Appendix E: Alternatives Analysis Project Cost Opinions

Opinion of Probable Construction and Project Costs - Conceptual Level Estimate

Alternative 1: Surface Water, Purchase Finished Water from Raleigh Water

Implementation Schedule: 20 to 30 years, use 20 years for start of construction

				Estimated onstruction Cost	Estimated Project Cost	Estimated Project Cost in	·
Improvement	Quantity	Unit	"	2024\$	2024\$	2044	
New reservoir on Middle Creek (Town funds 50% of reservoir)							
Property acquisition	1,100	acres			\$ 44,000,000 \$	52,051,500	\$40,000 per acre (some properties have structures), includes administrative and technical costs
Dam and Foundation	1	LS	\$	20,975,747	\$ 31,359,000 \$	37,097,500	\$13.6M escalated from Raleigh Water Little River EIS Middle Creek alternative
Clearing and Grubbing	914	acres	\$	26,231,800	\$ 39,217,000 \$	46,393,000	\$28,700/acre from Johnston County 210 WWTF Schedule of Values (\$172,000 for 6 acres)
Wetland and Stream Mitigation	1	LS			\$ 25,999,100 \$	30,756,500	From EIS Section 5
New Bridge over HW 42	1	LS	\$	6,500,000	\$ 9,718,000 \$	11,496,500	Estimated from NCDOT data
New raw water intake and pump station (22.6 mgd) (Town funds 50%)	1	LS	\$	13,786,000	\$ 20,610,000 \$	24,381,500	Unit costs based on Sanford Design
New raw water transmission main, 7.14 miles (Town funds 50%)	37,699	feet	\$	40,715,136	\$ 60,869,000 \$	72,007,000	36-inch diameter
Expansion of Dempsey E. Benton WTP, 20 to 42.6 mgd (Town funds 50%)	1	LS			\$ 316,400,000 \$	374,297,000	Includes property acquisition and engineering
New finished water transmission main, 9.41 miles	49,685	feet	\$	44,716,320	\$ 66,851,000 \$	158,168,000	30-inch diameter
New booster pump station	1	LS	\$	3,250,000	\$ 4,859,000 \$	11,496,000	Estimated from Sanford Conveyance
New elevated water tank	1	LS	\$	5,000,000	\$ 7,475,000 \$	17,686,000	1 MG
Instream Flow Study (Town funds 50%)	1	LS			\$ - \$	1,000,000	From EIS Section 1.5
					\$ - \$	-	
					\$ - \$	-	
					\$ - \$	-	
					\$ - \$	-	
TOTAL			\$	161,200,000	\$ 627,400,000 \$	836,800,000	

Notes:

Contingency per AACE Class 5 estimate 30% Engineering Factor (Design and Construction Phase Services) 15%

Escalation

Baseline year 2024 Planning year end 2044 Number of years 20

4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08) Interest Rate, 30 years

Escalation 2.366 (F/P, i%, n) = (1 + i%)^n

Opinion of Probable Construction and Project Costs - Conceptual Level Estimate

Alternative 2: Surface Water, Purchase Finished Water from Johnston County

Implementation Schedule: 10 years

				Estimated	Estimated		Estimated	
			6	Construction Cost	Project Cost	Dro	oject Cost in	
Improvement	Quantity	Unit	ľ	2024\$	2024\$	110	2034\$	Comments
New raw water intake and pump station (13 mgd)	1	LS	\$	7,930,000 \$	11,855,000	\$	18,235,000	Unit costs based on Sanford WTP Design
New raw water transmission main (from Neuse River to quarry), 12 miles	63,360	feet	\$	57,024,000 \$	85,251,000	\$ 1	131,131,000	30-inch dia
New raw water transmission main (quarry to new WTP), 36 miles	190,080	feet	\$	171,072,000 \$	255,753,000	\$ 3	393,392,000	30-inch dia
New raw water quarry pump station	1	LS	\$	7,930,000 \$	11,855,000	\$	18,235,000	Unit costs based on Sanford Design
New booster pump station	1	LS	\$	3,250,000 \$	4,859,000	\$	7,474,000	Estimated from Sanford Conveyance
New WTP (Town of Fuquay-Varina), 13 mgd	1	LS		\$	182,000,000	\$ 2	279,947,000	Includes property acquisition and engineering
New finished water transmission main, 2.48 miles	13,094	feet	\$	11,784,960 \$	17,619,000	\$	27,101,000	30-inch dia
Wetland and Stream Mitigation	1	LS		\$	1,195,500	\$	3,034,000	From EIS Section 5
				\$	- 9	\$	-	
				\$	- 9	\$	-	
				\$	- 9	\$	-	
				\$	- 9	\$	-	
				\$	- 9	\$	-	
				\$	- 9	\$	-	
				\$	- 9	\$	-	
				\$	- 9	\$	-	
				\$	- \$	\$	-	
TOTAL			\$	259,000,000 \$	570,400,000	\$ 8	878,500,000	

Contingency per AACE Class 5 estimate

Engineering Factor (Design and Construction Phase Services)

30% 15%

Escalation

Baseline year 2024 Planning year end 2034 Number of years 10

Interest Rate, 30 years 4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08) 1.538

Escalation (F/P, i%, n) = (1 + i%)^n

Opinion of Probable Construction and Project Costs - Conceptual Level Estimate

Alternative 3: Surface Water, Town of Fuquay-Varina Independent Water Supply in Neuse River Basin

Implementation Schedule: 20 to 30 years, use 20 years for start of construction

			0-	Estimated	Estimated	Estimated	
Improvement	Quantity	Unit	Co	nstruction Cost 2024\$	Project Cost 2024\$	Project Cost in 2044\$	
New reservoir on Middle Creek		•		•			
Property acquisition	679	acres			\$ 27,140,000 \$	64,213,000	\$40,000 per acre (some properties have structures), includes administrative and technical costs
Dam and Foundation	1	LS	\$	20,975,747	\$ 31,359,000 \$	74,195,000	\$13.6M escalated from Raleigh Water Little River EIS Middle Creek alternative
Clearing and Grubbing	334	acres	\$	9,585,800	\$ 14,331,000 \$	33,907,000	\$28,700/acre from Johnston County 210 WWTF Schedule of Values (\$172,000 for 6 acres)
Wetland and Stream Mitigation	1	LS			\$ 14,627,600 \$	34,609,000	From EIS Section 5
New Bridge over HW 42	1	LS	\$	10,900,000	\$ 16,296,000 \$	38,556,000	Estimated from NCDOT data
New raw water intake and pump station (13 mgd)	1	LS	\$	7,930,000	\$ 11,855,000 \$	28,049,000	Unit costs based on Sanford WTP Design
New raw water transmission line, 1.78 miles	9,398	feet	\$	8,458,560	\$ 8,459,000 \$	20,014,000	30-inch dia
New WTP (Town of Fuquay-Varina), 13 mgd	1	LS			\$ 182,000,000 \$	430,607,000	Includes property acquisition and engineering
New finished water transmission main, 4.51 miles	23,813	feet	\$	21,431,520	\$ 32,040,000 \$	75,806,000	30-inch dia
Instream Flow Study	1	LS			\$ - \$	2,000,000	From EIS Section 1.5
					\$ - \$		
					\$ - \$		
					\$ - \$		
					\$ - \$		
					\$ - \$		
					\$ - \$	-	
TOTAL			\$	79,300,000	\$ 338,100,000 \$	802,000,000	

Notes:

Contingency per AACE Class 5 estimate 30% Engineering Factor (Design and Construction Phase Services)

15%

Escalation

Baseline year 2024 Planning year end 2044 Number of years 20

4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08) Interest Rate, 30 years

Escalation 2.366 (F/P, i%, n) = (1 + i%)^n

Opinion of Probable Construction and Project Costs - Conceptual Level Estimate

Alternative 4: Surface Water, Purchase Finished Water from City of Dunn

Implementation Schedule: 5 to 8 years (use 6 years)

Estimated Estimated **Estimated Construction Cost** Project Cost Project Cost in Unit 2024\$ 2024\$ 2030\$ Improvement Quantity Comments New raw water intake and pump station LS 7.930.000 \$ 11.855.000 \$ 15.350,000 Unit costs based on Sanford WTP Design 1 \$ New terminal reservoir and pump station LS 6,000,000 \$ 8,970,000 \$ 11,614,000 \$0.286/gal based on reservoir storage calcs Expansion of A.B. Uzzle WTP with additional property (8 to 21 mgd) 1 LS \$ 182,000,000 \$ 235,654,000 Includes property acquisition and engineering New finished water transmission main, 18.35 miles 96,888 feet 87,199,200 \$ 130,363,000 \$ 168,794,000 30-inch dia LS 9,425,000 \$ 12,203,000 From Sanford Conveyance design estimate New booster pump station and ground storage 1 \$ 2,803,680 \$ 4,192,000 \$ New raw water transmission main, 0.59 miles 3,115 feet 5,428,000 30-inch dia Wetland and Stream Mitigation LS 159,000 \$ 206,000 From EIS Section 5 106,600 \$ \$ - \$ \$ - \$ \$ - \$ \$ - \$ \$ \$ - \$ \$ - \$

\$

104,000,000 \$

- \$

449,200,000

347,000,000 \$

TOTAL
Notes:

Contingency per AACE Class 5 estimate 30% Engineering Factor (Design and Construction Phase Services) 15%

Escalation

 Baseline year
 2024

 Planning year end
 2030

 Number of years
 6

Interest Rate, 30 years 4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08)

Escalation 1.295 $(F/P, i\%, n) = (1 + i\%)^n$

Alternative 5: Surface Water, Purchase Finished Water from Harnett County

Implementation Schedule: 5 to 8 years (use 6 years)

			Con	Estimated struction Cost	Estimated Project Cost		ed
Improvement	Quantity	Unit		2024\$	2024\$	Project Cost in 203	0\$ Comments
New finished water transmission main, 13.3 miles	70,224	feet	\$	63,201,600	\$ 94,486,000	\$ 122,341,0	00 30-inch dia
Expansion of raw water pump station and intake (42 to 55 mgd)	1	LS	\$	7,930,000	\$ 11,855,000	\$ 15,350,0	00 Unit costs based on Sanford WTP Design
Expansion of Harnett County Regional WTP (42 to 55 mgd)	1	LS		:	\$ 182,000,000	\$ 235,654,0	O Includes property acquisition and engineering
Instream Flow Study	1	LS		:	-	\$ 2,000,0	00 From EIS Section 1.5
Wetland and Stream Mitigation	1	LS		;	\$ 133,300	\$ 173,0	00 From EIS Section 5
				;	-	\$	-
				;	-	\$	-
				;	-	\$	
				;	-	\$	
				;	-	\$	-
				;	\$ -	\$	
				;	\$ -	\$	
				;	\$ -	\$	
				:	\$ -	\$	
				;	\$ -	\$	
TOTAL			\$	71,100,000	\$ 288,500,000	\$ 375,500,0	00

Notes:

Contingency per AACE Class 5 estimate

Engineering Factor (Design and Construction Phase Services) 15%

Escalation

Baseline year 2024 Planning year end 2030 Number of years

4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08) Interest Rate, 30 years

30%

1.295 (F/P, i%, n) = (1 + i%)^n Escalation

Opinion of Probable Construction and Project Costs - Conceptual Level Estimate

Alternative 6: Surface Water, Raw Water from Jordan Lake (Cary/Apex)

Implementation Schedule: 10 years

				Estimated	Estimated		
			Co	nstruction Cost	Project Cost	Estimated	
Improvement	Quantity	Unit		2024\$	2024\$ P	roject Cost in 2034\$	Comments
New raw water intake and pump station	1	LS	\$	7,930,000 \$	11,855,000 \$	18,235,000	Unit costs based on Sanford WTP Design
New raw water transmission main, 17.5 miles	92,400	feet	\$	83,160,000 \$	124,324,000 \$	191,232,000	30-inch dia
New booster pump station	1	LS	\$	3,250,000 \$	4,859,000 \$	7,474,000	Estimated from Sanford Conveyance
New WTP (Town of Fuquay-Varina), 13 mgd	1	LS		\$	182,000,000 \$	279,947,000	Includes property acquisition and engineering
Wetland and Stream Mitigation	1	LS		\$	106,600 \$	164,000	From EIS Section 5
				\$	- \$	-	
				\$	- \$	-	
				\$	- \$	-	
				\$	- \$	-	
				\$	- \$	-	
				\$	- \$	-	
				\$	- \$	-	
				\$	- \$	-	
				\$	- \$	-	
				\$	- \$	-	
				\$	- \$	-	
				\$	- \$	-	
TOTAL			\$	94,300,000 \$	323,100,000 \$	497,100,000	

Notes:

Contingency per AACE Class 5 estimate
Engineering Factor (Design and Construction Phase Services)

30% 15%

Escalation

Baseline year 2024 Planning year end 2034 Number of years

Interest Rate, 30 years 4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08)

Escalation

(F/P, i%, n) = (1 + i%)^n

Opinion of Probable Construction and Project Costs - Conceptual Level Estimate

Alternative 7: Surface Water, Raw Water from Jordan Lake (Western Intake Partnership)

Implementation Schedule: 10 years

				Estimated	Estimated	Estimated	
Improvement	Quantity	Unit	С	onstruction Cost 2024\$	Project Cost 2024\$	Project Cost in 2034\$	
New raw water intake and pump station	1	LS	\$	7,930,000 \$	11,855,000	\$ 18,235,000	Unit costs based on Sanford WTP Design
New raw water transmission main, 23.72 miles	125,136	feet	\$	112,622,400 \$	168,370,000	\$ 258,982,000	30-inch dia
New booster pump station	1	LS	\$	3,250,000 \$	4,859,000	\$ 7,474,000	Estimated from Sanford Conveyance
New WTP (Town of Fuquay-Varina), 13 mgd	1	LS		\$	182,000,000	\$ 279,947,000	Includes property acquisition and engineering
Wetland and Stream Mitigation	1	LS		\$	266,500	\$ 410,000	From EIS Section 5
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
TOTAL			\$	123,800,000 \$	367,400,000	\$ 565,000,000	

Notes:

Contingency per AACE Class 5 estimate
Engineering Factor (Design and Construction Phase Services) 30%

15%

Escalation

Baseline year 2024 Planning year end 2034 Number of years 10

4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08) Interest Rate, 30 years

Escalation 1.538 (F/P, i%, n) = (1 + i%)^n

Alternative 8A: Surface Water, Town of Fuquay-Varina Intake on the Cape Fear River with Return of Water to Cape Fear River Basin (Cape Fear)

Implementation Schedule: 10 years

			Cons	Estimated struction Cost	Estimated Project Cost	Estimated	
Improvement	Quantity	Unit	John	2024\$		Project Cost in 2034\$	
New raw water intake and pump station	1	LS	\$	7,930,000 \$	11,855,000	\$ 18,235,000	Unit costs based on Sanford WTP Design
New raw water transmission main, 11.79 miles	62,251	feet	\$	56,026,080 \$	83,759,000	\$ 128,836,000	30-inch dia
New WTP (Town of Fuquay-Varina), 13 mgd	1	LS		\$	182,000,000	\$ 279,947,000	Includes property acquisition and engineering
Effluent Pump Station at Terrible Creek WWTP	1	LS	\$	3,600,000 \$	5,382,000	\$ 8,278,000	Planning level unit cost \$0.50/gallon
New disinfection facility (chlor and dechlor)	1	LS	\$	6,000,000 \$	8,970,000	\$ 13,797,000	From Johnston County Schedule of Values, includes bonds, insurance, general conditions, escalation, etc.
New effluent force main to Cape Fear River, 19 miles	100,320	feet	\$	90,288,000 \$	134,981,000	\$ 207,624,000	30-inch dia
Water quality modeling in Cape Fear Basin	1	LS		\$	-	\$ 500,000	
Instream Flow Study	1	LS		\$	-	\$ 2,000,000	From EIS Section 1.5
Wetland and Stream Mitigation	1	LS		\$	586,400	\$ 902,000	From EIS Section 5
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
				\$	-	\$ -	
TOTAL			\$	163,800,000 \$	427,500,000	\$ 660,100,000	

Notes:

Contingency per AACE Class 5 estimate 30% Engineering Factor (Design and Construction Phase Services) 15%

Escalation

Baseline year 2024 Planning year end 2034 Number of years

Interest Rate, 30 years 4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08)

Escalation 1.538 (F/P, i%, n) = (1 + i%)^n

Alternative 8B: Surface Water, Town of Fuquay-Varina Intake on the Cape Fear River with Return of Water to Cape Fear River Basin (Kenneth Creek) Implementation Schedule: 10 years 2034

				Estimated onstruction Cost	Estimated Project Cost		a a
Improvement	Quantity	Unit	ľ	2024\$		Project Cost in 2034	
New raw water intake and pump station	1	LS	\$	7,930,000	\$ 11,855,000	\$ 18,235,000	Unit costs based on Sanford WTP Design
New raw water transmission main, 11.79 miles	62,251	feet	\$	56,026,080	\$ 83,759,000	\$ 128,836,000	30-inch dia
New WTP (Town of Fuquay-Varina), 13 mgd	1	LS			\$ 182,000,000	\$ 279,947,000	Includes property acquisition and engineering
Effluent Pump Station at Terrible Creek WWTP	1	LS	\$	3,600,000	\$ 5,382,000	\$ 8,278,000	Planning level unit cost \$0.50/gallon
New disinfection facility (chlor and dechlor)	1	LS	\$	6,000,000	\$ 8,970,000	\$ 13,797,000	From Johnston County Schedule of Values, includes bonds, insurance, general conditions, escalation, etc.
New effluent force main to Kenneth Creek (6.5 miles)	34,320	feet	\$	30,888,000	\$ 46,178,000	\$ 71,030,000	30-inch dia
Water quality modeling in Cape Fear Basin	1	LS			\$ -	\$ 500,000	
Instream Flow Study	1	LS			\$ -	\$ 1,500,000	From EIS Section 1.5
Wetland and Stream Mitigation	1	LS			\$ 453,100	\$ 697,000	From EIS Section 5
					\$ -	\$ -	
					\$ -	\$ -	
					\$ -	\$ -	
					\$ -	\$ -	
					\$ -	\$ -	•
					\$ -	\$ -	
					\$ -	\$ -	
					\$ -	\$ -	
TOTAL			\$	104,400,000	\$ 338,600,000	\$ 522,800,000	<u> </u>

Contingency per AACE Class 5 estimate Engineering Factor (Design and Construction Phase Services)

1,014,184 1,103,004

Escalation Baseline year 2024 2034 Planning year end Number of years 10

4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08)
1.538 (F/P, i%, n) = (1 + i%)^n Interest Rate, 30 years

30% 15%

Escalation

Opinion of Probable Construction and Project Costs - Conceptual Level Estimate

Alternative 9A / 9B: Surface Water, Purchase Finished Water from City of Sanford

Implementation Schedule: Construction started Year 2024

			Estimated	Estimated		
Improvement	Quantity	Unit	Construction Cost 2024\$	Project Cost	Estimated roject Cost in 2024\$	
New raw water intake and pump station improvements	1	LS	\$	-		Included in cost for WTP, Town's share
Expansion of Sanford WTP	1	LS	\$	_		Town's share of Sanford WFF Project Cost as of December 2024 (includes construction phase services)
New finished water transmission main	1	LS	\$	-		Town's share of Conveyance Project Cost as of September 2024 (includes construction phase services)
New booster pump station and ground storage tank	1	LS	\$	-		Included in cost for conveyance, Town's share
Wetland and Stream Mitigation	1	LS	\$	-		Included in cost for conveyance, Town's share
Ÿ			\$	-		·
			\$	-	-	
			\$	-	-	
			\$	-	-	
			\$	-	-	
			\$	-	-	
			\$	-	-	
			\$	-	-	
			\$	-	-	
			\$	-	-	
			\$	-	-	
			\$	-	-	
TOTAL			\$ - \$	-	227,300,000	

Notes:

Contingency per AACE Class 5 estimate

Engineering Factor (Design and Construction Phase Services)

15%

30%

Escalation

 Baseline year
 2024

 Planning year end
 2024

 Number of years
 0

Interest Rate, 30 years 4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08)

Escalation 1.000 (F/P, i%, n) = (1 + i%)^n

Alternative 9C: Surface Water, Purchase Finished Water from City of Sanford with Return of Water to Cape Fear River

Implementation Schedule: 10 years

			Estimated Construction Cost	Estimated Project Cost	Estimated Project Cost in	
Improvement	Quantity	Unit	2024\$	2024\$	2034\$	
New raw water intake and pump station improvements	1	LS	\$	- \$	-	Included in cost for WTP, Town's share
Expansion of Sanford WTP	1	LS	\$	- \$	126,746,000	Town's share of Sanford WFF Project Cost as of December 2024
New finished water transmission main (16.3 miles)	1	LS	\$	- \$	100,514,278	Town's share of Conveyance Project Cost as of September 2024
New booster pump station	1	LS	\$	- \$	-	Included in cost for conveyance, Town's share
Effluent Pump Station at Terrible Creek WWTP	1	LS	\$ 3,600,000 \$	5,382,000 \$	8,278,000	Planning level unit cost \$0.60/gallon
New disinfection facility (chlor and dechlor)	1	LS	\$	6,000,000 \$	9,229,000	From Johnston County Schedule of Values, includes bonds, insurance, general conditions, escalation, etc.
New effluent force main to Cape Fear River, 19 miles	100,320	feet	\$ 90,288,000 \$	134,981,000 \$	207,624,000	30-inch dia
Water quality modeling in Cape Fear Basin	1	LS	\$	- \$	500,000	
Wetland and Stream Mitigation	1	LS	\$	586,400 \$	902,000	Only effluent force main
			\$	- \$	-	
			\$	- \$	-	
			\$	- \$	-	
			\$	- \$	-	
			\$	- \$	-	
			\$	- \$	-	
			\$	- \$	-	
			\$	- \$	<u>-</u>	
TOTAL			\$ 93,900,000 \$	146,900,000 \$	453,800,000	

Notes:

Contingency per AACE Class 5 estimate Engineering Factor (Design and Construction Phase Services)

30% 15%

Escalation

Baseline year 2024 Planning year end 2034 Number of years 10

4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08) Interest Rate, 30 years

(F/P, i%, n) = (1 + i%)^n Escalation 1.538

Opinion of Probable Construction and Project Costs - Conceptual Level Estimate

Alternative 9D: Surface Water, Purchase Finished Water from City of Sanford with Return of Water to Cape Fear River via Western Wake Regional WRF Implementation Schedule: 5 to 8 years (use 6 years)

			Estimated Construction Cos			al al
Improvement	Quantity	Unit	2024		\$ Project Cost in 2030\$	
New raw water intake and pump station improvements	1	LS	•	\$	- \$ -	Included in cost for Sanford WTP, Town's share
Expansion of Sanford WTP	1	LS		\$	- \$ 126,746,000	Town's share of Sanford WFF Project Cost as of December 2024
New finished water transmission main (16.3 miles)	1	LS		\$	- \$ 100,514,278	Town's share of Conveyance Project Cost as of September 2024
New booster pump station	1	LS		\$	- \$ -	- Included in cost for conveyance, Town's share
Effluent Pump Station at Terrible Creek WWTP	1	LS	\$ 3,600,000	\$ 5,382,000	\$ 6,969,000	Planning level unit cost \$0.60/gallon
New disinfection facility (chlor and dechlor)	1	LS		\$ 6,000,000	\$ 7,769,000	From Johnston County Schedule of Values, includes bonds, insurance, general conditions, escalation, etc.
New effluent force main to Western Wake RWRF, 18.6 miles	98,208	feet	\$ 88,387,200	\$ 132,139,000	\$ 171,094,000	30-inch dia
Wetland and Stream Mitigation	1	LS		\$ 586,400	\$ 759,000	Only effluent force main
				\$	- \$ -	
				\$	- \$ -	
				\$	- \$ -	
				\$	- \$ -	
				\$	- \$ -	
				\$	- \$ -	
				\$	- \$ -	
				\$	- \$ -	
				\$	- \$ -	
TOTAL			\$ 92,000,000	\$ 144,100,000	\$ 413,900,000	

	tn	

Contingency per AACE Class 5 estimate

30% Association for the Advancement of Cost Engineering International for a Class 5 level of estimation (concept screening with capacity factors), +100 percent to -50 percent Engineering Factor (Design and Construction Phase Services)

15%

Escalation

Baseline year 2024 Planning year end 2030 Number of years

4.40% Interest Rate, 30 years EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08)

Escalation 1.295 (F/P, i%, n) = (1 + i%)^n

Opinion of Probable Construction and Project Costs - Conceptual Level Estimate

Alternative 10: Interbasin Transfer Minimization, Groundwater Implementation Schedule: 100 wells by 2036; 200 wells by 2046; 362 wells by 2056

			Estimated	Estimated		
Improvement	Quantity	Unit	Construction Cost 2024\$	Project Cost 2024\$		
388 wells total. Assume 100 wells by 2035	100	each	\$ 25,000,000		•	\$250k per well (easements, well house, pipe, GW yield study, etc.)
-						
388 wells total. Assume 200 wells by 2045	100	each	\$ 25,000,000			\$250k per well (easements, well house, pipe, GW yield study, etc.)
388 wells total. Assume all 388 wells by 2055	162	each	\$ 40,500,000	\$ 60,548,000	\$ 240,168,000	\$250k per well (easements, well house, pipe, GW yield study, etc.)
New WTP (Town of Fuquay-Varina), 13 mgd	1	LS		\$ 182,000,000	\$ 305,125,000	Includes property acquisition and engineering
Raw water transmission main	211,200	feet	\$ 76,032,000	\$ 113,668,000	\$ 190,565,000	Assume 40 miles of pipe network, 12-inch dia
Wetland and Stream Mitigation	1	LS		\$ 1,000,000	\$ 2,579,000	Estimate based on other alternatives, used 2045 as planning year
				\$ -	\$ -	
				\$ -	\$ -	
				\$ -	\$ -	
				\$ -	\$ -	
				\$ -	\$ -	
				\$ -	\$ -	
				\$ -	\$ -	
				\$ -	\$ -	
				\$ -	\$ -	
				\$ -	\$ -	
				\$ -	\$ -	
TOTAL		•	\$ 166,500,000	\$ 432,000,000	\$ 897,500,000	

N	O	te	s:
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Contingency per AACE Class 5 estimate 30% Engineering Factor (Design and Construction Phase Services) 15%

Escalation

Baseline year 2024 Planning year end 2036 Number of years 12

EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08) Interest Rate 4.40%

Escalation 1.677 (F/P, i%, n) = (1 + i%)^n

Escalation

Baseline year 2024 Planning year end 2046 Number of years 22

Interest Rate, 30 years 4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08) Escalation

(F/P, i%, n) = (1 + i%)^n

Escalation

Baseline year 2024 Planning year end 2056 Number of years 32

Interest Rate 4.40% EPA 2025 Nominal Interest Rates Circular A-94 (M-25-08)

Escalation 3.967 (F/P, i%, n) = (1 + i%)^n