning area along the west coast of Florida from Pasco to Charlotte County.

The Updated 2006 Regional Water Supply Plan was approved in December of 2006. It projected that the Planning Region's water demand would be approximately 409 mgd through 2025. The Plan determined that up to 703 mgd is potentially available to meet this demand.

The City of North Port lies within a Water Use Caution Area known as the Southern Water Use Caution Area (SWUCA). The SWUCA was designated by SWFWMD in 1992 as an area impacted by increased groundwater withdrawal.

The 2006 Regional Water Supply Plan determined that there is additional demand projected for this area. In the SWUCA, the additional demand through 2025 is projected to be approximately 211 mgd, while potentially available sources will be approximately 414 mgd. As a result, the potential impacts to the SWUCA include saltwater intrusion, reduced stream flow, and lowered lake levels. The ultimate effect of the SWUCA on the City is that there will likely be pressure to seek alternative sources of potable water.

The Updated 2006 Regional Water Supply Plan states that:
"The rapidly urbanizing coastal counties in the SWUCA will be supplied principally by alternative sources, not the retired ground-water quantities. The 50 mgd reduction in ground-water withdrawals required to meet the saltwater intrusion minimum aquifer level in the SWUCA can therefore be offset by the projected 142 mgd decrease in ground-water withdrawals. Some of the remaining 92 mgd in ground-water reductions may be re-permitted under certain conditions to meet demand in the inland counties in the SWUCA where access to alternative supplies is limited."

3. Reuse Water

The City of North Port's reuse water system is primarily regulated under FAC 62-610 Reuse of Reclaimed Water and Land Application. The City of North Port's system is currently in compliance with these regulations as shown below in Table 4-1.

Table 4-1

WWTP Effluent Flow sent to Reuse Water System-Limitations	
Parameter	**Value**
Permitted Capacity (flow) (Maximum Annual Average Daily Flow)	1.88 mgd
5 Day Carbonaceous Biochemical Oxygen Demand (CBOD5) (Maximum Month)	30.0 mg/L
Total Suspended Solids (TSS) (Maximum Month)	5.0 mg/L
pH (Minimum-Maximum)	6.0-8.5
Turbidity (Maximum)	3.5 NTU

Source: City of North Port Utilities

Conservation

The City of North Port has taken great strides in an effort to conserve water. The City has enacted rules for year-round water conservation that exceed requirements of SWFWMD. The City Ordinance also requires consistency with SWFWMD regulations during declared water

shortage periods. The City of North Port has enacted a regulation stating, "All required landscaped areas shall be equipped with permanent irrigation systems. Where appropriate, it is strongly encouraged that drip irrigation be used. This provision shall not apply to existing plant or tree communities or to parcels for single-family and two-family dwellings." In addition to the regulation of irrigation, the City has many conservation programs to include the Toilet Rebate Program, an extensive public education program, and enforces compliance of conservation rules by Code Enforcement. The City also has an inverted six (6) tiered rate structure designed to encourage conservation. The City has recently finalized a Reuse Master Plan (Brown & Caldwell, April 28, 2008) and will continue to actively pursue other options for the conservation of water resources, such as promoting "Florida Friendly" landscaping and the use of drought tolerant plantings as outlined in Policy 7.1 of this Comprehensive Plan.

Through the City's use of conservation programs and reuse water for bulk purchasers the City saves up to 27 million gallons per month, or 1 million gallons per day. This water is used primarily for irrigation of golf courses and landscaping. This allows the City to use less well and potable water for these water intensive uses.

Reuse Water

1. Reuse Water Customers

The current reuse water customer base consists of two primary bulk users, the Sable Trace and Heron Creek developments. Both of these customers primarily utilize reuse water for golf course irrigation. The City also provides reuse water directly to some commercial properties, several residential neighborhoods, and to some City-owned properties, such as the North Port City Hall, and certain rights-of-way. The City will actively seek out new re-use customers and require new development, when possible, to utilize City reuse water.

2. Reuse Water Facilities

The City is expanding the reuse water treatment capabilities from 1.88 mgd to 4.4 mgd and ultimately to 7.0 mgd in conjunction with the expansion of the City's WWTP and disposal systems. The reuse water system is regulated under the City's Waste Water Treatment Plant (WWTP) FDEP operating permit as well as FAC 62-610-450.

The primary components of the City of North Port's reuse water system include the following:

- Treatment, storage, and pumping facilities at the City of North Port WWTP.
- Reuse water distribution system.

Inventory

The City's potable water system has eight primary components:

1. The Myakkahatchee Creek raw water supply.
2. The Cocoplum Waterway raw water supply.
3. Peace River/Manasota Regional Water Supply Authority Interconnect, a regional finished water supply.
4. Myakkahatchee Creek Water Treatment Plant with 3.5 mg storage facilities.
5. The Hillsborough Booster Pump Station.
6. The Northeast Booster Pump Station with a 1.0 mg storage facility.
7. The transmission and distribution piping system.

8. The Southwest Booster Pump Station with a 1.0 mg storage facility.
9. Interconnects with Charlotte County and an interconnect is planned in 2008 with Sarasota County.

The first three items noted above are where the City gets its current potable water supply. The City is permitted by SWFWMD to withdraw surface water from both the Myakkahatchee Creek and the Cocoplum Waterway, both of which run through the City. Water from these sources is treated at the City's Myakkahatchee Creek Water Treatment Plant prior to distribution. The City also receives finished potable water from the Peace River/Manasota Regional Water Supply Authority (PR/MRWSA) through an existing agreement.

The City currently operates its potable water system under several different supply modes: Myakkahatchee Creek WTP supply only, PR/MRWSA supply only, Cocoplum waterway only, or a combination of the three different supplies. Water quality and/or quantity are used to determine which of the aforementioned modes is used.

1. Existing Water Supply Sources

(a.) Myakkahatchee Creek Surface Water Supply

The City of North Port withdraws raw surface water from the Myakkahatchee Creek for treatment at the Myakkahatchee Creek Water Treatment Plant. The City of North Port has a consumptive use permit from the Southwest Florida Water Management District which allows the City to withdraw an annual average quantity of 4.4 mgd, and a peak monthly quantity of 6.0 mgd. This is dependent on surface water flow in the Myakkahatchee Creek.

The surface water flow in the Myakkahatchee Creek is highly dependent on rainfall and the resulting stormwater runoff. The seasonal fluctuations in rainfall cause this water source to be highly variable in quantity and quality throughout the year. Historical data indicates that the Myakkahatchee Creek's water quality diminishes during dry seasons or periods of low rainfall when the creek's flow is minimal and influenced by groundwater. Therefore, the City of North Port prefers to withdraw and treat supply from the Myakkahatchee Creek during the wet seasons or periods of higher rainfall.

(b.) Cocoplum Waterway Surface Water Supply

The City has long felt that its system of freshwater canals functions somewhat as a linear reservoir. The City approached SWFWMD to determine the feasibility of this potential source. Ultimately, the City received permission from SWFWMD that allows it to draw surface water directly from the Cocoplum Waterway on a rotational basis with the Myakkahatchee Creek. This greatly increases the City's potable water supply, and will help to protect the City from future water shortages. This will also help relieve other water supplies from the stress of supplying as much potable water to the City of North Port, especially the Peace River/Manasota Regional Water Supply Authority.

As noted above for the Myakkahatchee Creek surface water supply, the flow in the Cocoplum Waterway is highly dependent on rainfall and the resulting stormwater runoff. The seasonal fluctuations in rainfall cause this water source to be highly variable in quantity and quality throughout the year. Historical data indicates that the Cocoplum Waterway's water quality

diminishes during dry seasons or periods of low rainfall when the creek's flow is minimal and influenced by groundwater. Therefore, the City again prefers to withdraw and treat supply from the Cocoplum Waterway during the wet seasons or periods of higher rainfall.

(c.) Peace River/Manasota Regional Water Supply Authority (PRMRWSA) Interconnect Supply

In 2005, the City entered into a 35-year renewable Master Water Supply Contract (MWSC) with the PRMRWSA that commits the PRMRWSA to provide the City with supplemental water to meet their current and development needs. Pursuant to the contract the City of North Port provides the PRMRWSA with 20-year projected demands to assist the region in the planning of future water resource development. Water from the Peace River facility is delivered to the City's transmission / distribution system through a 12-inch diameter interconnect located at the intersection of Raintree and Hillsborough Boulevards in eastern North Port. This interconnect is metered by PR/MRWSA and is fed from a 36-inch pipeline which is also used to deliver water from the PR/MRWSA supply to Charlotte County. The City of North Port is participating in the expansion of the PRMRWSA facilities to include the transmission system to meet future demands. The PR/MRWSA agreement also indicates that supply will be delivered to the interconnect at a minimum pressure of 65 psi.

The City continues to actively pursue the ability to become a voting member of the PR/MRWSA, and not just a purchaser of the water services provided. The City will continue to pursue this voting seat until it receives it.

Below is Table 4-2 showing the actual use from both the Peace River/Manasota Regional Water Supply Authority and the Myakkahatchee Creek, for the past 12 months.

Table 4-2

The City of North Port Potable Water Used from Dec. 2007 through Nov. 2008				
Year	**Month**	**Peace River**	**Myakkahatchee Creek**	**Total Demand**
		Million Gallons per Month	**Million Gallons per Month**	**Million Gallons per Month**
2007	Dec	35.542	50.365	85.907
2008	Jan.	28.869	58.427	87.296
	Feb.	26.852	55.172	82.024
	Mar	38.561	47.837	86.398
	Apr	38.143	45.119	83.262
	May	75.073	38.251	113.324
	Jun	69.04	28.713	97.753
	Jul	64.769	33.338	98.107
	Aug	27.466	64.628	92.094
	Sep	29.584	58.003	87.587
	Oct	33.009	58.846	91.945
	Nov	35.568	53.783	89.351
Total		502.566	592.482	1,095.048

The addition of Peace River million gallons and Myakkahatchee Creek million gallons do not match with the Total Demand Million Gallons due to the fluctuation of the amount of water within the City's storage tanks. The City's storage tank system includes 5.5 mg.

Source: City of North Port Utilities

2. Water Treatment Facilities

The Myakkahatchee Creek WTP is located on the Myakkahatchee Creek and was originally constructed in 1964 and expanded to include a second treatment train in 1974. Several additional plant components and equipment have been added, upgraded, and/or replaced since the original construction date. The plant's original design treatment capacity was 4.4 mgd. However, recently enacted regulations have limited actual water production.

(a.) Transmission and Distribution Facilities

The City of North Port owns and operates three potable water system pump stations, several miles of transmission and distribution system piping, and three emergency interconnects with Charlotte County's potable water system. A description of these facilities is provided below.

(b.) High Service Pump Station at the Myakkahatchee Creek WTP.

Finished potable water treated at the Myakkahatchee Creek WTP is transferred to two ground storage tanks that have a combined storage capacity of 3.5 million gallons. The tanks are located on the plant property along with a high service pump station. The City has the ability to feed potable water supply originating from the PR/MRWSA Interconnect into these ground storage tanks, thus allowing the City to utilize the high service pump station as a re-pump station under certain operating scenarios.

(c.) Hillsborough Booster Pump Station

The Hillsborough Booster Pump Station (HBPS) is an in-line booster station located along the 12-inch transmission pipeline in the southern portion of the City along Hillsborough Boulevard, west of the PR/MRWSA Interconnect. Since the direction of flow in the 12-inch pipeline that runs along the southern portion of the City of North Port can be in either direction, the booster pump station was designed to be able to boost system pressures when flow is going either east or west.

(d.) Northeast Booster Pump Station

The Northeast Booster Pump Station (NEBPS) was originally constructed in 1995 and is located in the northeastern portion of the City of North Port near the intersection of Haberland Boulevard and Price Boulevard. The function of the NEBPS facility is to collect a portion of the supply originating from the PR/MRWSA Interconnect and re-pump it back into the system at the desired pressure and flowrate.

(e.) Southwest Booster Pump Station

The Southwest Booster Pump Station, which includes a one (1) million gallon storage tank and pumping and disinfection facilities, was constructed and dedicated to the City of North Port in 2006 and is located in the southwest portion of the City within the West Villages Improvement District.

3. Transmission and Distribution System Piping

The City of North Port's transmission and distribution system piping consists of approximately 294 miles of piping. The transmission system is composed of the major pipelines that deliver potable water from the Myakkahatchee Creek WTP and PR/MRWSA Interconnect to the distribution system piping. The distribution system piping consists of smaller diameter lines.

4. Emergency Interconnects

In addition to the PR/MRWSA Interconnect, the City of North Port also has two emergency interconnects with Charlotte County's potable water transmission system. These interconnects are all 12-inch diameter pipeline interconnects located near the Charlotte County Border.

5. Aquifer Storage and Recovery (ASR)

The City of North Port is working with the Southwest Florida Water Management District (SWFWMD) and Water Resource Solutions Consultants to further evaluate the ASR well through cycle testing and laboratory analysis.

6. Reuse Water Facilities

(a.) City of North Port WWTP Reuse Water Facilities

It is the City of North Port's goal in the future to expand the reuse water system. Several potential bulk customers have been identified within the City. The existing WWTP provides effluent filtration and high level disinfection of treated wastewater in order to produce reuse water that meets the regulatory requirements for public access distribution. Treatment facilities at the WWTP are currently permitted to produce up to 1.88 mgd of reuse water on an annual average basis. Treated reuse water is transferred to a 500,000 gallon reuse water ground storage tank on the WWTP site. An on-site reuse water pump station delivers the reuse water to the reuse distribution system. The City of North Port will expand the reuse facilities to 4.4 mgd and 7.0 mgd with the planned expansion of the City's WWTP and disposal systems. The expansion will include construction of a 2.5 mg reuse storage tank.

(b.) Reuse Water Transmission and Distribution System

Reuse water from the City of North Port's WWTP is pumped northeast approximately 2 miles through a 10-inch main to the City of North Port's 600,000 gallon reuse water ground storage tank located at the Sabal Trace Golf Course irrigation system. The reuse water transmission system is extended further east and north with a 12-inch pipeline to deliver reuse water supply to two irrigation lakes which are used by the Heron Creek development and golf course irrigation system. The irrigation lakes and ponds are privately owned and maintained. The City of North Port has developed a Reuse Master Plan (Brown & Caldwell, April 28, 2008) that provides a plan to loop the reuse system to further maximize the system and provide reuse to more customers.

Analysis of Potable Water Needs Through 2030

1. Demand and Flow Projections

As a basis for system planning in the Utility Master Plan (Hazen & Sawyer, April 28, 2008), projections of future potable water demands were developed based on historical population, projected population historical water use rates, and projected water use rates based on a changing

City demography. As a note, the projections contained in this Utilities element differ from the City's overall population projections as the City Utilities Department serves citizens located outside of the City's boundaries in unincorporated Sarasota County, these include some high density mobile home parks, for a total of about 3,180 customers. The City is also studying supplying water service to other areas outside the City limits in the possible annexation areas along US-41, these numbers were taken into account when projecting population for water and sewer purposes only.

The potable water demand projections were estimated with the anticipation that the gallons per capita per day (gpcd) water usage would increase from 75 gpcd to 90 gpcd to account for the additional commercial demand. The water use rate was adjusted by increasing the usage by 2.5 gpcd per year until it reached 90 gpcd. It was also determined that the average number of persons per ERC would be increased from 2.3 to 2.5, based on recent historical growth trends. These assumptions will be evaluated in future updates to the Utility Master Plan to verify that they are correct.

Available historical data was used to support the maximum month peaking factor of 1.2. A peak day factor of 1.4 was utilized as recommended by the PR/MRWSA. The peaking factor was applied to the projected average day demands to determine the projected peak flows for negotiating water supply requirements with the PR/MRWSA. The projected demands for the City are shown in Table 4-3.

Table 4-3: Projected Demands for the City of North Port

Year	Population	Per Capita Usage (gpcd)	Average Day Demand (mgd)	Maximum Month Demand (mgd)	Peak Day Demand (mgd)
2008	60,251	75	4.52	5.42	6.33
2013	74,356	82.5	6.13	7.36	8.59
2018	96,350	90	8.67	10.41	12.14
2030	143,083	90	12.88	15.45	18.03

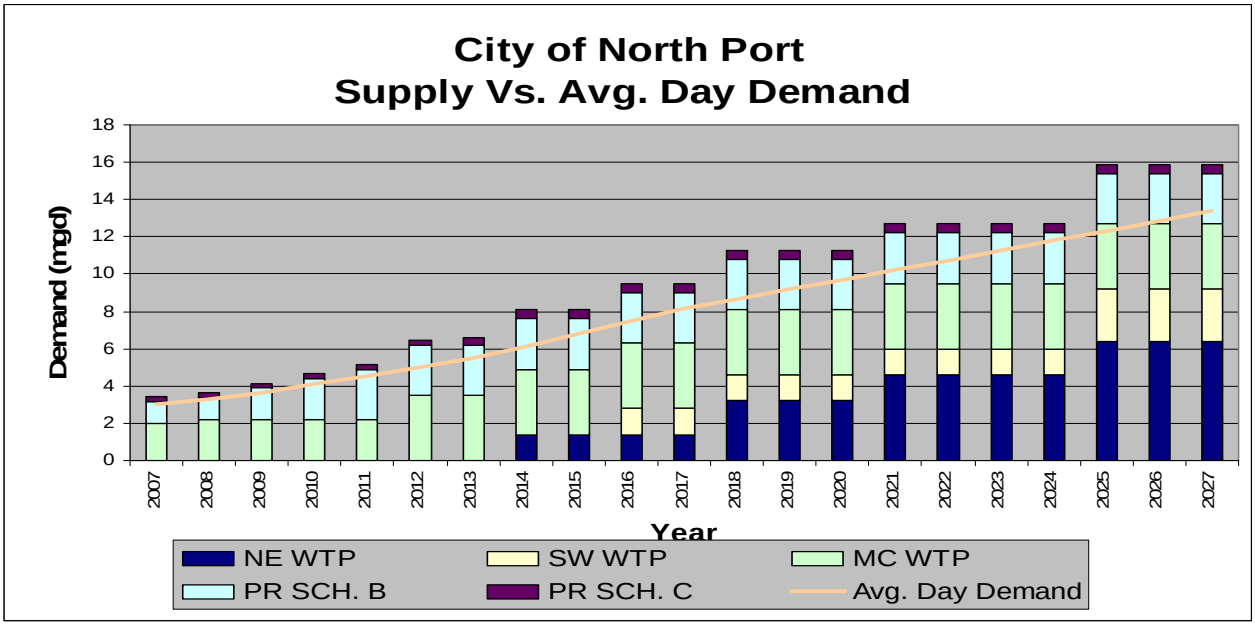
Source: City of North Port Utilities

2. Water Supply Projections

In order to evaluate the future timing for new water supplies and negotiate additional water from the PR/MRWSA, the annual average day and peak day demand projections were compared to the current and future proposed water supplies. These supplies include the Myakkahatchee Creek Water Treatment Plant (MCWTP), PR/MRWSA, a proposed Southwest Water Treatment Plant (SWWTP) which is anticipated to serve the WVID (Thomas Ranch) area and a Northeast Water Treatment Plant (NEWTP) to serve the Kelce Ranch, Panacea areas, and Eastern portion of the City. An initial firm treatment capacity of 2.2 mgd is required until 2012 based on the WUP withdrawal limitations which were used for the MCWTP. Firm capacity assumes that the plant can produce 2.2 mgd average daily flow depending on the source water quality. After that, the firm capacity was increased to 4.4 mgd based on proposed plant improvements and consideration for the Cocoplum Waterway or other alternative water supplies blended with the Myakkahatchee Creek. Because permitting conditions and future water availability for the MCWTP is

unknown, however, the firm capacity was not increased beyond 4.4 mgd. This may change after the Water Enhancement Study is finalized in 2008. Figure 4-1 shows the comparison of average demand versus proposed supply sources using information provided in Table 4-4. This figure is based on an estimated average day demand which is not utilized for projecting treatment plant capacity but is necessary for evaluation of future water supply needs from the PR/MRWSA.

Figure 4-1



Source: City of North Port Utilities

The information provided in Table 4-4 assumes that the NEWTP will be on line in 2014 and the SWWTP will be on line by July 2015, these projects have been pushed out beyond 2014, due to the downturn in the housing market and the inability to fund new infrastructure improvements, they are contained herein as analysis of what the City will need four our growing population in the future. The City will amend the Capital Improvements Program and Element to reflect when these projects are programmed in and the projects will be financially feasible per State Statute. The amount shown for Peace River SCH. C is the minimum additional water required by the PR/MRWSA. In evaluating the average day demand for the water treatment facilities, it was assumed that the new facilities would treat approximately 70% of the maximum day demand until they are expanded. The MCWTP is unique in that during peak demand periods; water quality may be limited thereby reducing the amount of finished water that can be produced by the facility during these periods.

Table 4-4: Average Day Demand vs. Estimated Supply

Year	Average Day Demand (mgd)	Supply Sources - Annual Average				
		NE WTP (mgd)	SW WTP (mgd)	MC WTP (mgd)	PR SCHED B (mgd)	PR SCHED C (mgd)
2007	3.01	0.00	0.00	2.00	1.192	0.25

2008	3.31	0.00	0.00	2.20	1.192	0.25
2009	3.66	0.00	0.00	2.20	1.705	0.25
2010	4.09	0.00	0.00	2.20	2.218	0.25
2011	4.52	0.00	0.00	2.20	2.7	0.25
2012	4.98	0.00	0.00	3.50	2.7	0.25
2013	5.52	0.00	0.00	3.50	2.7	0.4
2014	6.13	1.40	0.00	3.50	2.7	0.5
2015	6.78	1.40	0.00	3.50	2.7	0.5
2016	7.46	1.40	1.40	3.50	2.7	0.5
2017	8.17	1.40	1.40	3.50	2.7	0.5
2018	8.67	3.20	1.40	3.50	2.7	0.5
2019	9.18	3.20	1.40	3.50	2.7	0.5
2020	9.69	3.20	1.40	3.50	2.7	0.5
2021	10.21	4.60	1.40	3.50	2.7	0.5
2022	10.73	4.60	1.40	3.50	2.7	0.5
2023	11.26	4.60	1.40	3.50	2.7	0.5
2024	11.79	4.60	1.40	3.50	2.7	0.5
2025	12.33	6.40	2.80	3.50	2.7	0.5
2026	12.88	6.40	2.80	3.50	2.7	0.5
2027	13.43	6.40	2.80	3.50	2.7	0.5
2028	13.98	6.40	2.80	3.50	2.7	0.5
2029	14.54	6.40	2.80	3.50	2.7	0.5
2030	15.11	6.40	2.80	3.50	2.7	0.5

Source: City of North Port Utilities

3. Water System Conclusions

Based on review of the water supply system it was noted that the City currently only has two primary sources of treated water: surface water from the MCWTP and the PR/MRWSA Interconnect. The MCWTP is permitted by the SWFWMD to withdraw surface water from both the Myakkahatchee Creek and Cocoplum Waterway which runs through the City. Water from the Myakkahatchee Creek and Cocoplum Waterway is treated at the City's MCWTP prior to distribution. The new WUP issued in 2006 increased the maximum withdrawal to 6.00 mgd but the plant capacity is limited to 4.4 mgd.

The City also receives finished potable water from the PR/MRWSA through an existing agreement. The City currently has a contracted amount of 1.192 mgd average annual daily flow (AADF) and 3.146 mgd peak month, with increases in the AADF to 2.7 mgd by 2011 from the PR/MRWSA. The new water treatment plant for WVID (Thomas Ranch) (SWWTP), scheduled for use by July 2015, will be able to provide 2.0 mgd of potable water on an annual average day basis and 4.4 mgd on a peak day flow basis.

4. Projected Reuse Water Demand

The current agreements established by the City with the existing reuse water customers indicate that the City of North Port has committed to provide up to a combined 1.88 mgd of reuse water

supply to existing customers. The City is committed to continue supplying the existing reuse water customers in the future at the currently committed flow rates.

As the City of North Port's wastewater flow increases throughout the planning period, additional reuse water supply will become available for distribution to the targeted reuse water customers.

5. Capital Improvements Program

Please refer to the Capital Improvements Element for a breakdown of the fiscal year funding for the five-year planning period. The City will update this schedule yearly and the projects contained therein will be financially feasible as required by Florida Statutes.

Utility Expansion into Existing Neighborhoods

1. Introduction

The City of North Port will also be expanding the potable water system to existing neighborhoods. Within the City, there are currently 60 designated neighborhoods ranging in size from approximately 20 acres to over 3,600 acres. The City currently provides potable water service to a portion of these neighborhoods. The neighborhoods that currently have potable water service are located primarily in the older City core area where the General Development Corporation first developed and built. The platted nature of North Port meant that the neighborhoods beyond the "core" developed in a haphazard fashion over time. However, in the past decade tremendous growth has caused neighborhoods to fill, and make it more amenable and cost-effective to extend water and sewer infrastructure.

The goal of the City is to eventually connect all residences within the City limits to the City's utility system (with the exception of the North Port Estates and Lake Geraldine areas, as these areas are intended to be agricultural/estates). In general, these centralized utility systems are considered to offer increased environmental, health, and safety benefits over private wells because the centralized systems can be more closely monitored and controlled. In keeping with this goal, the City has implemented policies that require all newly developed neighborhoods to be constructed with infrastructure to connect into the City's water systems. Again, this is for subdivided portions of larger tracts of land and does not apply to the old quarter-acre platted lots.

The City will be completing a Neighborhood Improvements Master Plan in the near future to evaluate the areas not currently provided with utility service. This master plan will be used to prioritize the neighborhoods and the order of improvements including their financial feasibility. The City has policies in place in this Comprehensive Plan requiring residences of existing neighborhoods (the platted lots) to connect to the City of North Port utility system within one (1) year after the appropriate infrastructure is made available to the residences that currently lack the services.

Developer Contributions

In order for the City to realize its ultimate goal of City-wide potable water service, it must rely on the contributions of developers to help defray the costs of the needed infrastructure. This may come in the form of upgrades to existing facilities, construction of new facilities, reimbursements to the City for improvements made by the City or another form of contribution. The City

requires all developers to enter into a Developer's Agreement in order for the City to ascertain the needs that the development will require from the potable water system and, if applicable, the reuse water system, and how those needs will be met by both the City and the developer. The City of North Port requires the developer to supply the City with hydraulic modeling detailing the development's impacts to the existing infrastructure. The City is also requiring developers to investigate possible potable water sources which may be available on their property in order to serve both the development and as a possible future source of potable water for the City, specifically in the WVID (Thomas Ranch) and Kelce Ranch areas of the City. As stated in the GOP's the City will not allow development to go forward (except currently vested quarter-acre lots) if the water resources are not available to handle the demand of the developments.

Future Needs

1. Water Supply and Treatment Facilities

An expansion of the existing water supply/treatment capacity in the amount of 2.5 mgd (annual average) is projected to be needed by 2013, and an expansion of 7.0 mgd (annual average) is projected to be needed by the year 2025. At build-out conditions, it is projected that the City's potable water system will require a total supply capacity of approximately 25.4 mgd (annual average). New water supply/treatment facilities will be developed to meet the maximum day demands (1.4 times the annual average demands). These dates are preliminary and subject to change due to the current economic downturn and slowdown of growth. The City will amend the CIP when these projects are scheduled into the five-year plan and will be financially feasible per Florida Statute.

Future potable water demand will be significantly influenced by customer growth in the large proposed new developments of WVID (Thomas Ranch) and Panacea.

PR/MRWSA Interconnect

The current interconnect with the PR/MRWSA is undersized to meet future contracted flows and the City will negotiate a second interconnect with the PR/MRWSA. The City will continue negotiating with Peace River/ Sarasota County to have a connection on the 42" low pressure transmission main that runs through the northeast quadrant of the City. In addition to the 42" interconnect, the City will also construct an additional connection to the PR/MRWSA based on the Phase II Preliminary Engineering Evaluation recommendation. This is where much of the future development of the City is projected to take place.

Myakkahatchee Creek Water Treatment Plant

The City is currently proceeding with a Water Enhancement Study which will include recommendations for improvements to increase reliability. These improvements will be made in a timely fashion in order to maximize the treatment capacity of the MCWTP as required to meet the growing demand. Although the plant has a rated hydraulic capacity of 4.4 mgd, improvements are required since the plant has treatment limitations based on the source water quality and recent changes to regulatory requirements. The City will also proceed with design for a permanent intake structure for the Cocoplum Waterway, so that it may be utilized as a permanent water source and blended with the Myakkahatchee Creek during dry periods. Withdrawals from the Myakkahatchee Creek are limited based on the permit withdrawal schedule.

West Villages Improvement District
In order to meet the growing demands of WVID, a new water treatment plant is required. The City has guaranteed to provide the WVID with 5,600 ERCs of water or 1.4 mgd (based on 250 gpd/per ERC). In order to deliver this quantity the City must extend the 16" potable water line from the WVID from Ortiz Blvd to the MCWTP, dependent upon growth in the WVID. A new water treatment plant is anticipated to be on-line in 2015. This is currently being planned by the WVID for dedication to the City. This date is preliminary and subject to change due to the current economic downturn and slowdown of growth. The City will amend the CIP when this project is scheduled into the five-year plan and will be financially feasible per Florida Statute.

Other Transmission Improvements
The hydraulic model for the City's water distribution system will be calibrated and updated as new developments are added. The City will also conduct a water quality component to the distribution model since increased flushing has been required with the addition of the new developments.

Potable Water Conclusion
The City will actively pursue new groundwater sources, particularly in the Kelce Ranch area of the City, in order to augment the current surface and regional water supplies. The City is also committed to extending potable water service to the existing platted lots. The City will continue to require new developments to pay for their own improvements to the infrastructure due to their developments, while also requiring contributions so that the City will be able to upgrade its facilities City-wide.

2. Future Development of the Reuse Water System
The Reuse Master Plan (Brown & Caldwell, April 28, 2008), set forth the plan for expanding the reuse water system throughout build-out. The City's estimated future demand is 21 mgd. All wastewater treatment facilities will be constructed to maximum potential future quantity of available reuse water supply. The City's goal is to develop two additional wastewater plants at the northeast and southwest extremities of the City. The plants are anticipated to be interconnected with the City's current central plant for redundancy and reliability.

Future expansion of the City's reuse water system is likely to yield several benefits. First, this will support the City's goal of minimizing the use of potable water for irrigation, thus conserving natural water resources and helping to maintain the relatively low per-capita potable water consumption rate that has historically existed in the City. The City's goal of providing central water to the 70,000 lots will be more easily obtained by maximizing the reuse water. These lots with vested development rights need available potable water, which the City is able to provide through conservation, maximizing the use of reuse water. Also, distributing more reuse water will minimize the volume of treated wastewater to be disposed of through other means, thus further benefiting the environment and reducing the need for permitting and developing future effluent disposal facilities.

In conclusion, the City will continue to explore all possible options to increase the use of reuse water for purposes of irrigation. Through the use of the proposed WWTPs in the WVID (Thomas Ranch), and Panacea areas in conjunction with the current City WWTP, the City will

strive to increase the number of customers of bulk reuse water in order to reduce the use of potable water for irrigation of developments.