7. RECOMMENDED UTILITY IMPROVEMENT PROJECTS & POTENTIAL FUNDING SOURCES

The Master Plan establishes recommended utility improvement projects that address service area growth as well as needed infrastructure repair and rehabilitation projects. Growth related improvements will accommodate new service areas and increased demands/flows, whereas repair and rehabilitation projects extend useful life of assets and ensure assets are in good operating condition.

7.1 Growth Related Utility Improvements

The Master Plan identifies the potable water, wastewater, and irrigation water improvements required for expansion of utilities to the north part of the City, increases in the existing service area population/infill, and the required timing of the recommended utility improvements. **Table 7-1**, **7-2**, and **7-3** summarize the recommended potable water, wastewater, and IQ water improvement projects, respectively, with the date that each of the facility improvements are anticipated to be needed. Planning level cost estimates are provided in **Appendix D**.

Table 7-1: Recommended Potable Water Improvement Projects

Year Online	Improvement Description
2024	North 1 Transmission and Distribution Mains
2025	Hudson Creek Phase 1 (Western Route) Transmission Mains
	Pine Island Corridor Transmission Main
	North 3 Transmission and Distribution Mains
	High Service Pumps Upgrades at the North and SW RO WTP (covered by the City CIP)
2027	Hudson Creek Phase 2 (Eastern Route) Transmission Mains
	North RO 6 MGD Expansion to 18 MGD, 12 MG Storage Tank, 20 Raw Water Wells, and DIW
2030	North 4 Transmission and Distribution Mains
	North 5 Transmission and Distribution Mains
	East Reservoir Transmission Main
	East Reservoir Storage Tank and High Service Pumps (2.5 MG)
2035	North 6 Transmission and Distribution Mains
	North 7 Transmission and Distribution Mains
	Entrada Transmission and Distribution Mains Upgrades
2036	SW RO 18 MGD Replacement
	North RO 3 MGD Expansion to 21 MGD, 12 MG Storage Tank, and 18 Raw Water Wells
2039	SW RO 3 MGD Expansion to 21 MGD, 5 MG Storage Tank, and 6 Raw Water Wells
2040	North 8 Transmission and Distribution Mains
	North 9 Transmission and Distribution Mains
2045	North 10 Transmission and Distribution Mains
	North 11 Transmission and Distribution Mains
	North 12 Transmission and Distribution Mains
2046 to Buildout	West Reservoir Storage Tank and HSP (2.5 MG)
	West Reservoir Transmission Main
	SW RO 3 MGD Expansion to 24 MGD, 5 MG Storage Tank, and 5 Raw Water Wells
	North RO 3 MGD Expansion to 24 MGD and 4 Raw Water Wells

Table 7-2: Recommended Wastewater Improvement Projects

Year Online	Improvement Description
2024	North 1 Collection and Conveyance Mains
2025	Hudson Creek MPS
	Hudson Creek Phase 1 (Western Route) Transmission Mains
	Veterans Pkwy Transmission Main
	SW WRF 5 MGD Expansion to 20 MGD and 5 MG Reuse Storage Tank
	North 3 Collection and Conveyance Mains
2027	Hudson Creek Phase 2 (Eastern Route) Transmission Mains
	Hudson Creek MPS
2030	North 4 Collection and Conveyance Mains
	North 5 Collection and Conveyance Mains
2035	North 6 Collection and Conveyance Mains
	North 7 Collection and Conveyance Mains
	New North WRF 4 MGD Facility and Connecting Transmission Main
	Entrada Transmission and Collection Mains Purchase
	Entrada Transmission Main
2037	North WRF 2 MGD Expansion to 6 MGD
2040	North 8 Collection and Conveyance Mains
	North 9 Collection and Conveyance Mains
	North WRF 2 MGD Expansion to 8 MGD
2045	North 10 Collection and Conveyance Mains
	North 11 Collection and Conveyance Mains
	North 12 Collection and Conveyance Mains
2046 to Buildout	North WRF 4 MGD Expansion to 12 MGD

Table 7-3: Recommended IQ Improvement Projects

Year Online	Improvement Description
2024	North 1 Transmission and Distribution Mains
2025	Del Prado Reuse Storage Tanks and High Service Pumps
	Hudson Creek Phase 1 (Western Route) Transmission Mains
	North 3 Transmission and Distribution Mains
2030	Canal Pump Station #9
	NSTS ASR Expansion
	North 4 Transmission and Distribution Mains
	North 5 Transmission and Distribution Mains
2035	North 6 Transmission and Distribution Mains
	North 7 Transmission and Distribution Mains
	Everest WRF ASR Expansion
	Coral Lakes Transmission and Distribution Mains
	Entrada Transmission and Distribution Mains Purchase
	North WRF IQ Water Main Connection to North 6
2040	Canal Pump Station #11
	North 8 Transmission and Distribution Mains
	North 9 Transmission and Distribution Mains
	North WRF IQ Water Main Connection to North 9
2045	North 10 Transmission and Distribution Mains
	North 11 Transmission and Distribution Mains
	North 12 Transmission and Distribution Mains
2046 to Buildout	Mid-Hawthorn Supplemental Wells Phase 2
	Northwest Reuse Storage Tanks and HSP

7.1.1 Opinion of Probable Cost for Improvements

When preparing cost estimates for recommended utility expansion projects, AECOM references the Association for the Advancement of Cost Engineering (AACE) cost estimate classification system. This is a recommended practice that gives guidelines for applying the general principles of estimates classification to project cost estimates. The cost estimate classification system matrix is shown in **Table 7-4**.

Table 7-4: AACE Cost Estimate Classification Matrix

	Primary Characteristic	*Secondary Characteristic*			
ESTIMATE CLASS	**LEVEL OF PROJECT DEFINITION** Expressed as % of complete definition	**END USAGE** Typical purpose of estimate	**METHODOLOGY** Typical estimating method	**EXPECTED ACCURACY RANGE** Typical variation in low and high ranges [a]	**PREPARATION EFFORT** Typical degree of effort relative to least cost index of 1 [b]
Class 5	0% to 2%	Concept Screening	Capacity Factored, Parametric Models, Judgment, or Analogy	L: -20% to -50% H: +30% to +100%	1
Class 4	1% to 15%	Study or Feasibility	Equipment Factored or Parametric Models	L: -15% to -30% H: +20% to +50%	2 to 4
Class 3	10% to 40%	Budget, Authorization, or Control	Semi-Detailed Unit Costs with Assembly Level Line Items	L: -10% to -20% H: +10% to +30%	3 to 10
Class 2	30% to 70%	Control or Bid/ Tender	Detailed Unit Cost with Forced Detailed Take-Off	L: -5% to -15% H: +5% to +20%	4 to 20
Class 1	50% to 100%	Check Estimate or Bid/Tender	Detailed Unit Cost with Detailed Take-Off	L: -3% to -10% H: +3% to +15%	5 to 100

As shown in the table, the ACCE presents five classes of estimates that are characterized primarily by percent level of project definition as well as end usage, methodology, expected accuracy range, and preparation effort. Consideration of these characteristics and comparison with the project details is used to determine the appropriate estimate class applied to each project as well as appropriate contingencies.

The improvements that are recommended in this master plan are based on combination of hydraulic modeling efforts as well as the results of the gap analysis for the capacities of facilities. In comparison with the table, the basis for the recommended improvements as part of this master plan most closely align with a Class 4 estimate.

7.1.2 Unit Cost Development

To develop planning level cost estimates, unit costs were established using contractor pay applications, other planning level cost estimates for similar SW Florida projects and contractor construction contract estimates prepared by Tetra Tech for the North 1 UEP. These unit costs were

used to estimate project capital costs for the recommended improvements. Unit costs were increased to 2021 dollars based on Engineering News-Record historical construction costs indices.

7.1.3 Cost Estimating Markups

Several mark ups are applied to the capital cost estimates developed in this report. These mark ups are compounded with the capital cost estimates for all recommended projects outside of the UEPs and are separated between vertical and horizontal improvement projects.

For vertical improvement projects, such as new master pump stations or plant expansions, the mark ups include:

- 30% for Contingency
- 10% for Permitting, Design, and Construction Support

For horizontal improvement projects, such new transmission or collection mains, the mark ups include:

- 15% for Miscellaneous Costs
- 30% for Contingency
- 20% for Permitting, Design, and Construction Support

For UEP expansion projects, AECOM worked with City Staff to determine appropriate cost mark-ups to be applied to the estimated capital costs for each UEP. These mark ups are applied to the new utility costs and not compounded. They are as follows:

- 35% for Utility General Costs
- 10% for All Work General Costs
- 6% for Design Fees
- 2% for Admin Cost Allocation
- 0.2% for Property Costs Allocation
- 5% for Construction Contingency
- 30% High Expected Additional Cost as per a Level 4 Cost Estimate applied to the Contractor Costs Subtotal (equals the sum of New Utility Cost + Utility General Costs + All Work Costs + Contractor Contingency)

7.1.4 Assessed vs. Non-Assessed Costs

In this Master Plan, the funding for the infrastructure components for each UEP varies depending on the purpose of the infrastructure. Therefore, for each UEP area, cost estimates were organized into two categories, assessed costs and non-assessed costs. The City considers infrastructure associated with the collection and distribution system as an assessed cost. This infrastructure includes service laterals, gravity sewer pipe, manholes, fire hydrants, and any pipeline mains sized 8 inches and under. The City considers infrastructure associated with transmission and treatment as a non-assessed cost. This infrastructure includes master pump stations, duplex pump stations, pipeline mains over 8 inches, ancillary improvements, storage tanks, or other

growth-related expansions. The funding sources available to utilize for both assessed and non-assessed costs are described later herein.

7.1.5 Summary of UEP Cost Estimates

Based on the above categorization of infrastructure projects, assessed and non-assessed costs for the UEP improvements were prepared and summarized as shown in **Table 7-5**. In the table, “CD” denotes collection and distribution corresponding to assessed costs and “TT” denotes treatment and transmission corresponding to non-assessed costs.

Table 7-5: Summary of UEP Improvements (Assessed vs. Non-Assessed)

UEP	Item Description	Utility Construction Costs	Utility General Costs	All Work General Costs	Design Fees	Admin Cost Allocation	Property Costs Allocation	Construction Contingency	Subtotal	Contractor Costs Subtotal	Class 4 Cost Estimate - High Expected Additional Cost (30%)	Total Utility Cost	Ancillary Costs (General Civil, Stormwater, Fiber)	Ancillary Costs with Markups
		(A)	(B) *(A) x 0.35*	(C) *(A) x 0.10*	(D) *(A) x 0.06*	(E) *(A) x 0.02*	(F) *(A) x 0.002*	(G) *(A) x 0.05*	(H) *(A) thru (G)*	(I) *(A) thru (C) + (G)*	(J) *(I) x 0.3*	(K) *(H) + (J)*	(L) *(A) x 0.47*	(M) *(L) + 0.3 x (L x B, C, G)*
		($)												
North 3	WATER CD	$23,162,387	$8,106,835	$2,316,239	$1,389,743	$463,248	$46,325	$1,158,119	$36,642,896	$34,743,581	$10,423,074	$47,065,971	$10,899,947	$12,534,939
	WATER TT	$9,573,000	$3,350,550	$957,300	$574,380	$191,460	$19,146	$478,650	$15,144,486	$14,359,500	$4,307,850	$19,452,336	$4,504,941	$5,180,682
	WW CD	$31,866,027	$11,153,109	$3,186,603	$1,911,962	$637,321	$63,732	$1,593,301	$52,795,735	$50,182,721	$15,054,816	$67,850,551	$14,995,777	$17,245,144
	WW TT	$17,672,800	$6,185,480	$1,767,280	$1,060,368	$353,456	$35,346	$883,640	$28,172,420	$26,723,250	$8,016,975	$36,189,395	$8,316,612	$9,564,104
	IQ CD	$16,031,387	$5,610,985	$1,603,139	$961,883	$320,628	$32,063	$801,569	$25,361,654	$24,047,081	$7,214,124	$32,575,779	$7,544,182	$8,675,810
	IQ TT	$7,351,250	$2,572,938	$735,125	$441,075	$147,025	$14,703	$367,563	$11,629,678	$11,026,875	$3,308,063	$14,937,740	$3,459,412	$3,978,324
North 4	WATER CD	$22,838,453	$7,993,458	$2,283,845	$1,370,307	$456,769	$45,677	$1,141,923	$36,130,432	$34,257,679	$10,277,304	$46,407,736	$10,747,507	$12,359,633
	WATER TT	$4,528,500	$1,584,975	$452,850	$271,710	$90,570	$9,057	$226,425	$7,164,087	$6,792,750	$2,037,825	$9,201,912	$2,131,059	$2,450,718
	WW CD	$28,772,733	$10,070,456	$2,877,273	$1,726,364	$575,455	$57,545	$1,438,637	$46,268,463	$43,909,099	$13,172,730	$59,441,193	$13,540,109	$15,571,126
	WW TT	$17,543,110	$6,140,089	$1,754,311	$1,052,587	$350,862	$35,086	$877,156	$28,515,630	$27,077,095	$8,123,129	$36,638,759	$8,255,581	$9,493,918
	IQ CD	$15,466,053	$5,413,118	$1,546,605	$927,963	$309,321	$30,932	$773,303	$24,467,295	$23,199,079	$6,959,724	$31,427,019	$7,278,142	$8,369,864
	IQ TT	$7,255,900	$2,539,565	$725,590	$435,354	$145,118	$14,512	$362,795	$11,478,834	$10,883,850	$3,265,155	$14,743,989	$3,414,541	$3,926,722
North 5	WATER CD	$22,645,500	$7,925,925	$2,264,550	$1,358,730	$452,910	$45,291	$1,132,275	$35,825,181	$33,968,250	$10,190,475	$46,015,656	$10,656,706	$12,255,212
	WATER TT	$3,053,000	$1,068,550	$305,300	$183,180	$61,060	$6,106	$152,650	$4,829,846	$4,579,500	$1,373,850	$6,203,696	$1,436,706	$1,652,212
	WW CD	$28,670,200	$10,034,570	$2,867,020	$1,720,212	$573,404	$57,340	$1,433,510	$46,060,016	$43,709,060	$13,112,718	$59,172,734	$13,491,859	$15,515,638
	WW TT	$16,814,200	$5,884,970	$1,681,420	$1,008,852	$336,284	$33,628	$840,710	$27,680,864	$26,302,100	$7,890,630	$35,571,494	$7,912,565	$9,099,449
	IQ CD	$14,686,300	$5,140,205	$1,468,630	$881,178	$293,726	$29,373	$734,315	$23,233,727	$22,029,450	$6,608,835	$29,842,562	$6,911,200	$7,947,880
	IQ TT	$4,231,150	$1,480,903	$423,115	$253,869	$84,623	$8,462	$211,558	$6,693,679	$6,346,725	$1,904,018	$8,597,697	$1,991,129	$2,289,799

UEP	Item Description	Utility Construction Costs	Utility General Costs	All Work General Costs	Design Fees	Admin Cost Allocation	Property Costs Allocation	Construction Contingency	Subtotal	Contractor Costs Subtotal	Class 4 Cost Estimate - High Expected Additional Cost (30%)	Total Utility Cost	Ancillary Costs (General Civil, Stormwater, Fiber)	Ancillary Costs with Markups
		(A)	(B) *(A) x 0.35*	(C) *(A) x 0.10*	(D) *(A) x 0.06*	(E) *(A) x 0.02*	(F) *(A) x 0.002*	(G) *(A) x 0.05*	(H) *(A) thru (G)*	(I) *(A) thru (C) + (G)*	(J) *(I) x 0.3*	(K) *(H) + (J)*	(L) *(A) x 0.47*	(M) *(L) + 0.3 x (L x B, C, G)*
		($)												
North 6	WATER CD	$26,645,035	$9,325,762	$2,664,503	$1,598,702	$532,901	$53,290	$1,332,252	$42,152,445	$39,967,552	$11,990,266	$54,142,710	$12,538,840	$14,419,666
	WATER TT	$5,996,000	$2,098,600	$599,600	$359,760	$119,920	$11,992	$299,800	$9,485,672	$8,994,000	$2,698,200	$12,183,872	$2,821,647	$3,244,894
	WW CD	$34,731,435	$12,156,002	$3,473,143	$2,083,886	$694,629	$69,463	$1,736,572	$54,945,130	$52,097,152	$15,629,146	$70,574,275	$16,344,205	$18,795,835
	WW TT	$18,867,200	$6,603,520	$1,886,720	$1,132,032	$377,344	$37,734	$943,360	$29,847,910	$28,300,800	$8,490,240	$38,338,150	$8,878,682	$10,210,485
	IQ CD	$19,248,835	$6,737,092	$1,924,883	$1,154,930	$384,977	$38,498	$962,442	$30,451,656	$28,873,252	$8,661,976	$39,113,632	$9,058,275	$10,417,016
	IQ TT	$7,641,700	$2,674,595	$764,170	$458,502	$152,834	$15,283	$382,085	$12,089,169	$11,462,550	$3,438,765	$15,527,934	$3,596,094	$4,135,508
North 7	WATER CD	$20,121,158	$7,042,405	$2,012,116	$1,207,269	$402,423	$40,242	$1,006,058	$31,831,672	$30,181,737	$9,054,521	$40,886,193	$9,468,780	$10,889,097
	WATER TT	$5,192,000	$1,817,200	$519,200	$311,520	$103,840	$10,384	$259,600	$8,213,744	$7,788,000	$2,336,400	$10,550,144	$2,443,294	$2,809,788
	WW CD	$24,749,858	$8,662,450	$2,474,986	$1,484,991	$494,997	$49,500	$1,237,493	$39,154,275	$37,124,787	$11,137,436	$50,291,711	$11,646,992	$13,394,041
	WW TT	$17,886,870	$6,260,405	$1,788,687	$1,073,212	$357,737	$35,774	$894,344	$28,297,028	$26,830,305	$8,049,092	$36,346,120	$8,417,351	$9,679,953
	IQ CD	$13,199,958	$4,619,985	$1,319,996	$791,997	$263,999	$26,400	$659,998	$20,882,333	$19,799,937	$5,939,981	$26,822,314	$6,211,745	$7,143,507
	IQ TT	$6,050,100	$2,117,535	$605,010	$363,006	$121,002	$12,100	$302,505	$9,571,258	$9,075,150	$2,722,545	$12,293,803	$2,847,106	$3,274,172
North 8	WATER CD	$21,175,000	$7,411,250	$2,117,500	$1,270,500	$423,500	$42,350	$1,058,750	$33,498,850	$31,762,500	$9,528,750	$43,027,600	$9,964,706	$11,459,412
	WATER TT	$7,679,000	$2,687,650	$767,900	$460,740	$153,580	$15,358	$383,950	$12,148,178	$11,518,500	$3,455,550	$15,603,728	$3,613,647	$4,155,694
	WW CD	$28,357,860	$9,925,251	$2,835,786	$1,701,472	$567,157	$56,716	$1,417,893	$44,862,135	$42,536,790	$12,761,037	$57,623,172	$13,344,875	$15,346,607
	WW TT	$17,848,100	$6,246,835	$1,784,810	$1,070,886	$356,962	$35,696	$892,405	$28,235,694	$26,772,150	$8,031,645	$36,267,339	$8,399,106	$9,658,972
	IQ CD	$14,770,700	$5,169,745	$1,477,070	$886,242	$295,414	$29,541	$738,535	$23,367,247	$22,156,050	$6,646,815	$30,014,062	$6,950,918	$7,993,555
	IQ TT	$6,860,350	$2,401,123	$686,035	$411,621	$137,207	$13,721	$343,018	$10,853,074	$10,290,525	$3,087,158	$13,940,231	$3,228,400	$3,712,660
North 9	WATER CD	$19,668,000	$6,883,800	$1,966,800	$1,180,080	$393,360	$39,336	$983,400	$31,114,776	$29,502,000	$8,850,600	$39,965,376	$9,255,529	$10,643,859

UEP	Item Description	Utility Construction Costs	Utility General Costs	All Work General Costs	Design Fees	Admin Cost Allocation	Property Costs Allocation	Construction Contingency	Subtotal	Contractor Costs Subtotal	Class 4 Cost Estimate - High Expected Additional Cost (30%)	Total Utility Cost	Ancillary Costs (General Civil, Stormwater, Fiber)	Ancillary Costs with Markups
		(A)	(B) *(A) x 0.35*	(C) *(A) x 0.10*	(D) *(A) x 0.06*	(E) *(A) x 0.02*	(F) *(A) x 0.002*	(G) *(A) x 0.05*	(H) *(A) thru (G)*	(I) *(A) thru (C) + (G)*	(J) *(I) x 0.3*	(K) *(H) + (J)*	(L) *(A) x 0.47*	(M) *(L) + 0.3 x (L x B, C, G)*
		($)												
	WATER TT	$6,947,500	$2,431,625	$694,750	$416,850	$138,950	$13,895	$347,375	$10,990,945	$10,421,250	$3,126,375	$14,117,320	$3,269,412	$3,759,824
	WW CD	$25,031,520	$8,761,032	$2,503,152	$1,501,891	$500,630	$50,063	$1,251,576	$39,599,865	$37,547,280	$11,264,184	$50,864,049	$11,779,539	$13,546,470
	WW TT	$20,956,100	$7,334,635	$2,095,610	$1,257,366	$419,122	$41,912	$1,047,805	$33,152,550	$31,434,150	$9,430,245	$42,582,795	$9,861,694	$11,340,948
	IQ CD	$13,622,300	$4,767,805	$1,362,230	$817,338	$272,446	$27,245	$681,115	$21,550,479	$20,433,450	$6,130,035	$27,680,514	$6,410,494	$7,372,068
	IQ TT	$6,659,200	$2,330,720	$665,920	$399,552	$133,184	$13,318	$332,960	$10,534,854	$9,988,800	$2,996,640	$13,531,494	$3,133,741	$3,603,802
North 10	WATER CD	$13,986,500	$4,895,275	$1,398,650	$839,190	$279,730	$27,973	$699,325	$22,126,643	$20,979,750	$6,293,925	$28,420,568	$6,581,882	$7,569,165
	WATER TT	$1,920,000	$672,000	$192,000	$115,200	$38,400	$3,840	$96,000	$3,037,440	$2,880,000	$864,000	$3,901,440	$903,529	$1,039,059
	WW CD	$16,939,900	$5,928,965	$1,693,990	$1,016,394	$338,798	$33,880	$846,995	$26,798,922	$25,409,850	$7,622,955	$34,421,877	$7,971,718	$9,167,475
	WW TT	$16,949,220	$5,932,227	$1,694,922	$1,016,953	$338,984	$33,898	$847,461	$26,813,666	$25,423,830	$7,627,149	$34,440,815	$7,976,104	$9,172,519
	IQ CD	$8,704,000	$3,046,400	$870,400	$522,240	$174,080	$17,408	$435,200	$13,769,728	$13,056,000	$3,916,800	$17,686,528	$4,096,000	$4,710,400
	IQ TT	$2,102,450	$735,858	$210,245	$126,147	$42,049	$4,205	$105,123	$3,326,076	$3,153,675	$946,103	$4,272,178	$989,388	$1,137,796
North 11	WATER CD	$27,032,500	$9,461,375	$2,703,250	$1,621,950	$540,650	$54,065	$1,351,625	$42,765,415	$40,548,750	$12,164,625	$54,930,040	$12,721,176	$14,629,353
	WATER TT	$8,450,000	$2,957,500	$845,000	$507,000	$169,000	$16,900	$422,500	$13,367,900	$12,675,000	$3,802,500	$17,170,400	$3,976,471	$4,572,941
	WW CD	$32,320,940	$11,312,329	$3,232,094	$1,939,256	$646,419	$64,642	$1,616,047	$51,131,727	$48,481,410	$14,544,423	$65,676,150	$15,209,854	$17,491,332
	WW TT	$20,830,000	$7,290,500	$2,083,000	$1,249,800	$416,600	$41,660	$1,041,500	$32,953,060	$31,245,000	$9,373,500	$42,326,560	$9,802,353	$11,272,706
	IQ CD	$18,107,900	$6,337,765	$1,810,790	$1,086,474	$362,158	$36,216	$905,395	$28,646,698	$27,161,850	$8,148,555	$36,795,253	$8,521,365	$9,799,569
	IQ TT	$9,762,550	$3,416,893	$976,255	$585,753	$195,251	$19,525	$488,128	$15,444,354	$14,643,825	$4,393,148	$19,837,502	$4,594,141	$5,283,262
North 12	WATER CD	$8,895,500	$3,113,425	$889,550	$533,730	$177,910	$17,791	$444,775	$14,072,681	$13,343,250	$4,002,975	$18,075,656	$4,186,118	$4,814,035
	WATER TT	$4,280,000	$1,498,000	$428,000	$256,800	$85,600	$8,560	$214,000	$6,770,960	$6,420,000	$1,926,000	$8,696,960	$2,014,118	$2,316,235

UEP	Item Description	Utility Construction Costs	Utility General Costs	All Work General Costs	Design Fees	Admin Cost Allocation	Property Costs Allocation	Construction Contingency	Subtotal	Contractor Costs Subtotal	Class 4 Cost Estimate - High Expected Additional Cost (30%)	Total Utility Cost	Ancillary Costs (General Civil, Stormwater, Fiber)	Ancillary Costs with Markups
		(A)	**(B)** *(A) x 0.35*	**(C)** *(A) x 0.10*	**(D)** *(A) x 0.06*	**(E)** *(A) x 0.02*	**(F)** *(A) x 0.002*	**(G)** *(A) x 0.05*	**(H)** *(A) thru (G)*	**(I)** *(A) thru (C) + (G)*	**(J)** *(I) x 0.3*	**(K)** *(H) + (J)*	**(L)** *(A) x 0.47*	**(M)** *(L) + 0.3 x (L x B, C, G)*
		($)												
	WW CD	$10,657,040	$3,729,964	$1,065,704	$639,422	$213,141	$21,314	$532,852	$16,859,437	$15,985,560	$4,795,668	$21,655,105	$5,015,078	$5,767,339
	WW TT	$13,743,000	$4,810,050	$1,374,300	$824,580	$274,860	$27,486	$687,150	$21,741,426	$20,614,500	$6,184,350	$27,925,776	$6,467,294	$7,437,388
	IQ CD	$6,778,400	$2,372,440	$677,840	$406,704	$135,568	$13,557	$338,920	$10,723,429	$10,167,600	$3,050,280	$13,773,709	$3,189,835	$3,668,311
	IQ TT	$2,752,600	$963,410	$275,260	$165,156	$55,052	$5,505	$137,630	$4,354,613	$4,128,900	$1,238,670	$5,593,283	$1,295,341	$1,489,642
Entrada	WATER TT	$4,971,250	$1,739,938	$497,125	$298,275	$99,425	$9,943	$248,563	$7,864,518	$7,456,875	$2,237,063	$10,101,580	$2,339,412	$2,690,324
	WW TT	$5,424,620	$1,898,617	$542,462	$325,477	$108,492	$10,849	$271,231	$8,581,749	$8,136,930	$2,441,079	$11,022,828	$2,552,762	$2,935,677
	IQ TT	$5,550,000	$1,942,500	$555,000	$333,000	$111,000	$11,100	$277,500	$8,780,100	$8,325,000	$2,497,500	$11,277,600	$2,611,765	$3,003,529

7.2 Repair and Rehabilitation Projects

The City has many repair and rehabilitation (R&R) utility projects under construction as well as planned future R&R projects to address regulatory requirements, operational issues, and aging infrastructure. Capital investment and planning are vital to maintain a dependable level of utility services that are also efficient and safe. One of the key R&R projects includes the Utilities Collection and Distribution (UCD) new admin building and warehouse at the North RO WTP/WRF site which are identified in a concept layout in **Figure 7-1**. Proper planning for capital projects requires utilities to maintain and fund a rolling multi-year capital plan. Accordingly, the City prepares a five-year Capital Improvement Plan (CIP) on an annual basis. The CIP is continuously adjusted throughout each fiscal year based on budgetary constraints and/or changes in priorities. The City's Utilities 5-year CIP is included in **Appendix E**.

7.3 Potential Funding Sources

7.3.1 Funding by Others

A potential funding source for the City could be securing funds through agreements with other entities. A mutually beneficial project for the City and another entity (i.e., private developer) can result in the second party covering partial or total cost for the utility project.

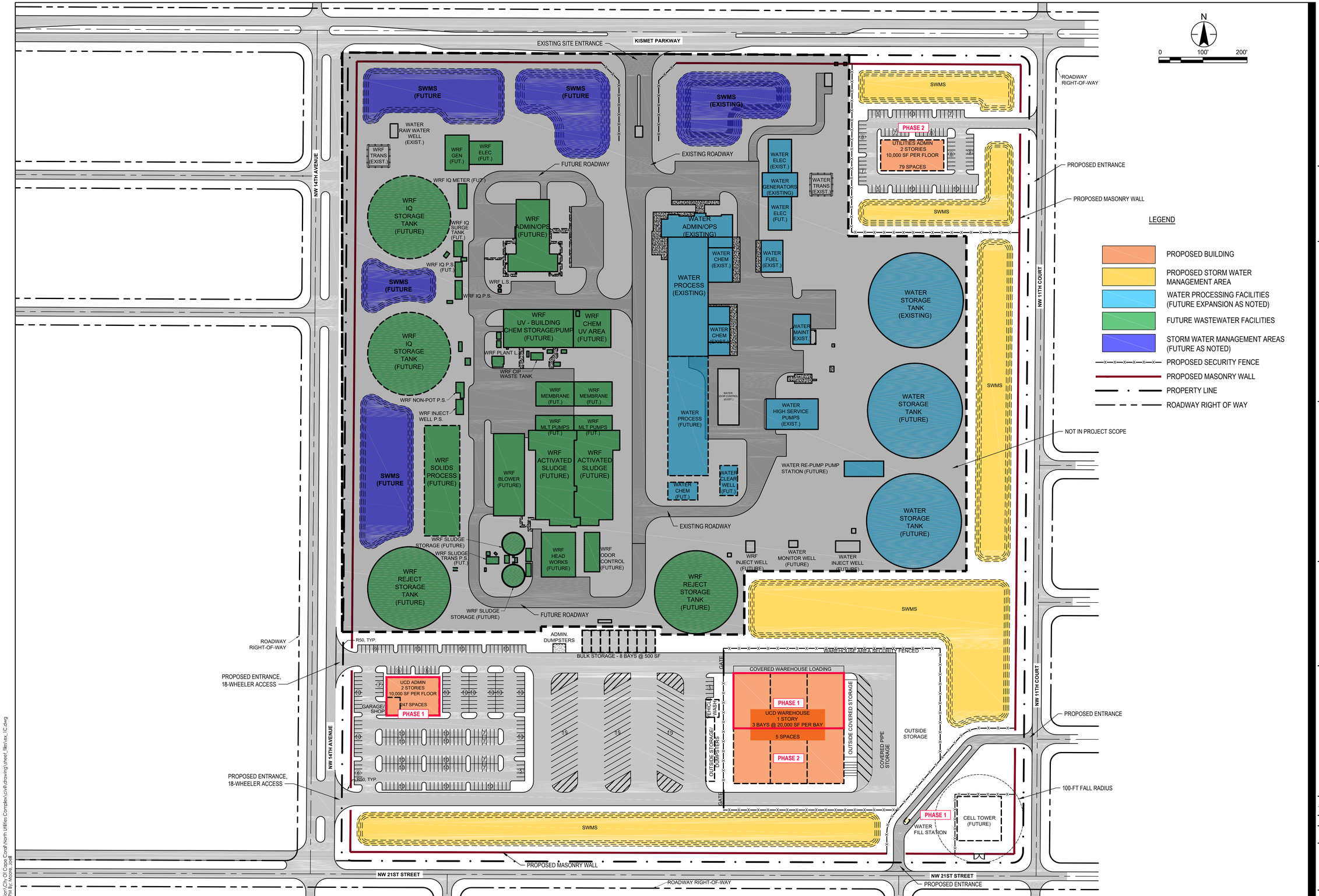
7.3.2 State Revolving Funds (SRF)

The State Revolving Fund (SRF) loan program by the Florida Department of Environmental Protection (FDEP) aims to provide low-interest loans to eligible entities for the planning, design, and construction of public water, wastewater, reclaimed water, and stormwater facilities. This loan has a quarterly funding cycle and has a 20-year term with payments beginning after construction is complete. Traditionally, this loan has an annual cap of approximately $25 million and the availability of funding cannot be guaranteed for each year it is needed.

7.3.3 Water Infrastructure Finance and Innovation Act

The Water Infrastructure Finance and Innovation Act (WIFIA) by the United States Environmental Protection Agency (USEPA) provides federal credit for eligible water and wastewater infrastructure projects such as development phase activities, construction, and acquisition of property and equipment. The program is more suited for larger construction projects as the minimum funding per project is $20 million for communities with populations of more than 25,000 and has a substantial non-refundable $100,000 application fee. The program also requires a dedicated source of revenue and that the project is creditworthy. The loan terms are 35 years and interest rates following US Treasury rates or greater.

Figure 7-1: UCD Admin Building and Warehouse at the North WTP/WRF Site



1 ALTERNATIVE 1C SITE PLAN
1" = 100'

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Client/Project
City of Cape Coral
North Utilities Complex

Project No.:
File Name: EX_1C
Scale: AS SHOWN

CDH	AIM		2022.03.16
Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
ALTERNATIVE 1C

Revision:
Drawing No.
EX-1C

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7.3.4 Municipal Bonds

The City could opt to issue municipal bonds to secure funding for the recommended utility improvement costs. Municipal bonds have a 30-year term, which is 10 years longer than an SRF loan. However, the interest rates on bonds are greater than with SRF loans, which increases their cost. Another element to consider for issuing municipal bonds is that the bond proceeds have to be borrowed upfront and spent, typically, within 36 months. Therefore, if funding is obtained through bonds, projects have to be grouped such that they can be executed within 36 months or refinanced.

7.3.5 Special Assessments

Special Assessments have historically been used by the City and are considered a form of funding in which growth-related capital costs incurred by extending water, wastewater, and IQ services are assigned (to the extent practical) to those new customers benefitting from the improvements and therefore responsible for such costs. Special Assessments are one-time charges to property owners when their property (including vacant property) is serviced for potable (drinking) water, sewer, or IQ water.

There are two components to assessments: Line Extension Assessments (SF) and Capital Facility Expansion Charge (CFEC). Line extension assessments utilize the land area method which for Cape Coral is based on equivalent parcel (EP) (10,000 square foot per 1 EP) for the construction of water and IQ distribution lines and wastewater collection lines. CFEC is a one-time charge incurred when homeowners hook up to City water and sewer systems. These fees may be paid over a six-year term after a certain down payment. CFEC estimates are based on the Equivalent Residential Unit (ERU) method with the number of ERUs determined based on system demands.

7.3.6 User Charges

Increasing user charges is another source of funding the City can utilize for operational costs and for Repair and Rehabilitation Projects identified in the City's Capital Improvement Program. This involves the water, wastewater, and reclaimed water rates paid by customers based on consumption (commodity charge) and based on meter size (capacity service charge for water and minimum monthly charge for sewer).

7.4 Typical Funding Approach

For the types of projects categorized as "Assessed", the City has historically funded these projects using Special Assessments. For other projects or project components categorized as "Non-Assessed", the City has taken on debt using a mix of the other funding sources described above.

7.5 Cost Summary of all Recommended Improvements

A summary of costs for all recommended improvements identified in the Master Plan through buildout condition as well as the City's Utilities Water-Sewer CIP projects identified for 2021 to buildout is provided in **Table 7-6**. Funding for improvements should be 3 to 4 years prior to recommended completion dates.

Table 7-6: 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**	

The cumulative cost of all recommended improvements through 2030 is nearly $1,674 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.