EXECUTIVE SUMMARY

BACKGROUND

The City of Cape Coral (City), developed in the 1950s and incorporated as a city in 1970, is one of the nation's fastest growing communities. Situated in southwest Florida on a large peninsula, the City of Cape Coral (City) consists of an area of over 120 square miles (76,000 acres) with 10 square miles being comprised of water. The peninsula holds over 400 miles of fresh and saltwater canals which ultimately open into the Gulf of Mexico and its tributaries. The City borders the Caloosahatchee River in the south and east, the Matlacha Pass in the west, and connects to the Florida mainland in the north by Charlotte County and North Fort Myers. Estimates of City population summarized in **Table ES-1** show that the year-round population in the year 2020 was 197,818 as of August of the same year. Compared with US Census Data from 2011 to 2019, the population has increased at an annual rate of approximately 3.3% over the past decade.

Table ES-1: City of Cape Coral Historical Total Population

FY	Total Population
2011	152,817
2012	155,405
2013	158,415
2014	161,804
2015	165,843
2016	170,063
2017	173,679
2018	178,593
2019	183,942
2020	197,818

Total population data for City of Cape Coral from 2011 to 2019 from United States Census Bureau

Total population data for City of Cape Coral for 2020 from Metro Forecasting

The City owns and operates potable water, wastewater, and irrigation quality (IQ) water systems. The City's utilities service area for potable water, sewer and irrigation quality water extends to the entirety of the City, and progress is ongoing to expand service to the less developed areas located to the north in the form of Utility Extension Projects (UEPs). The City Utilities Department provides the overall management of utilities operations to safely provide outstanding drinking water, reuse irrigation, and sewer service to the City's residents. The Department is responsible for the

management and enhancement of utilities capital assets and to ensure that all regulatory conditions and mandatory requirements are met. Over the years various engineering reports, plans and documents have been prepared to outline a phased program of infrastructure improvements to expand utility services to the residents of Cape Coral. However, as the City continues to grow, an updated comprehensive potable water, wastewater, and irrigation quality water and supporting utilities master plan is needed.

The City Utilities Department retained AECOM Technical Services, Inc. (AECOM) to provide professional engineering services for development of a Comprehensive Utilities Master Plan Update to address:

- Commercial and residential growth
- Prioritization for expanding utility service
- System capacity to meet projected demands
- Reliability of service
- Regulatory requirements

The Master Planning Project consisted of the following major tasks:

- Water Resource Planning
- Population and Demand/Flow Projections
- Existing Treatment Capacity Evaluation and Gap Analysis
- Hydraulic Modeling
- Level of Service Standards Documentation
- Development and Ranking of Alternative Improvements
- Capital Project Identification and Project Prioritization
- Final Report and Presentation
- UEP North 1 Planning

POPULATION FORECASTS & PRIORITIZATION OF AREAS FOR UTILITY EXTENSIONS

One of the most critical steps in the master planning efforts is to provide accurate and spatially located population forecasts for the City. A City Interactive Growth Model (CIGM) was developed to provide population estimates and projections. The CIGM is based on Metro Forecasting Models Interactive Growth Model® (IGM) planning tool which is a land use model that considers when and where growth is most likely to occur over time. The projections are based on detailed research

and meetings with the Cape Coral Planning Department to understand the potential for future development.

The Interactive Growth Model was used for population forecasts over the planning horizon and to identify high growth areas within the City to prioritize Utility Extension Program (UEP) Project areas. The CIGM considered the following factors:

- Environmentally Sensitive Areas (considers the number of septic systems per acre and potential water quality impacts)
- Review of historic Building Permits and recent COs on a zone basis
- Commercial Development required to support increases in population
- Location/Availability of existing infrastructure – roads, potable water, and wastewater
- National Wetland Inventory overlay
- Entitlements of Planned Development Projects
- Buildout condition based on zoning, entitlements, and development trends

The following table (**Table ES-2**) summarizes the anticipated growth on an equivalent residential unit basis (ERU) and also identifies the septic densities in each of the UEP areas.

Table ES-2: UEP Subarea Prioritization Matrix

UEP #	2020 # of ERUs	Buildout # of ERUs	Added ERUs (2020 to Buildout)	Percent Developed 2020	UEP Septic Density
North 3	1561	5607	4046	28%	1.06
North 4	1884	4928	3044	38%	1.27
North 5	1907	4670	2763	41%	1.60
Entrada & Coral Lakes	2067	2888	821	72%	Served
North 6	2239	6668	4429	34%	1.70
North 7	1555	4278	2723	36%	1.39
North 8	1370	4884	3514	28%	1.14
North 9 (includes Hudson Creek)	1170	8063	6893	15%	0.67
North 10 (includes Hudson Creek)	866	2870	2005	30%	1.00
North 11	791	6721	5930	12%	0.38
North 12	470	2680	2210	18%	0.41

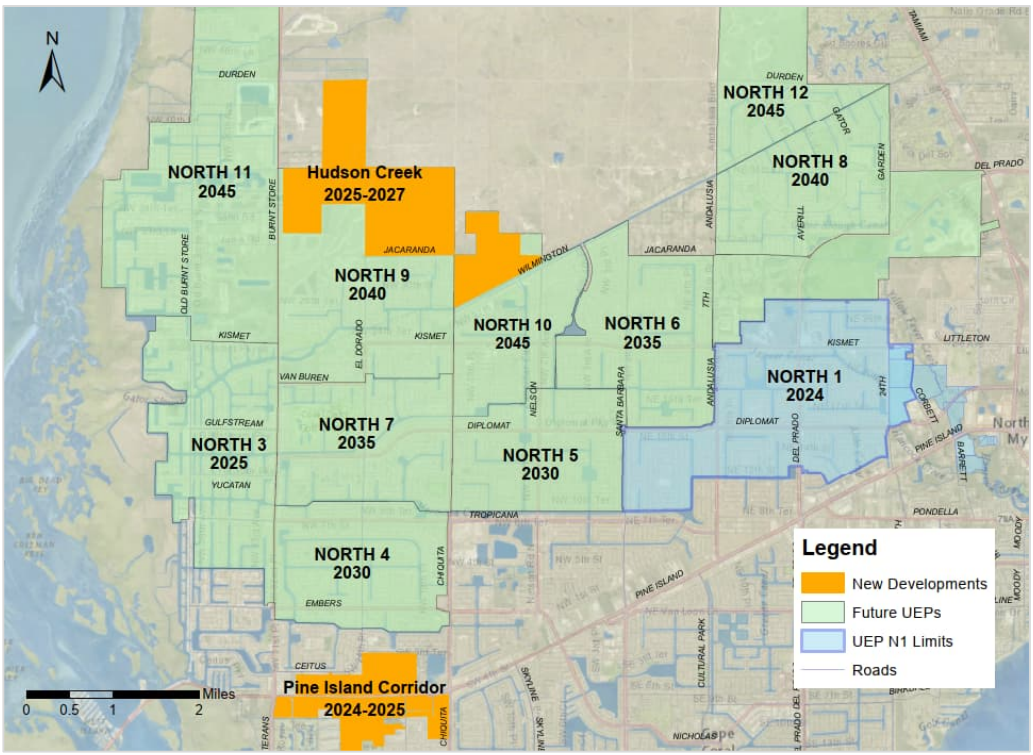
Additional criteria were also identified to help prioritize the UEP areas as described below. The criteria were weighted and scored according to City priorities. The existing population was considered the top priority for utility extension and therefore was provided the highest weighting with a total of 20 points possible for scoring. Residential growth, water quality, septic tank density and constructability were all considered the second priorities for utility extension and therefore 15 points were available for scoring. Operations and maintenance and "additional" commercial growth were also considered but as a lower priority over all the other criteria, and therefore scored based upon 10 total points. The results of the prioritization analysis for the UEP areas described above is shown in the form of a matrix in **Table ES-3**.

Table ES-3: UEP Subarea Prioritization Matrix

Points	15	10	15	20	15	15	10	100
UEP	**W/Q**	**Additional Commercial Growth**	**Residential Growth**	**Existing Population**	**Septic Tank Density**	**Constructability**	**O&M**	**Score**
North 3	15	9	14	14	9	15	10	87
North 4	0	8	12	20	11	14	8	73
North 5	0	9	12	17	14	8	8	68
North 6	0	7	15	17	15	5	8	67
North 7	0	6	9	14	12	5	5	52
North 8	0	8	12	12	10	5	5	52
North 9	0	10	11	10	6	4	5	46
North 10	0	10	6	8	9	5	5	43
North 11	0	5	8	7	3	3	8	34
North 12	0	3	4	4	4	4	5	24

The City priority is to expand utility service to all City residents and commercial developments. There are plans to extend utility services to North 1 and the Pine Island Corridor by FY 2024, North 3 by FY 2025, and then the City UEP proposed schedule will follow the established priority order and expand utilities to two UEP areas every five years. **Figure ES-1** shows the results of UEP prioritization for use in Master Planning for future service areas.

Figure ES-1: UEP Proposed Schedule

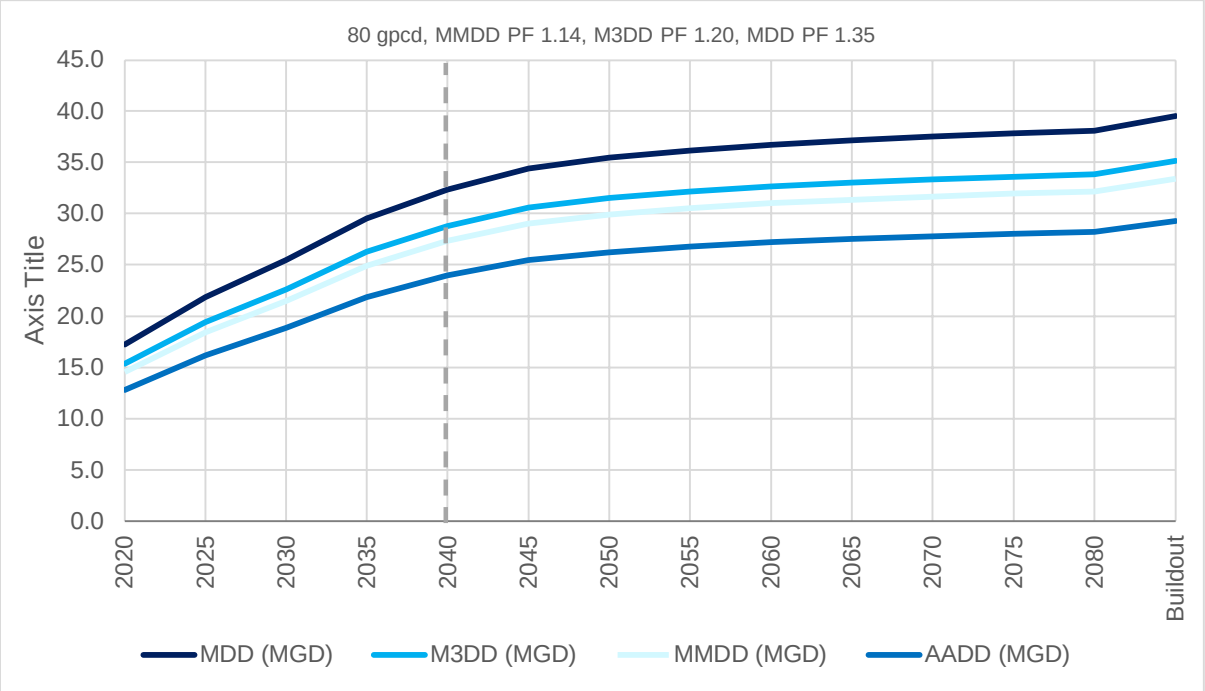


DEMAND AND FLOW PROJECTIONS

The UEP schedule is used to forecast served population and then to determine potable water, IQ water, and wastewater flows and demands over the planning horizon for this Master Plan. **Figure ES-2** and **Figures ES-4 through ES-8** show the increases in demands and flows over the 20-year planning period as well as projections through buildout (BO) using the per capita demands/flows and peaking factors shown at the top of the figures. Two different per capita flow rates were used when projecting flows to the existing water reclamation facilities. A lower per capita flow rate is used for the newer “tighter” sections of the wastewater collection system and higher per capita flow rate was used for older parts of the system where inflow and infiltration has more significant impacts.

Potable Water Demand Projections

Figure ES-2: Potable Water Demand Projections



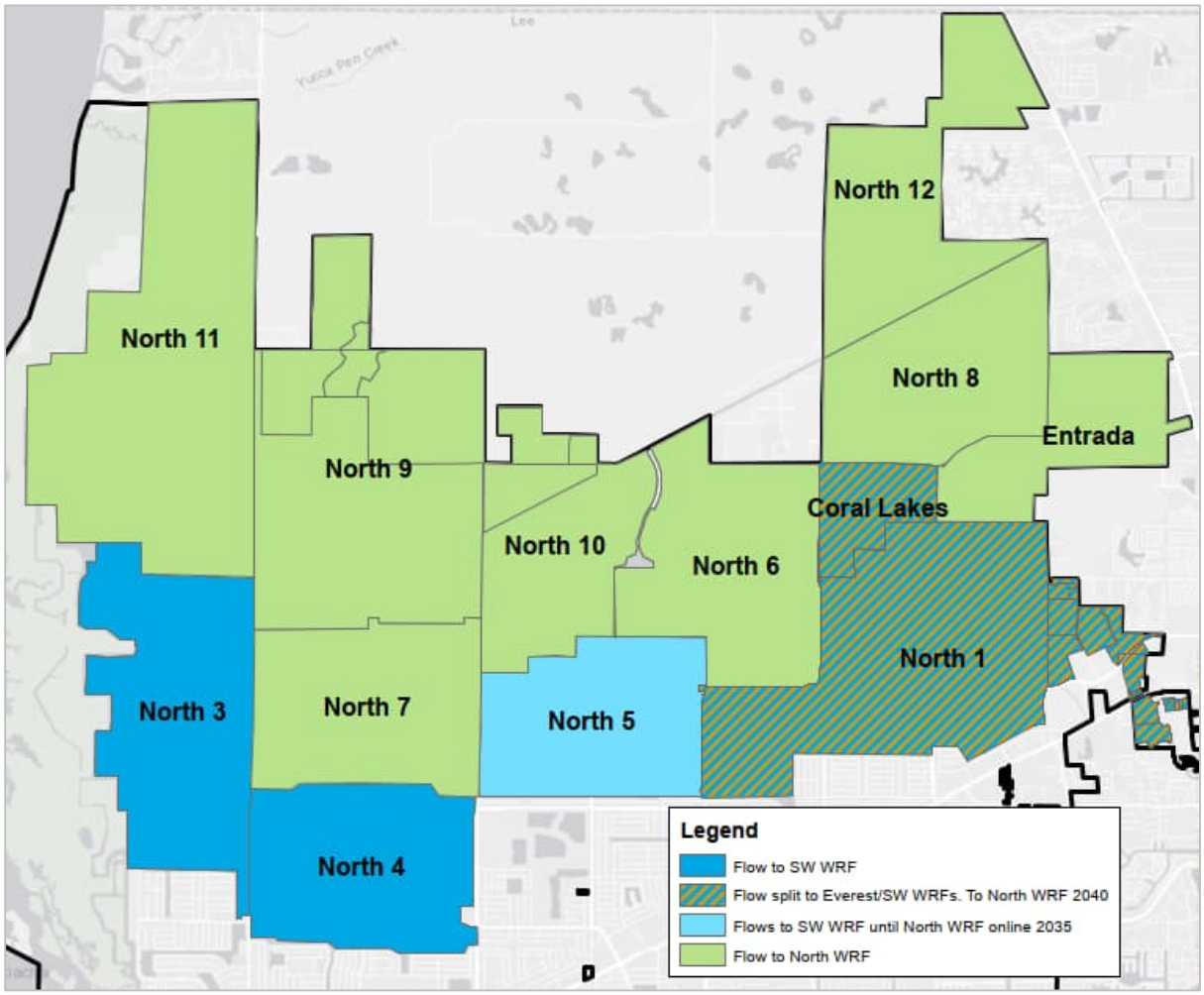
The dashed line indicates the start of forecasts provided exceeding the 20-year planning horizon (FY 2020 through FY 2040). This is meant to indicate that projections after this point are more uncertain and should be revisited for future planning. As shown in **Figure ES-2**, the MDD is expected to increase from 17.3 MGD in FY 2020 to 32.3 MGD in FY 2040 or an increase of 86.7%. This demand is projected to increase to 39.57 MGD at buildout or an increase of 22.5% from FY 2040 which should be viewed with caution due to uncertainty after the 20-year planning period.

Wastewater Flow Projections

Flow projections are carried out on a per-WRF basis to ensure each plant maintains capacity to serve its corresponding service area which will vary. A portion of the City's pump stations have the flexibility to convey flow to either the SW or Everest WRFs by opening and closing valves resulting in a change to each WRF service area. These pump stations are referred to by the City and herein as "Flex Stations". In addition, flow projections were carried out for the proposed new North WRF which is required to maintain pressure below 75 to 80 psi during peak hour flow conditions. Since the service areas change with the North WRF coming online, AADF projections are prepared for each wastewater service area using the projected served population based upon the UEP schedule (shown in **Figure ES-1**) along with per capita wastewater flow rates. **Figure**

ES-3 identifies which UEP areas will be conveying wastewater flow to each WRF and the anticipated timing.

Figure ES-3: Distribution of UEP Wastewater Flows by WRF



Figures ES-4 through **ES-7** show the flow projections for the two existing WRFs, the flex stations, and the new North WRF and reflect the changes in the service areas throughout the planning horizon.

Figure ES-4: Everest WRF Flow Projections

As shown in **Figure ES-4**, the Everest WRF AADF is expected to increase from 5.55 MGD in FY 2020 to 8.72 MGD in 2035. The flow then decreases to 7.36 MGD in FY 2040 due to the addition of a new North WRF and remains at 7.36 MGD due to the 2% infill rate that was applied and inflated the population to reach buildout in FY 2040.

Figure ES-5: Southwest WRF Flow Projections

As shown **Figure ES-5**, the SW WRF AADF is expected to increase from 9.44 MGD in FY 2020 to 17.24 MGD in FY 2040. This flow is projected to increase to 18.01 MGD at buildout and should be viewed with caution due to uncertainty after the 20-year planning period.

Figure ES-6: Flex Pump Station Flow Projections

A portion of the City's pump station basins have the flexibility to be conveyed to either SW or Everest WRFs and are classified as "Flex Station". As shown in **Figure ES-6**, the flex station AADF is expected to decrease from 2.09 MGD in FY 2020 to 0.61 MGD in FY 2040 and at buildout. The projected flow for the flex stations decreases due to some of the flex stations being assigned to either the Everest or SW WRFs. The flow remains at 0.61 MGD due to the 2% infill rate that was applied and inflated the population to reach buildout in FY 2040.

Figure ES-7: North WRF Flow Projections

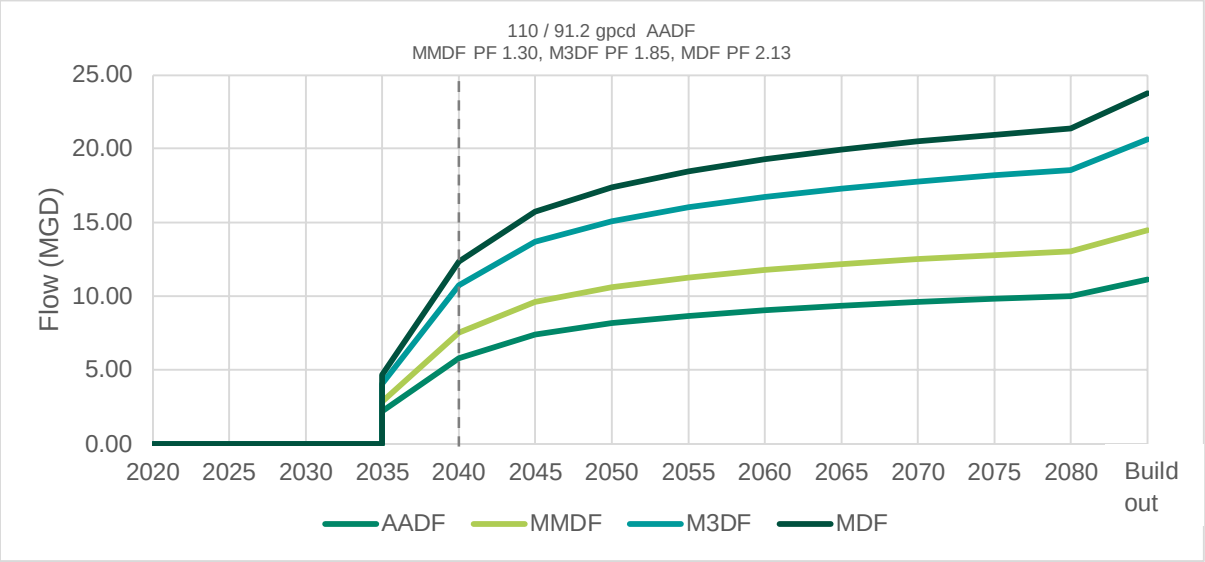


Figure ES-7 shows that a new North WRF AADF is expected to start at 2.19 MGD in FY 2035 when the plant is brought online. This flow is projected to increase to 5.79 MGD at FY 2040 as a result of additional UEP areas coming online and being conveyed to this facility. The AADF is projected to increase to 11.15 MGD at buildout, which should be viewed with caution due to uncertainty after the 20-year planning period.

IQ Water Demand Projections

Considering IQ water demands vary by season, IQ water monthly average and monthly max day demands were projected for both the dry and wet seasons using the seasonal multipliers in **Figure ES-8**.

Figure ES-8: IQ Water Demand Projections

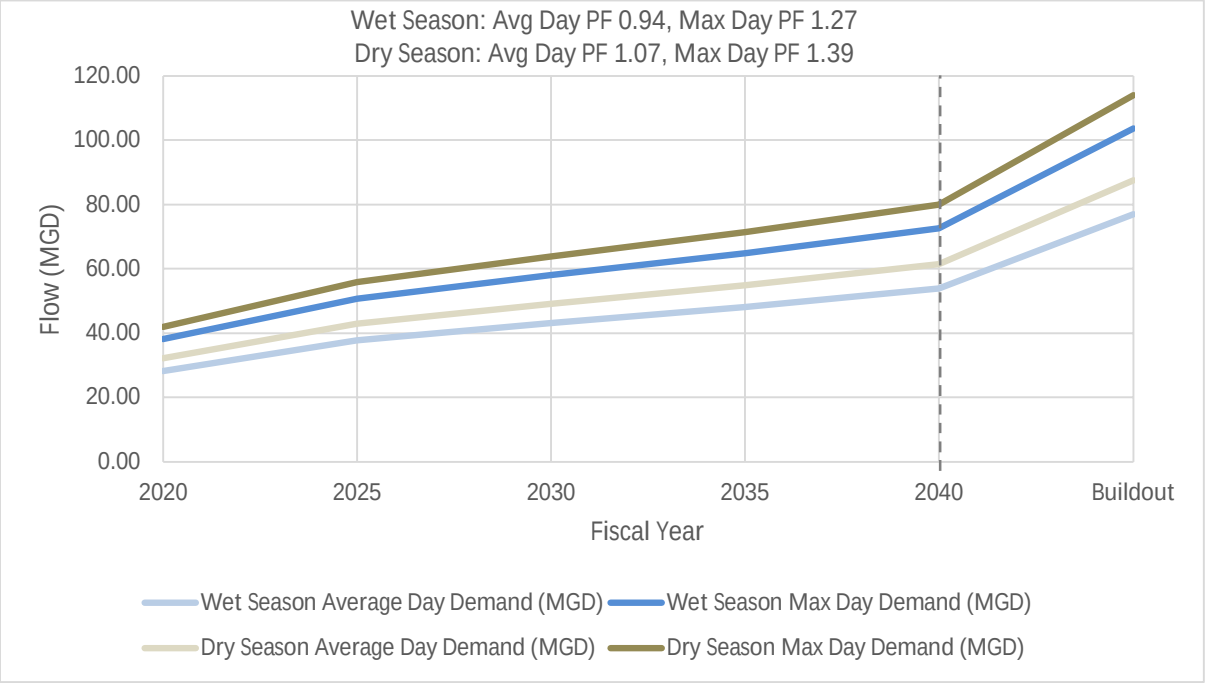


Figure ES-8 shows that the wet season monthly max day demand increases from 38.17 MGD in 2020 to 72.60 MGD in 2040 and 103.64 MGD at buildout. The dry season monthly max day demand increases from 42.01 MGD in 2020 to 79.91 MGD in 2040 and 114.08 MGD at buildout.

GAP ANALYSIS

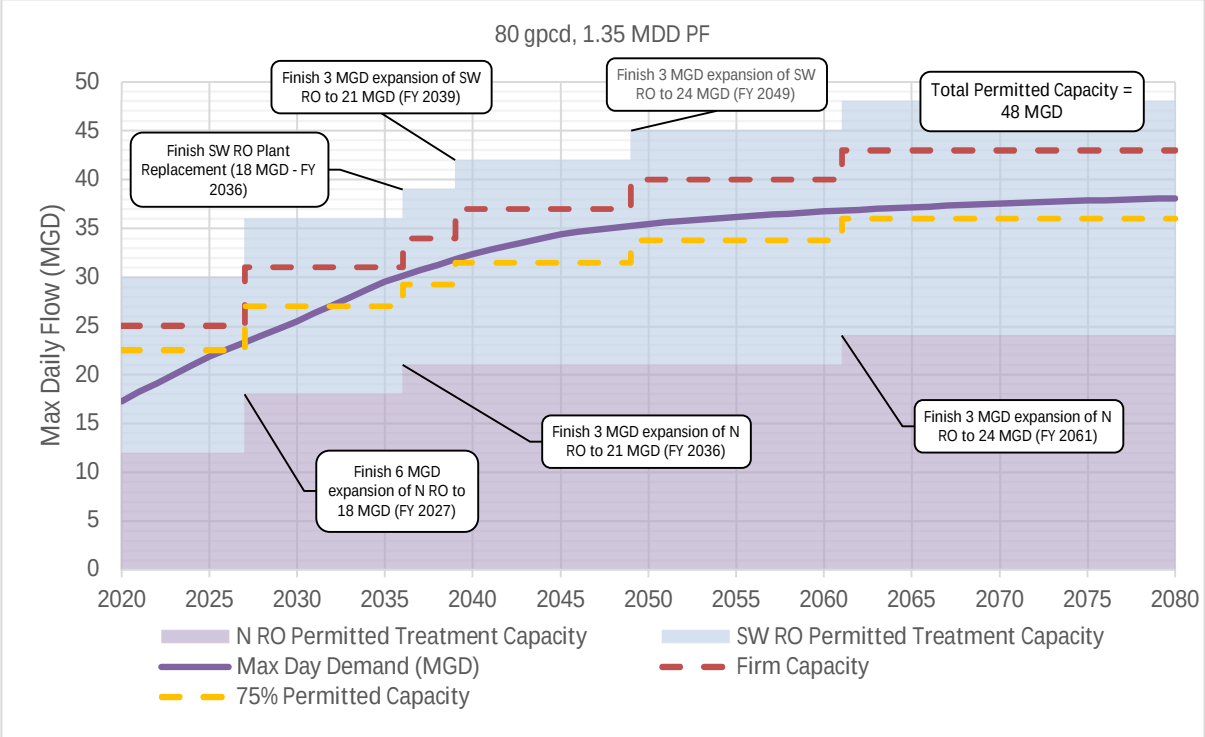
Increasing flows and demands due to utility expansion areas and growth within the existing service area requires an analysis of the existing and future capacity requirements of the potable water, irrigation, and wastewater facilities. A gap analysis was completed to identify the differential, whether a surplus or deficit, between the capacity of existing facilities and the projected flows and demands. Hydraulic modeling of the wastewater, potable water and irrigation quality water systems was completed to identify system deficiencies within the collection, transmission, and distribution systems over the twenty-year planning horizon.

The potable water system facilities that were evaluated under this gap analysis include the following:

- **Water Treatment Plant Capacity**
- Raw Water Supply Capacity
- Deep Injection Well Capacity
- Storage Capacity

Figure ES-9 presents the results of the Potable Water Treatment Gap analysis. As shown treatment plant capacity expansions are needed to keep up with the projected potable water MDDs. The timeline for expansions identified in the gap analysis was developed based upon using 3 MGD RO skids for future expansions and maintaining available treatment capacity beyond the firm capacity of each plant. In addition, the timeline included replacement of the SW RO WTP given the age, condition, and concern that the existing RO membranes are no longer being manufactured.

Figure ES-9: Potable Water Demand Projections & Treatment Plant Expansions Needed



The wastewater system facilities that were evaluated under the gap analysis include the following:

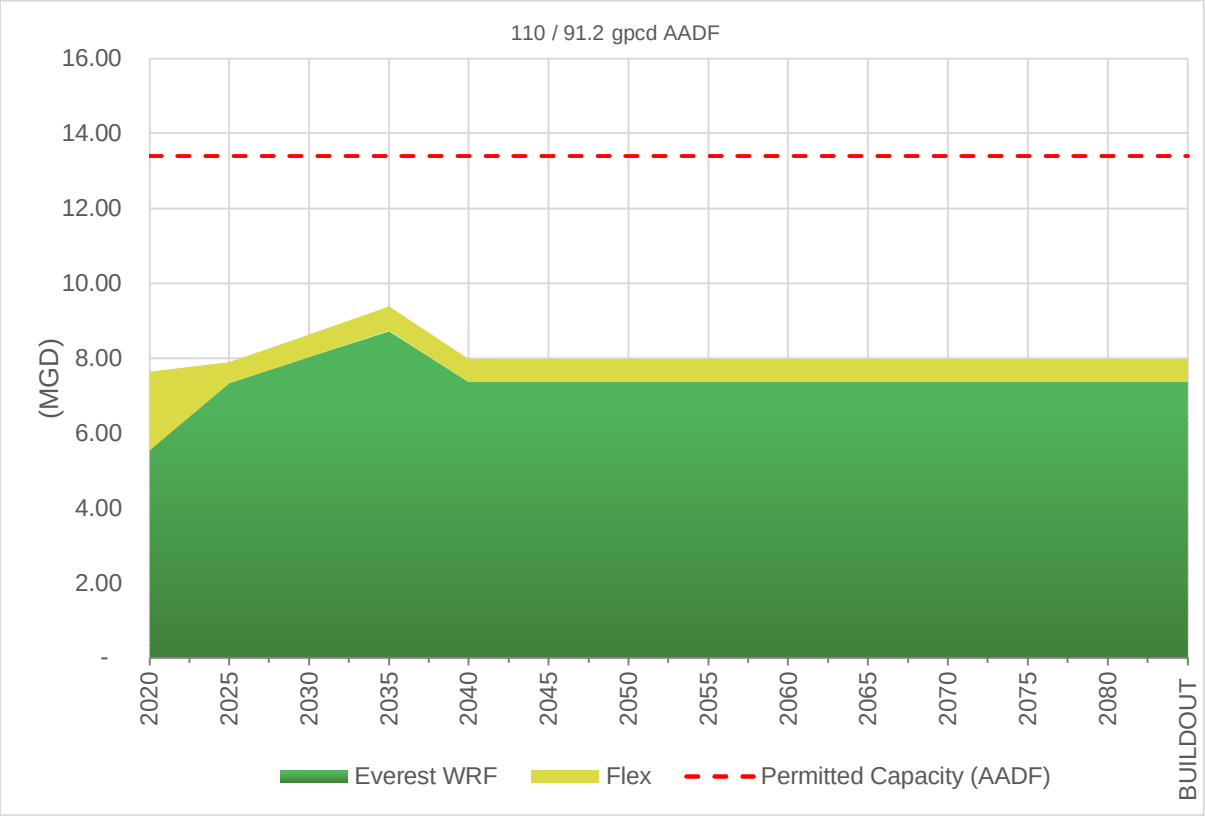
- **Wastewater Treatment Plant Capacity**
- Deep Injection Well Capacity

Hydraulic modeling of the wastewater conveyance system identified system limitations to send flows from the very northern section of the City to the two existing wastewater treatment facilities requiring a new North WRF. Therefore, prior to completing the wastewater treatment plant gap analysis, the hydraulic modeling results were used to identify future wastewater flow distributions between the existing and proposed treatment facilities. The results of hydraulic modeling have determined the need for a new North WRF to service the northern UEP areas. The analysis of the additional wastewater flows associated with these northern UEP areas has indicated that

when the North 6 UEP area is provided wastewater services in the (Year 2035) a new WRF should be constructed and operational.

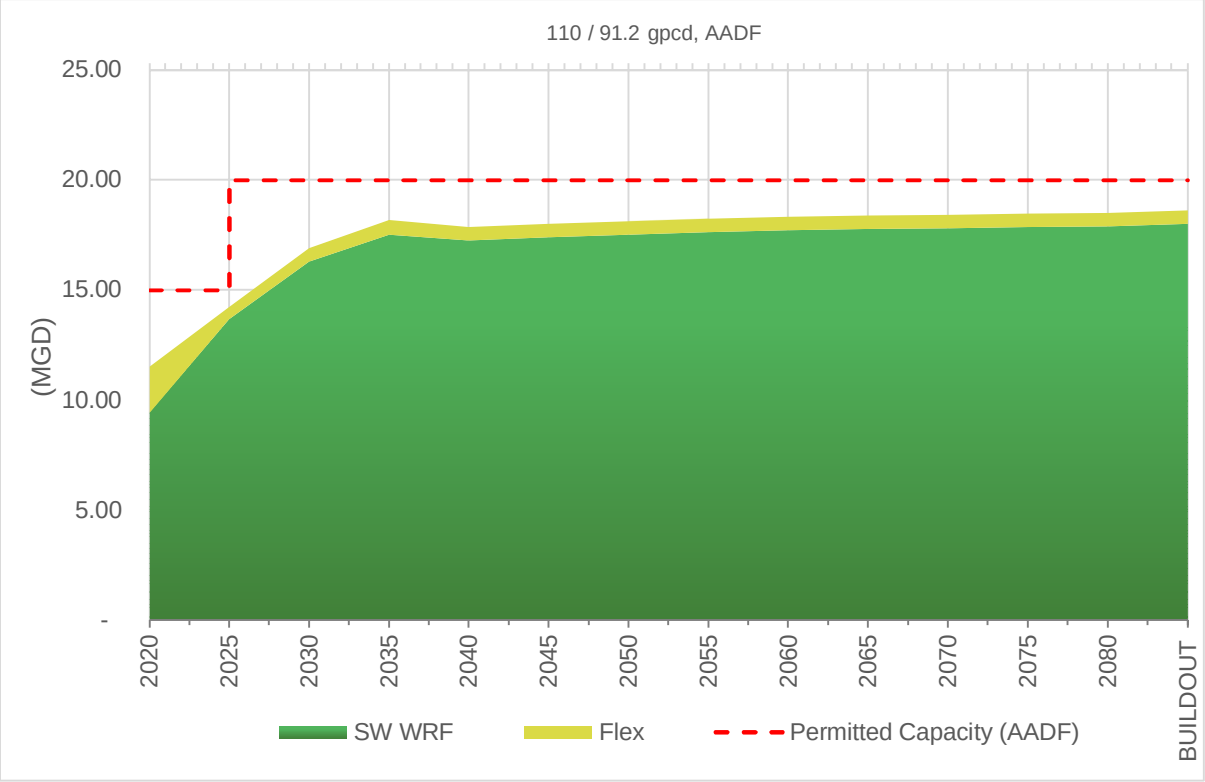
Figures ES-10 through **ES-12** presents the wastewater treatment plant gap analyses based upon plant sewer shed projected flows and the availability of permitted treatment capacity. This gap evaluation takes into account the hydraulic conveyance system limitations to send flows from the more northern expansion areas to the existing Everest and Southwest WRFs requiring a new North WRF to be online by 2035. Furthermore, while the flex stations can convey flow to either the Everest or SW WRFs, the gap analysis for each of the WRFs assumes that all flows from the flex stations are conveyed to that WRF to represent the highest influent conditions.

Figure ES-10: Everest WRF Gap Analysis



As shown in **Figure ES-10**, the Everest WRF has sufficient treatment capacity through buildout.

Figure ES-11: SW WRF Gap Analysis



The SW WRF has sufficient capacity to provide service through 2025, and a 5 MGD capacity expansion is planned to be online by 2025. The 20 MGD capacity is projected to be sufficient to serve the area though buildout.

For the new North WRF, it was originally proposed to have an initial treatment capacity of 4 MGD to be expanded to 8 MGD in 2040. However, the gap analysis indicated that an intermediate expansion to 6 MGD would be needed in 2037. Design and construction of plant expansions require a few years at minimum, thus an expansion after two years of the plant coming online is not recommended. Based on this, it is recommended that the North WRF has an initial treatment capacity of 6 MGD to be expanded to 8 MGD by 2040. The 8 MGD facility would accommodate flows up through 2050, after which an expansion of 4 MGD would be required to ensure sufficient treatment capacity through buildout. The gap analysis for the North WRF with the recommended treatment capacity schedule is shown in **Figure ES-12**.

Figure ES-12: North WRF Treatment Capacity Analysis

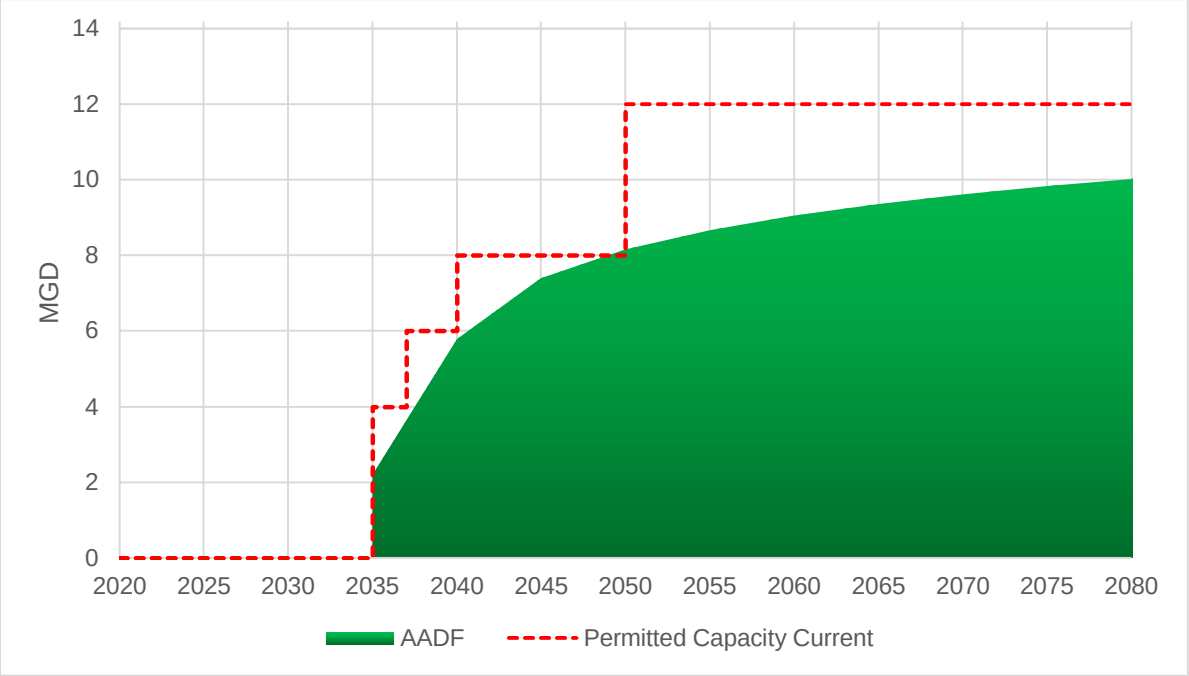


Figure ES-12 shows the proposed initial capacity of the North WRF of 4 MGD in 2035 to be expanded to 8 MGD in 2040. However, the gap analysis indicated that an intermediate expansion to 6 MGD would be needed in 2037. Design and construction of plant expansions require a few years at minimum, thus an expansion after two years of the plant coming online is typically not recommended. However, it is recommended that the City re-evaluate this when initiating the preliminary design.

The IQ water gap analysis evaluated available supply sources during the wet and dry seasons and included the following:

- Reclaimed water from the City's WRFs
- Canal water
- Reclaimed water through interlocal agreement with FGUA
- Reclaimed water through interlocal agreement with Fort Myers
- Surface water from SW Aggregates Reservoir
- Supplemental potable water (only for FY 2020)

The IQ water supply gap analysis accounts for these seasonal variations by using seasonal multipliers where appropriate, terms in the contractual agreements, and reduced supply capacities based upon engineering judgement. **Table ES-4** shows the results of the IQ water supply seasonal monthly average daily demand gap analysis for wet and dry seasons. **Table ES-5** shows the results of the IQ water supply seasonal monthly max day demand gap analysis for wet and dry seasons.

Table ES-4: IQ Water Supply Gap Analysis: Seasonal Monthly Average Daily Demands Basis

Served IQ Population Projection		Wet Season IQ Demands	Wet Season Supply Availability by Source (June thru Nov) (Flows in MGD)					Wet Season Surplus (Gap)	Dry Season IQ Demands	Dry Season Supply Availability by Source (Dec thru May) (Flows in MGD)							Dry Season Surplus (Gap)
Fiscal Year	Projected IQ Served Population [1]	Projected IQ Wet Season Average Day Demand[2]	Reclaimed Water[3]	Canal Water[4]	FGUA[4]	Ft Myers[4]	Total Water Availability	Seasonal Average Day Demand[6]	Projected IQ Dry Season Demand[2]	Reclaimed Water[3]	Canal Water[4]	FGUA[4]	Ft Myers[4]	SW Aggregates Reservoir[5]	Supplemental PW[6]	Total Water Availability	Seasonal Average Day Demand[7]
2020	128,181	28.34	14.17	36.88	3.5	0	54.55	26.21	32.26	15.03	12	1.5	0	16	3.09	47.62	15.36
2025	170,433	37.68	17.90	36.88	3.5	12	70.28	32.60	42.89	18.97	12	1.5	6	16	0	54.47	11.58
2030	194,758	43.06	20.68	36.88	3.5	12	73.06	30.00	49.02	21.93	12	1.5	6	16	0	57.43	8.41
2035	217,502	48.09	24.14	36.88	3.5	12	76.52	28.43	54.74	25.60	12	1.5	6	16	0	61.10	6.36
2040	243,799	53.9	25.73	36.88	3.5	12	78.11	24.21	61.36	27.28	12	1.5	6	16	0	62.78	1.42
Buildout	348,073	76.96	30.83	36.88	3.5	12	83.21	6.25	87.6	32.68	12	1.5	6	16	0	68.18	-19.42

1. Served IQ population for FY 2020 estimated based on Rate Sufficiency Study by Stantec. Population growth after FY 2020 through FY 2040 reflects 95% of system growth within both future UEP areas as per UEP prioritization timeline as well as infill within the existing system.
2. Projected IQ Wet and Dry Season Monthly Average Day Demands estimated based on Projected IQ Served Population, a 10-year historical IQ usage rate of 235 gpcd, a 10-year historical avg day seasonal multiplier of 0.94 for wet season and 1.07 for dry season, and a 10-year historical max day seasonal multiplier of 1.27 for wet season and 1.39 for dry season.
3. Reclaimed Water Capacity estimated from the projected combined system wastewater AADD multiplied by a 10-year historical min month seasonal multiplier of 0.83 for wet season and 0.88 for dry season.
4. Estimated Wet & Dry Season Available Irrigation Water supply based upon input from City staff and Engineering judgement, FGUA and City of Fort Myers availability as per contract, and SFWMD permit for the freshwater canals during the wet season.
5. 16 MGD for is the allowable withdrawal rate for 90 days as permitted for the SW Aggregates Reservoir.
6. Supplemental PW Capacity for 2020 estimated from historical usage between FY 2017 though FY 2019 and was assumed as zero in the future as new IQ sources will come online.
7. Seasonal Average and Max Day Demand Surplus (GAP) for each season is found by subtracting the Total IQ Water Supply Availability from the Projected IQ Demand for each respective season

Table ES-5: IQ Water Supply Gap Analysis: Seasonal Monthly Max Daily Demands

Served IQ Population Projection		Wet Season IQ Demands	Wet Season Supply Availability by Source (June thru Nov) (Flows in MGD)					Wet Season Surplus (Gap)	Dry Season IQ Demands	Dry Season Supply Availability by Source (Dec thru May) (Flows in MGD)							Dry Season Surplus (Gap)
Fiscal Year	Projected IQ Served Population (2.2% Growth Rate)[1]	Projected IQ Wet Season Demand (Max Day)[2]	Reclaimed Water (MGD)[3]	Canal Water (MGD)[4]	FGUA (MGD)[4]	Ft Myers (MGD)[4]	Total Water Availability (MGD)	Seasonal Max Day Demand[6]	Projected IQ Dry Season Demand (Max Day)[2]	Reclaimed Water[3]	Canal Water[4]	FGUA[4]	Ft Myers[4]	SW Aggregates Reservoir[5]	Supplemental PW[6]	Total Water Availability	Seasonal Max Day Demand[7]
2020	128,181	38.17	14.17	50.22	3.50	0.00	67.89	29.73	42.01	15.03	12.00	1.50	0.00	16.00	4.55	49.08	7.07
2025	170,433	50.75	17.90	50.22	3.50	12.00	83.62	32.87	55.86	18.97	12.00	1.50	6.00	16.00	0.00	54.47	-1.38
2030	194,758	57.99	20.68	50.22	3.50	12.00	86.40	28.41	63.83	21.93	12.00	1.50	6.00	16.00	0.00	57.43	-6.40
2035	217,502	64.76	24.14	50.22	3.50	12.00	89.86	25.10	71.29	25.60	12.00	1.50	6.00	16.00	0.00	61.10	-10.19
2040	243,799	72.60	25.73	50.22	3.50	12.00	91.45	18.86	79.91	27.28	12.00	1.50	6.00	16.00	0.00	62.78	-17.12
Buildout	348,073	103.64	30.83	50.22	3.50	12.00	96.55	-7.10	114.08	32.68	12.00	1.50	6.00	16.00	0.00	68.18	-45.90

The results of the irrigation water supply gap analysis show that the City has adequate supply on a seasonal monthly average daily flow basis through 2040 and buildout conditions during the wet season with a surplus of 24.21 MGD in year 2040 and a surplus of 6.25 MGD at buildout. During the dry season there is a surplus of 1.42 MGD in year 2040, however a deficit of 19.42 MGD is projected at buildout if demands continue to increase, and additional supplies are not available. The seasonal monthly maximum daily demand gap analysis indicates that there are sufficient supplies through 2040 during the wet season (18.86 MGD surplus) however, a deficit of 7.1 MGD is projected at buildout. During the dry season, a deficit of 1.38 MGD is projected starting FY 2025 increasing to 45.90 MGD at buildout.

Considering the variety of sources and seasonal variability of available supply, it is recommended that the City prioritize the utilization of all reclaimed water sources first (from City WRFs, FGUA, and Fort Myers), freshwater from the canals second, and surface water from the SW Aggregates Mine Reservoir last (only in the dry season). Efficient utilization of all available IQ water supply sources along with programs to promote water conservations are needed to reliably meet irrigation demands.

The City has many ongoing projects to increase IQ water supply and they also are proposing changes to the City's Irrigation Ordinance which when adopted will add one day to the irrigation schedule from 6 days/week to 7, and will require irrigation sprinkler heads with greater water efficiencies. These ongoing efforts to reduce IQ water max day demand and increase max day supply will help address max day supply gaps. It is recommended that the City also continues implementing water conservation measures to prevent demands from increasing.

UEP INFRASTRUCTURE NEEDS THROUGH FY 2040

Based upon results and findings from the gap analyses, hydraulic modeling analyses, and discussions and meetings with City staff, a list of recommended utility infrastructure improvements was developed with a schedule for implementation and planning level costs.

The planning level costs for required infrastructure needs were categorized based upon how they would be funded: Assessed Costs, Non-Assessed Costs, or Funded by Others/TBD. The City staff and the City's Utility Rate Consultant assisted with identifying the funding category. Planning level costs were developed using available cost information for similar upgrades including recent construction bids. The planning level costs are based upon 2021 dollars. The total planning level costs of infrastructure needs for each planning year are presented in the tables below and give the total cost of improvements by proposed source of funding. A detailed list of recommended improvements, associated estimated costs, and funding sources are provided in **Appendix D**.

Table ES-6 shows the FY 2024 cost summary for recommended improvements. These improvements include projects to support the extension to the North 1 UEP area as shown in **Figure ES-12**.

Table ES-6: FY 2024 Cost Summary for Recommended Improvements

2024 Planning Level Costs Summary	
Assessed Costs	$137.5 M
Non-Assessed Costs	$193.1 M
Funded By Others or TBD	$0.0 M
Water-Sewer CIP	$46.8 M
2024 Total	$377.5 M

Figure ES-12: North 1 UEP Expansion

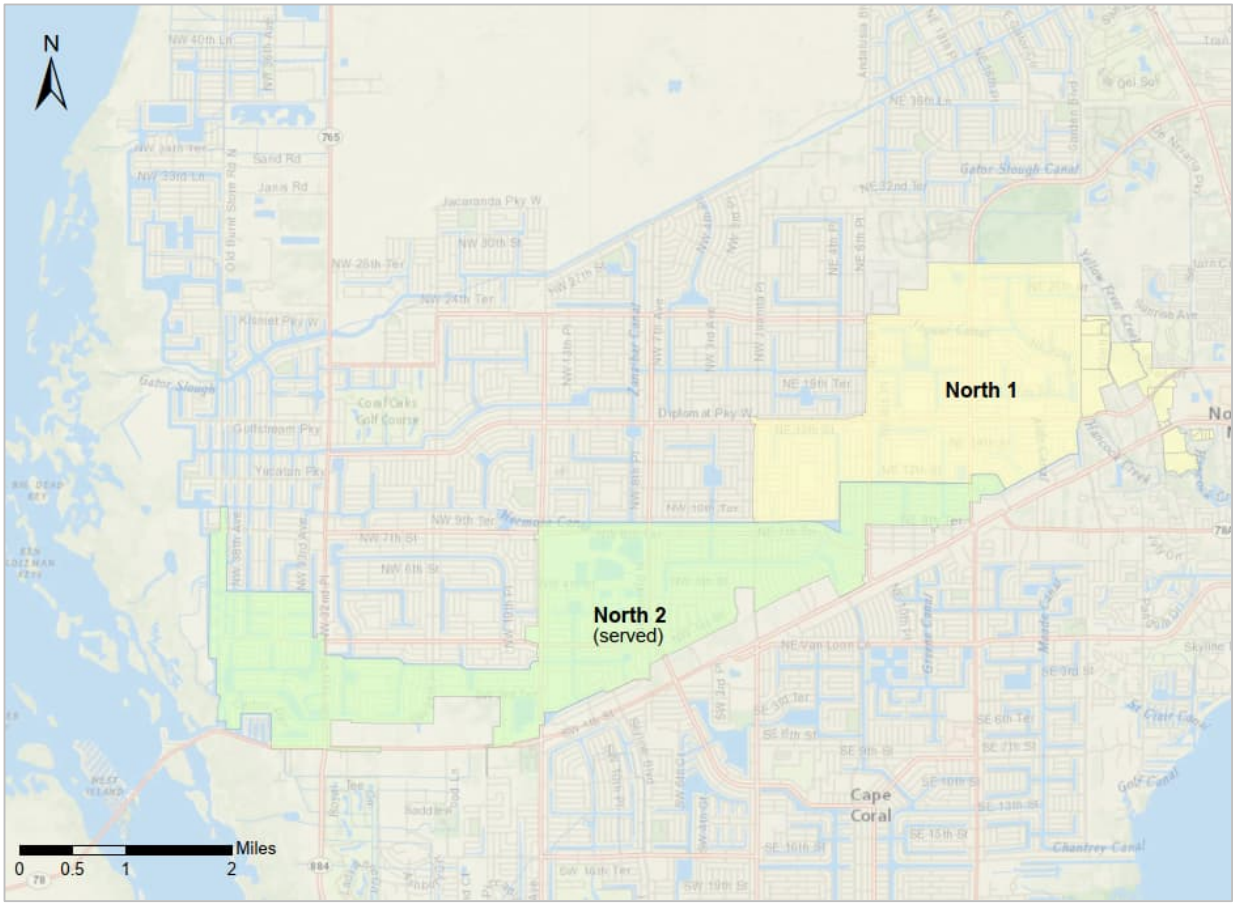


Table ES-7 shows the FY 2025 cost summary for recommended improvements. These improvements include projects to support the expansion to the North 3 UEP area, Hudson Creek PUD, Pine Island Corridor and Burnt Store Road corridor as shown in **Figure ES-13**. Recommended improvements included in the cost summary for FY 2025 but not shown in the figure are:

- 5 MGD expansion of the SW WRF to 20 MGD and 5 MG Reuse Storage Tank
- Del Prado Reuse Storage Tanks and High Service Pumps

Table ES-7: FY 2025 Cost Summary for Recommended Improvements

2025 Planning Level Costs Summary	
Assessed Costs	$147.5 M
Non-Assessed Costs	$193.4 M
Funded By Others or TBD	$67.3 M
Water-Sewer CIP	$66.2 M
2025 Total	$474.4 M

Figure ES-13: Recommended Improvements for FY 2025

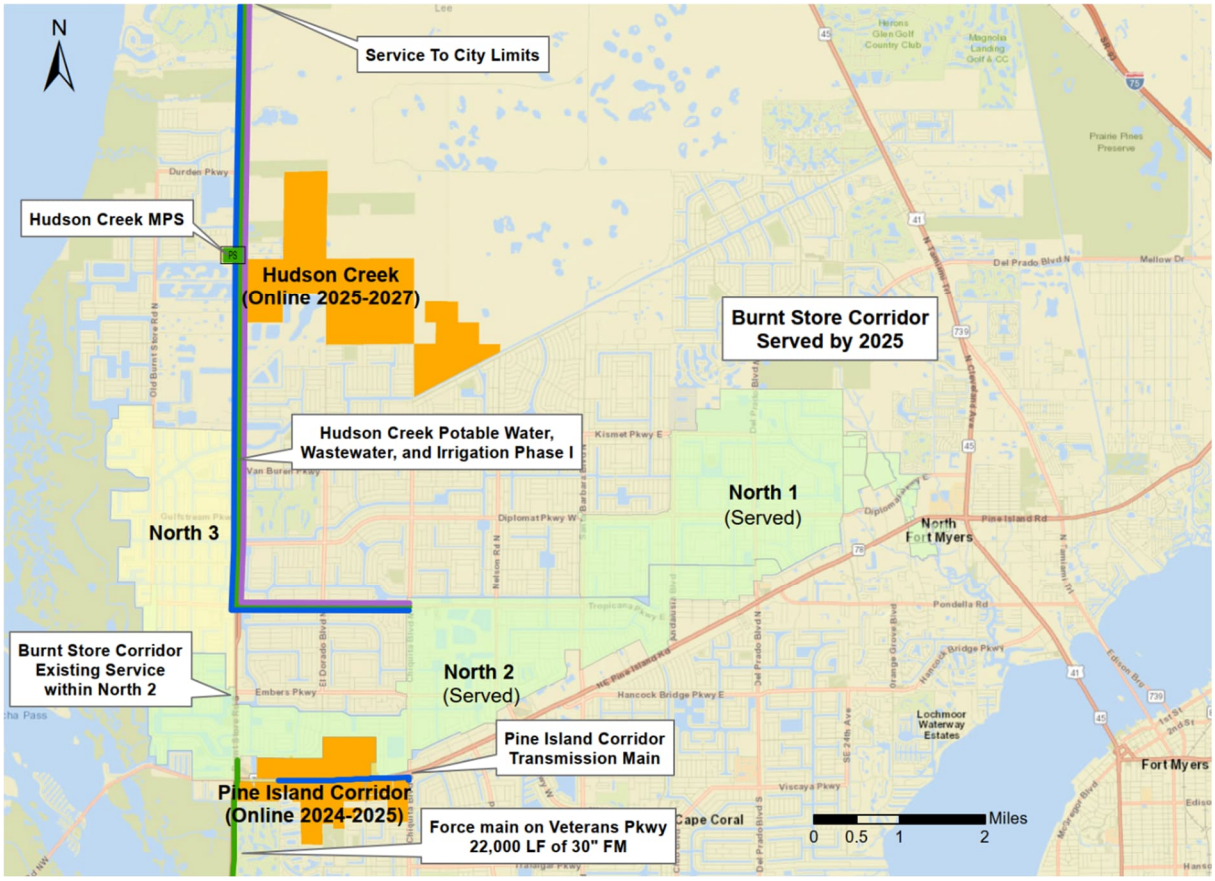


Table ES-8 shows the FY 2027 cost summary for recommended improvements. These improvements include projects to support the continued expansion to serve the Hudson Creek PUD as shown in **Figure ES-14**.

Table ES-8 FY 2027 Cost Summary for Recommended Improvements

2027 Planning Level Costs Summary	
Assessed Costs	$0.0 M
Non-Assessed Costs	$86.2 M
Funded By Others or TBD	$12.2 M
Water-Sewer CIP	$41.3 M
2027 Total	$139.7 M

Figure ES-14: Recommended Improvements for FY 2027

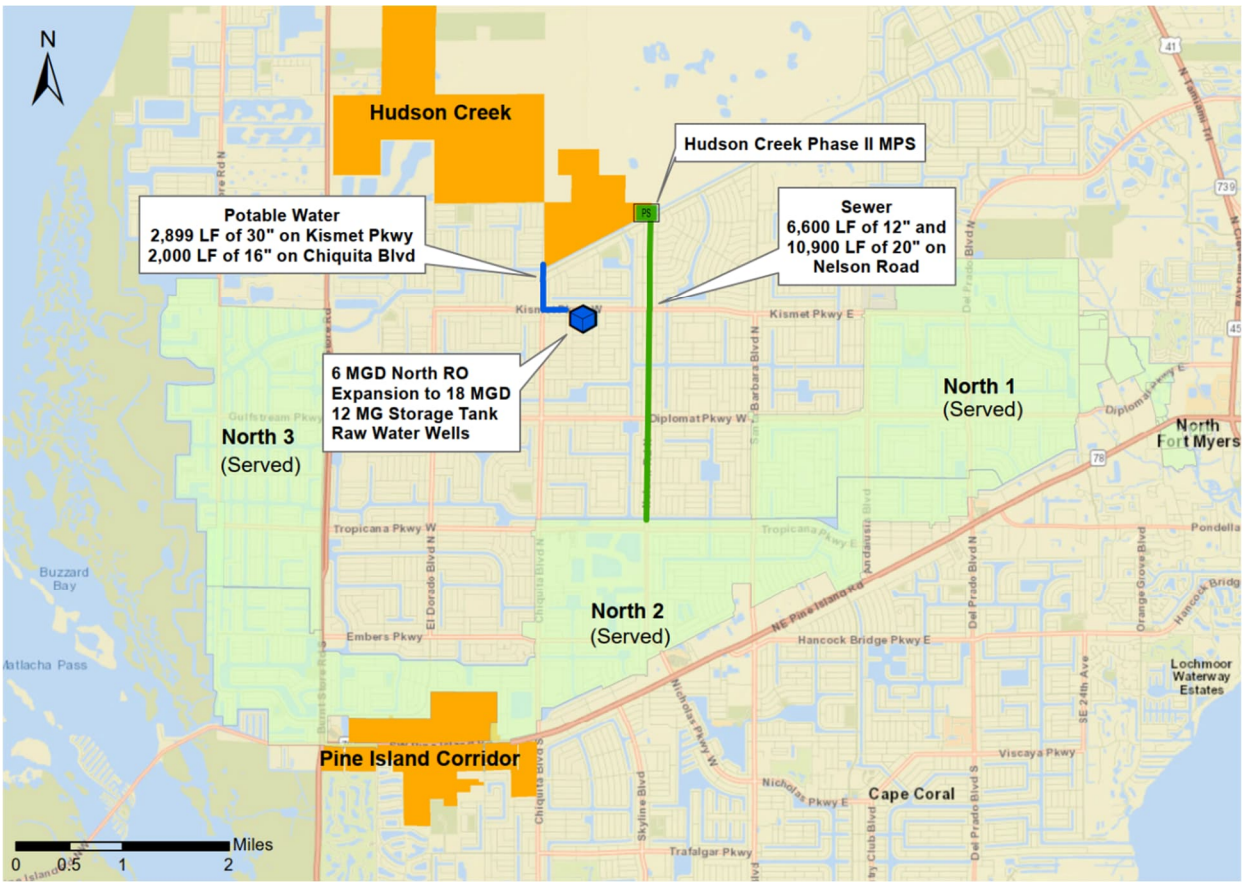


Table ES-9 shows the FY 2030 cost summary for recommended improvements. These improvements include projects to support the continued expansion to serve North 4 and North 5 as shown in **Figure ES-15**.

Table ES-9: FY 2030 Cost Summary for Recommended Improvements

2030 Planning Level Costs Summary	
Assessed Costs	$272.3 M
Non-Assessed Costs	$241.2 M
Funded By Others or TBD	$0.0 M
Water-Sewer CIP	$18.5 M
2030 Total	$532.0 M

Figure ES-15: Recommended Improvements for FY 2030

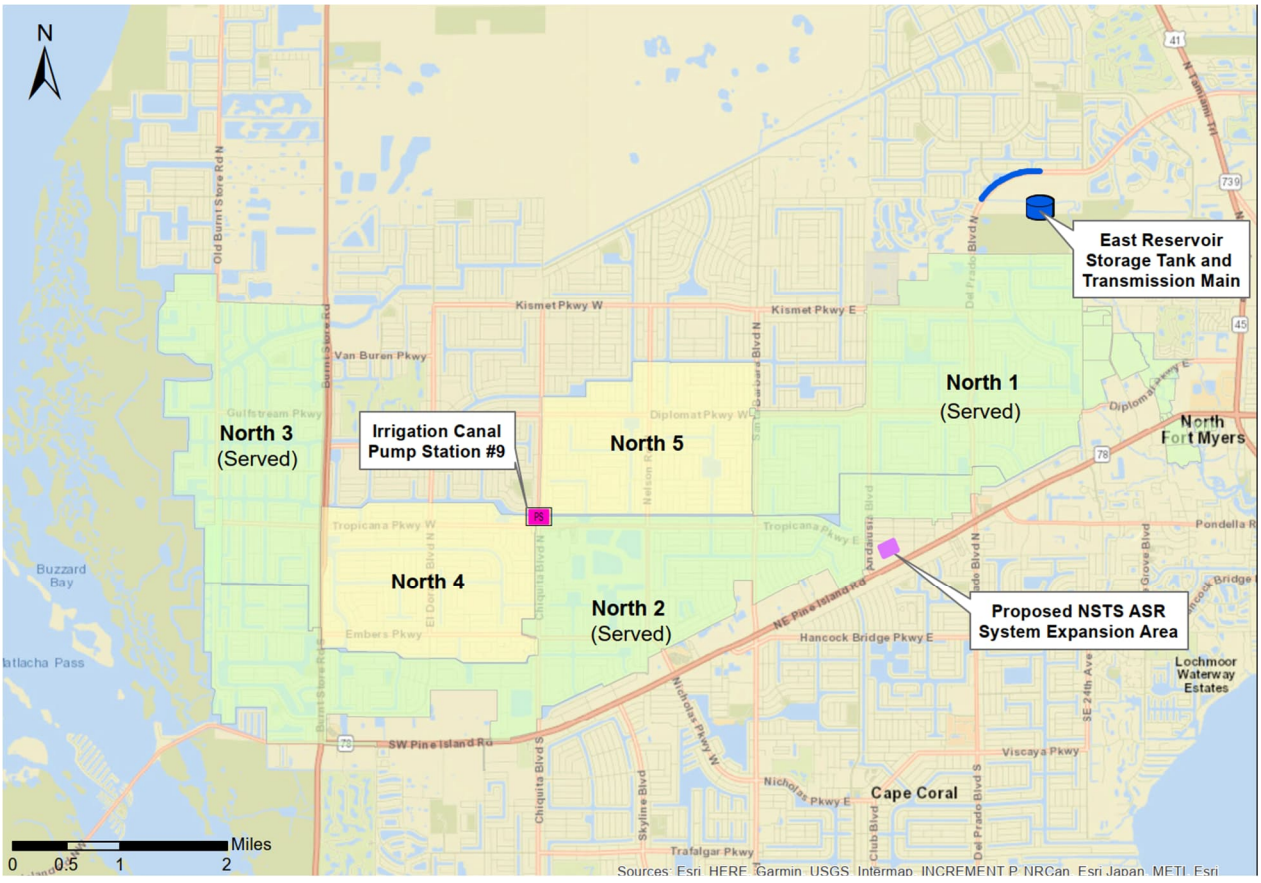


Table ES-10 shows the cost summary for recommended improvements from FY 2035 to 2040. **Figure ES-16** below shows a summary of all recommended infrastructure improvements through FY 2040 including continued expansion to serve North 8 and North 9.

Table ES-10: FY 2035 - 2040 Cost Summary for Recommended Improvements

2040 Planning Level Costs Summary	
Assessed Costs	$534.4 M
Non-Assessed Costs	$1083.7 M
Funded By Others or TBD	$0.0 M
Water-Sewer CIP	$15.0 M
2040 Total	$1618.1 M

Figure ES-16: Recommended Improvements for FY 2040

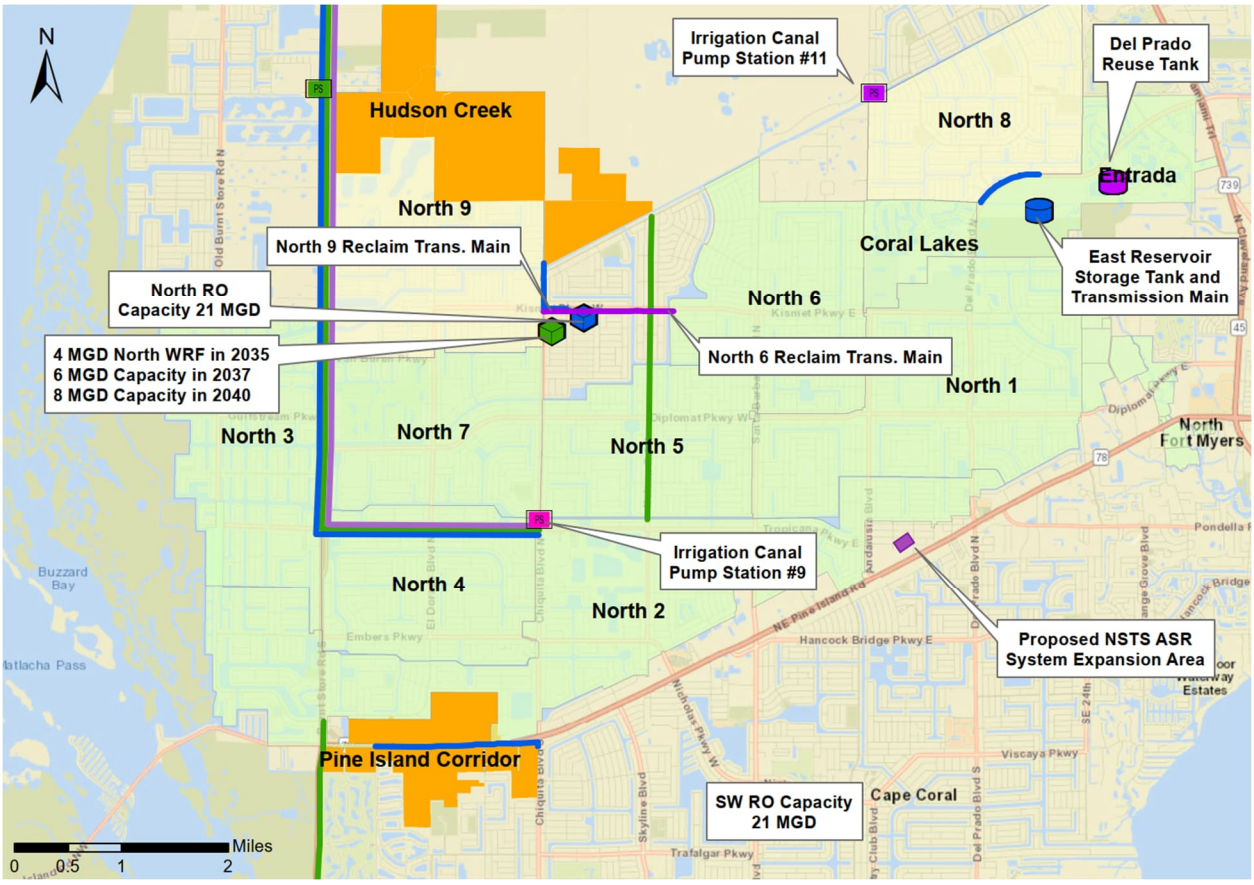


Table ES-11 gives a summary of costs for all recommended improvements identified in the Master Plan through buildout condition including City Water-Sewer CIP projects identified for 2021 to 2026. Planning level cost estimates are provided in terms of present day (2021) dollars and funding for improvements should be 3 to 4 years prior to recommended completion dates.

Table ES-11: Cost Summary of All Recommended Improvements

Year	UEP Assessed Cost	Non-Assessed Cost	Funded By Others or TBD Cost	Water-Sewer CIP Requested Budget	Total Cost	Cumulative Total Cost
	($M)					
2021				$18.8	$18.8	$18.8
2022				$26.3	$26.3	$45.0
2023				$28.7	$28.7	$73.7
2024	$137.5	$193.1		$46.8	$377.5	$451.2
2025	$147.5	$193.4	$67.3	$66.2	$474.4	$925.6
2026				$47.4	$47.4	$972.9
2027		$86.2	$12.2	$41.3	$139.7	$1,112.6
2028				$12.1	$12.1	$1,124.7
2029				$17.0	$17.0	$1,141.7
2030	$272.3	$241.2		$18.5	$532.0	$1,673.6
2031				$17.0	$17.0	$1,690.6
2032				$17.0	$17.0	$1,707.6
2033				$17.0	$17.0	$1,724.6
2035	$285.2	$422.3		$30.0	$737.5	$2,462.1
2036		$198.8		$15.0	$213.8	$2,675.9
2037		$46.9		$15.0	$61.9	$2,737.8
2039		$26.9		$30.0	$56.9	$2,794.7
2040	$249.2	$298.8		$15.0	$563.0	$3,357.7
2045	$291.4	$285.5		$75.0	$651.9	$4,009.7
2046 to Est. Buildout Year 2090		$154.2		$675.0	$829.2	$4,838.9
Buildout Subtotal	**$1,383 M**	**$2,147 M**	**$80 M**	**$1,229 M**	**$4,839 M**	

As seen in **Table ES-11**, the cumulative cost of all recommended improvements through 2030 is $1,673.6 million. It is recommended that every three to five years, the City should revisit the recommended improvements and cost summary with the introduction of every two new UEPs in order to capture any new growth trends and reflect market conditions. Potential funding strategies to provide funds for the cost of these improvements include special assessments, funding by others, and/or loans such as issuing municipal bonds or applying for a State Revolving Fund (SRF) or Water Infrastructure Finance and Innovation Act (WIFIA) loan. The City also is working with a Rate Consultant to evaluate how the infrastructure improvements would impact current utility rates. The analysis included the evaluation of utility rates, debt coverage, average residential bill, CIP spending and funding, operating fund levels, revenues verses expenses and long-term funding needs.