

**Class III Cost Estimate for Alternate 3A
Modified and Alternate 4B**

Riverbend Water Resources District

July 13, 2018

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1. Introduction

AECOM was retained by Riverbend Water Resources District to perform a Class III Estimate for the Alternate 3A Modified and Alternate 4B. Deliverables include the AACE CI III estimate, a phasing approach to minimize initial capital costs, sufficient details for a CI III estimate, a basis of estimate, and a cover memo. The cost estimate includes pricing estimates for items associated with the transmission and treatment of raw water from Wright Patman Lake, such as the raw water intake structure, raw water transmission pipeline, drinking water treatment plant, high service pumping station, distribution lines, storage tanks, industrial reuse treatment scheme, and a package water treatment plant to serve the customers of Riverbend Water Resources District. These facilities are proposed to be developed in a total of seven phases, as outlined in Table 1.

Table 1: Phasing

Phase 1A
Raw Water Intake
Raw Water Pump Station and Access Road
Raw Water Line to New Surface Water Treatment Plant Location
Distribution Pipelines, Storage and Pumping
Phase 1B
New Surface Water Treatment Plant (25 MGD)
Distribution Pipelines, Storage and Pumping
Phase 2A
Raw Water Capacity Expansion
Expansion of new Surface Water Treatment Plant (28MGD)
New Boston Road Water Treatment Plant Demolition
Distribution Pipelines, Storage and Pumping
Phase 2B
Raw Water Capacity Expansion
Expansion of new Surface Water Treatment Plant (30MGD)
Distribution Pipelines, Storage and Pumping
Industrial Reuse Treatment Facility
Phase 3A
Raw Water Pump Station Expansion
Raw Water Parallel Pipeline
Expansion of new Surface Water Treatment Plant (40MGD)
Distribution Pipelines, Storage and Pumping
Phase 3B
Raw Water Supply Capacity Expansion
Phase 4B
Raw Water Pipeline from the IP Intake
Regional Surface Water Treatment Plant (2.5 MGD)
Distribution Pipelines, Storage and Pumping

2. Methodology for Development of Estimate

In general, opinions of probable construction costs are defined by several characteristics, including the level of project definition, the intended purpose of the estimate, the level of effort, the methodology used, and the expected accuracy. The estimate performed by AECOM was a Class 3 Estimate, which is defined by the American Association of Cost Engineering and ASTM Standards International to be substantiated by preliminary engineering calculations and other stochastic methods, such as analysis of comparable construction projects and actual regional construction costs. Sketches of proposed systems were developed by AECOM and then priced, and product manufacturers were contacted to receive budgetary quotes for manufactured components.

For all Class III Cost Estimates, various contingencies are included to accommodate for future unknowns. These contingencies accommodate for future market conditions or future unknowns of existing conditions. Of the two contingencies, market based contingencies are more uncertain, especially as the timeline is projected farther out. Definition of work contingencies can be controlled by gathering more information about the project, such as performing geotechnical investigations, analyses of water quality data, or pipeline condition assessments. Additionally, performing detailed engineering design will improve the accuracy of construction costs.

3. Basis of Estimate and Assumptions

The cost estimate was developed with the following assumptions.

Global Exclusions and Assumptions

The following assumptions apply to all items within the estimate:

- All costs are in 2018 dollars. No escalation is included in this estimate.
- There is a contingency cost included at 20% within each line item grand total.
- Mobilization, OH&P, permits, bonds, general conditions are included within each line item's grand total. The cost percentage for mobilization and demobilization is 1%; the cost percentage for OH&P is 15%.
- Water supply demand was not verified. Storage tank volumes and distribution piping were sized and priced according to information provided by Susan Roth Consulting.

Phase and Line Item Specific Clarifications, Assumptions and Caveats

Below are assumptions and descriptions that formed the basis of the estimate, by line item.

Phase 1A

- Raw Water Intake:
 - Two 60 MGD intake tunnels are proposed to be installed in Phase 1A.
 - A single bore pit was priced for construction of two bores, one for Phase 1A and the second to support Phase 3. The bore pit is the same as the wet well excavation.
 - A static screen on intake lines at two pool levels was priced with no air burst. It is assumed that periodic inspection and manual cleaning shall be required.
- Raw Water Pump Station:
 - A conventional cast in place concrete wetwell is proposed.
 - The proposed raw water pumps are vertical turbine pumps with variable frequency drives and a local combined flow meter controlling the flow rate to the plant.
 - While the pump station enclosure would be ventilated, only the electrical room would have a HVAC system.
 - There is no chemical feed for zebra mussel elimination/population control.
 - Primary power costs to extend power from the grid to the site are not included. Pricing for power connections must be determined through contacting power suppliers.
 - Pricing for access roadway to site was included as an allowance. Costing was based on installing a driveway that is 3.5 miles long and 12-ft wide of gravel. The cost does not include subgrade enhancements, fencing, or any significant drainage power or pipeline crossings.
- Raw Water Pipeline:
 - The raw water line is proposed to include isolation (at 1 mile intervals) and air/vacuum release valves (at 1 mile intervals). No vaults or below grade access points are included to reduce costs.
 - The pipeline pigging station would be above ground without vault access.
 - The raw water pipeline was routed according to mapping provided by Susan Roth Consulting and without any intermediate takeoffs.

Phase 1B

- Water Treatment Plant:
 - A flow split box is proposed to provide equal flow split to four treatment trains.

- A conventional treatment design was proposed for plant operation. This consists of coagulation, flocculation, solids separation, ozonation, biologically activated filters, and disinfection.
- Each initial treatment train is sized for 8.3 MGD, which is upgradable to 10 MGD with the addition of plates in the solids separation step. Expansion of the plant is phased according to projected demand.
- Pricing includes a sludge lagoon and recycling station.
- Two (2) 10 MG storage tanks are proposed.
- Pricing includes a high service pump station for the treatment plant.
- Distribution Piping:
 - Pricing includes replacement of the 10" member line from the TAC to Maud, including creek and drainage crossings. No regional storage tanks are included in Maud since it is located at the end of the regional distribution line.
 - Replacement of the 30" member line from the Riverbend Tie-in to TAC, including street, drainage, and railroad crossings.
 - Replacement of the 24" member line from the TAC to City of New Boston, including street, drainage, and railroad crossings.
 - Pricing is included for City of News Boston storage tanks and a booster pump station.
 - Pricing includes repair and replacement of 75% of the 30-inch service line that runs from the Riverbend Tie-in to the New Boston Road Water Treatment Plant.

Phase 2A

- Raw Water Intake:
 - Addition of two (2) intake screens.
- Raw Water Pump Station:
 - Two (2) additional pumps and associated piping and appurtenances were priced.
- Water Treatment Plant:
 - To meet the future expected demand of 27 MGD, one treatment train is proposed to be upgraded with the installation of settling plates.
- Demolition of the TWU New Boston Road Water Treatment Plant
- Distribution Piping:
 - Replacement of the 24" member line from the City of New Boston to the Central Bowie County, replacement of storage tanks, and installation of a booster pump station.
 - Replacement of the 24" member line from Central Bowie County to De Kalb, replacement of storage tanks, and installation of a booster pump station.
 - Construction of additional storage facilities located at the TAC and a booster pump station
 - Construction of Redwater regional Storage tanks and a booster pump station

Phase 2B

- Raw Water Pump Station:
 - Installation of one (1) additional 10MGD (7000 gpm) pump and associated piping appurtenances.
- Water Treatment Plant:
 - To meet the future expected demand of 30 MG, two (2) treatment trains are proposed to be upgraded from 8.3 MGD each to 10 MGD each by the installation of settling plates.
 - It is proposed to expand the sludge lagoons to accommodate additional solids.
- Distribution Piping:
 - Replacement of the 12" member line from De Kalb to the City of Avery, replacement of the associated storage tanks, and installation of a booster pump station
 - Replacement of the 12" member line from the City of Avery to the City of Annona, replacement of the associated storage tanks, and installation of a booster pump station
 - A 1.1 MG storage tank is proposed to be located at the TAC with an associated booster pump station
- Industrial Reuse:
 - It is assumed that the industrial reuse treatment train will treat effluent from a paper mill. The treated water will be non-potable and discharged into Lake Wright Patman. The treatment capacity for industrial reuse is proposed to be 15 MGD.
 - Screening, ozonation, and biologically activated filters were proposed as the industrial reuse treatment scheme.

Phase 3A

- Raw Water Intake:
 - The pump station wet well expansion is planned for an additional 60 MGD.
 - Screens for additional 30 MGD intake capacity
- Raw Water Pump Station:
 - An additional 30 MGD of pumping capacity in a 3+1 pump system is proposed, with one on standby.
 - Installation of associated pump station components
- Raw Water Pipeline:
 - Install the second proposed 63.3-inch OD HDPE pipeline parallel to existing 63-inch line
- Water Treatment Plant:
 - Construction of a new 10 MGD treatment train with similar sizing and equipment, such as flocculators and plates, to the trains installed in Phase 1B.
 - Treatment Train No. 3 should be upgraded to 10 MGD to make the total plant capacity 40 MGD.
 - Addition of a high service pump is proposed to accommodate the additional 10 MGD.
- Distribution Piping:
 - Construction of 15.3 MG City of Redwater storage tanks with a booster pump station.
 - Construction of 15.3 MG TAC storage tanks with a booster pump station.

Phase 3B:

- Raw Water Intake:
 - Screens for additional 30 MGD intake capacity
- Raw Water Pump Station:
 - Installation of three (3) additional 10 MGD pumps for an additional 30 MGD pumping capacity. Raw water pump station has total buildout of 120 MGD.

Alternate 4B

- A 12" transmission pipeline is proposed to be connected from the IP intake, which would be routed to the new WTP site.
- An additional 2.5 MGD package water treatment plant is proposed, along with clearwells for a total of 3 MG ground storage capacity, high service pumps, and electrical modifications.
- The estimate includes distribution pipelines to Domino, Queen City, and Atlanta.
- Two (2) 635,000 gallon storage tanks are proposed, one located in Queen City, and one located in Atlanta.

The enclosed Opinion of Probable Cost is an estimate of possible construction costs for budgeting purposes. This estimate is limited to the conditions existing at issuance and is not a guaranty of actual price or cost. Uncertain market conditions such as, but not limited to, local labor or contractor availability, wages, other work, material market fluctuations, price escalations, force majeure events and developing bidding conditions, etc. may affect the accuracy of this estimate. AECOM is not responsible for any variance from this Opinion of Probable Construction Cost or actual prices and conditions obtained.



Appendix A
Opinion of Probable Construction Costs

Riverbend Water Resources District
Water Supply Project

Project name	Water Supply Project TX USA
Estimator	Bill Bachman
Labor rate table	1 AECOM RATES 18
Equipment rate table	Equip - ACM 17ld wrk
Job size	120 MGD
Bid date	7/20/2018
Project Office	Utility Houston
Principal Party	Ron Cass
Estimating Office	Greenville
Estimate Class Lvl	3
Purpose of Estimat	Engineer's
FY Estimate	2018
Estimate Number	18-043
Notes	<p>Engineer's budget estimate for 120 MGD raw water supply, treatment and distribution. Project separated into seven construction phases. Rev2- moved distribution piping (wbs level 2- labeled 30) in 1A (except Riverbend WTP to Riverbend Tie-in, 9485 lf) and distribution piping in1B to phase 2A. Rev 4 added Raw Water Pump Station access road.</p> <p>This Opinion of Probable Cost is only an estimate of possible construction costs for budgeting purposes. This estimate is limited to the conditions existing at issuance and is not a guaranty of actual price or cost. Uncertain market conditions such as, but not limited to; local labor or contractor availability, wages, other work, material market fluctuations, price escalations, force majeure events and developing bidding conditions, etc. may affect the accuracy of this estimate. AECOM is not responsible for any variance from this Opinion of Probable Cost or actual prices and conditions obtained.</p> <p>Lengend:</p> <p>BAF: Biologically Activated Filter CSI: Constructions Standard Insitute DI: Ductile Iron DIP: Ductile Iron Pipe Dia: Diameter Div: Division DR: Dimension Ratio GAC: Granular Activated Carbon GPM: Gallons Per Minute HDPE: High Density Polyethylene HP: Horsepower MGD: Million Gallons Per Day MJ: Mechanical Joint PSI: Pounds Per Square Inch RJ: Restrained Joint ROW: Right of Way RR: Railroad Std: Standard TAC: TexAmerica Center T&D: Transportation & Disposal VFD: Variable Frequency Drive WBS: Work Breakdown Structure Wgt: Weight</p>
Report format	Sorted by 'WBS Lvl 1/WBS Lvl 2/WBS Lvl 3/WBS Lvl 4/CSI Lvl 1' Detail summary Print sort level notes
Cost index	TX, Texarkana (2018)

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.	
01					Alternate 3A Modified- Phase 1A																				
	10				Raw Water Supply																				
		100			Intake Structure and Pipeline from Lake to Wetwell (60 MGD)																				
			110		Microtunneling																				
				Div 03	Concrete																				
					New Wetwell MTBM Launch Modifications	1 ls		250,000.00	250,000	144,027	394,027.30	394,027	0.11				0.00	0	250,000.00	250,000					
					New Wetwell MTBM Launch Modifications/Removal	1 ls		50,000.00	50,000	28,805	78,805.46	78,805	0.02						50,000.00	50,000					
					Div 03 Concrete	1 cy		300,000.00	300,000	172,833	472,832.76	472,833	0.13						300,000.00	300,000					
				Div 31	Earthwork																				
					28 ft. diameter Concrete Intermediate Shaft	72 vf		38,525.00	2,773,800	1,598,012	60,719.61	4,371,812	1.19							38,525.00	2,773,800				
					28 ft. diameter Concrete Intermediate Shaft	72 vf		38,525.00	2,773,800	1,598,012	60,719.61	4,371,812	1.19							38,525.00	2,773,800				
					Div 31 Earthwork	1 ls		5,547,600.00	5,547,600	3,196,023	8,743,623.44	8,743,623	2.39						5,547,600.00	5,547,600					
				Div 33	Utilities																				
					MTBM Mobilization & Demobilization	2 ea		50,000.00	100,000	57,611	78,805.46	157,611	0.04							50,000.00	100,000				
					Microtunneling - 72" diameter steel pipe	6,000 lf		1,843.20	11,059,200	6,371,307	2,905.08	17,430,507	4.76	Utilize pump station shoring and excavation for microtunneling launch pit.							1,843.20	11,059,200			
					MTBM Wet Recovery at Lake	2 ea		150,000.00	300,000	172,833	236,416.39	472,833	0.13							150,000.00	300,000				
					Div 33 Utilities	1 ls		11,459,200.00	11,459,200	6,601,751	18,060,950.64	18,060,951	4.93							11,459,200.00	11,459,200				
					110 Microtunneling	6,000 lf		2,884.47	17,306,800	9,970,607	4,546.23	27,277,407	7.45							2,884.47	17,306,800				
				112	Raw Water Intake Structure																				
				Div 35	Waterway and Marine																				
					Mobilize & Demobilize Barges, Crane/Drilling Rig, Crew	1 ls	176	23,925.22	23,925	15,025	38,949.80	38,950	0.01		7,871.70	7,872					16,053.52	16,054			
					Augered Piles CIP 12" x 25 ft.	12 ea	459	5,108.69	61,304	38,481	8,315.41	99,785	0.03		1,711.24	20,535	267.50	3,210			3,129.95	37,559			
					Install Pipe Saddles/Connectors to Concrete Piers	6 ea	168	8,607.19	51,643	32,841	14,080.65	84,484	0.02		1,393.61	8,362	4,200.00	25,200			3,013.57	18,081			
					CS Sch 40 A53 ERW PE 72"	200 lf	224	750.29	150,057	96,049	1,230.53	246,106	0.07	Fabricated with tees and blind flanges.	55.75	11,149	574.00	114,800			120.54	24,109			
					CS Sid Wt Tee 72"	4 ea		6,750.00	27,000	17,377	11,094.37	44,377	0.01				6,750.00	27,000							
					CS Blind Flange 72"	2 ea		4,900.00	8,980	5,780	7,379.81	14,760	0.00				4,900.00	8,980							
					Div 35 Waterway and Marine	1 ls	1,027	322,910.10	322,910	205,552	528,461.95	528,462	0.14		47,917.13	47,917	179,190.00	179,190			95,802.97	95,803			
				Div 46	Water and Wastewater Equipment																				
					Intake Screen, RAW Water, 72" disch, 336" OAL, 316L SS	2 ea	224	92,628.74	185,257	118,704	151,980.66	303,961	0.08	Plug price pending vendor quote.	5,574.45	11,149				0.00	0	12,054.29	24,109	75,000.00	150,000
					Div 46 Water and Wastewater Equipment	1 ls	224	185,257.48	185,257	118,704	303,961.31	303,961	0.08		11,148.90	11,149					24,108.58	24,109	150,000.00	150,000	
					112 Raw Water Intake Structure	2 ea	1,251	254,083.79	508,168	324,256	416,211.63	832,423	0.23		29,533.01	59,066	89,595.00	179,190			59,955.78	119,912	75,000.00	150,000	
					100 Intake Structure and Pipeline from Lake to Wetwell (60 MGD)	1 ls	1,251	17,814,967.58	17,814,968	10,294,863	28,109,830.10	28,109,830	7.67		59,066.03	59,066	179,190.00	179,190	17,306,800.00	17,306,800	119,911.55	119,912	150,000.00	150,000	
		105			Intake Pump Station Wetwell for Phases 1 & 2 (60 MGD)																				
			40		Sitework																				
				Div 31	Earthwork																				
					Selective Clearing & Grubbing	1 ac	64	4,780.58	4,781	2,959	7,739.09	7,739	0.00	30 ft wide.	2,491.27	2,491					2,289.31	2,289			
					Site Grading	1 ls	48	3,686.65	3,687	2,282	5,968.55	5,969	0.00		1,912.66	1,913					1,773.99	1,774			
					Div 31 Earthwork	1 ls	112	8,467.23	8,467	5,240	13,707.64	13,708	0.00		4,403.93	4,404					4,063.30	4,063			
				Div 32	Exterior Improvements																				
					Access Road Allowance	1 ls		507,579.00	507,579	292,421	799,999.95	800,000	0.22	Based on 3.5 miles, 12 ft. wide stone, minimal clearing and grading.					507,579.00	507,579					
					Misc. Site Improvements	1 ls		10,000.00	10,000	5,761	15,761.08	15,761	0.00	Stone driveway, fencing.						10,000.00	10,000				
					Hydroseeding/Restoration	1 ac		3,000.00	3,000	1,728	4,728.33	4,728	0.00						3,000.00	3,000					
					Div 32 Exterior Improvements	1 ls		520,579.00	520,579	299,910	820,489.36	820,489	0.22							520,579.00	520,579				
					40 Sitework	1 ls	112	529,046.23	529,046	305,151	834,197.00	834,197	0.23		4,403.93	4,404				520,579.00	520,579	4,063.30	4,063		
			50		Shoring																				
				Div 31	Earthwork																				
					Tie-Backs - 25' to 35' long	42 ea		2,750.00	115,500	66,541	4,334.30	182,041	0.05						2,750.00	115,500					
					Shoring- Structure Pile & Lag 65' deep	12,870 sf	3,775	40.16	516,843	326,126	65.50	842,969	0.23		10.66	137,244	25.00	321,750			4.50	57,849			
					Div 31 Earthwork	1 ls	3,775	632,343.08	632,343	392,666	1,025,009.57	1,025,010	0.28		137,243.93	137,244	321,750.00	321,750	115,500.00	115,500	57,849.15	57,849			
					50 Shoring	12,870 sf	3,775	49.13	632,343	392,666	79.64	1,025,010	0.28		10.66	137,244	25.00	321,750	8.97	115,500	115,500	4.50	57,849		
			60		Dewatering																				
				Div 31	Earthwork																				
					24" Wells, well casing, pea gravel	150 lf		150.00	22,500	12,962	236.42	35,462	0.01	Based on 2 ea. 75 deep wells.					150.00	22,500					
					Set & Wire Pumps	2 ea	48	26,371.55	52,743	33,844	43,293.63	86,587	0.02		1,071.63	2,143	25,000.00	50,000			299.93	600			
					Maintenance/Operation	2 ea	96	3,743.10	7,486	4,615	6,050.39	12,101	0.00		2,143.25	4,287	1,000.00	2,000			599.85	1,200			
					Suction Piping	100 lf	44	39.94	3,994	2,478	64.72	6,472	0.00		19.48	1,948	15.00	1,500			5.45	545			
					Header Piping	250 lf	60	48.72	12,179	7,711	19,890	39,789	0.01		10.72	2,679	35.00	8,750			3.00	750			
					Valving	1 ls	48	22,743.10	22,743	14,536	37,278.97	37,279	0.01		2,143.25	2,143	20,000.00	20,000							

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.		
				85	Electrical																					
				Div 25	Integrated Automation																					
					Instrumentation & Control	1	ls	250,000.00	250,000	144,027	394,027.30	394,027	0.11		-	-	-	-	250,000.00	250,000	-	-	-	-		
					Div 25 Integrated Automation	1	ls	250,000.00	250,000	144,027	394,027.30	394,027	0.11		-	-	-	-	250,000.00	250,000	-	-	-	-		
				Div 26	Electrical																					
					Electrical	1	ls	2,500,000.00	2,500,000	1,440,273	3,940,273.02	3,940,273	1.08		0.00	0	0.00	0	2,500,000.00	2,500,000	0.00	0	-	-		
					Div 26 Electrical	1	ls	2,500,000.00	2,500,000	1,440,273	3,940,273.02	3,940,273	1.08		-	-	-	-	2,500,000.00	2,500,000	-	-	-	-		
					85 Electrical	1	ls	2,750,000.00	2,750,000	1,584,300	4,334,300.32	4,334,300	1.18		-	-	-	-	2,750,000.00	2,750,000	-	-	-	-		
				90	Process Equipment																					
				Div 46	Water and Wastewater Equipment																					
					600 hp - Variable Frequency Drives	4	ea	155,036.79	620,147	398,555	254,675.85	1,018,703	0.28		3,036.79	12,147	152,000.00	608,000	-	-	-	-	-	-		
					Vertical Turbine Pumps- 7000 gpm	4	ea	576	1,137,937	731,206	467,285.72	1,869,143	0.51	Per vendor quote.	6,211.63	24,847	500.00	2,000	-	-	2,772.52	11,090	275,000.00	1,100,000		
					Div 46 Water and Wastewater Equipment	1	ls	1,758,083.75	1,758,084	1,129,762	2,887,845.46	2,887,845	0.79		36,993.69	36,994	610,000.00	610,000	-	-	11,090.06	11,090	1,100,000.00	1,100,000		
					90 Process Equipment	1	ls	1,758,083.75	1,758,084	1,129,762	2,887,845.46	2,887,845	0.79		36,993.69	36,994	610,000.00	610,000	-	-	11,090.06	11,090	1,100,000.00	1,100,000		
				95	Pump Discharge Piping																					
				Div 33	Utilities																					
					DI MJ Std Wgt 90 54	2	ea	9,576.44	19,153	12,265	15,708.85	31,418	0.01		653.85	1,308	8,684.55	17,369	-	-	238.04	476	-	-		
					DI MJ Std Wgt Tee 54x24	7	ea	9,732.40	68,127	43,520	15,949.59	111,647	0.03		982.35	6,876	8,478.00	59,346	-	-	272.05	1,904	-	-		
					DI MJ Std Wgt Cap 24	3	ea	738.13	2,214	1,403	1,205.64	3,617	0.00		159.28	478	499.50	1,499	-	-	79.35	238	-	-		
					DI MJ Std Wgt Cap 54	1	ea	10,292.47	10,292	6,606	16,898.70	16,899	0.00		380.47	380	9,912.00	9,912	-	-	-	-	-	-		
					Butterfly Valves MJ 24"	4	ea	6,578.42	26,314	16,824	10,784.34	43,137	0.01		589.68	2,359	5,929.23	23,717	-	-	59.51	238	-	-		
					Pressure Monitoring	1	ls	2,991.30	2,991	1,902	4,893.19	4,893	0.00		491.30	491	2,500.00	2,500	-	-	-	-	-	-		
					DI Flanged Joint Pipe 24"	32	lf	412.84	13,211	8,331	673.18	21,542	0.01		112.96	3,615	267.83	8,571	-	-	32.05	1,026	-	-		
					DI Flanged Joint Pipe 54"	34	lf	1,160.34	39,451	25,059	1,897.37	64,511	0.02		205.60	6,990	894.40	30,410	-	-	60.33	2,051	-	-		
					Pipe Supports	12	ea	385.06	4,621	2,858	623.25	7,479	0.00		203.06	2,437	182.00	2,184	-	-	-	-	-	-		
					Ball Valve 24" w/ motor operator	4	ea	36,756.31	147,025	94,305	60,332.63	241,331	0.07		1,692.20	6,769	35,000.00	140,000	-	-	64.11	256	-	-		
					Div 33 Utilities	1	ls	730	333,399.83	333,400	213,073	546,473.12	546,473	0.15		31,703.08	31,703	295,506.82	295,507	-	-	6,189.93	6,190	-	-	
					95 Pump Discharge Piping	1	ls	730	333,399.83	333,400	213,073	546,473.12	546,473	0.15		31,703.08	31,703	295,506.82	295,507	-	-	6,189.93	6,190	-	-	
					110 Intake Pump Capacity for 30 MGD	4	ea	1,586	1,210,370.90	4,841,484	2,927,135	1,942,154.73	7,768,619	2.12		17,174.19	68,697	226,376.70	905,507	687,500.00	2,750,000	4,320.00	17,280	275,000.00	1,100,000	
				115	Raw Water Transmission Pipeline- 63 Inch, 60 MGD																					
				100	Open Cut Piping																					
				Div 31	Earthwork																					
					Selective Clearing & Grubbing	15	ac	640	3,187.06	47,806	29,585	5,159.39	77,391	0.02	30 ft wide.	1,660.86	24,913	-	-	-	-	1,526.20	22,893	-	-	
					Fine Grade Utility Easement	15	ac	48	201.01	3,015	1,848	324.22	4,863	0.00		129.51	1,943	-	-	-	-	71.49	1,072	-	-	
					Trench Excav & Backfill 10'-12'	44,199	lf	21,216	38.25	1,690,644	1,049,487	62.00	2,740,131	0.75		18.40	813,209	-	-	-	-	-	19.85	877,435	-	-
					Utility Bed Sand	16,370	cy		17.25	282,383	181,744	28.35	464,126	0.13		0.00	0	17.25	282,383	-	-	0.00	0	-	-	
					3500 psi Thrust Block Concrete- allowance	100	cy	75	138.37	13,837	8,773	226.10	22,610	0.01		27.99	2,799	110.38	11,038	-	-	-	-	-	-	
					Silt Fence/Erosion Control Measures	44,199	lf		5.00	220,995	127,317	7.88	348,312	0.10		0.00	0	0.00	0	5.00	220,995	-	-	-	-	
					Div 31 Earthwork	1	ls	21,979	2,258,679.69	2,258,680	1,398,754	3,657,433.53	3,657,434	1.00		842,863.60	842,864	293,420.63	293,421	220,995.00	220,995	901,400.46	901,400	-	-	
				Div 32	Exterior Improvements																					
					Asphalt Patching/Street Restoration	312	sy		50.00	15,600	8,987	78.81	24,587	0.01	10 repairs, average 20 ft long.	-	-	-	-	50.00	15,600	-	-	-	-	
					Saw Cut Asphalt in Street Before Trench Excavation	2,400	inft		0.85	2,040	1,175	1.34	3,215	0.00		-	-	-	0.85	2,040	-	-	-	-		
					Hydroseeding/ROW Restoration	31	ac		3,000.00	93,000	53,578	4,728.33	146,578	0.04		-	-	-	-	3,000.00	93,000	-	-	-	-	
					Div 32 Exterior Improvements	1	ls		110,640.00	110,640	63,741	174,380.75	174,381	0.05		-	-	-	-	110,640.00	110,640	-	-	-	-	
				Div 33	Utilities																					
					2" Air Release/Vacuum Valve	8	ea	10	1,554.34	12,435	7,982	2,552.14	20,417	0.01		54.34	435	1,500.00	12,000	-	-	-	-	-	-	
					Unload & Shake Out HDPE Pipe	44,199	lf	1,537	2.77	122,213	75,817	4.48	198,031	0.05		1.35	59,797	0.00	0	-	-	1.41	62,417	-	-	
					Hydrostatic Testing -48-60"	44,199	lf	3,713	3.98	175,978	105,595	6.37	281,573	0.08		3.65	161,392	0.33	14,586	-	-	-	-	-	-	
					Precast Vaults	1	ea	56	12,373.40	12,373	7,859	20,232.89	20,233	0.01		2,192.72	2,193	7,500.00	7,500	-	-	2,680.68	2,681	-	-	
					Butterfly Valves MJ 60" w/ valve box	8	ea	240	37,988.63	303,909	195,033	62,367.75	498,942	0.14		1,488.63	11,909	36,500.00	292,000	-	-	-	-	-	-	
					Pressure Monitoring	1	ls	10	2,991.30	2,991	1,902	4,893.16	4,893	0.00		491.30	491	2,500.00	2,500	-	-	-	-	-	-	
					HDPE Pressure Pipe- DR21, 56.6" ID	44,199	lf	22,100	375.34	16,589,727	10,625,213	615.74	27,214,939	7.43	Includes fusion machine.	24.81	1,096,596	349.40	15,443,131	-	-	1.13	50,000	-	-	
					Div 33 Utilities	1	ls	27,665	17,219,626.48	17,219,626	11,019,402	28,239,028.02	28,239,028	7.71		1,332,812.86	1,332,813	15,771,716.27	15,771,716	-	-	115,097.35	115,097	-	-	
					100 Open Cut Piping	1	ls	49,644	19,588,946.17	19,588,946	12,481,896	32,070,842.30	32,070,842	8.75		2,175,676.46	2,175,676	16,065,136.90	16,065,137	331,635.00	331,635	1,016,497.81				

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.
					Div 32 Exterior Improvements	1 ls		15,310.00	15,310	8,820	24,130.23	24,130	0.01						15,310.00	15,310				
				Div 33	Utilities																			
					2" Air Release/Vaccum Valve	2 ea	3	1,554.34	3,109	1,996	2,552.15	5,104	0.00		54.34	109	1,500.00	3,000	-	-	-	-	-	-
					DI Pipe Push - Class 52 30	9,485 lf	4,173	168.01	1,593,595	1,015,816	275.11	2,609,411	0.71		21.83	207,088	146.18	1,386,508	-	-	-	-	-	-
					DI RJ Std Wgt Fittings 30- allowance	20 ea	155	5,904.96	118,099	75,644	9,687.16	193,743	0.05		384.96	7,699	5,520.00	110,400	-	-	-	-	-	-
					Unload & Shake Out DIP	9,485 lf	330	2.77	26,227	16,270	4.48	42,497	0.01		1.35	12,832	0.00	0	-	-	-	1.41	13,394	-
					Hydrostatic Testing - 26-36"	9,485 lf	588	2.92	27,650	16,582	4.66	44,232	0.01		2.70	25,563	0.22	2,087	-	-	-	-	-	-
					Chlorination	9,485 lf		0.10	949	610	0.16	1,559	0.00		0.00	0	0.10	949	-	-	-	-	-	
					Precast Vaults	1 ea	56	12,373.40	12,373	7,859	20,232.87	20,233	0.01		2,192.72	2,193	7,500.00	7,500	-	-	-	2,680.68	2,681	-
					Butterfly Valves MJ 30" w/ valve box	2 ea	32	12,759.70	25,519	16,348	20,933.69	41,867	0.01		805.85	1,612	11,953.85	23,908	-	-	-	-	-	-
					Pressure Monitoring	1 ls	10	2,991.30	2,991	1,902	4,893.17	4,893	0.00		491.30	491	2,500.00	2,500	-	-	-	-	-	-
					Div 33 Utilities	1 ls	5,347	1,810,512.73	1,810,513	1,153,027	2,963,540.00	2,963,540	0.81		257,586.96	257,587	1,536,850.62	1,536,851			62,735.00	62,735	16,075.15	16,075
					100 Open Cut Piping	1 ls	8,800	2,182,563.42	2,182,563	1,381,964	3,564,527.84	3,564,528	0.97		389,870.99	389,871	1,572,660.68	1,572,661			62,735.00	62,735	157,296.75	157,297
					125 Riverbend WTP to Riverbend Tie-In	9,485 lf	8,800	230.11	2,182,563	1,381,964	375.81	3,564,528	0.97		41.10	389,871	165.81	1,572,661	6.61	62,735	16.58	157,297	157,297	
					Annona Extension to Clarksville																			
					Open Cut Piping																			
					Div 31 Earthwork																			
					Trench Excav & Backfill 4- 8'	46,268 lf	13,325	22.95	1,061,871	659,169	37.20	1,721,039	0.47		11.04	510,766	-	-	-	-	-	11.91	551,105	-
					Utility Bed Sand	6,855 cy		17.25	118,249	76,106	28.35	194,355	0.05		0.00	0	17.25	118,249	-	-	0.00	0	-	
					3500 psi Thrust Block Concrete	100 cy	75	138.37	13,837	8,773	226.10	22,610	0.01		27.99	2,799	110.38	11,038	-	-	-	-	-	
					Silt Fence/Erosion Control Measures	46,268 lf		5.00	231,340	133,277	7.88	364,617	0.10		0.00	0	0.00	0	5.00	231,340	0.00	0	-	
					Div 31 Earthwork	1 ls	13,400	1,425,296.76	1,425,297	877,324	2,302,621.13	2,302,621	0.63		513,564.70	513,565	129,286.88	129,287	231,340.00	231,340	551,105.18	551,105		
					Exterior Improvements																			
					Repair Gravel Walking Trail	11,567 lf	555	9.20	106,385	67,385	15.02	173,771	0.05		1.98	22,840	5.78	66,819	-	-	-	1.45	16,726	-
					Asphalt Patching/Street Restoration	134 sy		50.00	6,700	3,860	78.81	10,560	0.00	15 repairs, average 20 ft long.	-	-	-	-	-	50.00	6,700	-	-	-
					Saw Cut Asphalt in Street Before Trench Excavation	3,600 inft		0.85	3,060	1,763	1.34	4,823	0.00		-	-	-	-	0.85	3,060	-	-	-	
					Hydroseeding/ROW Restoration	19 ac		3,000.00	57,000	32,838	4,728.33	89,838	0.02		-	-	-	-	3,000.00	57,000	-	-	-	
					Div 32 Exterior Improvements	1 ls	555	173,145.04	173,145	105,847	278,991.55	278,992	0.08		22,840.32	22,840	66,818.86	66,819	66,760.00	66,760	16,725.86	16,726		
					Utilities																			
					2" Air Release/Vaccum Valve	9 ea	11	1,554.34	13,989	8,980	2,552.14	22,969	0.01		54.34	489	1,500.00	13,500	-	-	-	-	-	
					DI Pipe Push - Class 52 8	46,268 lf	11,567	35.94	1,662,836	1,042,953	58.48	2,705,788	0.74		12.41	573,964	23.53	1,088,871	-	-	-	-	-	
					DI RJ Std Wgt Fittings 8"- allowance	100 ea	282	427.28	42,728	26,836	695.65	139,778	0.02		139.78	287.50	287.50	28,750	-	-	-	-	-	
					Unload & Shake Out DIP	46,268 lf	1,609	2.77	127,934	79,366	4.48	207,301	0.06		1.35	62,596	0.00	0	-	-	-	1.41	65,338	-
					Hydrostatic Testing - 2-12"	46,268 lf	1,110	1.13	52,065	31,216	1.80	83,281	0.02		1.04	48,271	0.08	3,794	-	-	-	-	-	-
					Chlorination	46,268 lf		0.10	4,627	2,978	0.16	7,605	0.00		0.00	0	0.10	4,627	-	-	-	-	-	
					Precast Vaults	1 ea	56	9,873.40	9,873	6,250	16,123.87	16,124	0.00		2,192.72	2,193	5,000.00	5,000	-	-	-	2,680.68	2,681	
					Butterfly Valves MJ 8" w/ valve box	9 ea	23	992.09	9,929	5,692	16,244.49	14,620	0.00		129.01	1,161	863.08	7,768	-	-	-	-	-	
					Pressure Monitoring	1 ls	10	2,991.30	2,991	1,902	4,893.16	4,893	0.00		491.30	491	2,500.00	2,500	-	-	-	-	-	
					Div 33 Utilities	1 ls	14,669	1,925,972.10	1,925,972	1,206,174	3,132,146.15	3,132,146	0.85		703,143.35	703,143	1,154,809.61	1,154,810			68,019.14	68,019		
					100 Open Cut Piping	1 ls	28,624	3,524,413.90	3,524,414	2,189,345	5,713,758.83	5,713,759	1.56		1,239,548.37	1,239,548	1,350,915.35	1,350,915	298,100.00	298,100	635,850.18	635,850		
					105 Jack & Bore at RR and Street Crossings																			
					Div 33 Utilities																			
					Mobilization - Jack & Bore	2 ea		2,000.00	4,000	2,304	3,152.23	6,304	0.00		-	-	-	-	2,000.00	4,000	-	-	-	
					Jacking Pits- excavate & restore	4 ea	160	2,610.72	10,443	6,422	4,216.19	16,865	0.00		1,575.17	6,301	-	-	-	-	1,035.56	4,142	-	
					20" diameter casing, Roadway, .250" thick for 8" carrier pipe	530 lf		575.00	304,750	175,569	906.26	480,319	0.13	One crossing @ 280 ft + one crossing @ 250 ft	-	-	-	-	575.00	304,750	-	-	-	
					Div 33 Utilities	1 ls	160	319,192.90	319,193	184,296	503,488.51	503,489	0.14		6,300.67	6,301	308,750.00	308,750	308,750.00	308,750	4,142.23	4,142		
					105 Jack & Bore at RR and Street Crossings	530 lf	160	602.25	319,193	184,296	949.98	503,489	0.14	Carrier pipe material costs included with open cut pipe length.	11.89	6,301	582.55	308,750	7.82	4,142				
					106 Jack & Bore at Creek and Drainage Ditch Crossings																			
					Div 33 Utilities																			
					Mobilization - Jack & Bore	8 ea		2,000.00	16,000	9,218	3,152.22	25,218	0.01		-	-	-	-	2,000.00	16,000	-	-	-	
					Jacking Pits- excavate & restore	16 ea	640	2,610.72	41,772	25,687	4,216.19	67,459	0.02		1,575.17	25,203	-	-	-	-	1,035.56	16,569	-	
					20" diameter casing, Roadway, .250" thick for 8" carrier pipe	800 lf		575.00	460,000	265,010	906.26	725,010	0.20	One crossing @ 280 ft + one crossing @ 250 ft	-	-	-	-	575.00	460,000	-	-	-	
					Div 33 Utilities	1 ls	640	517,771.57	517,															

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.
			115		Storage Tank Sites																			
				Div 03	Concrete																			
					Tank Foundation	20 cy	100	504.49	10,090	6,358	822.40	16,448	0.00		128.72	2,574	315.79	6,316	10.00	200	49.98	1,000	-	-
					Div 03 Concrete	20 cy	100	504.49	10,090	6,358	822.40	16,448	0.00		128.72	2,574	315.79	6,316	10.00	200	49.98	1,000	-	-
				Div 26	Electrical																			
					Misc. Electrical, Lighting, etc.	1 ls		25,000.00	25,000	14,403	39,402.75	39,403	0.01						25,000.00	25,000				-
					Div 26 Electrical	1 ls		25,000.00	25,000	14,403	39,402.75	39,403	0.01						25,000.00	25,000				-
				Div 31	Earthwork																			
					Selective Clearing & Grubbing	1 ac	64	4,780.58	4,781	2,958	7,739.05	7,739	0.00	30 ft wide.	2,491.27	2,491	-	-	-	-	2,289.31	2,289	-	-
					Excavate & Grade for Tank	1 ls	48	3,686.65	3,687	2,282	5,968.58	5,969	0.00		1,912.66	1,913	-	-	-	-	1,773.99	1,774	-	-
					Div 31 Earthwork	1 ls	112	8,467.23	8,467	5,240	13,707.63	13,708	0.00		4,403.93	4,404					4,063.30	4,063		
				Div 32	Exterior Improvements																			
					Misc. Site Improvements	1 ls		5,000.00	5,000	2,881	7,880.54	7,881	0.00	Stone driveway, fencing.	-	-	-	-	5,000.00	5,000				-
					Hydroseeding/Restoration	1 ac		3,000.00	3,000	1,728	4,728.35	4,728	0.00		-	-	-	-	3,000.00	3,000				-
					Div 32 Exterior Improvements	1 ls		8,000.00	8,000	4,609	12,608.89	12,609	0.00		-	-	-	-	8,000.00	8,000				-
				Div 33	Utilities																			
					Elevated Steel Water Storage Tank- 53,000 gal	1 ea		200,000.00	200,000	115,222	315,221.84	315,222	0.09		-	-	-	-	200,000.00	200,000				-
					18" Altitude Valve	1 ea	12	20,536.87	20,537	13,192	33,729.07	33,729	0.01		536.87	537	20,000.00	20,000	-	-	-	-	-	-
					Div 33 Utilities	1 ls	12	220,536.87	220,537	128,414	348,950.91	348,951	0.10		536.87	537	20,000.00	20,000	-	-	200,000.00	200,000		
					115 Storage Tank Sites	1 ls	224	272,093.92	272,094	159,024	431,118.11	431,118	0.12		7,515.15	7,515	26,315.79	26,316	233,200.00	233,200	5,062.98	5,063		
					140 Redwater Elevated Tank (53,000 gal.)	1 ls	224	272,093.92	272,094	159,024	431,118.11	431,118	0.12		7,515.15	7,515	26,315.79	26,316	233,200.00	233,200	5,062.98	5,063		
					30 Distribution Pipelines	9,485 lf	46,555	848.64	8,049,381	4,979,352	1,373.61	13,028,734	3.56		213.16	2,021,795	366.70	3,478,162	164.42	1,559,530	104.36	989,895		
					01 Alternate 3A Modified- Phase 1A	1 LS	110,250	52,899,521.04	52,899,521	32,248,531	85,148,052.38	85,148,052	23.24		4,698,802.04	4,698,802	21,289,251.53	21,289,252	23,331,768.55	23,331,769	2,329,698.92	2,329,699	1,250,000.00	1,250,000
02					Alternate 3A Modified- Phase 1B																			
	20				Water Treatment Plant																			
					Administration/Maintenance Building																			
					* unassigned *																			
				Div 01	General Requirements																			
					Administration/Maintenance Building	7,500 sf		150.00	1,125,000	648,123	236.42	1,773,123	0.48		-	-	-	-	150.00	1,125,000	0.00	0		
					Div 01 General Requirements	1 ls		1,125,000.00	1,125,000	648,123	1,773,122.85	1,773,123	0.48						1,125,000.00	1,125,000				-
					* unassigned *			1,125,000	1,125,000	648,123	1,773,123	1,773,123	0.48							1,125,000	1,125,000			-
					40 Administration/Maintenance Building	7,500 sf		150.00	1,125,000	648,123	236.42	1,773,123	0.48							150.00	1,125,000			-
					50 Sitework																			
					* unassigned *																			
				Div 31	Earthwork																			
					Selective Clearing & Grubbing	50 ac	2,133	3,187.06	159,353	98,617	5,159.39	257,970	0.07		1,660.86	83,043	-	-	-	-	1,526.20	76,310	-	-
					Site Grading, Cut & Fill	50 ac	4,800	7,373.31	368,666	228,191	11,937.14	596,857	0.16		3,825.32	191,266	-	-	-	-	3,547.99	177,399	-	-
					Silt Fence/Erosion Control Measures	1 ls		50,000.00	50,000	28,805	78,805.46	78,805	0.02						50,000.00	50,000				-
					Div 31 Earthwork	1 ls	6,933	578,018.64	578,019	355,613	933,632.09	933,632	0.25		274,309.07	274,309			50,000.00	50,000	253,709.57	253,710		-
				Div 32	Exterior Improvements																			
					Misc. Site Improvements- curbs, sidewalks, fencing	1 ls		100,000.00	100,000	57,611	157,610.93	157,611	0.04		-	-	-	-	100,000.00	100,000				-
					Asphalt Paving (6"Base+2"Binder+1" Top)	4,000 sy		38.76	155,040	89,320	61.09	244,360	0.07		-	-	-	-	38.76	155,040				-
					Hydroseeding	50 ac		3,000.00	150,000	86,416	4,728.33	236,416	0.06		-	-	-	-	3,000.00	150,000				-
					Topsoil & Landscaping Allowance	1 ls		25,000.00	25,000	14,403	39,402.73	39,403	0.01		-	-	-	-	25,000.00	25,000				-
					Div 32 Exterior Improvements	1 ls		430,040.00	430,040	247,750	677,790.01	677,790	0.19						430,040.00	430,040				-
				Div 33	Utilities																			
					Storm Drainage System- allowance	1 ls		50,000.00	50,000	28,805	78,805.46	78,805	0.02		-	-	-	-	50,000.00	50,000				-
					Site Utilities- water sanitary sewer, electric, communications- allowance	1 ls		100,000.00	100,000	57,611	157,610.91	157,611	0.04		-	-	-	-	100,000.00	100,000				-
					Div 33 Utilities	1 ls		150,000.00	150,000	86,416	236,416.37	236,416	0.06						150,000.00	150,000				-
					* unassigned *		6,933	1,158,059	1,158,059	689,780	1,847,838	1,847,838	0.50			274,309				630,040.00	630,040	253,709.57	253,710	
					50 Sitework	1 ls	6,933	1,158,058.64	1,158,059	689,780	1,847,838.47	1,847,838	0.50		274,309.07	274,309				630,040.00	630,040	253,709.57	253,710	
					200																			
				200	Flow Split Box																			
				Div 03	Concrete																			
					Base Slabs	39 cy	195	504.49	19,675	12,398	822.40	32,074	0.01		128.72	5,020	315.79	12,316	10.00	390	49.98	1,949	-	
					Walls	116 cy	812	571.67	66,314	41,609	930.37	107,923	0.03		180.20	20,904	315.79	36,632	10.00	1,160	65.68	7,619	-	
					Suspended Top Slabs	3 cy	21	555.98	1,668	1,046	904.58	2,714	0.00		180.20	541	315.79	947	10.00	30	49.98	150	-	
					Div 03 Concrete	158 cy	1,028	554.79	87,657	55,053	903.23	142,710	0.04		167.50	26,464	315.79	49,895	10.00	1,580	61.51	9,718	-	
				Div 05	Metals																			
					Aluminum 2 Line Rail	126 lf	25	36.96	4,657	2,949	60.36	7,606	0.00		8.09	1,019	28.88	3,638	-	-				

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.	
					Div 03 Concrete	4,239 cy	24,603	530.73	2,249,783	1,415,035	864.55	3,664,818	1.00		149.41	633,367	315.79	1,338,632	10.00	42,390	55.53	235,394			
				Div 05 Metals	Aluminum 2 Line Rail	2,300 lf	460	36.96	85,008	53,829	60.36	138,837	0.04		8.09	18,596	28.88	66,413	-	-	-	-	-	-	
				Div 05 Metals	Div 05 Metals	1 ls	460	85,008.15	85,008	53,829	138,836.89	138,837	0.04		18,595.65	18,596	66,412.50	66,413	-	-	-	-	-	-	
				Div 31 Earthwork	Excavation of Structure	25,684 cy	1,644	5.74	147,352	92,006	9.32	239,358	0.07		2.32	59,608	-	-	-	-	-	3.42	87,745	-	
					Backfilling of Structure	4,822 cy	386	5.80	27,966	17,245	9.38	45,211	0.01		3.29	15,869	-	-	-	-	-	2.51	12,096	-	
					Prep & Rough Grade for Slabs	27,379 sf	44	0.09	2,566	1,565	0.15	4,131	0.00		0.07	1,817	-	-	-	-	0.03	749	-		
					Excess Soils Disposal- Beneficial Reuse	20,862 cy	2.50	52,155	30,047	3.94	82,202	0.02							2.50	52,155	-	-	-	-	
					Stone Base Under All Structures	507 cy	16	38.46	19,497	12,517	63.15	32,015	0.01		1.30	657	36.00	18,252	-	-	-	1.16	589	-	
				Div 31 Earthwork	Div 31 Earthwork	1 ls	2,090	249,535.98	249,536	153,381	402,916.54	402,917	0.11		77,950.13	77,950	18,252.00	18,252	52,155.00	52,155	101,178.85	101,179			
				Div 33 Utilities	DI Pipe Push - Class 52 8	800 lf	200	35.94	28,751	18,033	58.48	46,785	0.01		12.41	9,924	23.53	18,827	-	-	-	-	-	-	
					DI RJ Std Wgt 90 8	10 ea	28	4,273	2,684	695.64	139.78	287.50	0.00		6.956	1,398	287.50	2,875	-	-	-	-	-	-	
					Hydrostatic Testing - 2-12"	800 lf	19	1.13	900	540	1.80	1,440	0.00		1.04	835	0.08	66	-	-	-	-	-	-	
				Div 33 Utilities	Div 33 Utilities	1 ls	247	33,924.42	33,924	21,257	55,181.04	55,181	0.02		12,156.62	12,157	21,767.80	21,768	-	-	-	-	-	-	
				Div 46 Water and Wastewater Equipment	Thickened Sludge Pump- Progressive Cavity Pump- 250 gpm	2 ea	48	35,973.93	71,948	46,214	59,080.84	118,162	0.03		973.94	1,948	-	-	-	-	-	-	35,000.00	70,000	
					Sludge Pumps- Horizontal End Suction Pumps- 300 gpm	6 ea	144	19,497.36	116,984	74,997	31,996.87	191,981	0.05		1,035.28	6,212	-	-	-	-	-	462.09	2,773	18,000.00	108,000
					Weir Plate Fiberglass- 42 ft. 3 ea.	126 lf	118	106.70	13,444	8,417	173.50	21,861	0.01		39.49	4,975	50.00	6,300	-	-	-	17.22	2,169	-	
					Vertical Shaft Flocculators- 1.5 hp, SS	27 ea	1,512	37,735.38	1,018,855	652,706	61,909.68	1,671,561	0.46		2,369.10	63,966	-	-	-	-	-	1,032.95	27,890	34,333.33	927,000
					Chain and Flights Clarifier- 150 ft x 20 ft	6 ea	1,680	67,880.56	407,283	258,755	111,006.45	666,039	0.18		11,845.50	71,073	-	-	-	-	-	5,164.73	30,988	50,870.33	305,222
				Div 46 Water and Wastewater Equipment	Div 46 Water and Wastewater Equipment	1 ls	3,502	1,628,514.91	1,628,515	1,041,089	2,669,603.86	2,669,604	0.73		148,173.34	148,173	6,300.00	6,300	-	-	-	63,819.57	63,820	1,410,222.00	1,410,222
				205 Floculation/Sedimentation	205 Floculation/Sedimentation	1 ls	30,902	4,246,766.36	4,246,766	2,684,590	6,931,355.96	6,931,356	1.89		890,242.65	890,243	1,451,363.88	1,451,364	94,545.00	94,545	400,392.83	400,393	1,410,222.00	1,410,222	
				210 Ozone Contactor	Ozone Contactor																				
				Div 03 Concrete	Base Slabs	201 cy	1,005	504.49	101,403	63,899	822.40	165,302	0.05		128.72	25,872	315.79	63,474	10.00	2,010	49.98	10,047	-	-	
					Walls	383 cy	2,681	571.67	218,951	137,382	930.37	180,200	0.10		180.20	69,018	315.79	120,947	10.00	3,830	65.68	25,155	-	-	
					Suspended Slabs	124 cy	868	555.98	68,941	43,226	904.58	180,200	0.03		180.20	22,345	315.79	39,158	10.00	1,240	49.98	6,198	-	-	
				Div 03 Concrete	Div 03 Concrete	708 cy	4,554	549.85	389,295	244,507	895.20	633,802	0.17		165.59	117,236	315.79	223,579	10.00	7,080	58.48	41,400	-	-	
				Div 31 Earthwork	Excavation of Structure	3,843 cy	246	5.74	22,048	13,766	9.32	35,814	0.01		2.32	8,919	-	-	-	-	-	3.42	13,129	-	
					Backfilling of Structure	1,790 cy	143	5.80	10,381	6,402	9.38	16,783	0.00		3.29	5,891	-	-	-	-	-	2.51	4,490	-	
					Prep & Rough Grade for Slabs	2,704 sf	4	0.09	253	155	0.15	408	0.00		0.07	179	-	-	-	-	0.03	74	-		
					Excess Soils Disposal- Beneficial Reuse	2,053 cy	2.50	5,133	2,957	3.94	8,089	0.00							2.50	5,133	-	-	-	-	
					Stone Base Under All Structures	50 cy	2	38.46	1,234	1,234	3.157	63.15	0.00		1.30	65	36.00	1,800	-	-	-	1.16	58	-	
				Div 31 Earthwork	Div 31 Earthwork	1 ls	395	39,737.76	39,738	24,514	64,251.85	64,252	0.02		15,053.95	15,054	1,800.00	1,800	5,132.50	5,133	17,751.31	17,751			
				Div 46 Water and Wastewater Equipment	Ozone Generator Package System	1 ls	240	2,264,074.45	2,264,074	1,456,664	3,720,738.49	3,720,738	1.02	Per vendor quote.	10,844.78	10,845	1,000.00	1,000	-	-	-	2,229.67	2,230	2,250,000.00	2,250,000
				Div 46 Water and Wastewater Equipment	Div 46 Water and Wastewater Equipment	1 ls	240	2,264,074.45	2,264,074	1,456,664	3,720,738.49	3,720,738	1.02		10,844.78	10,845	1,000.00	1,000	-	-	-	2,229.67	2,230	2,250,000.00	2,250,000
				210 Ozone Contactor	210 Ozone Contactor	1 ls	5,189	2,693,107.02	2,693,107	1,725,685	4,418,792.28	4,418,792	1.21		143,134.55	143,135	226,378.94	226,379	12,212.50	12,213	61,381.03	61,381	2,250,000.00	2,250,000	
				215 BAF Filters	BAF Filters																				
				Div 03 Concrete	Base Slabs	1,065 cy	5,325	504.49	537,283	338,570	822.40	875,853	0.24		128.72	137,084	315.79	336,316	10.00	10,650	49.98	53,233	-	-	
					Walls	1,283 cy	8,981	571.67	733,457	460,211	930.37	1,193,668	0.33		180.20	231,202	315.79	405,158	10.00	12,830	65.68	84,267	-	-	
					Suspended Slabs	439 cy	3,073	555.98	244,074	153,035	904.58	397,109	0.11		180.20	79,110	315.79	138,632	10.00	4,390	49.98	21,943	-	-	
				Div 03 Concrete	Div 03 Concrete	2,787 cy	17,379	543.53	1,514,814	951,816	885.05	2,466,630	0.67		160.53	447,396	315.79	880,105	10.00	27,870	57.21	159,443	-	-	
				Div 05 Metals	Aluminum 2 Line Rail	1,000 lf	200	36.96	36,960	23,404	60.36	60,364	0.02		8.09	8,085	28.88	28,875	-	-	-	-	-	-	
				Div 05 Metals	Div 05 Metals	1 ls	200	36,960.07	36,960	23,404	60,363.86	60,364	0.02		8,085.07	8,085	28,875.00	28,875	-	-	-	-	-	-	
				Div 31 Earthwork	Excavation of Structure	15,838 cy	1,014	5.74	90,864	56,735	9.32	147,600	0.04		2.32	36,757	0.00	0	-	-	-	3.42	54,108	-	
					Backfilling of Structure	5,620 cy	450	5.80	32,594	20,099	9.38	42,693	0.01		3.29	18,496	0.00	0	-	-	-	2.51	14,098	-	
					Prep & Rough Grade for Slabs	11,495 sf	18	0.09	1,077	657	0.15	1,734	0.00		0.07	763	-	-	-	-	0.03	315	-		
					Excess Soils Disposal- Beneficial Reuse	10,217 cy	2.50	25,543	14,715	3.94	40,258	0.01		0.00	0	0.00	0	2.50	25,543	0.00	0	-	-	-	
					Stone Base Under All Structures	213 cy	7	38.46	8,191	5,259	63.15	13,450	0.00		1.30	276	36.00	7,668	-	-	-	1.16	247	-	
				Div 31 Earthwork	Div 31 Earthwork	1 ls	1,488	158,269.18	158,269	97,466	255,734.75	255,735	0.07		56,291.01	56,291	7,668.00	7,668	25,542.50	25,543	68,767.67	68,768			
				Div 33 Utilities	Filter Piping	2,000 lf	500	35.94	71,878	45,083	58.48	116,962	0.03		12.41	24,810	23.53	47,068	-	-	-	-	-	-	
					Drain-Butterfly Valves MJ 4"	8 ea	17	619.68	4,957	3,150	1,013.40	8,107	0.00		107.68	861	512.00	4,096	-	-	-	-	-	-	
					Air Scour-Butterfly Valves MJ 12"	8 ea</																			

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.	
				Div 31	Div 03 Concrete	3,980 cy	19,900	504.49	2,007,875	1,265,266	822.40	3,273,141	0.89		128.72	512,295	315.79	1,256,842	10.00	39,800	49.98	198,937			
				Div 31	Earthwork																				
					Excavate & Grade for Tank	1 ls	144	11,061.07	11,061	6,846	17,907.50	17,908	0.00		5,738.56	5,739	-	-	-	-	5,322.51	5,323	-	-	
					Div 31 Earthwork	1 ls	144	11,061.07	11,061	6,846	17,907.50	17,908	0.00		5,738.56	5,739	-	-	-	-	5,322.51	5,323	-	-	
				Div 33	Utilities																				
					Prestressed Concrete Water Storage Tank - 10,075,000 gal.	2 ea		3,900,000.00	7,800,000	4,493,652	6,146,825.90	12,293,652	3.36		-	-	-	-	-	3,900,000.00	7,800,000	-	-	-	
					Div 33 Utilities	1 ls		7,800,000.00	7,800,000	4,493,652	12,293,651.81	12,293,652	3.36		-	-	-	-	-	7,800,000.00	7,800,000	-	-	-	
					115 Storage Tank Sites	1 ls	20,044	9,818,935.79	9,818,936	5,765,764	15,584,700.16	15,584,700	4.25		518,033.87	518,034	1,256,842.11	1,256,842	7,839,800.00	7,839,800	204,259.81	204,260	-	-	
					210 Clear Wells	2 ea	20,044	4,909,467.89	9,818,936	5,765,764	7,792,350.08	15,584,700	4.25		259,016.94	518,034	628,421.06	1,256,842	3,919,900.00	7,839,800	102,129.91	204,260	-	-	
				215	High Service Pump Station																				
				* unassigned *																					
				Div 03	Concrete																				
					Canopy Slab/Foundation	197 cy	985	504.49	99,385	62,627	822.40	162,012	0.04		128.72	25,357	315.79	62,211	10.00	1,970	49.98	9,847	-	-	
					Pump Can Encasement	230 cy	1,610	571.67	131,485	82,501	930.37	213,986	0.06		180.20	41,447	315.79	72,632	10.00	2,300	65.68	15,106	-	-	
					Div 03 Concrete	427 cy	2,595	540.68	230,870	145,128	880.56	375,998	0.10		156.45	66,804	315.79	134,842	10.00	4,270	58.44	24,953	-	-	
				Div 13	Special Construction																				
					Pre-Engineered Metal Canopy- 50'x100'	5,000 sf		20.00	100,000	57,611	31.52	157,611	0.04		-	-	-	-	20.00	100,000	-	-	-	-	
					Div 13 Special Construction	1 ls		100,000.00	100,000	57,611	157,610.90	157,611	0.04		-	-	-	-	100,000.00	100,000	-	-	-	-	
				Div 31	Earthwork																				
					Excavation for Pump Cans/Encasement	576 cy	37	5.74	3,305	2,063	9.32	5,368	0.00		2.32	1,337	0.00	0	-	-	3.42	1,968	-	-	
					Backfilling of Pump Cans/Encasement	309 cy	25	5.80	1,792	1,105	9.38	2,897	0.00		3.29	1,017	0.00	0	-	-	2.51	775	-	-	
					Excess Soils Disposal- Beneficial Reuse	267 cy		2.50	668	385	3.94	1,052	0.00		0.00	0	0.00	0	2.50	668	0.00	0	-	-	
					Excavate & Grade for Canopy Slab/Foundation	1 ls	96	7,373.31	7,373	4,564	11,937.14	11,937	0.00		3,825.32	3,825	-	-	-	-	3,547.99	3,548	-	-	
					Div 31 Earthwork	1 ls	158	13,137.45	13,137	8,117	21,254.28	21,254	0.01		6,179.02	6,179	-	-	-	667.50	668	6,290.93	6,291	-	-
				Div 33	Utilities																				
					2" Air Release/Vacuum Valve	1 ea	1	1,554.34	1,554	998	2,552.14	2,552	0.00		54.34	54	1,500.00	1,500	-	-	-	-	-	-	
					DI MJ Std Wgt 90 60	3 ea	48	13,043.39	39,130	25,081	21,403.72	64,211	0.02		726.59	2,180	12,158.10	36,474	-	-	158.69	476	-	-	
					DI MJ Std Wgt Tee 60x24	5 ea	121	12,345.55	61,728	39,469	20,239.42	101,197	0.03		1,091.25	5,456	10,982.25	54,911	-	-	272.05	1,360	-	-	
					DI MJ Std Wgt Red 60x24	4 ea	64	6,122.21	24,489	15,623	10,027.97	40,112	0.01		727.50	2,910	5,335.20	21,341	-	-	59.51	238	-	-	
					DI MJ Std Wgt Cap 24	1 ea	4	658.78	659	416	1,075.21	1,075	0.00		159.28	159	499.50	500	-	-	-	-	-	-	
					DI MJ Std Wgt Cap 60	1 ea	9	13,006.94	13,007	8,351	21,358.24	21,358	0.01		422.94	423	12,584.00	12,584	-	-	-	-	-	-	
					Hydrostatic Testing - 48-60"	100 lf	8	3.98	398	239	6.37	3.65	0.00		3.65	365	0.33	33	-	-	-	-	-	-	
					Precast Vaults	1 ea	56	12,373.40	12,373	7,859	20,232.87	20,233	0.01		2,192.72	2,193	7,500.00	7,500	-	-	2,680.68	2,681	-	-	
					Butterfly Valves MJ 24"	4 ea	52	6,578.42	26,314	16,824	10,784.34	43,137	0.01		589.68	2,359	5,929.23	23,717	-	-	59.51	238	-	-	
					Butterfly Valves MJ 60"	2 ea	60	38,093.63	76,187	48,906	62,546.67	125,093	0.03		1,355.59	2,711	36,500.00	73,000	-	-	238.04	476	-	-	
					Pressure Monitoring	1 ls	10	2,991.30	2,991	1,902	4,893.21	4,893	0.00		491.30	491	2,500.00	2,500	-	-	-	-	-	-	
					Magnetic Flow Meter 60"	1 ea	67	93,518.32	93,518	60,045	153,563.02	153,563	0.04		3,042.24	3,042	90,000.00	90,000	-	-	476.08	476	0.00	0	
					DI Flanged Joint Pipe 24"	40 lf	107	412.84	16,514	10,414	673.18	112,96	0.01		112.96	4,518	267.83	10,713	-	-	32.05	1,282	-	-	
					DI Flanged Joint Pipe 60"	100 lf	546	1,398.14	139,814	88,888	2,287.02	228,702	0.06		230.99	23,099	1,126.13	112,613	-	-	41.03	4,103	-	-	
					Pipe Supports	18 ea	86	385.06	6,931	4,287	623.25	11,218	0.00		203.06	3,655	182.00	3,276	-	-	-	-	-	-	
					Ball Valve 24" w/ motor operator	4 ea	160	36,756.31	147,025	94,305	60,332.63	241,331	0.07		1,692.20	6,769	35,000.00	140,000	-	-	64.11	256	-	-	
					Div 33 Utilities	1 ls	1,401	662,632.64	662,633	423,608	1,086,240.84	1,086,241	0.30		60,384.60	60,385	590,661.61	590,662	-	-	11,586.43	11,586	-	-	
				Div 46	Water and Wastewater Equipment																				
					500 hp - Variable Frequency Drives	4 ea	236	96,559.58	386,238	248,100	158,584.64	634,339	0.17		2,559.58	10,238	94,000.00	376,000	-	-	-	-	-	-	
					Vertical Can Pump- 7,000 gpm	4 ea	192	313,121.84	1,252,487	805,700	514,546.92	2,058,188	0.56		2,168.96	8,676	-	-	-	-	952.89	3,812	310,000.00	1,240,000	
					Div 46 Water and Wastewater Equipment	1 ls	428	1,638,725.70	1,638,726	1,053,801	2,692,526.23	2,692,526	0.73		18,914.14	18,914	376,000.00	376,000	-	-	3,811.56	3,812	1,240,000.00	1,240,000	
					* unassigned *			4,581	2,645,365	1,688,265	4,333,630	1.18		152,282.10	152,282	1,101,503.72	1,101,504	104,937.50	104,938	46,642.06	46,642	1,240,000.00	1,240,000		
					215 High Service Pump Station	1 ls	4,581	2,645,365.38	2,645,365	1,688,265	4,333,630.21	4,333,630	1.18		152,282.10	152,282	1,101,503.72	1,101,504	104,937.50	104,938	46,642.06	46,642	1,240,000.00	1,240,000	
				218	Electrical & Instrumentation																				
				* unassigned *																					
				Div 25	Integrated Automation																				
					Instrumentation & Control	1 ls		850,000.00	850,000	489,693	1,339,692.81	1,339,693	0.37		-	-	-	-	850,000.00	850,000	-	-	-	-	
					Div 25 Integrated Automation	1 ls		850,000.00	850,000	489,693	1,339,692.81	1,339,693	0.37		-	-	-	-	850,000.00	850,000	-	-	-	-	
				Div 26	Electrical																				
					Electrical	1 ls		2,800,000.00	2,800,000	1,613,106	4,413,105.81	4,413,106	1.20		-	-	-	-	2,800,000.00						

Water Supply Project
Detailed Cost Estimate (DCE) Report
 WBS 1 / 2 / 3

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.	
					220 30 Inch Line Repair/Replace-Riverbend Tie-in to New Boston Rd	49,361 lf	34,710	205.99	10,167,727	6,436,171	336.38	16,603,897	4.53	Based on replacing 75% of existing line.	31.10	1,535,191	151.86	7,495,896	10.49	517,779	12.54	618,861			
		221			TAC to Maud																				
			100		Open Cut Piping																				
				Div 31	Earthwork																				
					Trench Excav & Backfill 4-8'	54,387 lf	15,663	22.95	1,248,206	774,838	37.20	2,023,043	0.55		11.04	600,394	-	-	-	-	-	11.91	647,812	-	
					Utility Bed Sand	16,114 cy		17.25	277,967	178,902	28.35	456,868	0.12		0.00	0	17.25	277,967	-	-	0.00	0	-	-	
					3500 psi Thrust Block Concrete	100 cy	75	138.37	13,837	8,773	226.10	22,610	0.01		27.99	2,799	110.38	11,038	-	-	-	-	-	-	
					Silt Fence/Erosion Control Measures	54,387 lf		5.00	271,935	156,664	7.88	428,599	0.12		0.00	0	0.00	0	5.00	271,935	0.00	0	-	-	
				Div 31	Earthwork	1 ls	15,738	1,811,944.12	1,811,944	1,119,177	2,931,120.76	2,931,121	0.80		603,192.67	603,193	289,004.63	289,005	271,935.00	271,935	647,811.82	647,812	-	-	
				Div 32	Exterior Improvements																				
					Asphalt Patching/Street Restoration	54 sy		50.00	2,700	1,556	78.81	4,256	0.00	6 repairs, average 20 ft long.	-	-	-	-	50.00	2,700	-	-	-	-	
					Saw Cut Asphalt in Street Before Trench Excavation	1,440 inft		0.85	1,224	705	1.34	1,929	0.00		-	-	-	-	0.85	1,224	-	-	-	-	
					Hydroseeding/ROW Restoration	21 ac		3,000.00	63,000	36,295	4,728.33	99,295	0.03		-	-	-	-	3,000.00	63,000	-	-	-	-	
				Div 32	Exterior Improvements	1 ls		66,924.00	66,924	38,556	105,479.54	105,480	0.03		-	-	-	-	66,924.00	66,924	-	-	-	-	
				Div 33	Utilities																				
					2" Air Release/Vacuum Valve	10 ea	13	1,554.34	15,543	9,979	2,552.14	25,521	0.01		54.34	543	1,500.00	15,000	-	-	-	-	-	-	
					DI Pipe Push - Class 52 10'	54,387 lf	15,228	50.27	2,733,971	1,723,716	81.96	4,457,687	1.22		13.89	755,644	36.38	1,978,327	-	-	-	-	-	-	
					DI RJ Std Wgt Fittings 10" - allowance	105 ea	373	936.40	98,322	62,401	1,530.70	160,723	0.04		176.40	18,522	760.00	79,800	-	-	-	-	-	-	
					Unload & Shake Out DIP	54,387 lf	1,892	2.77	150,384	93,293	4.48	243,677	0.07		1.35	73,580	0.00	0	-	-	1.41	76,804	-	-	
					Hydrostatic Testing - 2-12"	54,387 lf	1,305	1.13	61,201	36,694	1.80	97,895	0.03		1.04	56,741	0.08	4,460	-	-	-	-	-	-	
					Chlorination	54,387 lf		0.10	5,439	3,500	0.16	8,939	0.00		0.00	0	0.10	5,439	-	-	-	-	-		
					Precast Vaults	1 ea	56	9,873.40	9,873	6,250	16,123.88	16,124	0.00		2,192.72	2,193	5,000.00	5,000	-	-	2,680.68	2,681	-	-	
					Butterfly Valves MJ 10" w/ valve box	10 ea	40	1,453.42	14,534	9,261	2,379.52	23,795	0.01		196.50	1,965	1,256.92	12,569	-	-	-	-	-	-	
					Pressure Monitoring	1 ls	10	2,991.30	2,991	1,902	4,893.18	4,893	0.00		491.30	491	2,500.00	2,500	-	-	-	-	-	-	
				Div 33	Utilities	1 ls	18,917	3,092,259.32	3,092,259	1,946,997	5,039,256.10	5,039,256	1.38		909,679.98	909,680	2,103,094.76	2,103,095	338,859.00	338,859	79,484.58	79,485	-	-	
				100	Open Cut Piping	1 ls	34,655	4,971,127.44	4,971,127	3,104,729	8,075,856.40	8,075,856	2.20		1,512,872.65	1,512,873	2,392,099.39	2,392,099	338,859.00	338,859	727,296.40	727,296	-	-	
				105	Jack & Bore at RR and Street Crossings																				
				Div 33	Utilities																				
					Mobilization - Jack & Bore	1 ea		2,000.00	2,000	1,152	3,152.24	3,152	0.00		-	-	-	-	2,000.00	2,000	-	-	-	-	
					Jacking Pits- excavate & restore	2 ea	80	2,610.72	5,221	3,211	4,216.18	8,432	0.00		1,575.17	3,150	-	-	-	-	1,035.56	2,071	-	-	
					22" diameter casing, Roadway, .250" thick for 10" carrier pipe	100 lf		632.50	63,250	36,439	996.89	996,889	0.03	One crossing @150 ft.	-	-	-	-	632.50	63,250	-	-	-	-	
				Div 33	Utilities	80		70,471	40,802	40,802	111,274	111,274	0.03		-	-	-	-	3,150	65,250	-	-	-	-	
				105	Jack & Bore at RR and Street Crossings	80		70,471	40,802	40,802	111,274	111,274	0.03	Carrier pipe material costs included with open cut pipe length.	-	-	-	-	3,150	65,250	-	-	-	-	
				106	Jack & Bore at Creek and Drainage Ditch Crossings																				
				Div 33	Utilities																				
					Mobilization - Jack & Bore	3 ea		2,000.00	6,000	3,457	3,152.22	9,457	0.00		-	-	-	-	2,000.00	6,000	-	-	-	-	
					Jacking Pits- excavate & restore	6 ea	240	2,610.72	15,664	9,633	4,216.18	25,297	0.01		1,575.17	9,451	-	-	-	-	1,035.56	6,213	-	-	
					22" diameter casing, Roadway, .250" thick for 10" carrier pipe	300 lf		632.50	189,750	109,317	996.89	299,067	0.08	One crossing @150 ft.	-	-	-	-	632.50	189,750	-	-	-	-	
				Div 33	Utilities	1 ls	240	211,414.34	211,414	122,406	333,820.49	333,820	0.09		9,451.00	9,451	-	-	652.50	195,750	6,213.34	6,213	-	-	
				106	Jack & Bore at Creek and Drainage Ditch Crossings	300 lf	240	704.71	211,414	122,406	1,112.73	333,820	0.09	Carrier pipe material costs included with open cut pipe length.	31.50	9,451	-	-	652.50	195,750	20.71	6,213	6,213	-	-
				222	TAC to Maud	51,183 lf	34,975	102.63	5,253,013	3,267,937	166.48	8,520,950	2.33		29.80	1,525,474	46.74	2,392,099	11.72	599,859	14.37	735,581			
					TAC to City of New Boston																				
			100		Open Cut Piping																				
				Div 31	Earthwork																				
					Trench Excav & Backfill 4-8'	32,648 lf	11,753	28.69	936,607	581,410	46.50	1,518,017	0.41		13.80	450,513	-	-	-	-	-	14.89	486,094	-	
					Utility Bed Sand	9,673 cy		17.25	166,859	107,392	28.35	274,251	0.07		0.00	0	17.25	166,859	-	-	0.00	0	-	-	
					3500 psi Thrust Block Concrete	100 cy	75	138.37	13,837	8,773	226.10	22,610	0.01		27.99	2,799	110.38	11,038	-	-	-	-	-	-	
					Silt Fence/Erosion Control Measures	32,648 lf		5.00	163,240	94,044	7.88	257,284	0.07		0.00	0	0.00	0	5.00	163,240	0.00	0	-	-	
				Div 31	Earthwork	1 ls	11,828	1,280,543.76	1,280,544	791,619	2,072,162.48	2,072,162	0.57		453,312.27	453,312	177,897.38	177,897	163,240.00	163,240	486,094.11	486,094	-	-	
				Div 32	Exterior Improvements																				
					Asphalt Patching/Street Restoration	84 sy		50.00	4,200	2,420	78.81	6,620	0.00	5 repairs, average 25 ft long.	-	-	-	-	50.00	4,200	-	-	-	-	
					Saw Cut Asphalt in Street Before Trench Excavation	1,500 inft		0.85	1,275	735	1.34	2,010	0.00		-	-	-	-	0.85	1,275	-	-	-	-	
					Hydroseeding/ROW Restoration	14 ac		3,000.00	42,000	24,197	4,728.33	66,197	0.02		-	-	-	-	3,000.00	42,000	-	-	-	-	
				Div 32	Exterior Improvements	1 ls		47,475.00	47,475	27,351	74,825.78	74,826	0.02		-	-	-	-	47,475.00	47,475	-	-	-	-	
				Div 33	Utilities																				
					2" Air Release/Vacuum Valve	6 ea	8	1,554.34	9,326	5,987	2,552.14	15,313	0.00		54.34	326	1,500.00	9,000	-	-	-	-	-	-	
					DI Pipe Push - Class 52 24'	32,648 lf	13,059	50.27	4,198,054	2,671,126	210.40	6,869,180	1.87		19.85	648,009	108.74	3,550,046							

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.
				Div 31	Earthwork																			
					Utility Bed Sand	6,600 cy		17.25	113,850	73,275	28.35	187,125	0.05		0.00	0	17.25	113,850	-	-	0.00	0	-	-
					3500 psi Thrust Block Concrete	100 cy	75	138.37	13,837	8,773	226.10	22,610	0.01		27.99	2,799	110.38	11,038	-	-	-	-	-	-
					Silt Fence/Erosion Control Measures	22,276 lf		5.00	111,380	64,167	7.88	175,547	0.05		0.00	0	0.00	0	5.00	111,380	0.00	0	-	-
					Div 31 Earthwork	1 ls	8,094	878,122.07	878,122	542,915	1,421,037.43	1,421,037	0.39		310,187.91	310,188	124,888.13	124,888	111,380.00	111,380	331,666.03	331,666	-	-
				Div 32	Exterior Improvements																			
					Asphalt Patching/Street Restoration	139 sy		50.00	6,950	4,004	78.81	10,954	0.00	5 repairs, average 25 ft long.	-	-	-	-	50.00	6,950	-	-	-	-
					Saw Cut Asphalt in Street Before Trench Excavation	1,500 inft		0.85	1,275	735	1.34	2,010	0.00		-	-	-	-	0.85	1,275	-	-	-	-
					Hydroseeding/ROW Restoration	10 ac		3,000.00	30,000	17,283	4,728.33	47,283	0.01		-	-	-	-	3,000.00	30,000	-	-	-	-
					Div 32 Exterior Improvements	1 ls		38,225.00	38,225	22,022	60,246.78	60,247	0.02						38,225.00	38,225				
				Div 33	Utilities																			
					2" Air Release/Vacuum Valve	5 ea	6	1,554.34	7,772	4,989	2,552.14	12,761	0.00		54.34	272	1,500.00	7,500	-	-	-	-	-	-
					DI Pipe Push - Class 52 30	22,276 lf	9,801	168.01	3,742,639	2,385,695	275.11	6,128,334	1.67		21.83	486,356	146.18	3,256,283	-	-	-	-	-	-
					DI RJ Std Wgt Fittings 30- allowance	45 ea	349	5,904.96	2,657,223	170,199	9,687.16	435,922	0.12		384.96	17,323	5,520.00	248,400	-	-	-	-	-	-
					Unload & Shake Out DIP	22,276 lf	775	2.77	61,595	38,211	4.48	99,806	0.03		1.35	30,137	0.00	0	-	-	1.41	31,458	-	-
					Hydrostatic Testing - 26-36"	22,276 lf	1,381	2.92	64,938	39,543	4.66	103,881	0.03		2.70	60,037	0.22	4,901	-	-	-	-	-	-
					Chlorination	22,276 lf		0.10	2,228	1,434	0.16	3,661	0.00		0.00	0	0.10	2,228	-	-	-	-	-	-
					Precast Vaults	1 ea	56	12,373.40	12,373	7,859	20,232.88	20,233	0.01		2,192.72	2,193	7,500.00	7,500	-	-	2,680.68	2,681	-	-
					Butterfly Valves MJ 30" w/ valve box	5 ea	81	12,759.69	63,798	40,870	20,933.67	104,668	0.03		805.84	4,029	11,953.85	59,769	-	-	-	-	-	-
					Pressure Monitoring	1 ls	10	2,991.30	2,991	1,902	4,893.18	4,893	0.00		491.30	491	2,500.00	2,500	-	-	-	-	-	-
					Div 33 Utilities	1 ls	12,460	4,224,057.22	4,224,057	2,690,102	6,914,159.52	6,914,160	1.89		600,838.19	600,838	3,589,080.76	3,589,081	149,605.00	149,605	34,138.27	34,138	-	-
					100 Open Cut Piping	1 ls	20,554	5,140,404.29	5,140,404	3,255,039	8,395,443.73	8,395,444	2.29		911,026.10	911,026	3,713,968.89	3,713,969	149,605.00	149,605	365,804.30	365,804	-	-
				105	Jack & Bore at RR and Street Crossings																			
				Div 33	Utilities																			
					Mobilization - Jack & Bore	3 ea		2,000.00	6,000	3,457	3,152.22	9,457	0.00		-	-	-	-	2,000.00	6,000	-	-	-	-
					Jacking Pits- excavate & restore	6 ea	240	2,610.72	15,664	9,633	4,216.19	25,297	0.01		1,575.17	9,451	-	-	-	-	1,035.56	6,213	-	-
					48" diameter casing, Roadway, .344" thick for 30" carrier pipe	1,000 lf		810.24	810,240	466,787	1,277.03	1,277,027	0.35	Length - up to ~500 ft.	-	-	-	-	810.24	810,240	-	-	-	-
					Div 33 Utilities	1 ls	240	831,904.34	831,904	479,876	1,311,780.51	1,311,781	0.36		9,451.00	9,451	816,240.00	816,240	816.24	816,240	6,213.34	6,213	-	-
					105 Jack & Bore at RR and Street Crossings	1,000 lf	240	831.90	831,904	479,876	1,311.78	1,311,781	0.36	Carrier pipe material costs included with open cut pipe length.	9.45	9,451	816.24	816,240	816.24	816,240	6.21	6,213	-	-
				106	Jack & Bore at Creek and Drainage Ditch Crossings																			
				Div 33	Utilities																			
					Mobilization - Jack & Bore	14 ea		2,000.00	28,000	16,131	3,152.22	44,131	0.01		-	-	-	-	2,000.00	28,000	-	-	-	-
					Jacking Pits- excavate & restore	28 ea	1,120	2,610.72	73,100	44,953	4,216.19	118,053	0.03		1,575.17	44,105	-	-	-	-	1,035.56	28,996	-	-
					48" diameter casing, Roadway, .344" thick for 30" carrier pipe	1,000 lf		810.24	810,240	466,787	1,277.03	1,277,027	0.35	Length - up to ~500 ft.	-	-	-	-	810.24	810,240	-	-	-	-
					Div 33 Utilities	1 ls	1,120	911,340.26	911,340	527,871	1,439,211.08	1,439,211	0.39		44,104.66	44,105	838,240.00	838,240	598.74	838,240	28,995.60	28,996	-	-
					106 Jack & Bore at Creek and Drainage Ditch Crossings	1,400 lf	1,120	650.96	911,340	527,871	1,028.01	1,439,211	0.39	Carrier pipe material costs included with open cut pipe length.	31.50	44,105	598.74	838,240	598.74	838,240	20.71	28,996	-	-
					223 Riverbend Tie-in to TAC	22,276 lf	21,914	309.02	6,883,649	4,262,786	500.38	11,146,435	3.04		43.30	964,582	166.73	3,713,969	80.99	1,804,085	18.00	401,013	-	-
				225	City of New Boston Storage/Booster Pump Station																			
				115	Storage Tank Sites																			
				Div 02	Existing Conditions																			
					Demo Above Ground Steel Tanks	1 ea	64	8,942.34	8,942	5,629	14,571.64	14,572	0.00	Recycle steel, no disposal cost.	2,654.11	2,654	-	-	-	-	6,288.23	6,288	-	-
					Demo Above Ground Concrete Tanks	1 ea	120	19,612.58	19,613	12,384	31,996.56	31,997	0.01	Dispose in landfill	5,028.17	5,028	-	-	-	-	14,584.41	14,584	-	-
					Landfill T & D	1,250 tn		65.00	81,250	46,809	102.45	128,059	0.03	1000 ton for concrete tank, 250 tons for steel tank foundation.	-	-	-	-	65.00	81,250	-	-	-	-
					Div 02 Existing Conditions	1 ls	184	109,804.92	109,805	64,822	174,627.08	174,627	0.05		7,682.28	7,682	81,250.00	81,250	20,872.64	20,873	-	-	-	-
				Div 03	Concrete																			
					Tank Foundation- 60 ft dia.x 2 ft thick	210 cy	1,050	504.49	105,943	66,760	822.40	172,703	0.05		128.72	27,031	315.79	66,316	10.00	2,100	49.98	10,497	-	-
					Booster Pumps Foundation- 20 ft.x 20 ft x 2 ft thick	30 cy	150	504.49	15,135	9,537	822.40	24,672	0.01		128.72	3,862	315.79	9,474	10.00	300	49.98	1,500	-	-
					Div 03 Concrete	240 cy	1,200	504.49	121,078	76,297	822.40	197,375	0.05		128.72	30,892	315.79	75,789	10.00	2,400	49.98	11,996	-	-
				Div 13	Special Construction																			
					Pre-Engineered Metal Canopy- 20'x20'	400 sf		25.00	10,000	5,761	39.40	15,761	0.00		-	-	-	-	25.00	10,000	-	-	-	-
					Div 13 Special Construction	1 ls		10,000.00	10,000	5,761	15,761.08	15,761	0.00						10,000.00	10,000				
				Div 26	Electrical																			
					Misc. Electrical, Lighting, Power to Pumps etc.																			

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.
				Div 31	Earthwork																			
					Excavate & Grade for Tank	1 ls	96	7,373.31	7,373	4,564	11,937.11	11,937	0.00		3,825.32	3,825	-	-	-	-	3,547.99	3,548	-	-
					Div 31 Earthwork	1 ls	96	7,373.31	7,373	4,564	11,937.11	11,937	0.00		3,825.32	3,825	-	-	-	-	3,547.99	3,548	-	-
				Div 32	Exterior Improvements																			
					Misc. Site Improvements	1 ls		10,000.00	10,000	5,761	15,761.10	15,761	0.00	Stone driveway, fencing.	-	-	-	-	10,000.00	10,000	-	-	-	-
					Hydroseeding/Restoration	1 ac		3,000.00	3,000	1,728	4,728.34	4,728	0.00		-	-	-	-	3,000.00	3,000	-	-	-	-
					Div 32 Exterior Improvements	1 ls		13,000.00	13,000	7,489	20,489.44	20,489	0.01		-	-	-	-	13,000.00	13,000	-	-	-	-
				Div 33	Utilities																			
					DI MJ Std Wgt Fittings 14"	8 ea	39	571.80	4,574	2,865	929.96	7,440	0.00		207.30	1,658	364.50	2,916	-	-	-	-	-	-
					Precast Vaults	1 ea	56	8,373.40	8,373	5,285	13,658.43	13,658	0.00		2,192.72	2,193	3,500.00	3,500	-	-	-	-	2,680.68	2,681
					Butterfly Valves MJ 14"	4 ea	24	2,490.90	9,964	6,364	4,081.93	16,328	0.00		255.52	1,022	2,235.38	8,942	-	-	-	-	-	-
					Prestressed Concrete Water Storage Tank - 200,000 gal.	1 ea		265,000.00	265,000	152,669	417,668.92	417,669	0.11		-	-	-	-	265,000.00	265,000	-	-	-	-
					Magnetic Flow Meter 14"	1 ea	26	8,901.25	8,901	5,674	14,574.93	14,575	0.00		1,163.21	1,163	7,500.00	7,500	-	-	-	-	238.04	238
					DI Flanged Joint Pipe 14"	16 lf	33	224.90	3,598	2,250	365.53	5,848	0.00		86.73	1,388	138.18	2,211	-	-	-	-	-	-
					Pipe Supports	10 ea	36	280.01	2,800	1,729	452.91	4,529	0.00		153.99	1,540	126.02	1,260	-	-	-	-	-	-
					Ball Valve 14" w/ motor operator	2 ea	48	16,079.43	32,159	20,601	26,380.08	52,760	0.01		1,015.32	2,031	15,000.00	30,000	-	-	-	-	64.11	128
					Div 33 Utilities	1 ls	262	335,369.99	335,370	197,437	532,807.46	532,807	0.15		10,994.53	10,995	56,328.53	56,329	265,000.00	265,000	3,046.93	3,047	-	-
				Div 46	Water and Wastewater Equipment																			
					80 hp - Variable Frequency Drives	2 ea	71	18,949.37	37,899	24,245	31,071.76	62,144	0.02		1,549.37	3,099	17,400.00	34,800	-	-	-	-	-	-
					Horizontal Split Case Booster Pumps- 3000 gpm	2 ea	40	51,324.82	102,650	65,984	84,316.96	168,634	0.05		862.73	1,725	-	-	-	-	-	-	462.09	924
					Div 46 Water and Wastewater Equipment	1 ls	111	140,548.37	140,548	90,229	230,777.45	230,777	0.06		4,824.20	4,824	34,800.00	34,800	-	-	-	-	924.17	924
					115 Storage Tank Sites	1 ls	1,085	593,344.07	593,344	358,986	952,330.13	952,330	0.26		35,476.29	35,476	129,970.63	129,971	314,230.00	314,230	13,667.15	13,667	100,000.00	100,000
					230 TAC Storage/Booster Pump Station	1 ls	1,085	593,344.07	593,344	358,986	952,330.13	952,330	0.26		35,476.29	35,476	129,970.63	129,971	314,230.00	314,230	13,667.15	13,667	100,000.00	100,000
					30 Distribution Pipelines	155,468 lf	123,136	199.19	30,967,797	19,328,545	323.52	50,296,342	13.73		34.58	5,376,602	115.05	17,886,160	33.09	5,144,077	15.19	2,360,958	1.29	200,000
					02 Alternate 3A Modified- Phase 1B	1 LS	218,758	63,330,951.09	63,330,951	39,106,000	102,436,950.59	102,436,951	27.96		8,232,110.89	8,232,111	23,718,447.56	23,718,448	18,716,421.95	18,716,422	3,729,248.69	3,729,249	8,934,722.00	8,934,722
03					Alternate 3A Modified- Phase 2A																			
	10				Raw Water Supply																			
		300			10 MGD Pumps																			
			85		Electrical																			
				Div 25	Integrated Automation																			
					Instrumentation & Control	1 ls		15,000.00	15,000	8,642	23,641.63	23,642	0.01		-	-	-	-	15,000.00	15,000	-	-	-	-
					Div 25 Integrated Automation	1 ls		15,000.00	15,000	8,642	23,641.63	23,642	0.01		-	-	-	-	15,000.00	15,000	-	-	-	-
				Div 26	Electrical																			
					Electrical	1 ls		90,000.00	90,000	51,850	141,849.85	141,850	0.04		-	-	-	-	90,000.00	90,000	-	-	-	-
					Div 26 Electrical	1 ls		90,000.00	90,000	51,850	141,849.85	141,850	0.04		-	-	-	-	90,000.00	90,000	-	-	-	-
					85 Electrical	1 ls		105,000.00	105,000	60,491	165,491.48	165,491	0.05		-	-	-	-	105,000.00	105,000	-	-	-	-
				90	Process Equipment																			
				Div 46	Water and Wastewater Equipment																			
					600 hp - Variable Frequency Drives	2 ea	140	155,036.79	310,074	199,278	254,675.64	509,351	0.14		3,036.79	6,074	152,000.00	304,000	-	-	-	-	-	-
					Vertical Turbine Pumps- 7000 gpm	2 ea	288	284,484.15	568,968	365,603	467,285.72	934,571	0.26		6,211.64	12,423	500.00	1,000	-	-	2,772.52	5,545	275,000.00	550,000
					Div 46 Water and Wastewater Equipment	1 ls	428	879,041.88	879,042	564,881	1,443,922.72	1,443,923	0.39		18,496.85	18,497	305,000.00	305,000	-	-	5,545.03	5,545	550,000.00	550,000
					90 Process Equipment	1 ls	428	879,041.88	879,042	564,881	1,443,922.72	1,443,923	0.39		18,496.85	18,497	305,000.00	305,000	-	-	5,545.03	5,545	550,000.00	550,000
				95	Pump Discharge Piping																			
				Div 33	Utilities																			
					Butterfly Valves MJ 24"	2 ea	26	6,578.42	13,157	8,412	10,784.35	21,569	0.01		589.68	1,179	5,929.23	11,858	-	-	-	-	59.51	119
					DI Flanged Joint Pipe 24"	16 lf	43	412.84	6,605	4,165	673.19	10,771	0.00		112.95	1,807	267.83	4,285	-	-	-	-	32.05	513
					Ball Valve 24" w/ motor operator	2 ea	80	36,756.31	73,513	47,153	60,332.63	120,665	0.03		1,692.21	3,384	35,000.00	70,000	-	-	-	-	64.11	128
					Div 33 Utilities	1 ls	149	93,274.90	93,275	59,730	153,004.84	153,005	0.04		6,371.04	6,371	86,143.80	86,144	-	-	760.06	760	-	-
					95 Pump Discharge Piping	1 ls	149	93,274.90	93,275	59,730	153,004.84	153,005	0.04		6,371.04	6,371	86,143.80	86,144	-	-	760.06	760	-	-
					300 10 MGD Pumps	2 ea	577	538,658.39	1,077,317	685,102	881,209.52	1,762,419	0.48		12,433.95	24,868	195,571.90	391,144	52,500.00	105,000	3,152.55	6,305	275,000.00	550,000
				301	Intake Structure-Screens																			
				112	Raw Water Intake Structure																			
				Div 35	Waterway and Marine																			
					Mobilize & Demobilize Barges, Crane/Drilling Rig, Crew	1 ls	112	19,014.98	19,015	11,973	30,988.43	30,988	0.01		5,574.45	5,574	-	-	-	-	13,440.53	13,441	-	-
					Div 35 Waterway and Marine																			

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.	
				100	Open Cut Piping																				
				Div 31	Earthwork																				
					Trench Excav & Backfill 4- 8'	41,072	14,786	28.69	1,178,276	731,428	46.50	1,909,704	0.52		13.80	566,757	-	-	-	-	-	14.89	611,519	-	-
					Utility Bed Sand	12,169		17.25	209,915	135,103	28.35	345,019	0.09		0.00	0	17.25	209,915	-	-	-	0.00	0	-	-
					3500 psi Thrust Block Concrete	150	113	138.37	20,756	13,159	226.10	33,915	0.01		27.99	4,198	110.38	16,557	-	-	-	-	-	-	-
					Silt Fence/Erosion Control Measures	41,072		5.00	205,360	118,310	7.88	323,670	0.09		0.00	0	0.00	0	5.00	205,360	-	0.00	0	-	-
					Div 31 Earthwork	1	14,898	1,614,306.42	1,614,306	998,000	2,612,306.70	2,612,307	0.71		570,955.44	570,955	226,472.44	226,472	205,360.00	205,360	611,518.54	611,519	-	-	
				Div 32	Exterior Improvements																				
					Asphalt Patching/Street Restoration	210		50.00	10,500	6,049	78.81	16,549	0.00	21 repairs, average 15 ft long.	-	-	-	-	-	50.00	10,500	-	-	-	
					Saw Cut Asphalt in Street Before Trench Excavation	3,780		0.85	3,213	1,851	1.34	5,064	0.00		-	-	-	-	-	0.85	-	-	-	-	
					Hydroseeding/ROW Restoration	17		3,000.00	51,000	29,382	4,728.33	80,382	0.02		-	-	-	-	-	3,000.00	51,000	-	-	-	
					Div 32 Exterior Improvements	1		64,713.00	64,713	37,282	101,994.75	101,995	0.03		-	-	-	-	64,713.00	64,713	-	-	-	-	
				Div 33	Utilities																				
					2" Air Release/Vaccum Valve	8	10	1,554.34	12,435	7,982	2,552.14	20,417	0.01		54.34	435	1,500.00	12,000	-	-	-	-	-	-	
					DI Pipe Push - Class 52 24	41,072	16,429	128.59	5,281,257	3,360,343	210.40	8,641,600	2.36		19.85	815,211	108.74	4,466,046	-	-	-	-	-	-	
					DI RJ Std Wgt Fittings 24- allowance	85	539	3,334.84	283,462	181,167	5,466.23	464,629	0.13		314.84	26,762	3,020.00	256,700	-	-	-	-	-	-	
					Unload & Shake Out DIP	41,072	1,429	2.77	113,567	70,453	4.48	184,020	0.05		1.35	55,566	0.00	0	-	-	-	1.41	58,001	-	-
					Hydrostatic Testing - 14-24"	41,072	1,725	1.99	81,559	48,930	3.18	130,489	0.04		1.83	74,987	0.16	6,572	-	-	-	-	-	-	-
					Chlorination	41,072		0.10	4,107	2,643	0.16	6,751	0.00		0.00	0	0.10	4,107	-	-	-	-	-	-	
					Precast Vaults	1	56	12,373.40	12,373	7,860	20,232.90	20,233	0.01		2,192.72	2,193	7,500.00	7,500	-	-	2,680.68	2,681	-	-	
					Butterfly Valves MJ 24" w/ valve box	8	104	6,576.78	52,614	33,617	10,778.90	86,231	0.02		647.55	5,180	5,929.23	47,434	-	-	-	-	-	-	
					Pressure Monitoring	1	10	2,991.30	2,991	1,902	4,893.17	4,893	0.00		491.30	491	2,500.00	2,500	-	-	-	-	-	-	
					Div 33 Utilities	1	20,302	5,844,365.40	5,844,365	3,714,898	9,559,263.57	9,559,264	2.61		980,825.29	980,825	4,802,858.62	4,802,859	270,073.00	270,073	60,681.49	60,681	-	-	
					100 Open Cut Piping	1	35,200	7,523,384.82	7,523,385	4,750,180	12,273,565.02	12,273,565	3.35		1,551,780.73	1,551,781	5,029,331.06	5,029,331	270,073.00	270,073	672,200.03	672,200	-	-	
					312 Central Bowie Co. to DeKalb	41,072	35,200	183.18	7,523,385	4,750,180	298.83	12,273,565	3.35		37.78	1,551,781	122.45	5,029,331	5,029,331	6.58	270,073	16.37	672,200	-	-
				313	New Boston to Central Bowie Co.																				
				100	Open Cut Piping																				
				Div 31	Earthwork																				
					Trench Excav & Backfill 4- 8'	18,283	6,582	28.69	524,504	325,592	46.50	850,095	0.23		13.80	252,289	-	-	-	-	-	14.89	272,214	-	-
					Utility Bed Sand	5,417		17.25	93,443	60,141	28.35	153,584	0.04		0.00	0	17.25	93,443	-	-	-	0.00	0	-	-
					3500 psi Thrust Block Concrete	100	75	138.37	13,837	8,773	226.10	22,610	0.01		27.99	2,799	110.38	11,038	-	-	-	-	-	-	
					Silt Fence/Erosion Control Measures	18,283		5.00	91,415	52,065	7.88	144,080	0.04		0.00	0	0.00	0	5.00	91,415	-	0.00	0	-	-
					Div 31 Earthwork	1	6,657	723,198.94	723,199	447,170	1,170,369.24	1,170,369	0.32		255,088.07	255,088	104,481.38	104,481	91,415.00	91,415	272,214.49	272,214	-	-	
				Div 32	Exterior Improvements																				
					Asphalt Patching/Street Restoration	1,667		50.00	83,350	48,019	78.81	131,369	0.04	60 repairs, average 25 ft long + 1000 lf of city street.	-	-	-	-	-	50.00	83,350	-	-	-	
					Saw Cut Asphalt in Street Before Trench Excavation	30,000		0.85	25,500	14,691	1.34	40,191	0.01		-	-	-	-	-	0.85	25,500	-	-	-	
					Hydroseeding/ROW Restoration	8		3,000.00	24,000	13,827	4,728.33	37,827	0.01		-	-	-	-	-	3,000.00	24,000	-	-	-	
					Div 32 Exterior Improvements	1		132,850.00	132,850	76,536	209,386.10	209,386	0.06		-	-	-	-	132,850.00	132,850	-	-	-	-	
				Div 33	Utilities																				
					2" Air Release/Vaccum Valve	4	5	1,554.34	6,217	3,991	2,552.15	10,209	0.00		54.34	217	1,500.00	6,000	-	-	-	-	-	-	
					DI Pipe Push - Class 52 24	18,283	7,313	128.59	2,350,926	1,495,840	210.40	3,846,766	1.05		19.85	362,887	108.74	1,988,039	-	-	-	-	-	-	
					DI RJ Std Wgt Fittings 24- allowance	40	254	3,334.84	133,394	85,255	5,466.23	218,649	0.06		314.84	12,594	3,020.00	120,800	-	-	-	-	-	-	
					Unload & Shake Out DIP	18,283	636	2.77	50,554	31,362	4.48	81,916	0.02		1.35	24,735	0.00	0	-	-	-	1.41	25,819	-	-
					Hydrostatic Testing - 14-24"	18,283	768	1.99	36,305	21,781	3.18	58,086	0.02		1.83	33,380	0.16	2,925	-	-	-	-	-	-	-
					Chlorination	18,283		0.10	1,828	1,177	0.16	3,005	0.00		0.00	0	0.10	1,828	-	-	-	-	-	-	
					Precast Vaults	1	56	12,373.40	12,373	7,859	20,232.87	20,233	0.01		2,192.72	2,193	7,500.00	7,500	-	-	2,680.68	2,681	-	-	
					Gate Valves 24" MJ w/ valve box	4	83	17,780.11	71,120	45,577	29,174.47	116,698	0.03		1,033.11	4,132	16,747.00	66,988	-	-	-	-	-	-	
					Pressure Monitoring	1	10	2,991.30	2,991	1,902	4,893.17	4,893	0.00		491.30	491	2,500.00	2,500	-	-	-	-	-	-	
					Div 33 Utilities	1	9,125	2,665,709.56	2,665,710	1,694,745	4,360,454.86	4,360,455	1.19		440,629.95	440,630	2,196,580.15	2,196,580	224,265.00	224,265	28,499.46	28,499	-	-	
					100 Open Cut Piping	1	15,782	3,521,758.50	3,521,759	2,218,452	5,740,210.20	5,740,210	1.57		695,718.02	695,718	2,301,061.53	2,301,062	224,265.00	224,265	300,713.95	300,714	-	-	
				105	Jack & Bore at RR and Street Crossings																				
				Div 33	Utilities																				
					Mobilization - Jack & Bore	1		2,000.00	2,000	1,152	3,152.23	3,152	0.00		-	-	-	-	2,000.00	2,000	-	-	-	-	
					Jacking Pits- excavate & restore	2	80	2,610.72	5,221	3,211	4,216.18	8,432	0.00		1,575.17	3,150	-	-	-	-	1,035.56	2,071	-	-	
					36" diameter casing, Roadway, .344" thick for 20-24" carrier pipe	400		683.28	273,312	157,458	1,076.92	430,770	0.12	One crossing @ 400 ft	-	-	-	-	-	683.28	273,312	-	-	-	

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.	
				Div 02	Existing Conditions																				
					Demo Above Ground Concrete Tanks	1 ea	120	19,612.58	19,613	12,384	31,996.56	31,997	0.01	Dispose in landfill	5,028.17	5,028	-	-	-	-	-	14,584.41	14,584	-	-
					Landfill T & D	1,000 tn		65.00	65,000	37,447	102.45	102,447	0.03		-	-	-	-	-	65.00	65,000	-	-	-	-
				Div 02	Existing Conditions	1 ls	120	84,612.58	84,613	49,831	134,443.67	134,444	0.04		5,028.17	5,028	-	-	65,000.00	65,000	14,584.41	14,584	-	-	
				Div 03	Concrete																				
					Tank Foundation- 40 ft dia.x 2 ft thick	93 cy	465	504.49	46,918	29,565	822.40	76,483	0.02		128.72	11,971	315.79	29,368	10.00	930	49.98	4,649	-	-	
					Booster Pumps Foundation- 20 ft.x 20 ft x 2 ft thick	30 cy	150	504.49	15,135	9,537	822.40	24,672	0.01		128.72	3,862	315.79	9,474	10.00	300	49.98	1,500	-	-	
				Div 03	Concrete	123 cy	615	504.49	62,052	39,102	822.40	101,155	0.03		128.72	15,832	315.79	38,842	10.00	1,230	49.98	6,148	-	-	
				Div 13	Special Construction																				
					Pre-Engineered Metal Canopy- 20'x20'	400 sf		25.00	10,000	5,761	39.40	15,761	0.00		-	-	-	-	25.00	10,000	-	-	-	-	
				Div 13	Special Construction	1 ls		10,000.00	10,000	5,761	15,761.09	15,761	0.00		-	-	-	-	10,000.00	10,000	-	-	-	-	
				Div 26	Electrical																				
					Misc. Electrical, Lighting, Power to Pumps etc.	1 ls		25,000.00	25,000	14,403	39,402.74	39,403	0.01		-	-	-	-	25,000.00	25,000	-	-	-	-	
				Div 26	Electrical	1 ls		25,000.00	25,000	14,403	39,402.74	39,403	0.01		-	-	-	-	25,000.00	25,000	-	-	-	-	
				Div 31	Earthwork																				
					Excavate & Grade for Tank	1 ls	96	7,373.31	7,373	4,564	11,937.15	11,937	0.00		3,825.32	3,825	-	-	-	-	3,547.99	3,548	-	-	
				Div 31	Earthwork	1 ls	96	7,373.31	7,373	4,564	11,937.15	11,937	0.00		3,825.32	3,825	-	-	-	-	3,547.99	3,548	-	-	
				Div 32	Exterior Improvements																				
					Misc. Site Improvements	1 ls		10,000.00	10,000	5,761	15,761.08	15,761	0.00	Stone driveway, fencing.	-	-	-	-	10,000.00	10,000	-	-	-	-	
					Hydroseeding/Restoration	1 ac		3,000.00	3,000	1,728	4,728.32	4,728	0.00		-	-	-	-	3,000.00	3,000	-	-	-	-	
				Div 32	Exterior Improvements	1 ls		13,000.00	13,000	7,489	20,489.40	20,489	0.01		-	-	-	-	13,000.00	13,000	-	-	-	-	
				Div 33	Utilities																				
					DI MJ Std Wgt Fittings 14"	8 ea	39	571.80	4,574	2,865	929.96	7,440	0.00		207.30	1,658	364.50	2,916	-	-	-	-	-	-	
					Precast Vaults	1 ea	56	8,373.40	8,373	5,285	13,658.42	13,658	0.00		2,192.72	2,193	3,500.00	3,500	-	-	2,680.68	2,681	-	-	
					Butterfly Valves MJ 14"	4 ea	24	2,490.90	9,964	6,364	4,081.94	16,328	0.00		255.52	1,022	2,235.38	8,942	-	-	-	-	-	-	
					Prestressed Concrete Water Storage Tank - 238,000 gal.	1 ea		315,000.00	315,000	181,474	496,474.40	496,474	0.14		-	-	-	-	315,000.00	315,000	-	-	-	-	
					Magnetic Flow Meter 14"	1 ea	26	8,901.25	8,901	5,674	14,574.94	14,575	0.00		1,163.21	1,163	7,500.00	7,500	-	-	238.04	238	-	-	
					DI Flanged Joint Pipe 14"	16 lf	33	224.90	3,598	2,250	365.53	86.73	1,388	0.00		86.73	1,388	138.18	2,211	-	-	-	-		
					Pipe Supports	10 ea	36	280.01	2,800	1,729	452.91	4,529	0.00		153.99	1,540	126.02	1,260	-	-	-	-	-	-	
					Ball Valve 14" w/ motor operator	2 ea	48	16,079.43	32,159	20,601	26,380.06	52,760	0.01		1,015.32	2,031	15,000.00	30,000	-	-	64.11	128	-	-	
				Div 33	Utilities	1 ls	262	385,369.99	385,370	226,243	611,612.92	611,613	0.17		10,994.53	10,995	56,328.53	56,329	315,000.00	315,000	3,046.93	3,047	-	-	
				Div 46	Water and Wastewater Equipment																				
					80 hp - Variable Frequency Drives	2 ea	71	18,949.37	37,899	24,245	31,071.77	62,144	0.02		1,549.37	3,099	17,400.00	34,800	-	-	-	-	-	-	
					Horizontal Split Case Booster Pumps- 3000 gpm	2 ea	40	51,324.82	102,650	65,984	84,316.95	168,634	0.05		862.73	1,725	-	-	462.09	924	50,000.00	100,000	-	-	
				Div 46	Water and Wastewater Equipment	1 ls	111	140,548.37	140,548	90,229	230,777.43	230,777	0.06		4,824.20	4,824	34,800.00	34,800	-	-	924.17	924	100,000.00	100,000	
					115 Storage Tank Sites	1 ls	1,205	727,956.65	727,957	437,623	1,165,579.24	1,165,579	0.32		40,504.46	40,504	129,970.63	129,971	429,230.00	429,230	28,251.56	28,252	100,000.00	100,000	
					315 City of Dekalb Storage/Booster Pump Station	1 ls	1,205	727,956.65	727,957	437,623	1,165,579.24	1,165,579	0.32		40,504.46	40,504	129,970.63	129,971	429,230.00	429,230	28,251.56	28,252	100,000.00	100,000	
				320	Central Bowie County Storage/Booster Pump Station																				
				115	Storage Tank Sites																				
				Div 02	Existing Conditions																				
					Demo Above Ground Steel Tanks	2 ea	128	8,942.34	17,885	11,259	14,571.65	29,143	0.01	Recycle steel, no disposal cost.	2,654.11	5,308	-	-	-	-	6,288.23	12,576	-	-	
					Landfill T & D	500 tn		65.00	32,500	18,724	102.45	51,224	0.01	Steel tank foundations	-	-	-	-	65.00	32,500	-	-	-	-	
				Div 02	Existing Conditions	1 ls	128	50,384.68	50,385	29,982	80,366.85	80,367	0.02		5,308.22	5,308	-	-	32,500.00	32,500	12,576.46	12,576	-	-	
				Div 03	Concrete																				
					Tank Foundation- 50 ft dia.x 2 ft thick	146 cy	730	504.49	73,656	46,414	822.40	120,070	0.03		128.72	18,793	315.79	46,105	10.00	1,460	49.98	7,298	-	-	
					Booster Pumps Foundation- 20 ft.x 20 ft x 2 ft thick	30 cy	150	504.49	15,135	9,537	822.40	24,672	0.01		128.72	3,862	315.79	9,474	10.00	300	49.98	1,500	-	-	
				Div 03	Concrete	176 cy	880	504.49	88,790	55,951	822.40	144,742	0.04		128.72	22,654	315.79	55,579	10.00	1,760	49.98	8,797	-	-	
				Div 13	Special Construction																				
					Pre-Engineered Metal Canopy- 20'x20'	400 sf		25.00	10,000	5,761	39.40	15,761	0.00		-	-	-	-	25.00	10,000	-	-	-	-	
				Div 13	Special Construction	1 ls		10,000.00	10,000	5,761	15,761.10	15,761	0.00		-	-	-	-	10,000.00	10,000	-	-	-	-	
				Div 26	Electrical																				
					Misc. Electrical, Lighting, Power to Pumps etc.	1 ls		25,000.00	25,000	14,403	39,402.72	39,403	0.01		-	-	-	-	25,000.00	25,000	-	-	-	-	
				Div 26	Electrical	1 ls		25,000.00	25,000	14,403	39,402.72	39,403	0.01		-	-	-	-	25,000.00	25,000	-	-	-	-	
				Div 31	Earthwork																				
					Excavate & Grade for Tank	1 ls	96	7,373.31	7,373	4,564	11,937.16	11,937	0.00		3,825.32	3,825	-	-	-	-	3,547.99	3,548	-	-	
				Div 31	Earthwork	1 ls	96	7,373.31	7,373	4,564	11,937.16	11,937	0.00		3,825.32	3,825	-	-	-	-	3,547.99	3,548	-	-	
				Div 32	Exterior Improvements																				
					Misc. Site Improvements	1 ls		10,000.00</																	

**Water Supply Project
Detailed Cost Estimate (DCE) Report
WBS 1 / 2 / 3**

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.
				Div 32	Exterior Improvements																			
					Hydroseding/Restoration	1 ac		3,000.00	3,000	1,728	4,728.35	4,728	0.00							3,000.00	3,000			
				Div 32	Exterior Improvements	1 ls		13,000.00	13,000	7,489	20,489.43	20,489	0.01							13,000.00	13,000			
				Div 33	Utilities																			
					DI MJ Std Wgt Fittings 14"	8 ea	39	571.80	4,574	2,865	929.96	7,440	0.00		207.30	1,658	364.50	2,916						
					Precast Vaults	1 ea	56	8,373.40	8,373	5,285	13,658.45	13,658	0.00		2,192.72	2,193	3,500.00	3,500					2,680.68	2,681
					Butterfly Valves MJ 14"	4 ea	24	2,490.90	9,964	6,364	4,081.93	16,328	0.00		255.52	1,022	2,235.38	8,942						
					Prestressed Concrete Water Storage Tank - 1,230,000 gal.	1 ea		900,000.00	900,000	518,498	1,418,498.31	1,418,498	0.39							900,000.00	900,000			
					Magnetic Flow Meter 14"	1 ea	26	8,901.25	8,901	5,674	14,574.91	14,575	0.00		1,163.21	1,163	7,500.00	7,500					238.04	238
					DI Flanged Joint Pipe 14"	16 lf	33	224.90	3,598	2,250	365.53	5,848	0.00		86.73	1,388	138.18	2,211						
					Pipe Supports	10 ea	36	280.01	2,800	1,729	452.92	4,529	0.00		153.99	1,540	126.02	1,260						
					Ball Valve 14" w/ motor operator	2 ea	48	16,079.43	32,159	20,601	26,380.05	52,760	0.01		1,015.32	2,031	15,000.00	30,000					64.11	128
				Div 33	Utilities	1 ls	262	970,369.99	970,370	563,267	1,533,636.80	1,533,637	0.42		10,994.53	10,995	56,328.53	56,329	900,000.00	900,000		3,046.93	3,047	
				Div 46	Water and Wastewater Equipment																			
					80 hp - Variable Frequency Drives	2 ea	71	18,949.37	37,899	24,245	31,071.76	62,144	0.02		1,549.37	3,099	17,400.00	34,800						
					Horizontal Split Case Booster Pumps- 3000 gpm	2 ea	40	51,324.82	102,650	65,984	84,316.96	168,634	0.05		862.73	1,725							462.09	924
				Div 46	Water and Wastewater Equipment	1 ls	111	140,548.37	140,548	90,229	230,777.45	230,777	0.06		4,824.20	4,824	34,800.00	34,800					924.17	924
					115 Storage Tank Sites	1 ls	2,485	1,369,601.59	1,369,602	813,829	2,183,430.70	2,183,431	0.60		71,517.17	71,517	218,391.68	218,392	952,030.00	952,030		27,662.74	27,663	100,000.00
					325 TAC Storage/Booster Pump Station	1 ls	2,485	1,369,601.59	1,369,602	813,829	2,183,430.70	2,183,431	0.60		71,517.17	71,517	218,391.68	218,392	952,030.00	952,030		27,662.74	27,663	100,000.00
330					City of Redwater Storage/Booster Pump Station																			
				115	Storage Tank Sites																			
				Div 03	Concrete																			
					Tank Foundation- 250 ft dia.x 2 ft thick	3,634 cy	18,170	504.49	1,833,321	1,155,271	822.40	2,988,591	0.82		128.72	467,759	315.79	1,147,579	10.00		36,340	49.98	181,643	
					Booster Pumps Foundation- 20 ft.x 20 ft x 2 ft thick	30 cy	150	504.49	15,135	9,537	822.40	24,672	0.01		128.72	3,862	315.79	9,474	10.00		300	49.98	1,500	
				Div 03	Concrete	3,664 cy	18,320	504.49	1,848,456	1,164,808	822.40	3,013,263	0.82		128.72	471,621	315.79	1,157,053	10.00		36,640	49.98	183,142	
				Div 13	Special Construction																			
					Pre-Engineered Metal Canopy- 20'x20'	400 sf		25.00	10,000	5,761	39.40	15,761	0.00								25.00	10,000		
				Div 13	Special Construction	1 ls		10,000.00	10,000	5,761	15,761.10	15,761	0.00								10,000.00	10,000		
				Div 26	Electrical																			
					Misc. Electrical, Lighting, Power to Pumps etc.	1 ls		25,000.00	25,000	14,403	39,402.70	39,403	0.01								25,000.00	25,000		
				Div 26	Electrical	1 ls		25,000.00	25,000	14,403	39,402.70	39,403	0.01								25,000.00	25,000		
				Div 31	Earthwork																			
					Selective Clearing & Grubbing	2 ac	128	4,780.58	9,561	5,917	7,739.08	15,478	0.00	30 ft wide.	2,491.27	4,983						2,289.31	4,579	
					Excavate & Grade for Tank	1 ls	96	7,373.31	7,373	4,564	11,937.13	11,937	0.00		3,825.32	3,825						3,547.99	3,548	
				Div 31	Earthwork	1 ls	224	16,934.46	16,934	10,481	27,415.29	27,415	0.01		8,807.86	8,808						8,126.60	8,127	
				Div 32	Exterior Improvements																			
					Misc. Site Improvements	1 ls		10,000.00	10,000	5,761	15,761.10	15,761	0.00	Stone driveway, fencing.							10,000.00	10,000		
					Hydroseding/Restoration	2 ac		3,000.00	6,000	3,457	4,728.33	9,457	0.00								3,000.00	6,000		
				Div 32	Exterior Improvements	1 ls		16,000.00	16,000	9,218	25,217.75	25,218	0.01								16,000.00	16,000		
				Div 33	Utilities																			
					DI MJ Std Wgt Fittings 14"	8 ea	39	571.80	4,574	2,865	929.96	7,440	0.00		207.30	1,658	364.50	2,916						
					Precast Vaults	1 ea	56	8,373.40	8,373	5,285	13,658.45	13,658	0.00		2,192.72	2,193	3,500.00	3,500					2,680.68	2,681
					Butterfly Valves MJ 14"	4 ea	24	2,490.90	9,964	6,364	4,081.93	16,328	0.00		255.52	1,022	2,235.38	8,942						
					Prestressed Concrete Water Storage Tank - 12,500,000 gal.	1 ea		4,850,000.00	4,850,000	2,794,130	7,644,129.64	7,644,130	2.09							4,850,000.00	4,850,000			
					Magnetic Flow Meter 14"	1 ea	26	8,901.25	8,901	5,674	14,574.93	14,575	0.00		1,163.21	1,163	7,500.00	7,500					238.04	238
					DI Flanged Joint Pipe 14"	16 lf	33	224.90	3,598	2,250	365.53	5,848	0.00		86.73	1,388	138.18	2,211						
					Pipe Supports	10 ea	36	280.01	2,800	1,729	452.92	4,529	0.00		153.99	1,540	126.02	1,260						
					Ball Valve 14" w/ motor operator	2 ea	48	16,079.43	32,159	20,601	26,380.05	52,760	0.01		1,015.32	2,031	15,000.00	30,000					64.11	128
				Div 33	Utilities	1 ls	262	4,920,369.99	4,920,370	2,838,898	7,759,268.17	7,759,268	2.12		10,994.53	10,995	56,328.53	56,329	4,850,000.00	4,850,000		3,046.93	3,047	
				Div 46	Water and Wastewater Equipment																			
					80 hp - Variable Frequency Drives	2 ea	71	18,949.37	37,899	24,245	31,071.76	62,144	0.02		1,549.37	3,099	17,400.00	34,800						
					Horizontal Split Case Booster Pumps- 3000 gpm	2 ea	40	51,324.82	102,650	65,984	84,316.96	168,634	0.05		862.73	1,725							462.09	924
				Div 46	Water and Wastewater Equipment	1 ls	111	140,548.37	140,548	90,229	230,777.45	230,777	0.06		4,824.20	4,824	34,800.00	34,800					924.17	924
					115 Storage Tank Sites	1 ls	18,918	6,977,308.34	6,977,308	4,133,797	11,111,105.79	11,111,106	3.03		496,247.20	496,247	1,248,181.16	1,248,181	4,937,640.00	4,937,640		195,239.98	195,240	100,000.00
					330 City of Redwater Storage/Booster Pump Station	1 ls	18,918	6,977,308.34	6,977,308	4,133,797	11,111,105.79	11,111,106	3.03		496,247.20	496,247	1,248,181.16	1,248,181	4,937,640.00	4,937,640		195,239.98	195,240	100,000.00
					30 Distribution Pipelines	261,227 lf	81,124	85.69	22,385,32															

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.	
					90 Process Equipment	1 ls	1,120	462,040.90	462,041	295,123	757,164.04	757,164	0.21								20,658.90	20,659	394,000.00	394,000	
					405 Upgrade Two Treatment Trains	2 ea	1,120	231,020.45	462,041	295,123	378,582.02	757,164	0.21								10,329.45	20,659	197,000.00	394,000	
		406			Sludge Lagoons & Recycle Station																				
			217		Sludge Lagoons & Recycle Station																				
				Div 31	Earthwork																				
					Excavate and Grade for Sludge Lagoons- 150 ft. x 400 ft. x 5 ft. deep	12,000 cy	960	7.02	84,187	52,463	11.39	136,650	0.04		3.02	36,226					-	4.00	47,961	-	
					Excess Soils Disposal- Beneficial Reuse	12,000 cy		2.50	30,000	17,283	3.94	47,283	0.01							2.50	30,000			-	
					Div 31 Earthwork	1 ls	960	114,187.02	114,187	69,746	183,933.10	183,933	0.05			36,225.66	36,226			30,000.00	30,000	47,961.36	47,961		
				Div 33	Utilities																				
					Recycle Pump Station- submersible duplex pumps, 10 hp, concrete manhole	1 ea	95	75,948.43	75,948	48,686	124,634.80	124,635	0.03		4,100.09	4,100						1,848.34	1,848	70,000.00	70,000
					Div 33 Utilities	1 ls	95	75,948.43	75,948	48,686	124,634.80	124,635	0.03			4,100.09	4,100					1,848.34	1,848	70,000.00	70,000
					217 Sludge Lagoons & Recycle Station	1 ea	1,055	190,135.45	190,135	118,432	308,567.90	308,568	0.08			40,325.75	40,326			30,000.00	30,000	49,809.70	49,810	70,000.00	70,000
					406 Sludge Lagoons & Recycle Station	1 ea	1,055	190,135.45	190,135	118,432	308,567.90	308,568	0.08			40,325.75	40,326			30,000.00	30,000	49,809.70	49,810	70,000.00	70,000
					20 Water Treatment Plant	1 ls	2,175	652,176.35	652,176	413,556	1,065,731.94	1,065,732	0.29			87,707.75	87,708			30,000.00	30,000	70,468.60	70,469	464,000.00	464,000
					Distribution Pipelines																				
					DeKalb to City of Avery																				
				412	Open Cut Piping																				
				100	Earthwork																				
					Trench Excav & Backfill 4- 8'	60,185 lf	17,333	22.95	1,381,272	857,441	37.20	2,238,713	0.61		11.04	664,400						11.91	716,873		
					Utility Bed Sand	8,916 cy		17.25	153,801	98,988	28.35	252,789	0.07		0.00	0	17.25	153,801				0.00	0		
					3500 psi Thrust Block Concrete	200 cy	150	138.37	27,674	17,545	226.10	45,220	0.01		27.99	5,598	110.38	22,076							
					Silt Fence/Erosion Control Measures	60,185 lf		5.00	300,925	173,366	7.88	474,291	0.13		0.00	0	0.00	0	0	5.00	300,925		0.00	0	
					Div 31 Earthwork	1 ls	17,483	1,863,672.35	1,863,672	1,147,339	3,011,011.71	3,011,012	0.82			669,997.42	669,997	175,877.25	175,877	300,925.00	300,925	716,872.68	716,873		
				Div 32	Exterior Improvements																				
					Asphalt Patching/Street Restoration	312 sy		50.00	15,600	8,987	78.81	24,587	0.01	35 repairs, average 20 ft long.	-	-					50.00	15,600			
					Saw Cut Asphalt in Street Before Trench Excavation	8,400 inft		0.85	7,140	4,113	1.34	11,253	0.00		-	-				0.85	7,140				
					Hydroseeding/ROW Restoration	25 ac		3,000.00	75,000	43,208	4,728.33	118,208	0.03		-	-				3,000.00	75,000				
					Div 32 Exterior Improvements	1 ls		97,740.00	97,740	56,309	154,048.90	154,049	0.04							97,740.00	97,740				
				Div 33	Utilities																				
					2" Air Release/Vacuum Valve	12 ea	15	1,554.34	18,652	11,974	2,552.15	30,626	0.01		54.34	652	1,500.00	18,000							
					DI Pipe Push - Class 52 10	60,185 lf	16,852	50.27	3,025,430	1,907,475	81.96	4,932,905	1.35		13.89	836,201	36.38	2,189,229							
					DI RJ Std Wgt Fittings 10"- allowance	120 ea	427	936.40	112,368	71,316	1,530.70	183,684	0.05		176.40	21,168	760.00	91,200							
					Unload & Shake Out DIP	60,185 lf	2,093	2.77	166,416	103,239	4.48	269,655	0.07		1.35	81,424	0.00	0				1.41	84,992		
					Hydrostatic Testing - 2-12"	60,185 lf	1,444	1.13	67,725	40,606	1.80	108,331	0.03		1.04	62,790	0.08	4,935							
					Chlorination	60,185 lf		0.10	6,019	3,874	0.16	9,892	0.00		0.00	0	0.10	6,019							
					Precast Vaults	1 ea	56	9,873.40	9,873	6,250	16,123.86	16,124	0.00		2,192.72	2,193	5,000.00	5,000				2,680.68	2,681		
					Butterfly Valves MJ 10" w/ valve box	12 ea	48	1,453.42	17,441	11,113	2,379.52	28,554	0.01		196.50	2,358	1,256.92	15,083							
					Pressure Monitoring	1 ls	10	2,991.30	2,991	1,902	4,893.20	4,893	0.00		491.30	491	2,500.00	2,500							
					Div 33 Utilities	1 ls	20,945	3,426,915.69	3,426,916	2,157,749	5,584,664.55	5,584,665	1.52		1,007,277.23	1,007,277	2,331,966.09	2,331,966				87,672.37	87,672		
					100 Open Cut Piping	1 ls	38,428	5,388,328.04	5,388,328	3,361,397	8,749,725.16	8,749,725	2.39			1,677,274.65	1,677,275	2,507,843.34	2,507,843	398,665.00	398,665	804,545.05	804,545		
				105	Jack & Bore at RR and Street Crossings																				
					Utilities																				
					Mobilization - Jack & Bore	1 ea		2,000.00	2,000	1,152	3,152.21	3,152	0.00		-	-					2,000.00	2,000			
					Jacking Pits- excavate & restore	2 ea	80	2,610.72	5,221	3,211	4,216.19	8,432	0.00		1,575.17	3,150						1,035.56	2,071		
					22" diameter casing, Roadway, .250" thick for 10" carrier pipe	175 lf		632.50	110,688	63,768	996.89	174,456	0.05	One crossing @ 175 ft.							632.50	110,688			
					Div 33 Utilities	1 ls	80	117,908.94	117,909	68,131	186,040.16	186,040	0.05		3,150.33	3,150				112,687.50	112,688	2,071.11	2,071		
					105 Jack & Bore at RR and Street Crossings	175 lf	80	673.77	117,909	68,131	1,063.09	186,040	0.05	Carrier pipe material costs included with open cut pipe length.	18.00	3,150				643.93	112,688	11.84	2,071		
				106	Jack & Bore at Creek and Drainage Ditch Crossings																				
					Utilities																				
					Mobilization - Jack & Bore	13 ea		2,000.00	26,000	14,979	3,152.22	40,979	0.01		-	-					2,000.00	26,000			
					Jacking Pits- excavate & restore	26 ea	1,040	2,610.72	67,879	41,742	4,216.19	109,621	0.03		1,575.17	40,954						1,035.56	26,924		
					22" diameter casing, Roadway, .250" thick for 10" carrier pipe	1,300 lf		632.50	822,250	473,706	996.89	1,295,956	0.35	One crossing @ 175 ft.							632.50	822,250			
					Div 33 Utilities	1 ls	1,040	916,128.80	916,129																

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.	
			415		413 Avery to City of Annona	45,187	1f	84.50	3,818,100	2,362,136	136.77	6,180,236	1.69		27.62	1,247,937	30.80	1,391,909	11.79	532,607	14.29	645,647			
				115	City of Annona Storage/Booster Pump Station																				
					Storage Tank Sites																				
				Div 02	Existing Conditions																				
					Demo Above Ground Steel Tanks	1	ea	64	8,942.34	8,942	5,629	14,571.65	14,572	0.00	Recycle steel, no disposal cost.	2,654.11	2,654	-	-	-	-	6,288.23	6,288	-	
					Landfill T & D	250	tn	65.00	16,250	9,362	102.45	25,612	25,612	0.01	Steel tank foundations	-	-	-	-	65.00	16,250	-	-	-	
					Div 02 Existing Conditions	1	is	64	25,192.34	25,192	14,991	40,183.41	40,183	0.01		2,654.11	2,654	-	-	16,250.00	16,250	6,288.23	6,288	-	
				Div 03	Concrete																				
					Tank Foundation- 40 ft dia.x 2 ft thick	93	cy	465	504.49	46,918	29,565	822.40	76,483	0.02		128.72	11,971	315.79	29,368	10.00	930	49.98	4,649	-	
					Booster Pumps Foundation- 20 ft.x 20 ft x 2 ft thick	30	cy	150	504.49	15,135	9,537	822.40	24,672	0.01		128.72	3,862	315.79	9,474	10.00	300	49.98	1,500	-	
					Div 03 Concrete	123	cy	615	504.49	62,052	39,102	822.40	101,155	0.03		128.72	15,832	315.79	38,842	10.00	1,230	49.98	6,148	-	
				Div 13	Special Construction																				
					Pre-Engineered Metal Canopy- 20'x20'	400	sf	25.00	10,000	5,761	39.40	15,761	15,761	0.00		-	-	-	-	25.00	10,000	-	-	-	
					Div 13 Special Construction	1	is	10,000.00	10,000	5,761	15,761.09	15,761	15,761	0.00		-	-	-	-	10,000.00	10,000	-	-	-	
				Div 26	Electrical																				
					Misc. Electrical, Lighting, Power to Pumps etc.	1	is	25,000.00	25,000	14,403	39,402.71	39,403	39,403	0.01		-	-	-	-	25,000.00	25,000	-	-	-	
					Div 26 Electrical	1	is	25,000.00	25,000	14,403	39,402.71	39,403	39,403	0.01		-	-	-	-	25,000.00	25,000	-	-	-	
				Div 31	Earthwork																				
					Excavate & Grade for Tank	1	is	96	7,373.31	7,373	4,564	11,937.16	11,937	0.00		3,825.32	3,825	-	-	-	-	3,547.99	3,548	-	
					Div 31 Earthwork	1	is	96	7,373.31	7,373	4,564	11,937.16	11,937	0.00		3,825.32	3,825	-	-	-	-	3,547.99	3,548	-	
				Div 32	Exterior Improvements																				
					Misc. Site Improvements	1	is	10,000.00	10,000	5,761	15,761.09	15,761	15,761	0.00	Stone driveway, fencing.	-	-	-	-	10,000.00	10,000	-	-	-	
					Hydroseeding/Restoration	1	ac	3,000.00	3,000	1,728	4,728.32	4,728	4,728	0.00		-	-	-	-	3,000.00	3,000	-	-	-	
					Div 32 Exterior Improvements	1	is	13,000.00	13,000	7,489	20,489.41	20,489	20,489	0.01		-	-	-	-	13,000.00	13,000	-	-	-	
				Div 33	Utilities																				
					DI MJ Std Wgt Fittings 14"	8	ea	39	571.80	4,574	2,865	929.96	7,440	0.00		207.30	1,658	364.50	2,916	-	-	-	-	-	
					Precast Vaults	1	ea	56	8,373.40	8,373	5,285	13,658.43	13,658	0.00		2,192.72	2,193	3,500.00	3,500	-	-	2,680.68	2,681	-	
					Butterfly Valves MJ 14"	4	ea	24	2,490.90	9,964	6,364	4,081.93	16,328	0.00		255.52	1,022	2,235.38	8,942	-	-	-	-	-	
					Prestressed Concrete Water Storage Tank - 205,000 gal.	1	ea	270,000.00	270,000	155,549	425,549.49	425,549	425,549	0.12		-	-	-	-	270,000.00	270,000	-	-	-	
					Magnetic Flow Meter 14"	1	ea	26	8,901.25	8,901	5,674	14,574.92	14,575	0.00		1,163.21	1,163	7,500.00	7,500	-	-	238.04	238	-	
					DI Flanged Joint Pipe 14"	16	lf	33	224.90	3,598	2,250	365.53	86.73	5,848	0.00		86.73	1,388	138.18	2,211	-	-	-	-	-
					Pipe Supports	10	ea	36	280.01	2,800	1,729	452.91	4,529	0.00		153.99	1,540	126.02	1,260	-	-	-	-	-	
					Ball Valve 14" w/ motor operator	2	ea	48	16,079.43	32,159	20,601	26,380.06	52,760	0.01		1,015.32	2,031	15,000.00	30,000	-	-	64.11	128	-	
					Div 33 Utilities	1	is	262	340,369.99	340,370	200,318	540,688.00	540,688	0.15		10,994.53	10,995	56,328.53	56,329	270,000.00	270,000	3,046.93	3,047	-	
				Div 46	Water and Wastewater Equipment																				
					80 hp - Variable Frequency Drives	2	ea	71	18,949.37	37,899	24,245	31,071.76	62,144	0.02		1,549.37	3,099	17,400.00	34,800	-	-	-	-	-	
					Horizontal Split Case Booster Pumps- 3000 gpm	2	ea	40	51,324.82	102,650	65,984	84,316.96	168,634	0.05		862.73	1,725	-	-	-	-	462.09	924	50,000.00	
					Div 46 Water and Wastewater Equipment	1	is	111	140,548.37	140,548	90,229	230,777.45	230,777	0.06		4,824.20	4,824	34,800.00	34,800	-	-	924.17	924	100,000.00	
					115 Storage Tank Sites	1	is	1,149	623,536.41	623,536	376,858	1,000,394.08	1,000,394	0.27		38,130.40	38,130	129,970.63	129,971	335,480.00	335,480	19,955.38	19,955	100,000.00	
					415 City of Annona Storage/Booster Pump Station	1	is	1,149	623,536.41	623,536	376,858	1,000,394.08	1,000,394	0.27		38,130.40	38,130	129,970.63	129,971	335,480.00	335,480	19,955.38	19,955	100,000.00	
			420		City of Avery Storage/Booster Pump Station																				
				115	Storage Tank Sites																				
				Div 02	Existing Conditions																				
					Demo Above Ground Steel Tanks	2	ea	128	8,942.34	17,885	11,259	14,571.65	29,143	0.01	Recycle steel, no disposal cost.	2,654.11	5,308	-	-	-	-	6,288.23	12,576	-	
					Landfill T & D	500	tn	65.00	32,500	18,724	102.45	51,224	51,224	0.01	Steel tank foundations	-	-	-	-	65.00	32,500	-	-	-	
					Div 02 Existing Conditions	1	is	128	50,384.68	50,385	29,982	80,366.85	80,367	0.02		5,308.22	5,308	-	-	32,500.00	32,500	12,576.46	12,576	-	
				Div 03	Concrete																				
					Tank Foundation- 40 ft dia.x 2 ft thick	93	cy	465	504.49	46,918	29,565	822.40	76,483	0.02		128.72	11,971	315.79	29,368	10.00	930	49.98	4,649	-	
					Booster Pumps Foundation- 20 ft.x 20 ft x 2 ft thick	30	cy	150	504.49	15,135	9,537	822.40	24,672	0.01		128.72	3,862	315.79	9,474	10.00	300	49.98	1,500	-	
					Div 03 Concrete	123	cy	615	504.49	62,052	39,102	822.40	101,155	0.03		128.72	15,832	315.79	38,842	10.00	1,230	49.98	6,148	-	
				Div 13	Special Construction																				
					Pre-Engineered Metal Canopy- 20'x20'	400	sf	25.00	10,000	5,761	39.40	15,761	15,761	0.00		-	-	-	-	25.00	10,000	-	-	-	
					Div 13 Special Construction	1	is	10,000.00	10,000	5,761	15,761.09	15,761	15,761	0.00		-	-	-	-	10,000.00	10,000	-	-	-	
				Div 26	Electrical																				
					Misc. Electrical, Lighting, Power to Pumps etc.	1	is	25,000.00	25,000	14,403	39,402.74	39,403	39,403	0.01		-	-	-	-	25,000.00	25,000	-	-	-	
					Div 26 Electrical	1	is	25,000.00	25,000	14,403	39,402.74	39,403	39,403	0.01		-	-	-	-	25,000.00	25,000	-	-	-	
				Div 31	Earthwork																				
					Excavate & Grade for Tank	1	is	96	7,373.31	7,373	4,564	11,937.14	11,937	0.00		3,									

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.
				Div 13	Special Construction																			
					Pre-Engineered Metal Building- Electrical & Pump Rooms	1,920 sf		50.00	96,000	55,306	78.81	151,306	0.04	Based on 40 ft x 48 ft x 10 ft eave height. Includes HVAC system.						50.00	96,000			
					Div 13 Special Construction	1 ls		96,000.00	96,000	55,306	151,306.47	151,306	0.04							96,000.00	96,000			
					80 Pump Station Structure	1 ls	3,838	426,843.65	426,844	263,135	689,978.57	689,979	0.19		98,803.49	98,803	189,315.79	189,316	102,110.00	102,110	36,614.37	36,614		
					500 Intake Pump Station Wet Well For Phase 3	1 ls	7,632	1,094,823.95	1,094,824	678,015	1,772,838.81	1,772,839	0.48		241,058.56	241,059	520,465.79	520,466	224,794.55	224,795	108,505.05	108,505		
		501			Intake Structure-Screens																			
				112	Raw Water Intake Structure																			
				Div 35	Waterway and Marine																			
					Mobilize & Demobilize Barges, Crane/Drilling Rig, Crew	1 ls	112	19,014.98	19,015	11,973	30,988.41	30,988	0.01		5,574.45	5,574					13,440.53	13,441		
					Div 35 Waterway and Marine	1 ls	112	19,014.98	19,015	11,973	30,988.41	30,988	0.01		5,574.45	5,574					13,440.53	13,441		
				Div 46	Water and Wastewater Equipment																			
					Intake Screen, RAW Water, 72" disch, 336" OAL, 316L SS	2 ea	224	92,628.74	185,257	118,704	151,980.67	303,961	0.08		5,574.45	11,149					12,054.29	24,109	75,000.00	150,000
					Div 46 Water and Wastewater Equipment	1 ls	224	185,257.48	185,257	118,704	303,961.33	303,961	0.08		11,148.90	11,149					24,108.58	24,109	150,000.00	150,000
					112 Raw Water Intake Structure	2 ea	336	102,136.23	204,272	130,677	167,474.87	334,950	0.09		8,361.68	16,723					18,774.56	37,549	75,000.00	150,000
					501 Intake Structure-Screens	2 ea	336	102,136.23	204,272	130,677	167,474.87	334,950	0.09		8,361.68	16,723					18,774.56	37,549	75,000.00	150,000
		505			Intake Pump Capacity for 30 MGD																			
				85	Electrical																			
				Div 25	Integrated Automation																			
					Instrumentation & Control	1 ls		75,000.00	75,000	43,208	118,208.20	118,208	0.03							75,000.00	75,000			
					Div 25 Integrated Automation	1 ls		75,000.00	75,000	43,208	118,208.20	118,208	0.03							75,000.00	75,000			
				Div 26	Electrical																			
					Electrical	1 ls		360,000.00	360,000	207,399	567,399.30	567,399	0.15							360,000.00	360,000			
					Div 26 Electrical	1 ls		360,000.00	360,000	207,399	567,399.30	567,399	0.15							360,000.00	360,000			
					85 Electrical	1 ls		435,000.00	435,000	250,608	685,607.50	685,608	0.19							435,000.00	435,000			
				90	Process Equipment																			
				Div 46	Water and Wastewater Equipment																			
					600 hp - Variable Frequency Drives	4 ea	280	155,036.79	620,147	398,555	254,675.65	1,018,703	0.28		3,036.79	12,147	152,000.00	608,000						
					Vertical Turbine Pumps- 7000 gpm	4 ea	576	284,484.15	1,137,937	731,206	467,285.71	1,869,143	0.51		6,211.63	24,847	500.00	2,000			2,772.52	11,090	275,000.00	1,100,000
					Div 46 Water and Wastewater Equipment	1 ls	856	1,758,083.75	1,758,084	1,129,762	2,887,845.45	2,887,845	0.79		36,993.69	36,994	610,000.00	610,000			11,090.06	11,090	1,100,000.00	1,100,000
					90 Process Equipment	1 ls	856	1,758,083.75	1,758,084	1,129,762	2,887,845.45	2,887,845	0.79		36,993.69	36,994	610,000.00	610,000			11,090.06	11,090	1,100,000.00	1,100,000
				95	Pump Discharge Piping																			
				Div 33	Utilities																			
					DI MJ Std Wgt 90 54	2 ea	29	9,576.44	19,153	12,265	15,708.86	31,418	0.01		653.85	1,308	8,684.55	17,369			238.04	476		
					DI MJ Std Wgt Tee 54x24	7 ea	152	9,732.40	68,127	43,520	15,949.59	111,647	0.03		982.35	6,876	8,478.00	59,346			272.05	1,904		
					DI MJ Std Wgt Cap 24	3 ea	11	738.13	2,214	1,403	1,205.63	3,617	0.00		159.28	478	499.50	1,499			79.35	238		
					DI MJ Std Wgt Cap 54	1 ea	8	10,292.47	10,292	6,606	16,898.75	16,899	0.00		380.47	380	9,912.00	9,912						
					Butterfly Valves MJ 24"	4 ea	52	6,578.42	26,314	16,824	10,784.34	43,137	0.01		589.68	2,359	5,929.23	23,717			59.51	238		
					Pressure Monitoring	1 ls	10	2,991.30	2,991	1,902	4,893.20	4,893	0.00		491.30	491	2,500.00	2,500						
					DI Flanged Joint Pipe 24"	32 lf	85	412.84	13,211	8,331	673.18	21,542	0.01		112.96	3,615	267.83	8,571			32.05	1,026		
					DI Flanged Joint Pipe 54"	34 lf	165	1,160.34	39,451	25,059	1,897.37	64,511	0.02		205.60	6,990	894.40	30,410			60.33	2,051		
					Pipe Supports	12 ea	58	385.06	4,621	2,858	623.25	7,479	0.00		203.06	2,437	182.00	2,184						
					Ball Valve 24" w/ motor operator	4 ea	160	36,756.31	147,025	94,305	60,332.63	241,331	0.07		1,692.20	6,769	35,000.00	140,000			64.11	256		
					Div 33 Utilities	1 ls	730	333,399.83	333,400	213,073	546,473.13	546,473	0.15		31,703.08	31,703	295,506.82	295,507			6,189.93	6,190		
					95 Pump Discharge Piping	1 ls	730	333,399.83	333,400	213,073	546,473.13	546,473	0.15		31,703.08	31,703	295,506.82	295,507			6,189.93	6,190		
					505 Intake Pump Capacity for 30 MGD	4 ea	1,586	631,620.90	2,526,484	1,593,443	1,029,981.52	4,119,926	1.12		17,174.19	68,697	226,376.70	905,507	108,750.00	435,000	4,320.00	17,280	275,000.00	1,100,000
		510			Raw Water Transmission Pipeline- 66 Inch, 60 MGD																			
				100	Open Cut Piping																			
				Div 31	Earthwork																			
					Selective Clearing & Grubbing	15 ac	640	3,187.06	47,806	29,585	5,159.39	77,391	0.02	30 ft wide.	1,660.86	24,913					1,526.20	22,893		
					Fine Grade Utility Easement	15 ac	48	201.01	3,015	1,848	324.22	4,863	0.00		129.51	1,943					71.49	1,072		
					Trench Excav & Backfill 10- 12'	44,199 lf	21,216	38.25	1,690,644	1,049,487	62.00	2,740,131	0.75		18.40	813,209					19.85	877,435		
					Utility Bed Sand	16,370 cy		17.25	282,383	181,744	28.35	464,126	0.13				17.25	282,383						
					3500 psi Thrust Block Concrete- allowance	100 cy	75	138.37	13,837	8,773	226.10	22,610	0.01		27.99	2,799	110.38	11,038						
					Silt Fence/Erosion Control Measures	44,199 lf		5.00	220,995	127,317	7.88	348,312	0.10							5.00	220,995			
		</																						

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Constr Equipment	Process Equip Cost/Unit	Total Process Equip.	
				85	Electrical																				
				Div 25	Integrated Automation																				
					Instrumentation & Control	1	1s	17,500.00	17,500	10,082	27,581.92	27,582	0.01							17,500.00					
					Div 25 Integrated Automation	1	1s	17,500.00	17,500	10,082	27,581.92	27,582	0.01							17,500.00	17,500				
				Div 26	Electrical																				
					Electrical	1	1s	50,000.00	50,000	28,805	78,805.47	78,805	0.02							50,000.00					
					Div 26 Electrical	1	1s	50,000.00	50,000	28,805	78,805.47	78,805	0.02							50,000.00	50,000				
					85 Electrical	1	1s	67,500.00	67,500	38,887	106,387.39	106,387	0.03							67,500.00	67,500				
				*	unassigned																				
				Div 33	Utilities																				
					Butterfly Valves MJ 24"	1	ea	6,576.78	6,577	4,202	10,778.88	10,779	0.00		647.55	648	5,929.23	5,929							
					Ball Valve 24" w/ motor operator	1	ea	36,692.20	36,692	23,535	60,227.27	60,227	0.02		1,692.20	1,692	35,000.00	35,000							
					Div 33 Utilities	1	1s	43,268.98	43,269	27,737	71,006.15	71,006	0.02		2,339.75	2,340	40,929.23	40,929							
				Div 46	Water and Wastewater Equipment																				
					500 hp - Variable Frequency Drives	1	ea	96,559.58	96,560	62,025	158,584.62	158,585	0.04		2,559.58	2,560	94,000.00	94,000							
					Vertical Can Pump- 7,000 gpm	1	ea	313,121.85	313,122	201,425	514,546.94	514,547	0.14		2,168.96	2,169					952.89	953	310,000.00	310,000	
					Div 46 Water and Wastewater Equipment	1	1s	409,681.43	409,681	263,450	673,131.56	673,132	0.18		4,728.54	4,729	94,000.00	94,000			952.89	953	310,000.00	310,000	
					* unassigned *	160		452,950	452,950	291,187	744,138	744,138	0.20		7,068	7,068					953	953	310,000.00	310,000	
					521 High Service Pump Station	1	1s	520,450.41	520,450	330,075	850,525.10	850,525	0.23		7,068.29	7,068	134,929.23	134,929			67,500.00	67,500	952.89	953	310,000.00
				522	Upgrade One Treatment Train																				
				90	Process Equipment																				
				Div 46	Water and Wastewater Equipment																				
					Tube Packs	4,200	sf	39.05	164,010	104,996	64.05	269,006	0.07		2.82	11,846						1.23	5,165	35.00	
					Troughs & Supports	1	1s	67,010.23	67,010	42,566	109,575.97	109,576	0.03		11,845.50	11,846					5,164.73	5,165	50,000.00	50,000	
					Div 46 Water and Wastewater Equipment	1	1s	231,020.46	231,020	147,562	378,582.04	378,582	0.10		23,691.00	23,691					10,329.46	10,329	197,000.00	197,000	
					90 Process Equipment	1	1s	231,020.46	231,020	147,562	378,582.04	378,582	0.10		23,691.00	23,691					10,329.46	10,329	197,000.00	197,000	
					522 Upgrade One Treatment Train	1	ea	231,020.46	231,020	147,562	378,582.04	378,582	0.10		23,691.00	23,691					10,329.46	10,329	197,000.00	197,000	
					20 Water Treatment Plant	1	1s	4,823,273.17	4,823,273	3,049,306	7,872,578.75	7,872,579	2.15		585,132.85	585,133	1,131,061.54	1,131,062			403,016.73	403,017	237,837.05	237,837	2,466,225.00
				30	Distribution Pipelines																				
				525	City of Redwater Storage/Booster Pump Station																				
				115	Storage Tank Sites																				
				Div 03	Concrete																				
					Tank Foundation- 125 ft dia.x 2 ft thick	3,634	cy	504.49	1,833,321	1,155,271	822.40	2,988,591	0.82		128.72	467,759	315.79	1,147,579	10.00	36,340	49.98	181,643			
					Booster Pumps Foundation- 20 ft x 20 ft x 2 ft thick	30	cy	504.49	15,135	9,537	822.40	24,672	0.01		128.72	3,862	315.79	9,474	10.00	300	49.98	1,500			
					Div 03 Concrete	3,664	cy	504.49	1,848,456	1,164,808	822.40	3,013,263	0.82		128.72	471,621	315.79	1,157,053	10.00	36,640	49.98	183,142			
				Div 13	Special Construction																				
					Pre-Engineered Metal Canopy- 20'x20'	400	sf	25.00	10,000	5,761	39.40	15,761	0.00							25.00	10,000				
					Div 13 Special Construction	1	1s	10,000.00	10,000	5,761	15,761.10	15,761	0.00							10,000.00	10,000				
				Div 26	Electrical																				
					Misc. Electrical, Lighting, Power to Pumps etc.	1	1s	25,000.00	25,000	14,403	39,402.73	39,403	0.01							25,000.00	25,000				
					Div 26 Electrical	1	1s	25,000.00	25,000	14,403	39,402.73	39,403	0.01							25,000.00	25,000				
				Div 31	Earthwork																				
					Selective Clearing & Grubbing	2	ac	4,780.58	9,561	5,917	7,739.06	15,478	0.00	30 ft wide.	2,491.27	4,983					2,289.31	4,579			
					Excavate & Grade for Tank	1	1s	7,373.31	7,373	4,564	11,937.16	11,937	0.00		3,825.32	3,825					3,547.99	3,548			
					Div 31 Earthwork	1	1s	16,934.46	16,934	10,481	27,415.27	27,415	0.01		8,807.86	8,808					8,126.60	8,127			
				Div 32	Exterior Improvements																				
					Misc. Site Improvements	1	1s	10,000.00	10,000	5,761	15,761.09	15,761	0.00	Stone driveway, fencing.						10,000.00	10,000				
					Hydroseeding/Restoration	2	ac	3,000.00	6,000	3,457	4,728.33	9,457	0.00							3,000.00	6,000				
					Div 32 Exterior Improvements	1	1s	16,000.00	16,000	9,218	25,217.75	25,218	0.01							16,000.00	16,000				
				Div 33	Utilities																				
					DI MJ Std Wgt Fittings 14"	8	ea	571.80	4,574	2,865	929.96	7,440	0.00		207.30	1,658	364.50	2,916							
					Precast Vaults	1	ea	8,373.40	8,373	5,285	13,658.43	13,658	0.00		2,192.72	2,193	3,500.00	3,500					2,680.68	2,681	
					Butterfly Valves MJ 14"	4	ea	2,490.90	9,964	6,364	4,081.94	16,328	0.00		255.52	1,022	2,235.38	8,942							
					Prestressed Concrete Water Storage Tank - 15,300,000 gal.	1	ea	5,800,000.00	5,800,000	3,341,433	9,141,433.38	9,141,433	2.50							5,800,000.00	5,800,000				
					Magnetic Flow Meter 14"	1	ea	8,901.25	8,901	5,674	14,574.95	14,575	0.00		1,163.21	1,163	7,500.00	7,500					238.04	238	
					DI Flanged Joint Pipe 14"	16	lf	224.90	3,598	2,250	365.53	86.73	1,388	0.00		86.73	1,388	138.18	2,211						
					Pipe Supports	10	ea	280.01	2,800	1,729	4,529.91	4,529	0.00		153.99	1,540	126.02	1,260							
					Ball Valve 14" w/ motor operator	2	ea	16,079.43	32,159	20,601	26,380.06	52,760	0.01		1,015.32	2,031	15,000.00	30,000					64.11	128	
					Div 33 Utilities	1	1s	5,870,369.99	5,870,370	3,386,202	9,256,571.89	9,256,572	2.53		10,994.53	10,995	56,328.53	56,329			5,800,000.00	5,800,000	3,046.93	3,047	

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.
				Div 33	Utilities																			
					Prestressed Concrete Water Storage Tank - 15,300,000 gal.	1 ea		5,800,000.00	5,800,000	3,341,433	9,141,433.42	9,141,433	2.50		-	-	-	-	5,800,000.00	5,800,000	-	-	-	-
					Magnetic Flow Meter 14"	1 ea	26	8,901.25	8,901	5,674	14,574.91	14,575	0.00		1,163.21	1,163	7,500.00	7,500	-	-	238.04	238	-	-
					DI Flanged Joint Pipe 14"	16 lf	33	224.90	3,598	2,250	365.53	5,848	0.00		86.73	1,388	138.18	2,211	-	-	-	-	-	-
					Pipe Supports	10 ea	36	280.01	2,800	1,729	452.92	4,529	0.00		153.99	1,540	126.02	1,260	-	-	-	-	-	-
					Ball Valve 14" w/ motor operator	2 ea	48	16,079.43	32,159	20,601	26,380.06	52,760	0.01		1,015.32	2,031	15,000.00	30,000	-	-	64.11	128	-	-
					Div 33 Utilities	1 ls	262	5,870,369.99	5,870,370	3,386,202	9,256,571.92	9,256,572	2.53		10,994.53	10,995	56,328.53	56,329	5,800,000.00	5,800,000	-	-	3,046.93	3,047
				Div 46	Water and Wastewater Equipment																			
					80 hp - Variable Frequency Drives	2 ea	71	18,949.37	37,899	24,245	31,071.76	62,144	0.02		1,549.37	3,099	17,400.00	34,800	-	-	-	-	-	-
					Horizontal Split Case Booster Pumps- 3000 gpm	2 ea	40	51,324.82	102,650	65,984	84,316.97	168,634	0.05		862.73	1,725	-	-	-	-	-	-	462.09	924
					Div 46 Water and Wastewater Equipment	1 ls	111	140,548.37	140,548	90,229	230,777.46	230,777	0.06		4,824.20	4,824	34,800.00	34,800	-	-	-	-	924.17	924
					115 Storage Tank Sites	1 ls	5,165	6,543,008.84	6,543,009	3,808,890	10,351,899.04	10,351,899	2.83		140,509.70	140,510	387,654.84	387,655	5,860,390.00	5,860,390	-	-	54,454.30	54,454
					530 TAC Storage/Booster Pump Station	1 ls	5,165	6,543,008.84	6,543,009	3,808,890	10,351,899.04	10,351,899	2.83		140,509.70	140,510	387,654.84	387,655	5,860,390.00	5,860,390	-	-	54,454.30	54,454
					30 Distribution Pipelines	1 lf	24,082	14,470,317.18	14,470,317	8,489,991	22,960,308.58	22,960,309	6.27		636,756.90	636,757	1,635,836.00	1,635,836	11,748,030.00	11,748,030	-	-	249,694.28	249,694
					05 Alternate 3A Modified- Phase 3A	1 LS	104,637	43,459,638.61	43,459,639	26,863,159	70,322,797.73	70,322,798	19.19		3,793,557.59	3,793,558	20,305,467.05	20,305,467	13,743,266.28	13,743,266	-	-	1,701,122.69	1,701,123
06					Alternate 3A Modified- Phase 3B																			
					Raw Water Supply																			
					10 MGD Pumps																			
					Electrical																			
					85																			
					Div 25 Integrated Automation																			
					Instrumentation & Control	1 ls		50,000.00	50,000	28,805	78,805.46	78,805	0.02		-	-	-	-	50,000.00	50,000	-	-	-	-
					Div 25 Integrated Automation	1 ls		50,000.00	50,000	28,805	78,805.46	78,805	0.02		-	-	-	-	50,000.00	50,000	-	-	-	-
					Div 26 Electrical																			
					Electrical	0 ls		150,000	150,000	86,416	236,416.38	236,416	0.06		-	-	-	-	150,000.00	150,000	-	-	-	-
					Div 26 Electrical	1 ls		150,000.00	150,000	86,416	236,416.38	236,416	0.06		-	-	-	-	150,000.00	150,000	-	-	-	-
					85 Electrical	1 ls		200,000.00	200,000	115,222	315,221.84	315,222	0.09		-	-	-	-	200,000.00	200,000	-	-	-	-
					90 Process Equipment																			
					Div 46 Water and Wastewater Equipment																			
					600 hp - Variable Frequency Drives	3 ea	210	155,036.79	465,110	298,917	254,675.64	764,027	0.21		3,036.79	9,110	152,000.00	456,000	-	-	-	-	-	-
					Vertical Turbine Pumps- 7000 gpm	3 ea	432	284,484.15	853,452	548,405	467,285.72	1,401,857	0.38		6,211.63	18,635	500.00	1,500	-	-	2,772.52	8,318	275,000.00	825,000
					Div 46 Water and Wastewater Equipment	1 ls	642	1,318,562.82	1,318,563	847,321	2,165,884.08	2,165,884	0.59		27,745.27	27,745	457,500.00	457,500	-	-	8,317.55	8,318	825,000.00	825,000
					90 Process Equipment	1 ls	642	1,318,562.82	1,318,563	847,321	2,165,884.08	2,165,884	0.59		27,745.27	27,745	457,500.00	457,500	-	-	8,317.55	8,318	825,000.00	825,000
					95 Pump Discharge Piping																			
					Div 33 Utilities																			
					Butterfly Valves MJ 24"	3 ea	39	6,578.42	19,735	12,618	10,784.35	32,353	0.01		589.68	1,769	5,929.23	17,788	-	-	59.51	179	-	-
					DI Flanged Joint Pipe 24"	24 lf	64	412.84	9,908	6,248	673.18	16,156	0.00		112.96	2,711	267.83	6,428	-	-	32.05	769	-	-
					Pipe Supports	3 ea	14	385.06	1,155	715	623.25	1,870	0.00		203.06	609	182.00	546	-	-	-	-	-	-
					Ball Valve 24" w/ motor operator	3 ea	120	36,756.31	110,269	70,729	60,332.63	180,998	0.05		1,692.20	5,077	35,000.00	105,000	-	-	64.10	192	-	-
					Div 33 Utilities	1 ls	238	141,067.53	141,068	90,310	231,377.03	231,377	0.06		10,165.75	10,166	129,761.69	129,762	-	-	1,140.09	1,140	-	-
					95 Pump Discharge Piping	1 ls	238	141,067.53	141,068	90,310	231,377.03	231,377	0.06		10,165.75	10,166	129,761.69	129,762	-	-	1,140.09	1,140	-	-
					600 10 MGD Pumps	3 ea	880	553,210.12	1,659,630	1,052,853	904,160.98	2,712,483	0.74		12,637.01	37,911	195,753.90	587,262	66,666.67	200,000	3,152.55	9,458	275,000.00	825,000
					601 Intake Structure-Screens																			
					112 Raw Water Intake Structure																			
					Div 35 Waterway and Marine																			
					Mobilize & Demobilize Barges, Crane/Drilling Rig, Crew	1 ls	112	19,014.98	19,015	11,973	30,988.40	30,988	0.01		5,574.45	5,574	-	-	-	-	13,440.53	13,441	-	-
					Div 35 Waterway and Marine	1 ls	112	19,014.98	19,015	11,973	30,988.40	30,988	0.01		5,574.45	5,574	-	-	-	-	13,440.53	13,441	-	-
					Div 46 Water and Wastewater Equipment																			
					Intake Screen, RAW Water, 72" disch, 336" OAL, 316L SS	2 ea	224	92,628.74	185,257	118,704	151,980.67	303,961	0.08		5,574.45	11,149	-	-	12,054.29	24,109	75,000.00	150,000	-	-
					Div 46 Water and Wastewater Equipment	1 ls	224	185,257.48	185,257	118,704	303,961.33	303,961	0.08		11,148.90	11,149	-	-	24,108.58	24,109	150,000.00	150,000	-	-
					112 Raw Water Intake Structure	2 ea	336	102,136.23	204,272	130,677	167,474.86	334,950	0.09		8,361.68	16,723	-	-	18,774.56	37,549	75,000.00	150,000	-	-
					601 Intake Structure-Screens	2 ea	336	102,136.23	204,272	130,677	167,474.86	334,950	0.09		8,361.68	16,723	-	-	18,774.56	37,549	75,000.00	150,000	-	-
					10 Raw Water Supply	1 ls	1,216	1,863,902.81	1,863,903	1,183,530	3,047,432.68	3,047,433	0.83		54,634.37	54,634	587,261.69	587,262	200,000.00	200,000	47,006.75	47,007	975,000.00	975,000
					06 Alternate 3A Modified- Phase 3B	1 LS	1,216	1,863,902.81	1,863,903	1,183,530	3,047,432.68	3,047,433	0.83		54,634.37	54,634	587,261.69	587,262	200,000.00	200,000	47,006.75	47,007	975,000.00	975,000
07					Alternate 4B																			

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.
	20				10 Raw Water Supply Water Treatment Plant	1 ls	11,431	1,269,059.02	1,269,059	782,325	2,051,384.06	2,051,384	0.56		488,046.40	488,046	327,162.89	327,163	166,975.00	166,975	286,874.73	286,875		
		50			Sitework																			
			*		unassigned																			
				Div 31	Earthwork																			
					Selective Clearing & Grubbing	2 ac	85	3,187.07	6,374	3,945	5,159.41	10,319	0.00	30 ft wide.	1,660.86	3,322	-	-	-	-	-	1,526.21	3,052	-
					Site Grading, Cut & Fill	4 ac	384	7,373.31	29,493	18,255	11,937.14	47,749	0.01		3,825.32	15,301	-	-	-	-	-	3,547.99	14,192	-
					Silt Fence/Erosion Control Measures	1 ls		5,000.00	5,000	2,881	7,880.55	7,881	0.00		0.00	0	0.00	0	5,000.00	5,000	0.00	0	-	-
				Div 31	Earthwork	1 ls	469	40,867.37	40,867	25,081	65,947.92	65,948	0.02		18,623.01	18,623			5,000.00	5,000	17,244.36	17,244		
				Div 32	Exterior Improvements																			
					Misc.Site Improvements- curbs, sidewalks, fencing	1 ls		10,000.00	10,000	5,761	15,761.08	15,761	0.00		-	-	-	-	10,000.00	10,000	-	-	-	-
					Asphalt Paving (6"Base+2"Binder+1" Top)	500 sy		38.76	19,380	11,165	61.09	30,545	0.01		-	-	-	-	38.76	19,380	-	-	-	-
					Hydroseeding	4 ac		3,000.00	12,000	6,913	4,728.33	18,913	0.01		-	-	-	-	3,000.00	12,000	-	-	-	-
					Topsoil & Landscaping Allowance	1 ls		5,000.00	5,000	2,881	7,880.55	7,881	0.00		-	-	-	-	5,000.00	5,000	-	-	-	-
				Div 32	Exterior Improvements	1 ls		46,380.00	46,380	26,720	73,099.95	73,100	0.02						46,380.00	46,380				
					* unassigned *		469		87,247	51,801	139,048	139,048	0.04			18,623					51,380	51,380		17,244
					50 Sitework	1 ls	469	87,247.37	87,247	51,801	139,047.87	139,048	0.04		18,623.01	18,623			51,380.00	51,380	17,244.36	17,244		
				710	2.5 MGD Treatment- 2 trains																			
			*		unassigned																			
				Div 03	Concrete																			
					Package TP Foundation- 40 ft.x 60 ft x 2 ft thick	178 cy	890	504.49	89,799	56,587	822.40	146,387	0.04		128.72	22,912	315.79	56,211	10.00	1,780	49.98	8,897	-	-
				Div 03	Concrete	178 cy	890	504.49	89,799	56,587	822.40	146,387	0.04		128.72	22,912	315.79	56,211	10.00	1,780	49.98	8,897	-	-
				Div 46	Water and Wastewater Equipment																			
					Package WTP- 2.0 MGD	2 ea	480	697,418.95	1,394,838	896,700	1,145,769.08	2,291,538	0.63	1400 gpm each. Per vendor quote.	10,844.78	21,690	1,000.00	2,000	0.00	0	5,574.18	11,148	680,000.00	1,360,000
					Ozone Generator Package System- 1.25 MGD	2 ea	192	480,167.58	960,335	617,668	789,001.81	1,578,004	0.43	Per vendor quote.	4,337.91	8,676	1,000.00	2,000	-	-	2,229.67	4,459	472,600.00	945,200
				Div 46	Water and Wastewater Equipment	1 ls	672	2,355,173.07	2,355,173	1,514,369	3,869,541.77	3,869,542	1.06		30,365.38	30,365	4,000.00	4,000	-	-	15,607.69	15,608	2,305,200.00	2,305,200
					* unassigned *		1,562		2,444,973	1,570,956	4,015,928	4,015,928	1.10			53,277					24,505	24,505	2,305,200	2,305,200
					710 2.5 MGD Treatment- 2 trains	1 ls	1,562	2,444,972.50	2,444,973	1,570,956	4,015,928.48	4,015,928	1.10		53,277.08	53,277	60,210.53	60,211	1,780.00	1,780	24,504.89	24,505	2,305,200.00	2,305,200
					Ground Storage Tanks																			
			*		unassigned																			
				Div 03	Concrete																			
					Tank Foundation- 80 ft dia.x 2 ft thick- 2 ea.	745 cy	3,725	504.49	375,846	236,840	822.40	612,686	0.17		128.72	95,894	315.79	235,263	10.00	7,450	49.98	37,238	-	-
					Booster Pumps Foundation- 20 ft.x 20 ft x 2 ft thick- 2 ea.	60 cy	300	504.49	30,269	19,074	822.40	49,344	0.01		128.72	7,723	315.79	18,947	10.00	600	49.98	2,999	-	-
				Div 03	Concrete	805 cy	4,025	504.49	406,115	255,914	822.40	662,030	0.18		128.72	103,618	315.79	254,211	10.00	8,050	49.98	40,237	-	-
				Div 13	Special Construction																			
					Pre-Engineered Metal Canopy- 20'x20'- 2 ea.	800 sf		25.00	20,000	11,522	39.40	31,522	0.01		-	-	-	-	25.00	20,000	-	-	-	-
				Div 13	Special Construction	1 ls		20,000.00	20,000	11,522	31,522.18	31,522	0.01						20,000.00	20,000				
				Div 33	Utilities																			
					DI MJ Std Wgt Fittings 14"	16 ea	78	571.80	9,149	5,731	929.96	14,879	0.00		207.30	3,317	364.50	5,832	-	-	-	-	-	-
					Precast Vaults	2 ea	112	8,373.40	16,747	10,570	13,658.43	27,317	0.01		2,192.72	4,385	3,500.00	7,000	-	-	2,680.68	5,361	-	-
					Butterfly Valves MJ 14"	8 ea	48	2,490.90	19,927	12,728	4,081.93	32,655	0.01		255.52	2,044	2,235.38	17,883	-	-	-	-	-	-
					Prestressed Concrete Water Storage Tank - 1,500,000 gal.	2 ea		1,000,000.00	2,000,000	1,152,218	1,576,109.21	3,152,218	0.86		-	-	-	-	1,000,000.00	2,000,000	-	-	-	-
					Magnetic Flow Meter 14"	2 ea	51	8,901.25	17,803	11,347	14,574.92	29,150	0.01		1,163.21	2,326	7,500.00	15,000	-	-	238.04	476	-	-
					DI Flanged Joint Pipe 14"	32 lf	66	224.90	7,197	4,500	365.53	11,697	0.00		86.73	2,775	138.18	4,422	-	-	-	-	-	-
					Pipe Supports	20 ea	73	280.01	5,600	3,458	452.91	9,058	0.00		153.99	3,080	126.02	2,520	-	-	-	-	-	-
					Ball Valve 14" w/ motor operator	4 ea	96	16,079.43	64,318	41,203	26,380.07	105,520	0.03		1,015.32	4,061	15,000.00	60,000	-	-	64.11	256	-	-
				Div 33	Utilities	1 ls	525	2,140,740.97	2,140,740	1,241,755	3,382,495.43	3,382,495	0.92		21,989.06	21,989	112,657.05	112,657	2,000,000.00	2,000,000	6,093.86	6,094	-	-
					* unassigned *		4,550		2,566,855	1,509,192	4,076,047	4,076,047	1.11			125,607		366,868		2,028,050		46,331		
					715 Ground Storage Tanks	2 ea	4,550	1,283,427.66	2,566,855	1,509,192	2,038,023.68	4,076,047	1.11		62,803.29	125,607	183,433.79	366,868	1,014,025.00	2,028,050	23,165.58	46,331	-	-
				720	High Service Pump Station																			
			*		unassigned																			
				Div 03	Concrete																			
					Canopy Slab/Foundation	99 cy	495	504.49	49,945	31,473	822.40	81,417	0.02		128.72	12,743	315.79	31,263	10.00	990	49.98	4,948	-	-
					Pump Can Encasement	138 cy	966	571.67	78,891	49,501	930.37	128,391	0.04		180.20	24,868	315.79	43,579	10.00	1,380	65.68	9,064	-	-
				Div 03	Concrete	237 cy	1,461	543.61	128,836	80,973	885.27	209,809	0.06		158.70	37,611	315.79	74,842	10.00	2,370	59.12	14,012	-	-
				Div 13	Special Construction																			
					Pre-Engineered Metal Canopy- 50'x50'	2,500 sf		20.00	50,000	28,805	31.52	78,805	0.02		-	-	-	-	20.00	50,000	-	-	-	-
				Div 13	Special Construction	1 ls		50,000.00	50,000	28,805	78,805.47	78,805	0.02											

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.
					Div 33 Utilities	1 ls	488	85,232.82	85,233	53,870	139,102.59	139,103	0.04		20,775.86	20,776	59,532.63	59,533			4,924.33	4,924		
				Div 46	Water and Wastewater Equipment																			
					60 hp - Variable Frequency Drives	3 ea	107	14,418.12	43,254	27,618	23,624.16	70,872	0.02		1,549.37	4,648	12,868.75	38,606	-	-	-	-	-	-
					Vertical Can Pump- 800 gpm	3 ea	144	78,121.85	234,366	150,531	128,298.75	384,896	0.11		2,168.96	6,507	-	-	-	-	-	-	-	-
					Div 46 Water and Wastewater Equipment	1 ls	251	277,619.90	277,620	178,149	455,768.75	455,769	0.12		11,154.98	11,155	38,606.25	38,606			2,858.67	2,859	75,000.00	225,000
					* unassigned *			2,333	552,520	348,493	901,013	901,013	0.25			74,780		172,981		52,771	26,989	225,000	225,000	
					720 High Service Pump Station	1 ls	2,333	552,520.03	552,520	348,493	901,012.96	901,013	0.25		74,779.60	74,780	172,980.99	172,981	52,770.50	52,771	26,988.94	26,989	225,000.00	225,000
		721			Electrical & Instrumentation																			
				* unassigned *																				
				Div 25	Integrated Automation																			
					Instrumentation & Control	1 ls		200,000.00	200,000	115,222	315,221.84	315,222	0.09		-	-	-	-	200,000.00	200,000	-	-	-	
					Div 25 Integrated Automation	1 ls		200,000.00	200,000	115,222	315,221.84	315,222	0.09		-	-	-	-	200,000.00	200,000	-	-	-	
				Div 26	Electrical																			
					Electrical	1 ls		660,000.00	660,000	380,232	1,040,232.09	1,040,232	0.28						660,000.00	660,000				
					Div 26 Electrical	1 ls		660,000.00	660,000	380,232	1,040,232.09	1,040,232	0.28						660,000.00	660,000				
					* unassigned *			860,000	860,000	495,454	1,355,454	1,355,454	0.37						860,000.00	860,000				
					721 Electrical & Instrumentation	1 ls		860,000.00	860,000	495,454	1,355,453.93	1,355,454	0.37						860,000.00	860,000				
					20 Water Treatment Plant	1 ls	8,914	6,511,595.22	6,511,595	3,975,895	10,487,490.59	10,487,491	2.86		272,286.26	272,286	600,059.10	600,059	2,993,980.50	2,993,981	115,069.36	115,069	2,530,200.00	2,530,200
30					Distribution Pipelines																			
		725			Queen City, Atlanta & Domino Pipelines																			
				100	Open Cut Piping																			
				Div 31	Earthwork																			
					Trench Excav & Backfill 4- 8'	58,000 lf	16,704	22.95	1,331,125	826,311	37.20	2,157,437	0.59		11.04	640,279	-	-	-	-	-	11.91	690,847	-
					Utility Bed Sand	8,592 cy		17.25	148,212	95,391	28.35	243,603	0.07				17.25	148,212	-	-	-	-	-	
					3500 psi Thrust Block Concrete	150 cy	113	138.37	20,756	13,159	226.10	33,915	0.01		27.99	4,198	110.38	16,557	-	-	-	-	-	
					Silt Fence/Erosion Control Measures	58,000 lf		5.00	290,000	167,072	7.88	457,072	0.12						5.00	290,000	-	-	-	
					Div 31 Earthwork	1 ls	16,817	1,790,093.10	1,790,093	1,101,933	2,892,025.83	2,892,026	0.79		644,477.09	644,477	164,769.19	164,769	290,000.00	290,000	690,846.82	690,847	-	-
				Div 32	Exterior Improvements																			
					Asphalt Patching/Street Restoration	445 sy		50.00	22,250	12,818	78.81	35,068	0.01	50 repairs, average 20 ft long.	-	-	-	-	50.00	22,250	-	-	-	
					Saw Cut Asphalt in Street Before Trench Excavation	8,000 inft		0.85	6,800	3,918	1.34	10,718	0.00	50 repairs, average 20 ft long.	-	-	-	-	0.85	6,800	-	-	-	
					Hydroseeding/ROW Restoration	24 ac		3,000.00	72,000	41,480	4,728.33	113,480	0.03		-	-	-	-	3,000.00	72,000	-	-	-	
					Div 32 Exterior Improvements	1 ls		101,050.00	101,050	58,216	159,265.83	159,266	0.04						101,050.00	101,050	-	-	-	
				Div 33	Utilities																			
					2" Air Release/Vacuum Valve	12 ea	15	1,554.34	18,652	11,974	2,552.15	30,626	0.01		54.34	652	1,500.00	18,000	-	-	-	-	-	
					DI Pipe Push - Class 52 12	58,000 lf	17,980	61.17	3,547,655	2,240,925	99.80	5,788,580	1.58		15.38	892,183	45.78	2,655,472	-	-	-	-	-	
					DI RJ Std Wgt Fittings 12"- allowance	115 ea	463	1,219.63	140,257	89,180	1,995.10	229,437	0.06		199.63	22,957	1,020.00	117,300	-	-	-	-	-	
					Unload & Shake Out DIP	58,000 lf	2,017	2.77	160,374	99,491	4.48	259,865	0.07		1.35	78,468	-	-	-	1.41	81,906	-	-	
					Hydrostatic Testing - 2-12"	58,000 lf	1,392	1.13	65,266	39,132	1.80	104,398	0.03		1.04	60,510	0.08	4,756	-	-	-	-	-	
					Chlorination	58,000 lf		0.10	5,800	3,733	0.16	9,533	0.00				0.10	5,800	-	-	-	-		
					Precast Vaults	1 ea	56	9,873.40	9,873	6,250	16,124	2,192.72	2,193	0.00		2,192.72	2,193	5,000.00	5,000	-	-	2,680.68	2,681	
					Gate Valves 12" MJ w/ valve box	12 ea	127	2,726.00	32,712	20,755	4,455.58	53,467	0.01		524.00	6,288	2,202.00	26,424	-	-	-	-	-	
					Pressure Monitoring	1 ls	10	2,991.30	2,991	1,902	4,893.18	4,893	0.00		491.30	491	2,500.00	2,500	-	-	-	-	-	
					Div 33 Utilities	1 ls	22,060	3,983,581.15	3,983,581	2,513,342	6,496,922.90	6,496,923	1.77		1,063,742.38	1,063,742	2,835,252.00	2,835,252	391,050.00	391,050	84,586.77	84,587		
					100 Open Cut Piping	1 ls	38,876	5,874,724.25	5,874,724	3,673,490	9,548,214.56	9,548,215	2.61		1,708,219.47	1,708,219	3,000,021.19	3,000,021	391,050.00	391,050	775,433.59	775,434		
				105	Jack & Bore at RR and Street Crossings																			
				Div 33	Utilities																			
					Mobilization - Jack & Bore	6 ea		2,000.00	12,000	6,913	3,152.22	18,913	0.01		-	-	-	-	2,000.00	12,000	-	-	-	
					Jacking Pits- excavate & restore	12 ea	480	2,610.72	31,329	19,266	4,216.19	50,594	0.04		1,575.17	18,902	-	-	-	-	-	1,035.56	12,427	
					24" diameter casing, Roadway, .281" thick for 12" carrier pipe	600 lf	240	540.00	324,000	186,659	851.10	510,659	0.14	Length - up to ~500 ft.; Avg. Productivity - ~ 12.5 ft. / hr.	-	-	-	-	540.00	324,000	-	-	-	
					Div 33 Utilities	1 ls	720	367,328.68	367,329	212,838	580,166.97	580,167	0.16		18,902.00	18,902			336,000.00	336,000	12,426.68	12,427		
					105 Jack & Bore at RR and Street Crossings	600 lf	720	612.21	367,329	212,838	966.94	580,167	0.16	Carrier pipe material costs included with open cut pipe length.	31.50	18,902			560.00	336,000	20.71	12,427		
					725 Queen City, Atlanta & Domino Pipelines	1 ls	39,596	6,242,052.93	6,242,053	3,886,329	10,128,381.53	10,128,382	2.76		1,727,121.47	1,727,121	3,000,021.19	3,000,021	727,050.00	727,050	787,860.27	787,860		
		750			Queen City and Atlanta Storage/Booster Pumps Stations																			
				115	Storage Tank Sites																			
				Div 02	Existing Conditions																			
					Demo Above Ground Steel Tanks	2 ea	128	8,942.34	17,885	11,259	14,571.63	29,143	0.01	Recycle steel, no disposal cost.	2,654.11	5,308	-	-	-	-	6,288.23	12,576	-	
					Landfill T & D	500 tn		65.00	32,500	18,724	102.45	51,224	0.01	Steel tank foundations	-	-	-	65.00	32,500	-	-	-	-	
					Div 02 Existing Conditions	1 ls	128	50,384.68	50,385	29,982	80,366.82	80,367	0.02		5,308.22	5,308			32,500.00	32,500				

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	WBS Lvl 4	CSI Lvl 1	Description	Takeoff Quantity	Labor Man Hrs	Total Cost/Unit	Total Cost	Addon Amount	Grand Total Unit Price	Grand Total	Percent of Total	Notes	Labor Cost/Unit	Total Labor	Material Cost/Unit	Total Material	Sub Cost/Unit	Total Sub	Constr Equip Cost/Unit	Total Construc Equipment	Process Equip Cost/Unit	Total Process Equip.
					Div 46 Water and Wastewater Equipment	1 ls	223	281,096.74	281,097	180,458	461,554.89	461,555	0.13		9,648.40	9,648	69,600.00	69,600			1,848.34	1,848	200,000.00	200,000
					115 Storage Tank Sites	1 ls	3,462	1,974,619.26	1,974,619	1,179,214	3,153,833.35	3,153,833	0.86		106,251.96	106,252	333,520.21	333,520	1,283,290.00	1,283,290	51,557.09	51,557	200,000.00	200,000
					750 Queen City and Atlanta Storage/Booster Pumps Stations	1 ls	3,462	1,974,619.26	1,974,619	1,179,214	3,153,833.35	3,153,833	0.86		106,251.96	106,252	333,520.21	333,520	1,283,290.00	1,283,290	51,557.09	51,557	200,000.00	200,000
					30 Distribution Pipelines	58,000 lf	43,059	141.67	8,216,672	5,065,543	229.00	13,282,215	3.63		31.61	1,833,373	57.48	3,333,541	34.66	2,010,340	14.47	839,417	3.45	200,000
					07 Alternate 4B	1 LS	63,404	15,997,326.43	15,997,326	9,823,763	25,821,089.53	25,821,090	7.05		2,593,706.09	2,593,706	4,260,763.39	4,260,763	5,171,295.50	5,171,296	1,241,361.45	1,241,361	2,730,200.00	2,730,200

Estimate Totals

Description	Amount	Totals	Hours	Rate	Percent of Total
Labor	26,019,951		661,297 hrs		7.10%
Material	84,587,639				23.09%
Subcontract	83,681,772				22.84%
Construction Equipment	12,663,795		343,384 hrs		3.46%
Process Equip	20,142,147				5.50%
Subtotal	227,095,304	227,095,304 USD			61.98
Mobilization/Demobilization	2,270,953			1.00 %	0.62%
Small Tools & Equipment	390,299			1.50 %	0.11%
Safety Supplies & Equipment	130,100			0.50 %	0.04%
Sales Tax- Bowie County	7,924,067			6.75 %	2.16%
Subtotal	10,715,419	237,810,723 USD			2.92
General Conditions	22,709,530			10.00 %	6.20%
General Conditions Subtotal	22,709,530	260,520,253 USD			6.20
Permits	651,301			0.25 %	0.18%
Performance & Payment Bond	3,663,715			1.00 %	1.00%
Builder's Risk Insurance	651,301			0.25 %	0.18%
Permits, Ins, & Bonds Subtotal	4,966,317	265,486,570 USD			1.36
Escalation- NOT INCLUDED					
Subtotal		265,486,570 USD			
Contingency (%)	53,097,314			20.00 %	14.49%
Subtotal	53,097,314	318,583,884 USD			14.49
Contractor Overhead & Profit	47,787,582			15.00 %	13.04%
GC OH&P Subtotal	47,787,582	366,371,466 USD			13.04
Total		366,371,466 USD			

July 20, 2018

PROJECT: Water Supply Project
CLIENT: Riverbend Water Resources District
LOCATION: Texarkana, TX
DOCUMENT LEVEL: Conceptual Design
ESTIMATE NO: 18-043
BY: Bill Bachman

OPINION OF PROBABLE CONSTRUCTION COST CONCEPTUAL
DESIGN ESTIMATE

1. This Opinion of Probable Construction Cost Level 3 Estimate is based on information provided for seven phases of water supply expansion. The scope of work is based on the items described in the detailed cost estimate.
2. General Contractor Field Overhead and General Conditions are included at the rate of 10%.
3. Estimate is based on 2018 construction costs. Cost escalation for the work to be performed in future phases is not included.
4. Permits are included the rate of .25%.
5. All Risk Insurance is included at the rate of .25%.
6. Performance and Payment Bonds are included at the rate of 1%.
7. General Contractor Overhead and Profit is included at the rate of 15%.
8. Contingency costs are included at a rate of 20%.
9. Wage Rates are based on local Texarkana, TX Davis Bacon craft rates.
10. Shoring systems of soldier piles, timber lagging and drilled tie backs are included for wet well pump station excavations.
11. Dewatering of the pump station excavations are included using deep wells located around the perimeter of the shoring and discharging to grade.
12. Concrete coatings are not included.
13. Rock excavation is not included.
14. Start-up and commissioning costs are not included.
15. Due to lack of soils information at this time, all water storage tanks to be supported by 2 ft. thick concrete slabs on grade.
16. An allowance for the construction of an access road to the site location of the new wet well pump station is included at \$800,000.
17. The Riverbend Tie-in to New Boston 30" distribution line costs are based on replacing 75% of the existing line.

18. The New Boston Road WTP demolition costs do not include site restoration of surfaces or any type of site improvements after demolition.
19. The raw water lines from the Lake to the pump station/wet well to be installed using 72" micro-tunneling technology. Two (2) 3000 LF 72" steel pipe lines are included. The pump station/wet well structure to be utilized for the launch pit for the TBM with one intermediate vertical shaft required at halfway along the length of each 3000 ft. line.
20. Owner related management costs and land acquisition costs are not included.
21. Other applicable detailed notes and clarifications are included in the body of the cost estimate report.

The enclosed Opinion of Probable Cost is only an estimate of possible construction costs for budgeting purposes. This estimate is limited to the conditions existing at issuance and is not a guaranty of actual price or cost. Uncertain market conditions such as, but not limited to; local labor or contractor availability, wages, other work, material market fluctuations, price escalations, force majeure events and developing bidding conditions, etc. may affect the accuracy of this estimate. AECOM is not responsible for any variance from this Opinion of Probable Cost or actual prices and conditions obtained.

Summary Sheet

RBWD - New 25MGD WTP	Initial State
Power	\$2,684,153
Chemicals	\$1,315,972
Labor	\$1,695,832
Sludge Disposal	\$288,756
TOTAL ANNUAL COST	\$5,984,713

This is raw water pump station and water treatment plant combined

Staffing

Position or Name	Direct Salaries	Direct Salaries + OT&Standby	Fully Burdened Cost
Plant Manager (CI B+)	\$120,000	\$124,800	\$172,224
O&M Lead (CI C+)	\$80,000	\$83,200	\$114,816
O Technician (CI C+)	\$65,000	\$67,600	\$93,288
O Technician (CI C+)	\$65,000	\$67,600	\$93,288
O Technician (CI D+)	\$65,000	\$67,600	\$93,288
O Technician	\$65,000	\$67,600	\$93,288
O Technician	\$65,000	\$67,600	\$93,288
O&M Technician	\$65,000	\$67,600	\$93,288
O&M Technician	\$65,000	\$67,600	\$93,288
O&M Technician	\$65,000	\$67,600	\$93,288
O&M Technician	\$65,000	\$67,600	\$93,288
O&M Technician	\$65,000	\$67,600	\$93,288
O&M Technician	\$65,000	\$67,600	\$93,288
I&C Specialist	\$80,000	\$83,200	\$114,816
Lab Lead	\$80,000	\$83,200	\$114,816
Lab Technician	\$65,000	\$67,600	\$93,288
Lab Technician	\$65,000	\$67,600	\$93,288
Administrative Assistant	\$41,600	\$43,264	\$59,704
TOTAL	\$1,181,600	\$1,228,864	\$1,695,832

Power

Raw Water Demand (avg): 10 MGD

WTP Plant Capacity: 25 MGD

Average annual production: 17.5 MGD

Power cost: \$ 0.07 per kWh

Area	Annual Power, kWh/yr	Power Cost, \$/yr
Raw Water Pump Station	11,168,620	\$ 781,803
Process Equipment	2,835,360	\$ 198,475
Chemical Storage & Feed Systems	328,500	\$ 22,995
Ozone	15,342,264	\$ 1,073,958
High Service Pumping	5,385,295	\$ 376,971
Site Utilities	1,642,500	\$ 114,975
Admin Building	1,642,500	\$ 114,975
TOTALS	38,345,039	\$ 2,684,153

Chemicals

Chemical	% wt	SG	Cost per pound	Average Dose (mg/L)	Annual Cost
LOX	100% gas		\$60.0/Ton	15lbs/lb ozone	\$71,917
Ozone	8% gas		4kWh/lb 3mg/L at 17.5MGD	3 mg/L	Cost in 'Power'
Ferric Sulfate	40.00%	1.500	\$0.670	20 mg/L	\$713,841
Coagulant Aid Polymer	100.00%	1.250	\$0.243	1 mg/L	\$12,945
Liquid Ammonium Sulfate	40.00%	1.220	\$0.450	1 mg/L	\$23,972
Sodium Hypochlorite	12.50%	1.100	\$0.300	5 mg/L	\$239,723
Lime	30.00%	1.500	\$0.200	10 mg/L	\$106,544
Orthophosphate	15.00%	1.460	\$0.560	1 mg/L	\$29,832
Potassium Permanganate	98%		\$ 2.20	1 mg/L	\$117,198

Annual Chemical Cost \$1,315,972

Sludge

	Solids (Lbs/Day, Dry)	Wet Solids (yd3/day)	Trucks per year	Annual Avg Trip Fee	Annual Avg Tipping Fee	Annual Cost
DT/Yr	7530	3	134	\$ 100,500	\$ 188,256	\$ 288,756

Assumptions

Truck Capacity: 9 yd³
 Cost per truck trip: \$750 /trip
 Tipping Fee: \$25 /ton
 Density: 85 PCF

Summary Sheet

RWRD - New Cass Co.

2.5MGD WTP Alt. 4B

RWRD - New Cass Co. 2.5MGD WTP	Initial State
Power	\$260,682
Chemicals	\$131,597
Labor	\$698,368
Sludge Disposal	\$29,326
TOTAL ANNUAL COST	\$1,119,973

Staffing

Position or Name	Direct Salaries	Direct Salaries + OT&Standby	Fully Burdened Cost
Plant Manager (CI B+)	\$120,000	\$124,800	\$172,224
O Technician (CI C+)	\$65,000	\$67,600	\$93,288
O Technician (CI C+)	\$65,000	\$67,600	\$93,288
O&M Technician	\$65,000	\$67,600	\$93,288
O&M Technician	\$65,000	\$67,600	\$93,288
I&C Specialist	\$65,000	\$67,600	\$93,288
Administrative Assistant	\$41,600	\$43,264	\$59,704
TOTAL	\$486,600	\$506,064	\$698,368

Power

Raw Water Demand (avg): 0 MGD
WTP Plant Capacity: 2.5 MGD
Average annual production: 1.75 MGD
Power cost: \$ 0.07 per kWh

Area	Annual Power, kWh/yr	Power Cost, \$/yr
Raw Water Pump Station	710,730	\$ 49,751
Process Equipment	283,536	\$ 19,848
Chemical Storage & Feed Systems	328,500	\$ 22,995
Ozone	1,534,226	\$ 107,396
High Service Pumping	538,529	\$ 37,697
Site Utilities	164,250	\$ 11,498
Misc	164,250	\$ 11,498
TOTALS	3,724,022	\$ 260,682

Chemicals

Chemical	% wt	SG	Cost per pound	Average Dose (mg/L)	Annual Cost
LOX	100% gas		\$60.0/Ton	15lbs/lb ozone	\$7,192
Ozone	8% gas		4kWh/lb 3mg/L at 17.5MGD	3 mg/L	Cost in 'Power'
Ferric Sulfate	40.00%	1.500	\$0.670	20 mg/L	\$71,384
Coagulant Aid Polymer	100.00%	1.250	\$0.243	1 mg/L	\$1,295
Liquid Ammonium Sulfate	40.00%	1.220	\$0.450	1 mg/L	\$2,397
Sodium Hypochlorite	12.50%	1.100	\$0.300	5 mg/L	\$23,972
Lime	30.00%	1.500	\$0.200	10 mg/L	\$10,654
Orthophosphate	15.00%	1.460	\$0.560	1 mg/L	\$2,983
Potassium Permanganate	98%		\$ 2.20	1 mg/L	\$11,720

Annual Chemical
Cost \$131,597

Sludge Disposal

Solids (Lbs/Day, Dry)	Wet Solids (yd3/day)	Trucks per year	Annual Avg Trip Fee	Annual Avg Tipping Fee	Annual Cost
753	0	14	\$ 10,500	\$ 18,826	\$ 29,326

DT/Yr 137

Assumptions

- Truck Capacity: 9 yd³
- Cost per truck trip: \$750 /trip
- Tipping Fee: \$25 /ton
- Density: 85 PCF

Cost Summary

RWRD Water Supply Project

AECOM

7/24/2018

Phase	Subtotal	20% Contingency	Const. Subtotal	Capital Cost					Annual Costs						
				Engrg, Feas, Legal, Finance, Bond Counsel (20% Constr.) ¹	Power Connection (capital) ²	Land Acquisition and Survey ³	Interest During Construction ⁴	Total Capital Cost	Raw Water Transfer and TAC WTP - O&M	Cass Co. 2.5 MGD WTP	Distribution Pumping Costs	Debt Service ⁵	Total Annual		
Phase 1A															
Access Roadway	\$ 667,000	\$ 133,000	\$ 800,000												
Intake	\$ 23,425,000	\$ 4,685,000	\$ 28,110,000												
Pump Station	\$ 8,267,000	\$ 1,653,000	\$ 9,920,000												
Raw Water Line	\$ 27,743,000	\$ 5,548,000	\$ 33,291,000												
			<i>Raw Water System</i>												
			\$ 72,121,000	\$ 14,425,000											
Distribution	\$ 10,858,000	\$ 2,172,000	\$ 13,030,000	\$ 2,606,000											
			\$ 85,151,000	1A	\$ 17,031,000	\$ 1,095,000	\$ 402,000	\$ 22,514,000	\$ 126,193,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Phase 1B															
WTP (25 MGD)	\$ 43,452,000	\$ 8,690,000	\$ 52,142,000												
			<i>Water Treatment</i>	\$ 10,429,000											
Distribution	\$ 43,383,000	\$ 8,677,000	\$ 52,060,000	\$ 10,412,000											
			\$ 104,202,000	1B	\$ 20,841,000	\$ -	\$ -	\$ -	\$ 125,043,000	\$ 5,985,000	\$ -	\$ 111,000	\$ 10,951,000	\$ 17,047,000	
Phase 2A															
Raw Water	\$ 279,000	\$ 56,000	\$ 335,000												
WTP (28 MGD)	\$ 316,000	\$ 63,000	\$ 379,000												
New Boston Demo	\$ 2,763,000	\$ 553,000	\$ 3,316,000												
			<i>Raw Water and Trt System</i>	\$ 806,000											
Distribution	\$ 30,088,000	\$ 6,017,000	\$ 36,105,000	\$ 7,221,000											
			\$ 40,135,000	2A	\$ 8,027,000	\$ 173,000	\$ -	\$ 4,793,000	\$ 53,128,000	\$ 5,985,000	\$ -	\$ 258,000	\$ 2,321,000	\$ 8,564,000	
Phase 2B															
Raw Water	\$ 734,000	\$ 147,000	\$ 881,000												
WTP (30 MGD)	\$ 888,000	\$ 178,000	\$ 1,066,000												
			<i>Raw Water and Trt System</i>	\$ 390,000											
Distribution	\$ 17,317,000	\$ 3,463,000	\$ 20,780,000	\$ 4,156,000											
Industrial Reuse	\$ 12,478,000	\$ 2,496,000	\$ 14,974,000	\$ 2,995,000											
			\$ 37,701,000	2B	\$ 7,541,000	\$ 86,000	\$ -	\$ 4,502,000	\$ 49,830,000	\$ 6,798,000	\$ -	\$ 405,000	\$ 2,181,000	\$ 9,384,000	
Phase 3A															
Raw Water PS	\$ 5,190,000	\$ 1,038,000	\$ 6,228,000												
Raw Water Pipeline	\$ 27,719,000	\$ 5,544,000	\$ 33,263,000												
WTP (30 MGD)	\$ 6,561,000	\$ 1,312,000	\$ 7,873,000												
			<i>Raw Water and Trt System</i>	\$ 9,473,000											
Distribution	\$ 19,134,000	\$ 3,827,000	\$ 22,961,000	\$ 4,593,000											
			\$ 70,325,000	3A	\$ 14,066,000	\$ 116,000	\$ -	\$ 8,397,000	\$ 92,904,000	\$ 7,857,000	\$ -	\$ 479,000	\$ 4,067,000	\$ 12,403,000	
Phase 3B															
Raw Water Supply	\$ 2,539,000	\$ 508,000	\$ 3,047,000	\$ 610,000											
			\$ 3,047,000	3B	\$ 610,000	\$ -	\$ -	\$ 364,000	\$ 4,021,000	\$ 7,857,000	\$ -	\$ 479,000	\$ 177,000	\$ 8,513,000	
Phase 4B															
Raw Water Pipeline	\$ 1,709,000	\$ 342,000	\$ 2,051,000												
WTP (2.5 MGD)	\$ 8,740,000	\$ 1,748,000	\$ 10,488,000												
			<i>Raw Water and Trt System</i>	\$ 2,508,000											
Distribution	\$ 11,068,000	\$ 2,214,000	\$ 13,282,000	\$ 2,657,000											
			\$ 25,821,000	4B	\$ 5,165,000	\$ 108,000	\$ 35,000	\$ 3,084,000	\$ 34,213,000	\$ -	\$ 1,120,000	\$ -	\$ 1,494,000	\$ 2,614,000	
Total	\$ 305,318,000	\$ 61,064,000	\$ 366,382,000		\$ 73,281,000	\$ 1,578,000	\$ 437,000	\$ 43,654,000	\$ 485,332,000						
					Capital Cost					Annual Costs					

¹ Calculated according to Section 7 of Susan Roth Consulting report

² Power Connections are calculated at \$150 per HP

³ 139 Acres at \$2,850/acre, plus 10% of cost for survey, from Susan Roth Consulting Report.

Price per acre was taken per TWDB Unified Cost Model reference of Texas A&M Real Estate Center

⁴ Assuming 4% interest for 3 years with a 1% ROI.

⁵ Debt service is calculated assuming 4% interest for 30 years.



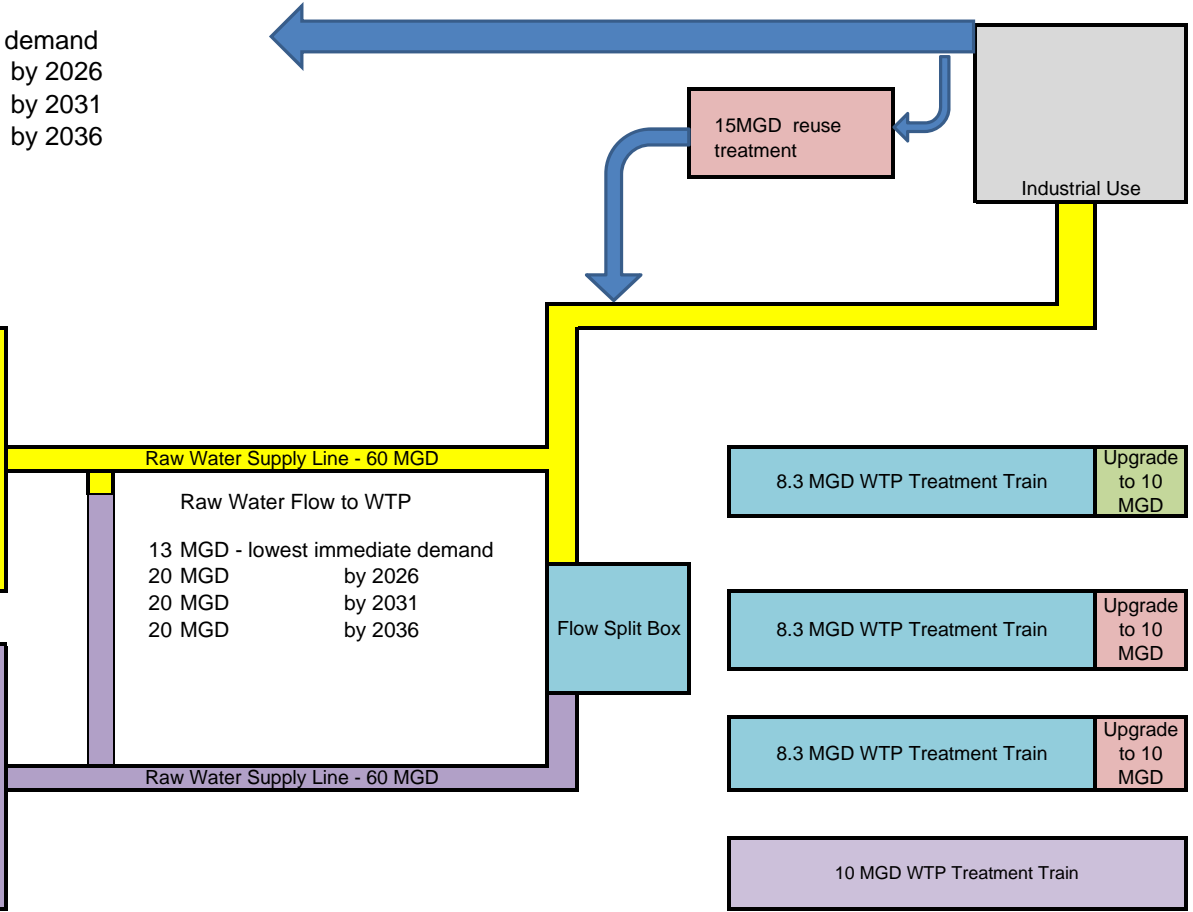
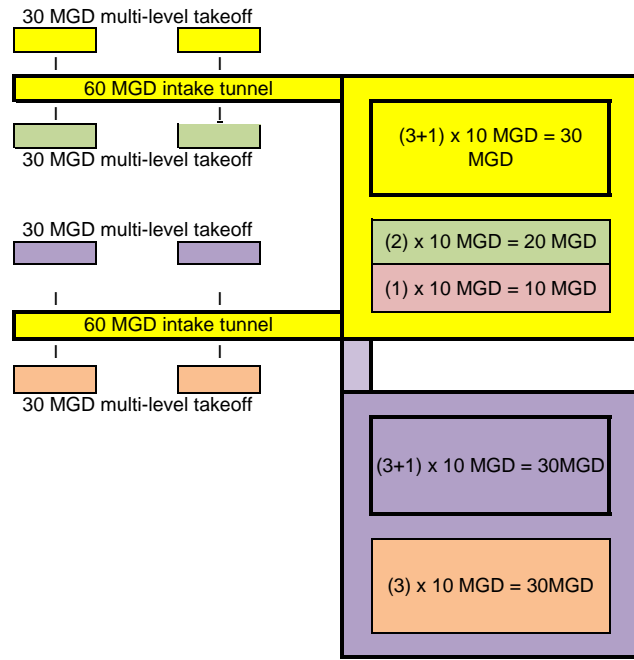
Appendix B
Phasing Diagram
System Alignment Diagrams

RWRD Water Supply Phasing Diagram

Raw Water Capacity
 13 MGD - lowest immediate demand
 30 MGD by 2026
 50 MGD by 2031
 60 MGD by 2036

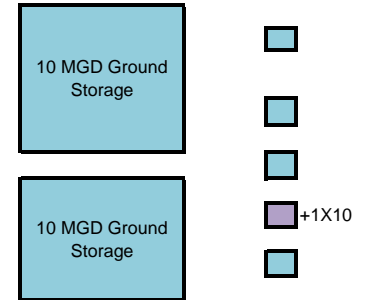
Industrial Raw Water Demand
 10 MGD by 2026
 30 MGD by 2031
 40 MGD by 2036

Alternate 3A



Potable Water Production Capacity
 25 MGD
 upgrade to 27 +/- MGD by 2031
 upgrade to 30 +/- MGD by 2036
 Expand 40 MGD by 2045

High Service Pumping
 (3+1) X 10 MGD

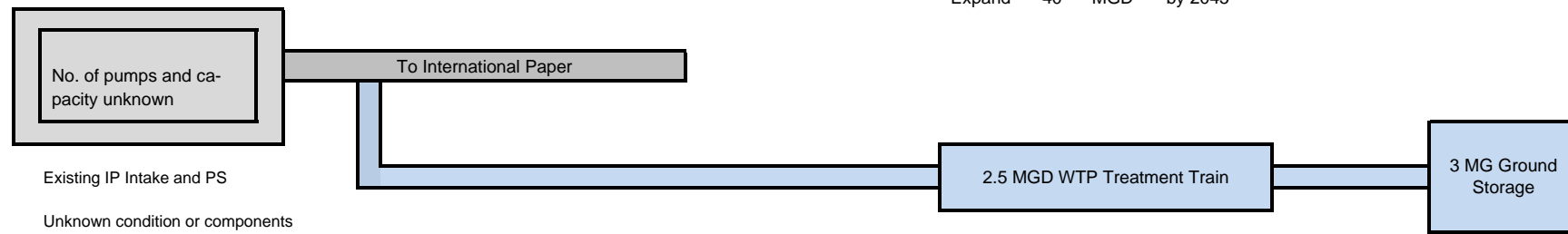


Key

Member cities transfer	1A	2026
New Boston	1B	2026
DeKalb, and Wake Village	2A	2031
Clarksville	2B	2036
	3A	2045
	3B	2055
WTP to Riverbend Tieln Riverbend WTP to Redwater	Alt 4B	2026
Redwater Elevated tank Annona to Clarksville	Existing	

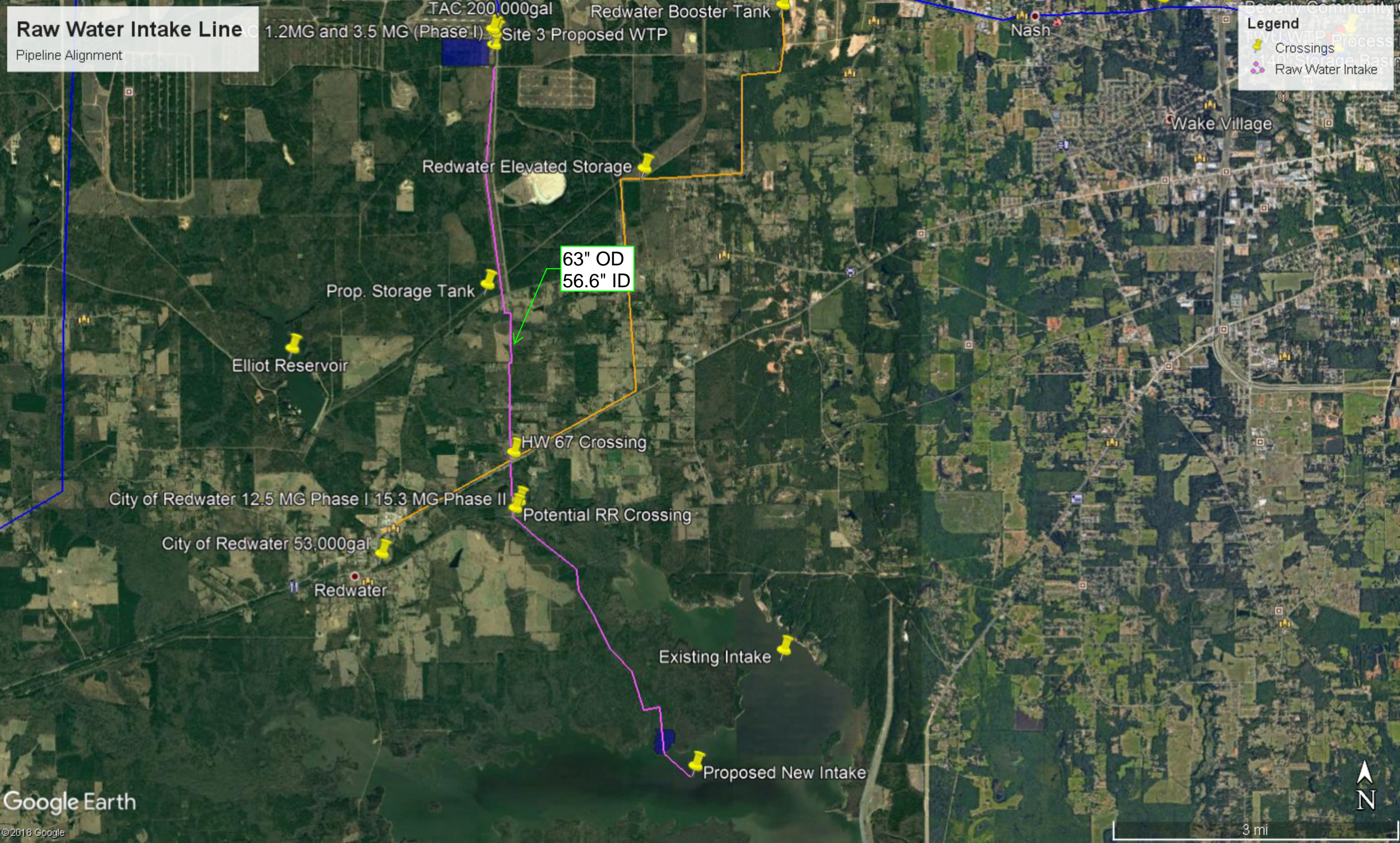
City of Annona	205,000 gal
City of Avery	218,000 gal
City of De Kalb	238,000 gal
Central Bowie County	320,000 gal
City of New Boston	698,000 gal
TAC	200,000 gal
TAC	1,230,000 gal
TAC	3,585,000 gal
TAC	1,100,000 gal
City of Redwater (Phase II)	15,300,000 gal
City of Redwater	12,500,000 gal
City of Redwater	53,000 gal

Alternate 4B



Member cities transfer
 Domino
 Queen City
 Atlanta

System Alignment Diagrams



Raw Water Intake Line

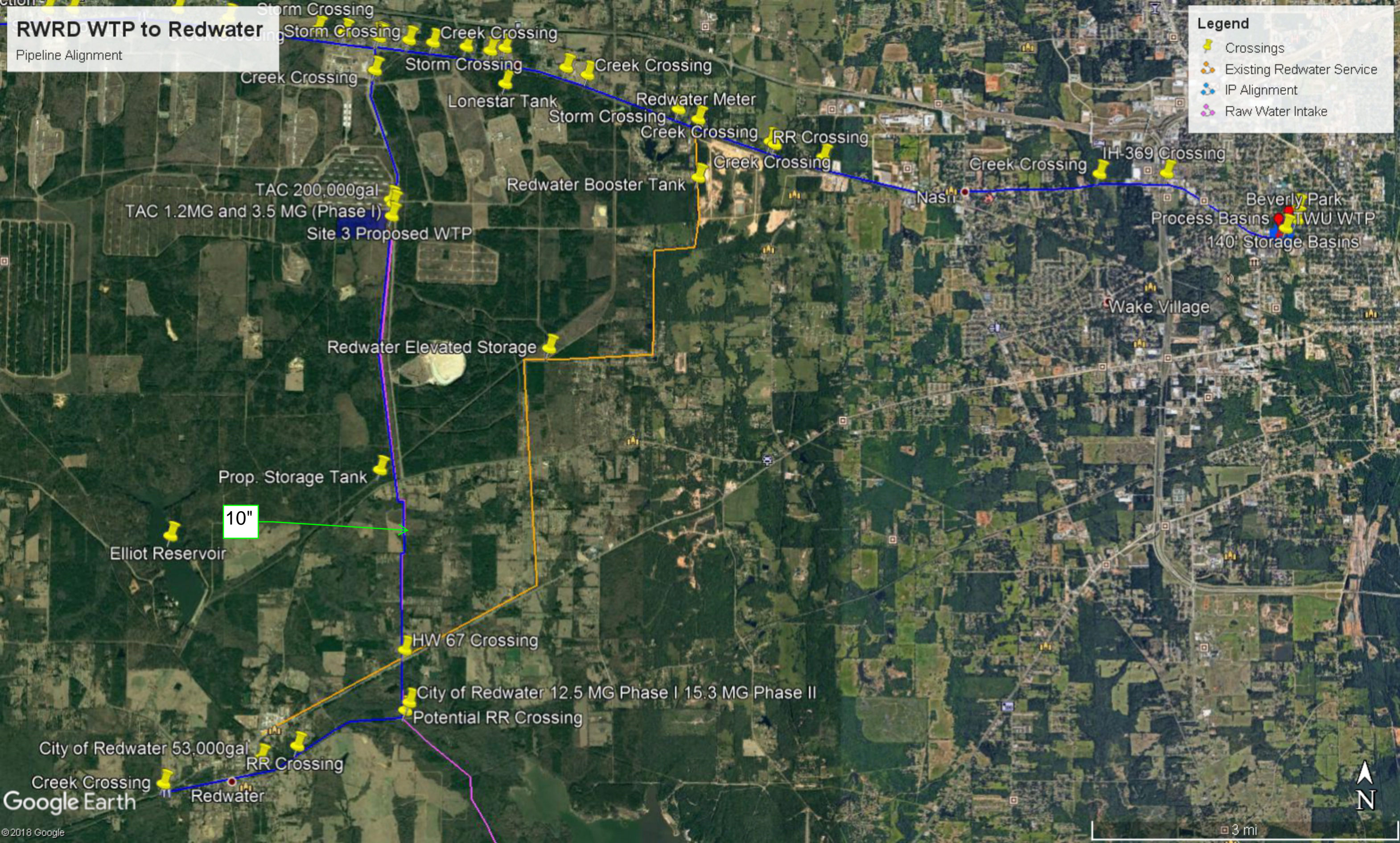
Pipeline Alignment

Legend

- Crossings
- Raw Water Intake
- WTP Process

63" OD
56.6" ID





RWRD WTP to Redwater

Pipeline Alignment

Legend

- Crossings
- Existing Redwater Service
- IP Alignment
- Raw Water Intake

Storm Crossing
 Storm Crossing
 Creek Crossing
 Creek Crossing
 Storm Crossing
 Storm Crossing
 Creek Crossing
 Creek Crossing
 Lonestar Tank
 Redwater Meter
 Storm Crossing
 Creek Crossing
 RR Crossing
 Creek Crossing
 Creek Crossing
 IH-369 Crossing
 Nasri
 Beverly Park Process Basins
 TWU WTP
 140' Storage Basins
 Wake Village
 Redwater Booster Tank
 Redwater Elevated Storage
 Prop. Storage Tank
 10"
 Elliot Reservoir
 HW 67 Crossing
 City of Redwater 12.5 MG Phase I 15.3 MG Phase II
 Potential RR Crossing
 City of Redwater 53,000gal
 RR Crossing
 Creek Crossing
 Redwater




TAC 200,000gal
 TAC 1.2MG and 3.5 MG (Phase I)
 Site 3 Proposed WTP

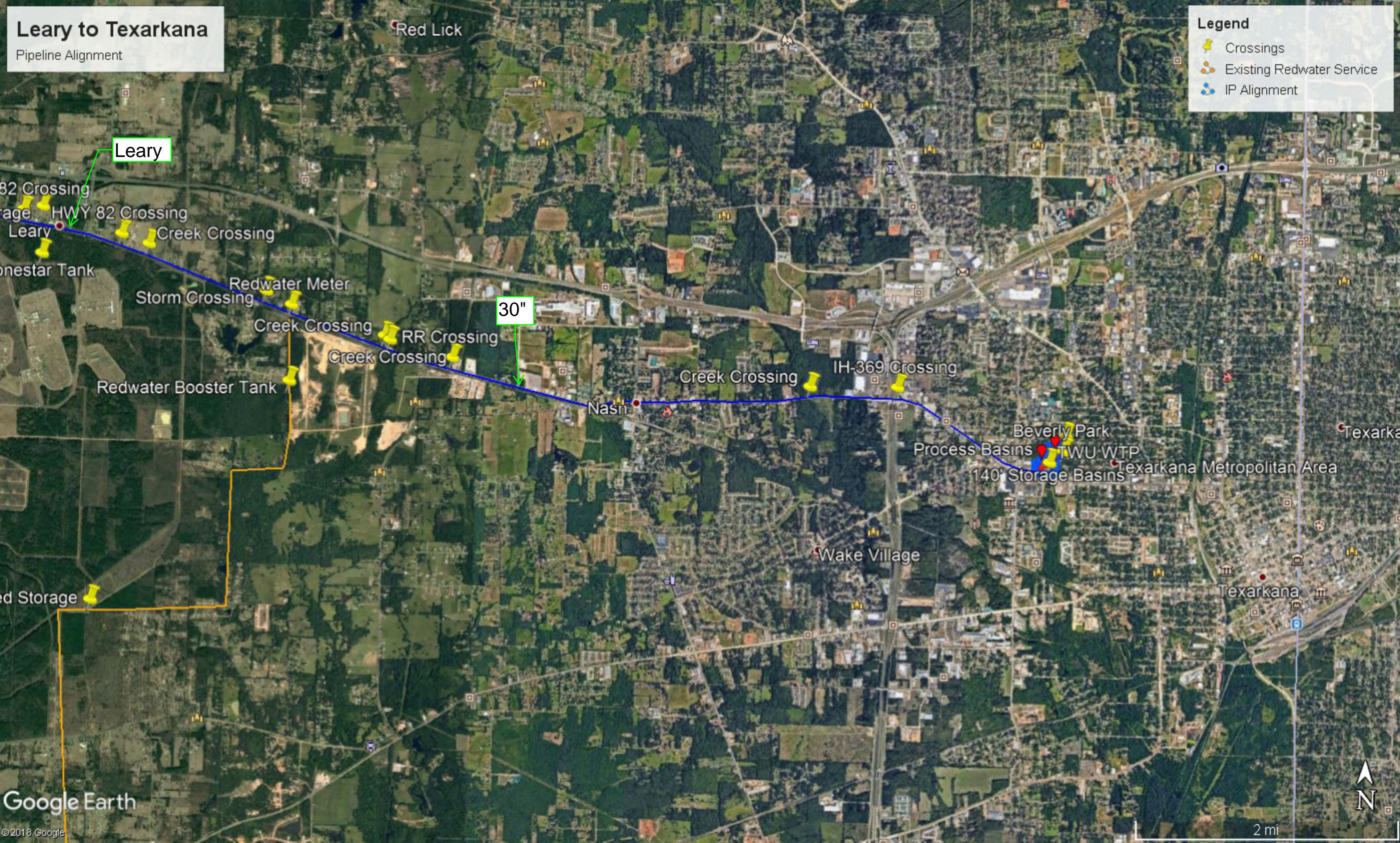


Leary to Texarkana

Pipeline Alignment

Legend

-  Crossings
-  Existing Redwater Service
-  IP Alignment



Leary

30"

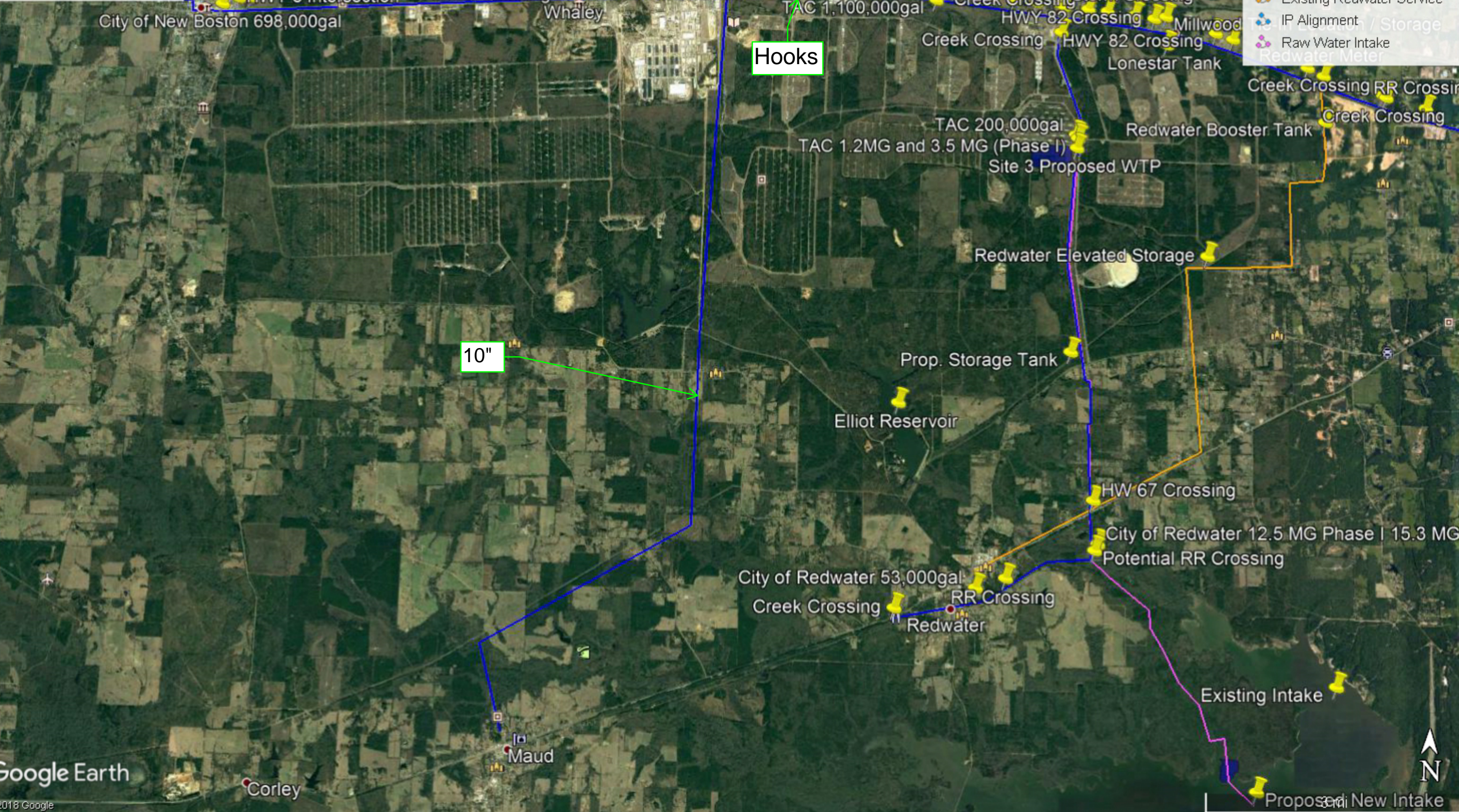
2 mi

Hooks to Maud

Pipeline Alignment

Legend



- Crossings
- Existing Redwater Service
- IP Alignment / Storage
- Raw Water Intake
- Redwater Meter

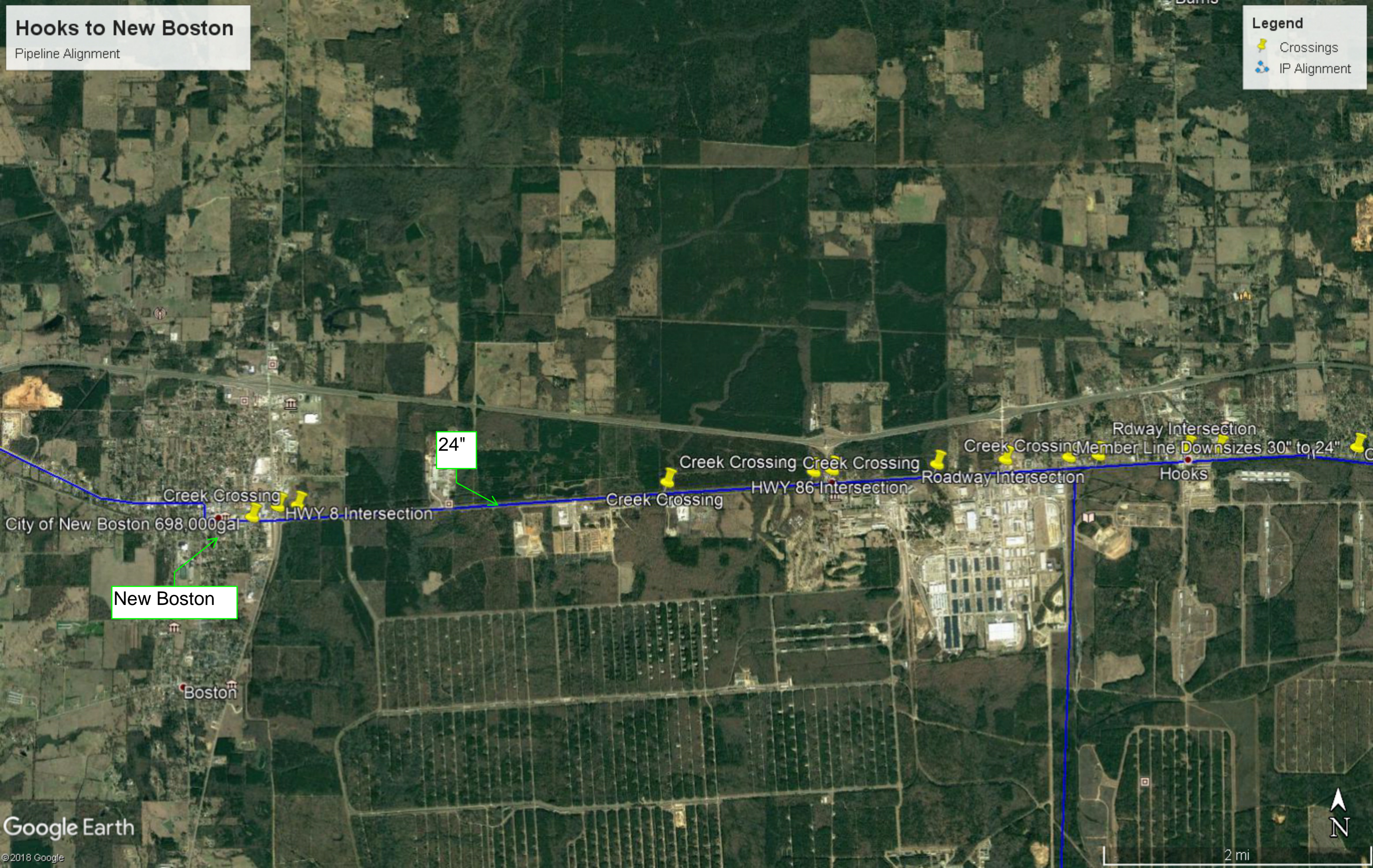


Hooks to New Boston

Pipeline Alignment

Legend

-  Crossings
-  IP Alignment



24"

Creek Crossing

City of New Boston 698,000gal

HWY 8 Intersection

New Boston

Boston

Creek Crossing

Creek Crossing

HWY 86 Intersection

Roadway Intersection

Creek Crossing

Member Line Downsizes 30" to 24"

Hooks



2 mi

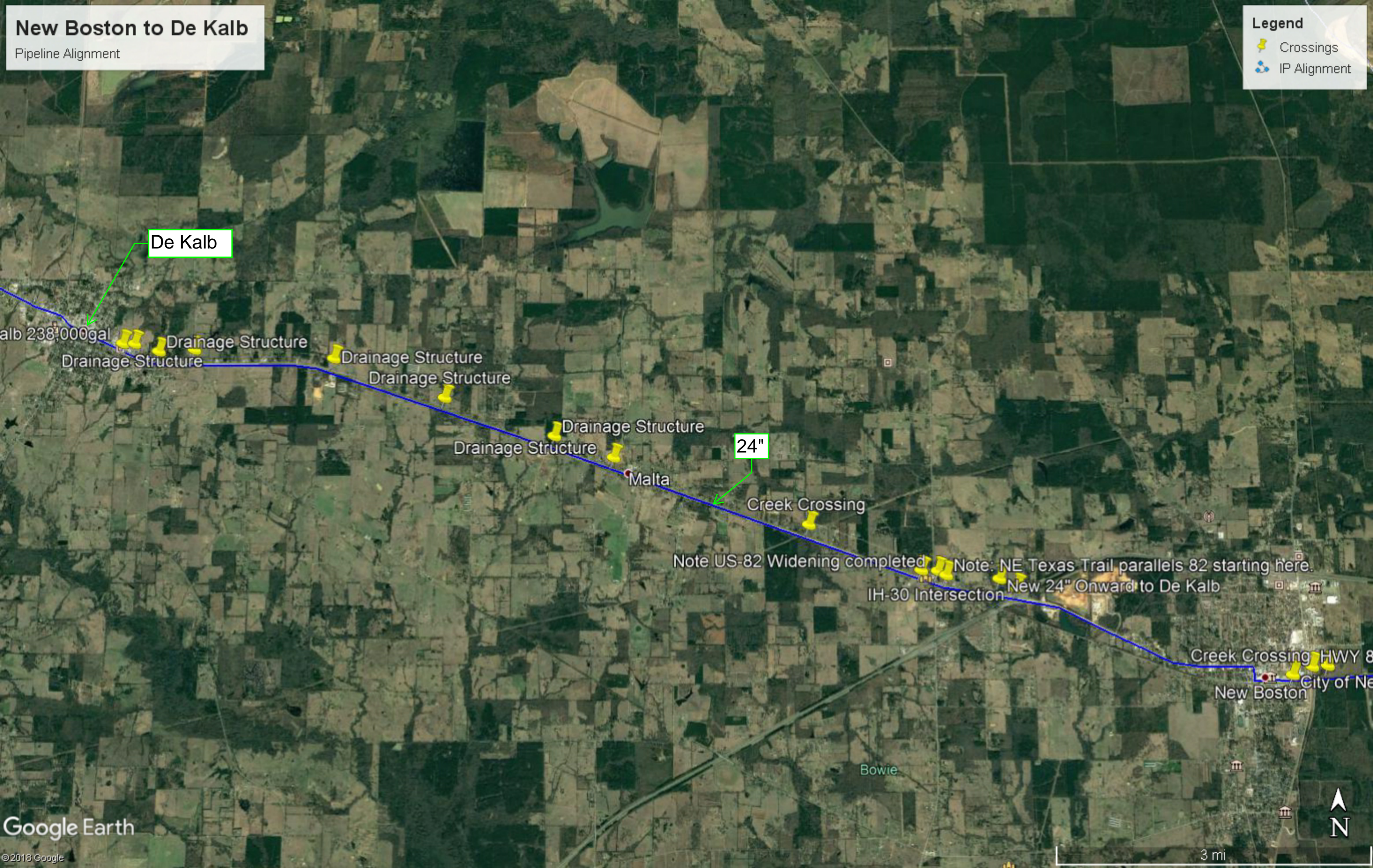


New Boston to De Kalb

Pipeline Alignment

Legend

-  Crossings
-  IP Alignment





3 mi

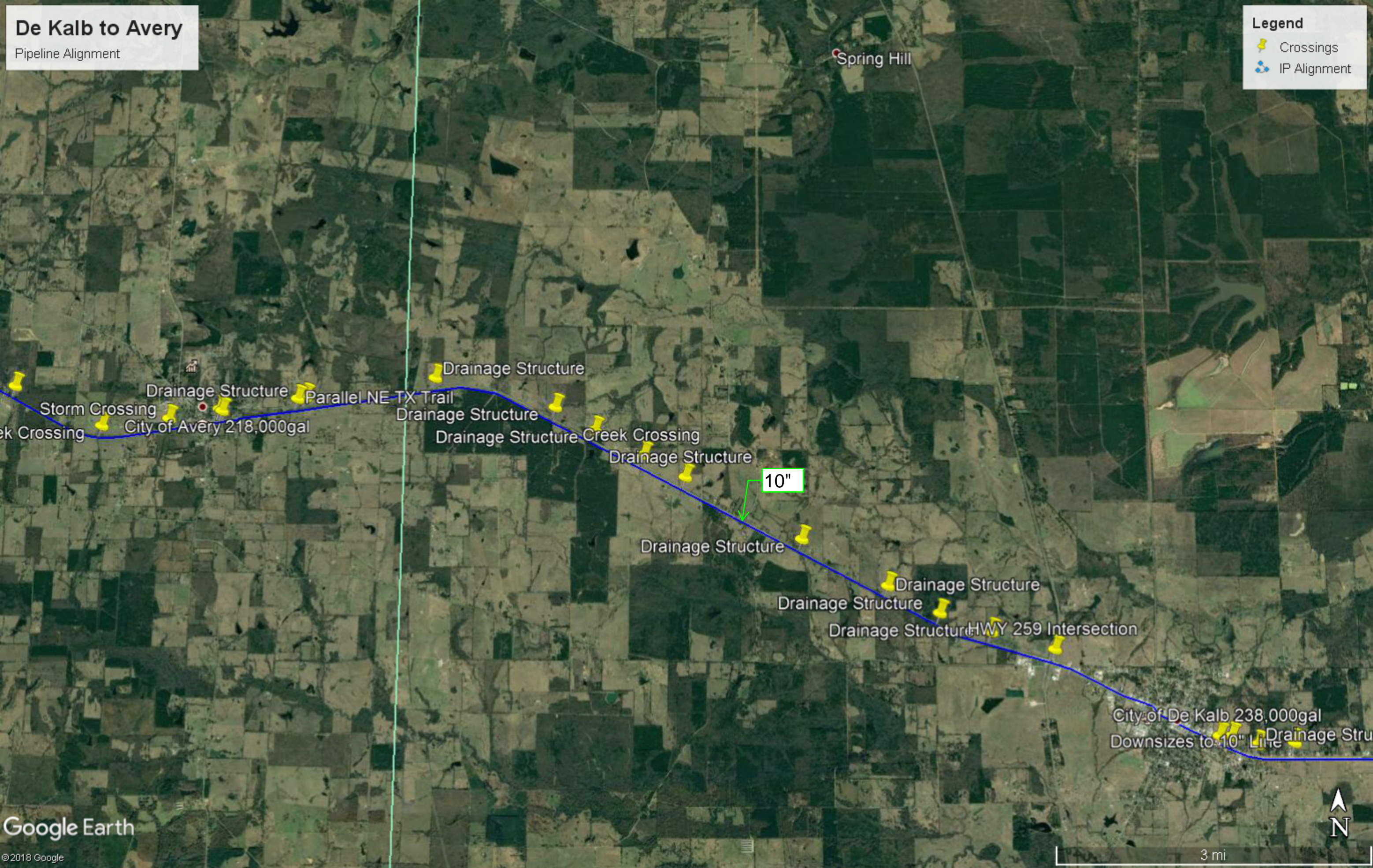


De Kalb to Avery

Pipeline Alignment

Legend



-  Crossings
-  IP Alignment



Avery to Annona

Pipeline Alignment

Legend

-  Crossings
-  IP Alignment

HWY 82 Crossing

City of Annona 205,000Gal

Annona

Creek Crossing

8"

Creek Crossing

Storm Crossing

Creek Crossing

City of Avery 218,000gal



Drainage Structure

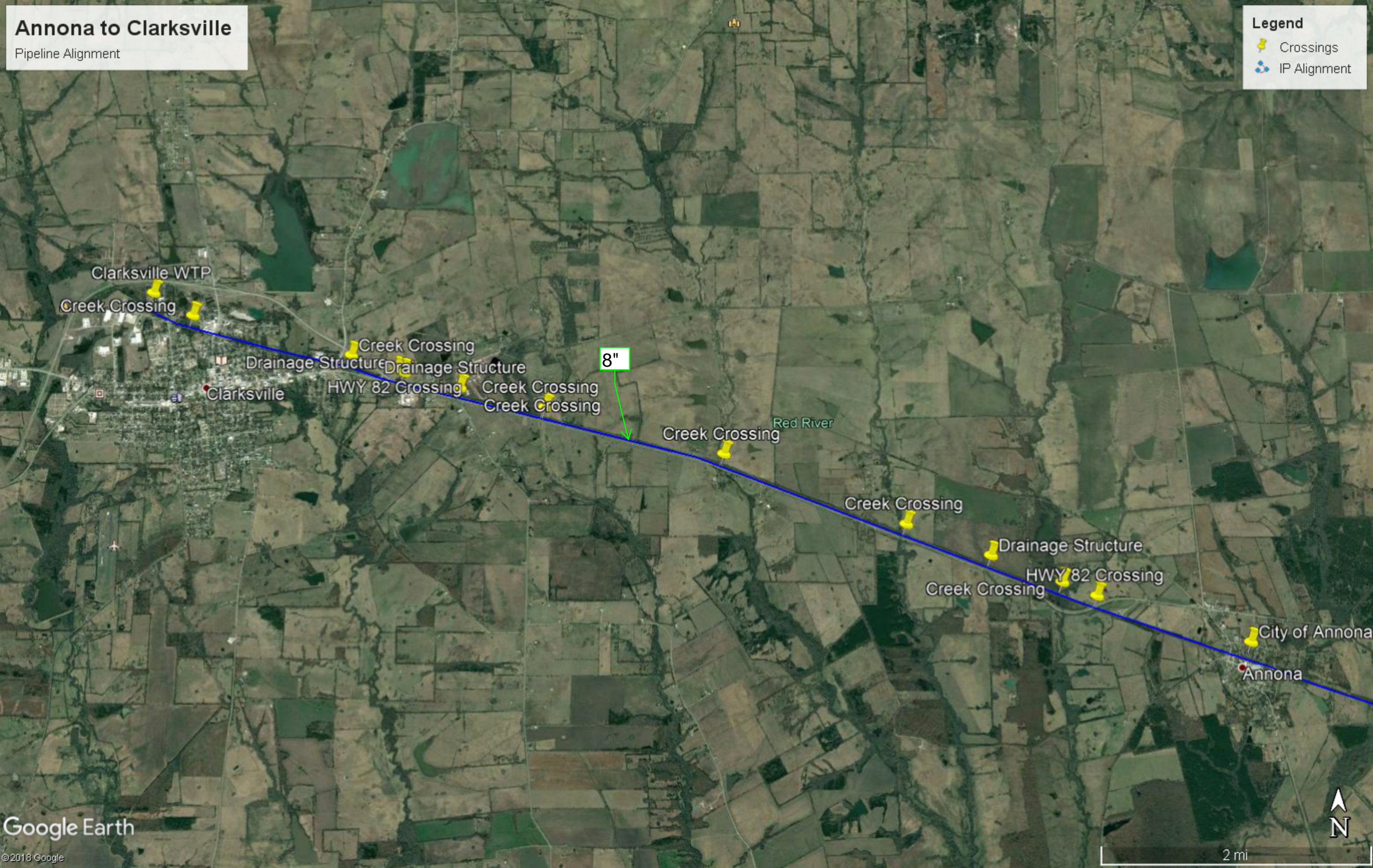


Annona to Clarksville

Pipeline Alignment

Legend

-  Crossings
-  IP Alignment






New Boston Road WTP Demolition

Texarkana Water Utilities




800 ft

Legend

-  Beverly Park and Community Center
-  Demo
-  New Boston Road WTP


 Beverly Community Center

 170' Storage Basins

 Process Basins

 Beverly Park

 140' Storage Basins

 Demo pavement and buildings