

Appendix D

Preliminary Capital Cost and Operating Cost Estimates

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

AdEdge GAC Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Park Ridge								740,000
Supply Main								
4" DIP Force Main (incl. excavation)	2600	LF	100.00	260,000	110.00	286,000	210.00	546,000
Air Release Valves	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800
4" 45-Degree Bends	5	EA	320.00	1,600	160.00	800	480.00	2,400
4" 90-Degree Bend	1	EA	320.00	320	160.00	160	480.00	480
4" Tee	1	EA	800.00	800	400.00	400	1,200.00	1,200
Backfill	1926	CY	28.25	54,407	9.04	17,410	37.29	71,818
Pavement Restoration (4' wide)	1156	SY	36.16	41,785	21.47	24,810	57.63	66,595
New Well Pump A	1	EA	10,000.00	10,000	5,000.00	5,000	15,000.00	15,000
New Well Pump B	1	EA	13,000.00	13,000	6,500.00	6,500	19,500.00	19,500
Electrical Work								
Modifications to Ex. Well A Control Panel	1	LS	150.00	150	150.00	150	300.00	300
New Well A Feeder/Connection	200	LF	32.00	6,400	16.00	3,200	48.00	9,600
New Well A Disconnect Switch at Pump	1	EA	450.00	450	280.00	280	730.00	730
New Well B Disconnect Switch at Pump	1	EA	450.00	450	280.00	280	730.00	730
New LED Emergency Light Fixtures	2	EA	275.00	550	150.00	300	425.00	850
Breaker Replacements in MDP For Well A	1	EA	860.00	860	150.00	150	1,010.00	1,010
Replace Exterior Light Fixture with LED Fixture	1	EA	200.00	200	175.00	175	375.00	375
Miscellaneous Work	1	LS	500.00	500	500.00	500	1,000.00	1,000
Patricia Court								495,000
Supply Main								
4" DIP Force Main (incl. excavation)	1700	LF	100.00	170,000	110.00	187,000	210.00	357,000
Air Release Valves	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800
4" 45-Degree Bends	2	EA	320.00	640	160.00	320	480.00	960
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
Backfill	1259	CY	28.25	35,574	9.04	11,384	37.29	46,958
Pavement Restoration (4' wide)	756	SY	36.16	27,321	21.47	16,222	57.63	43,543
New Well Pump	1	EA	9,000.00	9,000	4,500.00	4,500	13,500.00	13,500

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

AdEdge GAC Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Electrical Work								
New Well Pump Connection	1	EA	25.00	25	110.00	110	135.00	135
New Well Pump Disconnect Switch	1	EA	400.00	400	260.00	260	660.00	660
New Well Pump Capacitor	1	EA	75.00	75	75.00	75	150.00	150
New Well Pump Feeder	50	LF	18.00	900	10.00	500	28.00	1,400
New Well Power Panel, Feeder, Breaker in LC Panel	1	EA	860.00	860	150.00	150	1,010.00	1,010
Modifications to Ex. Well Power Panel/SCADA Panel	1	LS	150.00	150	150.00	150	300.00	300
New LED Ceiling Light Fixtures	1	EA	275.00	275	150.00	150	425.00	425
New Emergency Light Fixture	1	EA	375.00	375	150.00	150	525.00	525
Replace Exterior Light Fixture with LED Fixture	1	EA	200.00	200	175.00	175	375.00	375
New Diesel Generator Set and ATS	1	EA	12,100.00	12,100	5,500.00	5,500	17,600.00	17,600
Structural Concrete - Generator Pad	7	CY	500.00	3,500	300.00	2,100	800.00	5,600
Miscellaneous Work	1	LS	500.00	500	500.00	500	1,000.00	1,000
Site Work								287,000
Clear and Grub Site	1	LS	5,000.00	5,000	1,500.00	1,500	6,500.00	6,500
Super Silt Fence	1000	LF	10.00	10,000	5.00	5,000	15.00	15,000
Stabilized Construction Entrance	1	EA	2,000.00	2,000	2,400.00	2,400	4,400.00	4,400
Perimeter Fencing - 8'-0" high	240	LF	25.00	6,000	8.00	1,920	33.00	7,920
Concrete Sidewalks	4	CY	500.00	1,852	300.00	1,111	800.00	2,963
New Gate along Perimeter Fence	1	EA	2,000.00	2,000	1,000.00	1,000	3,000.00	3,000
New Bituminous Paving - Extend Access Road/Parking	127	SY	20.00	2,533	5.00	633	25.00	3,167
Site Work, Cont'd								
Final Grading & Stabilization	1	LS	20,000.00	20,000	6,000.00	6,000	26,000.00	26,000
Stormwater Management	1	LS	10,000.00	10,000	5,000.00	5,000	15,000.00	15,000
Final Seeding/Mulch	1	LS	10,000.00	10,000	2,000.00	2,000	12,000.00	12,000
Manchester Farms Well Pump B	1	EA	15,000.00	15,000	7,500.00	7,500	22,500.00	22,500
Manchester Farms Well Pump D	1	EA	8,000.00	8,000	4,000.00	4,000	12,000.00	12,000
New Power and Control Wiring to Well Pumps	600	LF	25.00	15,000	25.00	15,000	50.00	30,000
New Well B Supply Line								
4" DIP Force Main (incl. excavation)	100	LF	100.00	10,000	80.00	8,000	180.00	18,000
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
Backfill	74	CY	28.25	2,093	9.04	670	37.29	2,762

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

AdEdge GAC Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
<i>New Well D Supply Line</i>								
4" DIP Force Main (incl. excavation)	500	LF	100.00	50,000	80.00	40,000	180.00	90,000
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
4" 45-Degree Bends	1	EA	320.00	320	160.00	160	480.00	480
Backfill	370	CY	28.25	10,463	9.04	3,348	37.29	13,811
New WTP Building								673,000
Excavation	109	CY	-	-	25.00	2,731	25.00	2,731
Structural Concrete - Slab and Footers	61	CY	500.00	30,704	300.00	18,422	800.00	49,126
Backfill	32	CY	28.25	901	9.04	288	37.29	1,190
Vapor Barrier	1292	SF	7.57	9,787	3.78	4,886	11.36	14,672
4" Compacted Stone under Floor Slab	16	CY	28.00	447	7.00	112	35.00	558
Roll-up Door (12' wide x 15' feet high)	1	EA	7,200.00	7,200	1,500.00	1,500	8,700.00	8,700
Personnel Doors (3' wide x 7' high) HM with hardware	5	EA	1,500.00	7,500	500.00	2,500	2,000.00	10,000
New Masonry Walls	2928	SF	15.00	43,920	15.00	43,920	30.00	87,840
4" Brick Exterior Walls	2424	SF	10.00	24,240	15.00	36,360	25.00	60,600
Building Insulation	2424	SF	2.50	6,060	1.50	3,636	4.00	9,696
Emergency Shower/Eyewash Station	3	EA	6,780.00	20,340	3,390.00	10,170	10,170.00	30,510
Electric Tankless Water Heater & Appurtenances	1	LS	15,000.00	15,000	4,500.00	4,500	19,500.00	19,500
2" Potable water pipe PVC	120	LF	11.24	1,349	20.00	2,400	31.24	3,749
6-inch DIP Sewer	220	LF	130.00	28,600	70.00	15,400	200.00	44,000
6" DIP 45-Degree Bends	2	EA	520.00	1,040	260.00	520	780.00	1,560
6" x 6" Wye	9	EA	800.00	7,200	400.00	3,600	1,200.00	10,800
Clean-outs	3	EA	123.00	369	60.00	180	183.00	549
Cast Iron Floor Drains	6	EA	87.00	522	40.00	240	127.00	762
P-Traps	6	EA	26.00	156	15.00	90	41.00	246
Paint Exposed Masonry Walls	2928	SF	8.00	23,424	4.00	11,712	12.00	35,136
Paint Metal Doors	1	LS	3,200.00	3,200	1,200.00	1,200	4,400.00	4,400
Paint Process Piping	1	LS	2,000.00	2,000	1,200.00	1,200	3,200.00	3,200
Instrumentation, SCADA and Controls	1	LS	138,319.45	138,319	69,159.73	69,160	207,479.18	207,479
Fire Extinguishers (2 treatment room, 2 chem, 1 elec)	5	EA	100.00	500	60.00	300	160.00	800
Roof with Membrane	1221	SF	35.00	42,735	16.00	19,536	51.00	62,271
Aluminum Drip Fascia	142	LF	15.00	2,130	9.00	1,278	24.00	3,408

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

AdEdge GAC Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Treatment Room								917,000
Fe/Mn Filter	1	LS	255,000.00	255,000	127,500.00	127,500	382,500.00	382,500
Motor Actuated Valve	2	EA	6,000.00	12,000	2,000.00	4,000	8,000.00	16,000
3" DIP - Fe/Mn Pretreatment Piping	20	LF	100.00	2,000	50.00	1,000	150.00	3,000
6" x 4" Tee	2	EA	800.00	1,600	400.00	800	1,200.00	2,400
4" 90-Degree Bend	3	EA	320.00	960	160.00	480	480.00	1,440
4" x 3" Reducer	2	EA	700.00	1,400	210.00	420	910.00	1,820
GAC Treatment Skid	1	LS	335,000.00	335,000	100,500.00	100,500	435,500.00	435,500
4" DIP - Raw Water from Wells	20	LF	100.00	2,000	50.00	1,000	150.00	3,000
6" x 4" Reducer	1	EA	700.00	700	210.00	210	910.00	910
4" Plug Valve	4	EA	3,000.00	12,000	1,000.00	4,000	4,000.00	16,000
4" Check Valve	4	EA	300.00	1,200	90.00	360	390.00	1,560
4" 90-Degree Bend	1	EA	320.00	320	160.00	160	480.00	480
6" x 4" Tee	3	EA	800.00	2,400	400.00	1,200	1,200.00	3,600
6" DIP	120	LF	130.00	15,600	70.00	8,400	200.00	24,000
6" 90-Degree Bends	10	EA	520.00	5,200	260.00	2,600	780.00	7,800
6" Check Valve	1	EA	600.00	600	180.00	180	780.00	780
6" x 6" Tee	2	EA	800.00	1,600	400.00	800	1,200.00	2,400
Backflow Preventer	1	EA	10,000.00	10,000	4,000.00	4,000	14,000.00	14,000
Chemical Rooms								166,000
Soda Ash Feed System	1	EA	30,000.00	30,000	10,000.00	10,000	40,000.00	40,000
Hypochlorite Feed System	2	EA	30,000.00	60,000	10,000.00	20,000	40,000.00	80,000
Sulfur Dioxide Feed System	1	EA	30,000.00	30,000	10,000.00	10,000	40,000.00	40,000
Chemical Tubing and Conduit	120	LF	21.13	2,536	32.96	3,955	54.09	6,491
Electrical Room & Service								55,000
Existing Building								
Modifications to Ex Well B Control Panel	1	LS	250.00	250	400.00	400	650.00	650
Replace Ex Well B Encl Feeder Breaker	1	EA	600.00	600	200.00	200	800.00	800
New LED Emergency Light Fixtures	2	EA	375.00	750	150.00	300	525.00	1,050
Replace Exterior Light Fixtures with LED Fixtures	3	EA	200.00	600	175.00	525	375.00	1,125

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

AdEdge GAC Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
<i>New Building</i>								
Interior LED Light Fixtures	10	EA	275.00	2,750	150.00	1,500	425.00	4,250
Emergency Light Fixtures	4	EA	375.00	1,500	150.00	600	525.00	2,100
Light Switches	3	EA	50.00	150	75.00	225	125.00	375
Interior Receptacles	8	EA	50.00	400	75.00	600	125.00	1,000
480V Panel	1	EA	5,700.00	5,700	1,500.00	1,500	7,200.00	7,200
480V to 208/120V Transformer	1	EA	2,200.00	2,200	1,100.00	1,100	3,300.00	3,300
208/120V Panel	1	EA	2,800.00	2,800	1,500.00	1,500	4,300.00	4,300
480V Feeder from Ex Building	75	LF	45.00	3,375	20.00	1,500	65.00	4,875
Exterior LED Light Fixtures	3	EA	280.00	840	100.00	300	380.00	1,140
Unit Heater Connections	4	EA	15.00	60	40.00	160	55.00	220
Vent Fan/MOD Connections	6	EA	10.00	60	75.00	450	85.00	510
Chemical Pump Connections	4	EA	10.00	40	75.00	300	85.00	340
Vent Fan Control Panels	3	EA	1,000.00	3,000	250.00	750	1,250.00	3,750
Unit Heater Disconnect Switches	3	EA	90.00	270	150.00	450	240.00	720
Ethernet Signal to Ex SCADA Panel	75	LF	17.00	1,275	9.00	675	26.00	1,950
Feeder Breaker in Ex Building	1	EA	650.00	650	250.00	250	900.00	900
Basic Conduit and Wiring	1000	LF	4.00	4,000	8.00	8,000	12.00	12,000
Misc. Work	1	LS	1,000.00	1,000	1,500.00	1,500	2,500.00	2,500
Mechanical Services								30,000
Propellar Fans	2	EA	850.00	1,700	265.00	530	1,115.00	2,230
Inline Fans	1	EA	2,000.00	2,000	665.00	665	2,665.00	2,665
Unit Heaters	4	EA	1,100.00	4,400	120.00	480	1,220.00	4,880
Motor Operated Dampers	3	EA	1,500.00	4,500	150.00	450	1,650.00	4,950
Louvers	36	SF	65.00	2,340	21.00	756	86.00	3,096
Ductwork	1	LS	2,500.00	2,500	3,500.00	3,500	6,000.00	6,000
Ductwork Accessories	1	LS	1,000.00	1,000	1,500.00	1,500	2,500.00	2,500
Controls	1	LS	1,250.00	1,250	2,250.00	2,250	3,500.00	3,500

**TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS
CENTRALIZED PFAS TREATMENT SYSTEM
AdEdge GAC Treatment**

Item/Structure	Quantity		Material		Labor		Engineer's Estimate		
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	
Treated Water Line from Manchester Farms WTP to Distribution System								263,000	
6" DIP Force Main (incl. excavation)	1000	LF	130.00	130,000	100.00	100,000	230.00	230,000	
Air Release Valve	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800	
6" x 6" Tee	1	EA	720.00	720	360.00	360	1,080.00	1,080	
6" 90-Degree Bends	1	EA	520.00	520	260.00	260	780.00	780	
6" 22.5-Degree Bends	1	EA	520.00	520	260.00	260	780.00	780	
Backfill and Compaction	741	CY	28.25	20,926	9.04	6,696	37.29	27,622	
CONSTRUCTION COST SUBTOTALS			\$ 2,246,000		\$ 1,382,000		3,131,000		
APPLICABLE SALES TAX (6%)								\$	135,000
MOBILIZATION/DEMobilIZATION (3%)								\$	94,000
ON-SITE SUPERVISION, SUPPORT STAFF (8%)								\$	250,000
CONTRACTOR INSURANCE AND BONDS (2%)								\$	63,000
OVERHEAD (5%)								\$	157,000
PROFIT (10%)								\$	313,000
CONTINGENCY (30%)								\$	1,243,000
TOTAL ESTIMATED CONSTRUCTION COST								\$ 5,386,000	

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

Newterra GAC Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Park Ridge								951,000
Supply Main								
4" DIP Force Main (incl. excavation)	3400	LF	100.00	340,000	110.00	374,000	210.00	714,000
Air Release Valves	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800
4" 45-Degree Bends	6	EA	320.00	1,920	160.00	960	480.00	2,880
4" 90-Degree Bend	3	EA	320.00	960	160.00	480	480.00	1,440
Backfill	2519	CY	28.25	71,148	9.04	22,767	37.29	93,916
Pavement Restoration (4' wide)	1511	SY	36.16	54,642	21.47	32,444	57.63	87,085
New Well Pump A	1	EA	10,000.00	10,000	5,000.00	5,000	15,000.00	15,000
New Well Pump B	1	EA	13,000.00	13,000	6,500.00	6,500	19,500.00	19,500
Electrical Work								
Modifications to Ex. Well A Control Panel	1	LS	150.00	150	150.00	150	300.00	300
New Well A Feeder/Connection	200	LF	32.00	6,400	16.00	3,200	48.00	9,600
New Well A Disconnect Switch at Pump	1	EA	450.00	450	280.00	280	730.00	730
New Well B Disconnect Switch at Pump	1	EA	450.00	450	280.00	280	730.00	730
New LED Emergency Light Fixtures	2	EA	275.00	550	150.00	300	425.00	850
Breaker Replacements in MDP For Well A	1	EA	860.00	860	150.00	150	1,010.00	1,010
Replace Exterior Light Fixture with LED Fixture	1	EA	200.00	200	175.00	175	375.00	375
Miscellaneous Work	1	LS	500.00	500	500.00	500	1,000.00	1,000
Patricia Court								495,000
Supply Main								
4" DIP Force Main (incl. excavation)	1700	LF	100.00	170,000	110.00	187,000	210.00	357,000
Air Release Valves	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800
4" 45-Degree Bends	2	EA	320.00	640	160.00	320	480.00	960
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
Backfill	1259	CY	28.25	35,574	9.04	11,384	37.29	46,958
Pavement Restoration (4' wide)	756	SY	36.16	27,321	21.47	16,222	57.63	43,543
New Well Pump	1	EA	9,000.00	9,000	4,500.00	4,500	13,500.00	13,500

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

Newterra GAC Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Electrical Work								
New Well Pump Connection	1	EA	25.00	25	110.00	110	135.00	135
New Well Pump Disconnect Switch	1	EA	400.00	400	260.00	260	660.00	660
New Well Pump Capacitor	1	EA	75.00	75	75.00	75	150.00	150
New Well Pump Feeder	50	LF	18.00	900	10.00	500	28.00	1,400
New Well Power Panel, Feeder, Breaker in LC Panel	1	EA	860.00	860	150.00	150	1,010.00	1,010
Modifications to Ex. Well Power Panel/SCADA Panel	1	LS	150.00	150	150.00	150	300.00	300
New LED Ceiling Light Fixtures	1	EA	275.00	275	150.00	150	425.00	425
New Emergency Light Fixture	1	EA	375.00	375	150.00	150	525.00	525
Replace Exterior Light Fixture with LED Fixture	1	EA	200.00	200	175.00	175	375.00	375
New Diesel Generator Set and ATS	1	EA	12,100.00	12,100	5,500.00	5,500	17,600.00	17,600
Structural Concrete - Generator Pad	7	CY	500.00	3,500	300.00	2,100	800.00	5,600
Miscellaneous Work	1	LS	500.00	500	500.00	500	1,000.00	1,000
Site Work								287,000
Clear and Grub Site	1	LS	5,000.00	5,000	1,500.00	1,500	6,500.00	6,500
Super Silt Fence	1000	LF	10.00	10,000	5.00	5,000	15.00	15,000
Stabilized Construction Entrance	1	EA	2,000.00	2,000	2,400.00	2,400	4,400.00	4,400
Perimeter Fencing - 8'-0" high	240	LF	25.00	6,000	8.00	1,920	33.00	7,920
Concrete Sidewalks	4	CY	500.00	1,852	300.00	1,111	800.00	2,963
New Gate along Perimeter Fence	1	EA	2,000.00	2,000	1,000.00	1,000	3,000.00	3,000
New Bituminous Paving - Extend Access Road/Parking	127	SY	20.00	2,533	5.00	633	25.00	3,167
Site Work, Cont'd								
Final Grading & Stabilization	1	LS	20,000.00	20,000	6,000.00	6,000	26,000.00	26,000
Stormwater Management	1	LS	10,000.00	10,000	5,000.00	5,000	15,000.00	15,000
Final Seeding/Mulch	1	LS	10,000.00	10,000	2,000.00	2,000	12,000.00	12,000
Manchester Farms Well Pump B	1	EA	15,000.00	15,000	7,500.00	7,500	22,500.00	22,500
Manchester Farms Well Pump D	1	EA	8,000.00	8,000	4,000.00	4,000	12,000.00	12,000
New Power and Control Wiring to Well Pumps	600	LF	25.00	15,000	25.00	15,000	50.00	30,000
New Well B Supply Line								
4" DIP Force Main (incl. excavation)	100	LF	100.00	10,000	80.00	8,000	180.00	18,000
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
Backfill	74	CY	28.25	2,093	9.04	670	37.29	2,762

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

Newterra GAC Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
<i>New Well D Supply Line</i>								
4" DIP Force Main (incl. excavation)	500	LF	100.00	50,000	80.00	40,000	180.00	90,000
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
4" 45-Degree Bends	1	EA	320.00	320	160.00	160	480.00	480
Backfill	370	CY	28.25	10,463	9.04	3,348	37.29	13,811
New WTP Building								653,000
Excavation	109	CY	-	-	25.00	2,731	25.00	2,731
Structural Concrete - Slab and Footers	61	CY	500.00	30,704	300.00	18,422	800.00	49,126
Backfill	32	CY	28.25	901	9.04	288	37.29	1,190
Vapor Barrier	1292	SF	7.57	9,787	3.78	4,886	11.36	14,672
4" Compacted Stone under Floor Slab	16	CY	28.00	447	7.00	112	35.00	558
Roll-up Door (12' wide x 15' feet high)	1	EA	7,200.00	7,200	1,500.00	1,500	8,700.00	8,700
Personnel Doors (3' wide x 7' high) HM with hardware	5	EA	1,500.00	7,500	500.00	2,500	2,000.00	10,000
New Masonry Walls	2928	SF	15.00	43,920	15.00	43,920	30.00	87,840
4" Brick Exterior Walls	2424	SF	10.00	24,240	15.00	36,360	25.00	60,600
Building Insulation	2424	SF	2.50	6,060	1.50	3,636	4.00	9,696
Emergency Shower/Eyewash Station	3	EA	6,780.00	20,340	3,390.00	10,170	10,170.00	30,510
Electric Tankless Water Heater & Appurtenances	1	LS	15,000.00	15,000	4,500.00	4,500	19,500.00	19,500
2" Potable water pipe PVC	120	LF	11.24	1,349	20.00	2,400	31.24	3,749
6-inch DIP Sewer	220	LF	130.00	28,600	70.00	15,400	200.00	44,000
6" DIP 45-Degree Bends	2	EA	520.00	1,040	260.00	520	780.00	1,560
6" x 6" Wye	9	EA	800.00	7,200	400.00	3,600	1,200.00	10,800
Clean-outs	3	EA	123.00	369	60.00	180	183.00	549
Cast Iron Floor Drains	6	EA	87.00	522	40.00	240	127.00	762
P-Traps	6	EA	26.00	156	15.00	90	41.00	246
Paint Exposed Masonry Walls	2928	SF	8.00	23,424	4.00	11,712	12.00	35,136
Paint Metal Doors	1	LS	3,200.00	3,200	1,200.00	1,200	4,400.00	4,400
Paint Process Piping	1	LS	2,000.00	2,000	1,200.00	1,200	3,200.00	3,200
Instrumentation, SCADA and Controls	1	LS	124,669.45	124,669	62,334.73	62,335	187,004.18	187,004
Fire Extinguishers (2 treatment room, 2 chem, 1 elec)	5	EA	100.00	500	60.00	300	160.00	800
Roof with Membrane	1221	SF	35.00	42,735	16.00	19,536	51.00	62,271
Aluminum Drip Fascia	142	LF	15.00	2,130	9.00	1,278	24.00	3,408

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

Newterra GAC Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Treatment Room	781,000							
Fe/Mn Filter	1	LS	255,000.00	255,000	127,500.00	127,500	382,500.00	382,500
Motor Actuated Valve	2	EA	6,000.00	12,000	2,000.00	4,000	8,000.00	16,000
3" DIP - Fe/Mn Pretreatment Piping	20	LF	100.00	2,000	50.00	1,000	150.00	3,000
6" x 4" Tee	2	EA	800.00	1,600	400.00	800	1,200.00	2,400
4" 90-Degree Bend	3	EA	320.00	960	160.00	480	480.00	1,440
4" x 3" Reducer	2	EA	700.00	1,400	210.00	420	910.00	1,820
GAC Treatment Skid	1	LS	230,000.00	230,000	69,000.00	69,000	299,000.00	299,000
4" DIP - Raw Water from Wells	20	LF	100.00	2,000	50.00	1,000	150.00	3,000
6" x 4" Reducer	1	EA	700.00	700	210.00	210	910.00	910
4" Plug Valve	4	EA	3,000.00	12,000	1,000.00	4,000	4,000.00	16,000
4" Check Valve	4	EA	300.00	1,200	90.00	360	390.00	1,560
4" 90-Degree Bend	1	EA	320.00	320	160.00	160	480.00	480
6" x 4" Tee	3	EA	800.00	2,400	400.00	1,200	1,200.00	3,600
6" DIP	120	LF	130.00	15,600	70.00	8,400	200.00	24,000
6" 90-Degree Bends	10	EA	520.00	5,200	260.00	2,600	780.00	7,800
6" Check Valve	1	EA	600.00	600	180.00	180	780.00	780
6" x 6" Tee	2	EA	800.00	1,600	400.00	800	1,200.00	2,400
Backflow Preventer	1	EA	10,000.00	10,000	4,000.00	4,000	14,000.00	14,000
Chemical Rooms	166,000							
Soda Ash Feed System	1	EA	30,000.00	30,000	10,000.00	10,000	40,000.00	40,000
Hypochlorite Feed System	2	EA	30,000.00	60,000	10,000.00	20,000	40,000.00	80,000
Sulfur Dioxide Feed System	1	EA	30,000.00	30,000	10,000.00	10,000	40,000.00	40,000
Chemical Tubing and Conduit	120	LF	21.13	2,536	32.96	3,955	54.09	6,491
Electrical Room & Service	55,000							
<i>Existing Building</i>								
Modifications to Ex Well B Control Panel	1	LS	250.00	250	400.00	400	650.00	650
Replace Ex Well B Encl Feeder Breaker	1	EA	600.00	600	200.00	200	800.00	800
New LED Emergency Light Fixtures	2	EA	375.00	750	150.00	300	525.00	1,050
Replace Exterior Light Fixtures with LED Fixtures	3	EA	200.00	600	175.00	525	375.00	1,125

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

Newterra GAC Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
<i>New Building</i>								
Interior LED Light Fixtures	10	EA	275.00	2,750	150.00	1,500	425.00	4,250
Emergency Light Fixtures	4	EA	375.00	1,500	150.00	600	525.00	2,100
Light Switches	3	EA	50.00	150	75.00	225	125.00	375
Interior Receptacles	8	EA	50.00	400	75.00	600	125.00	1,000
480V Panel	1	EA	5,700.00	5,700	1,500.00	1,500	7,200.00	7,200
480V to 208/120V Transformer	1	EA	2,200.00	2,200	1,100.00	1,100	3,300.00	3,300
208/120V Panel	1	EA	2,800.00	2,800	1,500.00	1,500	4,300.00	4,300
480V Feeder from Ex Building	75	LF	45.00	3,375	20.00	1,500	65.00	4,875
Exterior LED Light Fixtures	3	EA	280.00	840	100.00	300	380.00	1,140
Unit Heater Connections	4	EA	15.00	60	40.00	160	55.00	220
Vent Fan/MOD Connections	6	EA	10.00	60	75.00	450	85.00	510
Chemical Pump Connections	4	EA	10.00	40	75.00	300	85.00	340
Vent Fan Control Panels	3	EA	1,000.00	3,000	250.00	750	1,250.00	3,750
Unit Heater Disconnect Switches	3	EA	90.00	270	150.00	450	240.00	720
Ethernet Signal to Ex SCADA Panel	75	LF	17.00	1,275	9.00	675	26.00	1,950
Feeder Breaker in Ex Building	1	EA	650.00	650	250.00	250	900.00	900
Basic Conduit and Wiring	1000	LF	4.00	4,000	8.00	8,000	12.00	12,000
Misc. Work	1	LS	1,000.00	1,000	1,500.00	1,500	2,500.00	2,500
Mechanical Services								30,000
Propellar Fans	2	EA	850.00	1,700	265.00	530	1,115.00	2,230
Inline Fans	1	EA	2,000.00	2,000	665.00	665	2,665.00	2,665
Unit Heaters	4	EA	1,100.00	4,400	120.00	480	1,220.00	4,880
Motor Operated Dampers	3	EA	1,500.00	4,500	150.00	450	1,650.00	4,950
Louvers	36	SF	65.00	2,340	21.00	756	86.00	3,096
Ductwork	1	LS	2,500.00	2,500	3,500.00	3,500	6,000.00	6,000
Ductwork Accessories	1	LS	1,000.00	1,000	1,500.00	1,500	2,500.00	2,500
Controls	1	LS	1,250.00	1,250	2,250.00	2,250	3,500.00	3,500

**TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS
CENTRALIZED PFAS TREATMENT SYSTEM
Newterra GAC Treatment**

Item/Structure	Quantity		Material		Labor		Engineer's Estimate		
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	
Treated Water Line from Manchester Farms WTP to Distribution System								263,000	
6" DIP Force Main (incl. excavation)	1000	LF	130.00	130,000	100.00	100,000	230.00	230,000	
Air Release Valve	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800	
6" x 6" Tee	1	EA	720.00	720	360.00	360	1,080.00	1,080	
6" 90-Degree Bends	1	EA	520.00	520	260.00	260	780.00	780	
6" 22.5-Degree Bends	1	EA	520.00	520	260.00	260	780.00	780	
Backfill and Compaction	741	CY	28.25	20,926	9.04	6,696	37.29	27,622	
CONSTRUCTION COST SUBTOTALS			\$ 2,237,000		\$ 1,445,000		3,186,000		
APPLICABLE SALES TAX (6%)								\$	134,000
MOBILIZATION/DEMobilIZATION (3%)								\$	96,000
ON-SITE SUPERVISION, SUPPORT STAFF (8%)								\$	255,000
CONTRACTOR INSURANCE AND BONDS (2%)								\$	64,000
OVERHEAD (5%)								\$	159,000
PROFIT (10%)								\$	319,000
CONTINGENCY (30%)								\$	1,264,000
TOTAL ESTIMATED CONSTRUCTION COST								\$ 5,477,000	

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

AdEdge IX Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Park Ridge								951,000
Supply Main								
4" DIP Force Main (incl. excavation)	3400	LF	100.00	340,000	110.00	374,000	210.00	714,000
Air Release Valves	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800
4" 45-Degree Bends	6	EA	320.00	1,920	160.00	960	480.00	2,880
4" 90-Degree Bend	3	EA	320.00	960	160.00	480	480.00	1,440
Backfill	2519	CY	28.25	71,148	9.04	22,767	37.29	93,916
Pavement Restoration (4' wide)	1511	SY	36.16	54,642	21.47	32,444	57.63	87,085
New Well Pump A	1	EA	10,000.00	10,000	5,000.00	5,000	15,000.00	15,000
New Well Pump B	1	EA	13,000.00	13,000	6,500.00	6,500	19,500.00	19,500
Electrical Work								
Modifications to Ex. Well A Control Panel	1	LS	150.00	150	150.00	150	300.00	300
New Well A Feeder/Connection	200	LF	32.00	6,400	16.00	3,200	48.00	9,600
New Well A Disconnect Switch at Pump	1	EA	450.00	450	280.00	280	730.00	730
New Well B Disconnect Switch at Pump	1	EA	450.00	450	280.00	280	730.00	730
New LED Emergency Light Fixtures	2	EA	275.00	550	150.00	300	425.00	850
Breaker Replacements in MDP For Well A	1	EA	860.00	860	150.00	150	1,010.00	1,010
Replace Exterior Light Fixture with LED Fixture	1	EA	200.00	200	175.00	175	375.00	375
Miscellaneous Work	1	LS	500.00	500	500.00	500	1,000.00	1,000
Patricia Court								495,000
Supply Main								
4" DIP Force Main (incl. excavation)	1700	LF	100.00	170,000	110.00	187,000	210.00	357,000
Air Release Valves	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800
4" 45-Degree Bends	2	EA	320.00	640	160.00	320	480.00	960
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
Backfill	1259	CY	28.25	35,574	9.04	11,384	37.29	46,958
Pavement Restoration (4' wide)	756	SY	36.16	27,321	21.47	16,222	57.63	43,543
New Well Pump	1	EA	9,000.00	9,000	4,500.00	4,500	13,500.00	13,500

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

AdEdge IX Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Electrical Work								
New Well Pump Connection	1	EA	25.00	25	110.00	110	135.00	135
New Well Pump Disconnect Switch	1	EA	400.00	400	260.00	260	660.00	660
New Well Pump Capacitor	1	EA	75.00	75	75.00	75	150.00	150
New Well Pump Feeder	50	LF	18.00	900	10.00	500	28.00	1,400
New Well Power Panel, Feeder, Breaker in LC Panel	1	EA	860.00	860	150.00	150	1,010.00	1,010
Modifications to Ex. Well Power Panel/SCADA Panel	1	LS	150.00	150	150.00	150	300.00	300
New LED Ceiling Light Fixtures	1	EA	275.00	275	150.00	150	425.00	425
New Emergency Light Fixture	1	EA	375.00	375	150.00	150	525.00	525
Replace Exterior Light Fixture with LED Fixture	1	EA	200.00	200	175.00	175	375.00	375
New Diesel Generator Set and ATS	1	EA	12,100.00	12,100	5,500.00	5,500	17,600.00	17,600
Structural Concrete - Generator Pad	7	CY	500.00	3,500	300.00	2,100	800.00	5,600
Miscellaneous Work	1	LS	500.00	500	500.00	500	1,000.00	1,000
Site Work								287,000
Clear and Grub Site	1	LS	5,000.00	5,000	1,500.00	1,500	6,500.00	6,500
Super Silt Fence	1000	LF	10.00	10,000	5.00	5,000	15.00	15,000
Stabilized Construction Entrance	1	EA	2,000.00	2,000	2,400.00	2,400	4,400.00	4,400
Perimeter Fencing - 8'-0" high	240	LF	25.00	6,000	8.00	1,920	33.00	7,920
Concrete Sidewalks	4	CY	500.00	1,852	300.00	1,111	800.00	2,963
New Gate along Perimeter Fence	1	EA	2,000.00	2,000	1,000.00	1,000	3,000.00	3,000
New Bituminous Paving - Extend Access Road/Parking	127	SY	20.00	2,533	5.00	633	25.00	3,167
Site Work, Cont'd								
Final Grading & Stabilization	1	LS	20,000.00	20,000	6,000.00	6,000	26,000.00	26,000
Stormwater Management	1	LS	10,000.00	10,000	5,000.00	5,000	15,000.00	15,000
Final Seeding/Mulch	1	LS	10,000.00	10,000	2,000.00	2,000	12,000.00	12,000
Manchester Farms Well Pump B	1	EA	15,000.00	15,000	7,500.00	7,500	22,500.00	22,500
Manchester Farms Well Pump D	1	EA	8,000.00	8,000	4,000.00	4,000	12,000.00	12,000
New Power and Control Wiring to Well Pumps	600	LF	25.00	15,000	25.00	15,000	50.00	30,000
<u>New Well B Supply Line</u>								
4" DIP Force Main (incl. excavation)	100	LF	100.00	10,000	80.00	8,000	180.00	18,000
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
Backfill	74	CY	28.25	2,093	9.04	670	37.29	2,762

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

AdEdge IX Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
<i>New Well D Supply Line</i>								
4" DIP Force Main (incl. excavation)	500	LF	100.00	50,000	80.00	40,000	180.00	90,000
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
4" 45-Degree Bends	1	EA	320.00	320	160.00	160	480.00	480
Backfill	370	CY	28.25	10,463	9.04	3,348	37.29	13,811
New WTP Building								647,000
Excavation	109	CY	-	-	25.00	2,731	25.00	2,731
Structural Concrete - Slab and Footers	61	CY	500.00	30,704	300.00	18,422	800.00	49,126
Backfill	32	CY	28.25	901	9.04	288	37.29	1,190
Vapor Barrier	1292	SF	7.57	9,787	3.78	4,886	11.36	14,672
4" Compacted Stone under Floor Slab	16	CY	28.00	447	7.00	112	35.00	558
Roll-up Door (12' wide x 15' feet high)	1	EA	7,200.00	7,200	1,500.00	1,500	8,700.00	8,700
Personnel Doors (3' wide x 7' high) HM with hardware	5	EA	1,500.00	7,500	500.00	2,500	2,000.00	10,000
New Masonry Walls	2928	SF	15.00	43,920	15.00	43,920	30.00	87,840
4" Brick Exterior Walls	2424	SF	10.00	24,240	15.00	36,360	25.00	60,600
Building Insulation	2424	SF	2.50	6,060	1.50	3,636	4.00	9,696
Emergency Shower/Eyewash Station	3	EA	6,780.00	20,340	3,390.00	10,170	10,170.00	30,510
Electric Tankless Water Heater & Appurtenances	1	LS	15,000.00	15,000	4,500.00	4,500	19,500.00	19,500
2" Potable water pipe PVC	120	LF	11.24	1,349	20.00	2,400	31.24	3,749
6-inch DIP Sewer	220	LF	130.00	28,600	70.00	15,400	200.00	44,000
6" DIP 45-Degree Bends	2	EA	520.00	1,040	260.00	520	780.00	1,560
6" x 6" Wye	9	EA	800.00	7,200	400.00	3,600	1,200.00	10,800
Clean-outs	3	EA	123.00	369	60.00	180	183.00	549
Cast Iron Floor Drains	6	EA	87.00	522	40.00	240	127.00	762
P-Traps	6	EA	26.00	156	15.00	90	41.00	246
Paint Exposed Masonry Walls	2928	SF	8.00	23,424	4.00	11,712	12.00	35,136
Paint Metal Doors	1	LS	3,200.00	3,200	1,200.00	1,200	4,400.00	4,400
Paint Process Piping	1	LS	2,000.00	2,000	1,200.00	1,200	3,200.00	3,200
Instrumentation, SCADA and Controls	1	LS	120,769.45	120,769	60,384.73	60,385	181,154.18	181,154
Fire Extinguishers (2 treatment room, 2 chem, 1 elec)	5	EA	100.00	500	60.00	300	160.00	800
Roof with Membrane	1221	SF	35.00	42,735	16.00	19,536	51.00	62,271
Aluminum Drip Fascia	142	LF	15.00	2,130	9.00	1,278	24.00	3,408

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

AdEdge IX Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Treatment Room	742,000							
Fe/Mn Filter	1	LS	255,000.00	255,000	127,500.00	127,500	382,500.00	382,500
Motor Actuated Valve	2	EA	6,000.00	12,000	2,000.00	4,000	8,000.00	16,000
3" DIP - Fe/Mn Pretreatment Piping	20	LF	100.00	2,000	50.00	1,000	150.00	3,000
6" x 4" Tee	2	EA	800.00	1,600	400.00	800	1,200.00	2,400
4" 90-Degree Bend	3	EA	320.00	960	160.00	480	480.00	1,440
4" x 3" Reducer	2	EA	700.00	1,400	210.00	420	910.00	1,820
GAC Treatment Skid	1	LS	200,000.00	200,000	60,000.00	60,000	260,000.00	260,000
4" DIP - Raw Water from Wells	20	LF	100.00	2,000	50.00	1,000	150.00	3,000
6" x 4" Reducer	1	EA	700.00	700	210.00	210	910.00	910
4" Plug Valve	4	EA	3,000.00	12,000	1,000.00	4,000	4,000.00	16,000
4" Check Valve	4	EA	300.00	1,200	90.00	360	390.00	1,560
4" 90-Degree Bend	1	EA	320.00	320	160.00	160	480.00	480
6" x 4" Tee	3	EA	800.00	2,400	400.00	1,200	1,200.00	3,600
6" DIP	120	LF	130.00	15,600	70.00	8,400	200.00	24,000
6" 90-Degree Bends	10	EA	520.00	5,200	260.00	2,600	780.00	7,800
6" Check Valve	1	EA	600.00	600	180.00	180	780.00	780
6" x 6" Tee	2	EA	800.00	1,600	400.00	800	1,200.00	2,400
Backflow Preventer	1	EA	10,000.00	10,000	4,000.00	4,000	14,000.00	14,000
Chemical Rooms	166,000							
Soda Ash Feed System	1	EA	30,000.00	30,000	10,000.00	10,000	40,000.00	40,000
Hypochlorite Feed System	2	EA	30,000.00	60,000	10,000.00	20,000	40,000.00	80,000
Sulfur Dioxide Feed System	1	EA	30,000.00	30,000	10,000.00	10,000	40,000.00	40,000
Chemical Tubing and Conduit	120	LF	21.13	2,536	32.96	3,955	54.09	6,491
Electrical Room & Service	55,000							
Existing Building								
Modifications to Ex Well B Control Panel	1	LS	250.00	250	400.00	400	650.00	650
Replace Ex Well B Encl Feeder Breaker	1	EA	600.00	600	200.00	200	800.00	800
New LED Emergency Light Fixtures	2	EA	375.00	750	150.00	300	525.00	1,050
Replace Exterior Light Fixtures with LED Fixtures	3	EA	200.00	600	175.00	525	375.00	1,125

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

AdEdge IX Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
<i>New Building</i>								
Interior LED Light Fixtures	10	EA	275.00	2,750	150.00	1,500	425.00	4,250
Emergency Light Fixtures	4	EA	375.00	1,500	150.00	600	525.00	2,100
Llight Switches	3	EA	50.00	150	75.00	225	125.00	375
Interior Receptacles	8	EA	50.00	400	75.00	600	125.00	1,000
480V Panel	1	EA	5,700.00	5,700	1,500.00	1,500	7,200.00	7,200
480V to 208/120V Transformer	1	EA	2,200.00	2,200	1,100.00	1,100	3,300.00	3,300
208/120V Panel	1	EA	2,800.00	2,800	1,500.00	1,500	4,300.00	4,300
480V Feeder from Ex Building	75	LF	45.00	3,375	20.00	1,500	65.00	4,875
Exterior LED Light Fixtures	3	EA	280.00	840	100.00	300	380.00	1,140
Unit Heater Connections	4	EA	15.00	60	40.00	160	55.00	220
Vent Fan/MOD Connections	6	EA	10.00	60	75.00	450	85.00	510
Chemical Pump Connections	4	EA	10.00	40	75.00	300	85.00	340
Vent Fan Control Panels	3	EA	1,000.00	3,000	250.00	750	1,250.00	3,750
Unit Heater Disconnect Switches	3	EA	90.00	270	150.00	450	240.00	720
Ethernet Signal to Ex SCADA Panel	75	LF	17.00	1,275	9.00	675	26.00	1,950
Feeder Breaker in Ex Building	1	EA	650.00	650	250.00	250	900.00	900
Basic Conduit and Wiring	1000	LF	4.00	4,000	8.00	8,000	12.00	12,000
Misc. Work	1	LS	1,000.00	1,000	1,500.00	1,500	2,500.00	2,500
Mechanical Services								30,000
Propellar Fans	2	EA	850.00	1,700	265.00	530	1,115.00	2,230
Inline Fans	1	EA	2,000.00	2,000	665.00	665	2,665.00	2,665
Unit Heaters	4	EA	1,100.00	4,400	120.00	480	1,220.00	4,880
Motor Operated Dampers	3	EA	1,500.00	4,500	150.00	450	1,650.00	4,950
Louvers	36	SF	65.00	2,340	21.00	756	86.00	3,096
Ductwork	1	LS	2,500.00	2,500	3,500.00	3,500	6,000.00	6,000
Ductwork Accessories	1	LS	1,000.00	1,000	1,500.00	1,500	2,500.00	2,500
Controls	1	LS	1,250.00	1,250	2,250.00	2,250	3,500.00	3,500

**TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS
CENTRALIZED PFAS TREATMENT SYSTEM
AdEdge IX Treatment**

Item/Structure	Quantity		Material		Labor		Engineer's Estimate		
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	
Treated Water Line from Manchester Farms WTP to Distribution System								263,000	
6" DIP Force Main (incl. excavation)	1000	LF	130.00	130,000	100.00	100,000	230.00	230,000	
Air Release Valve	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800	
6" x 6" Tee	1	EA	720.00	720	360.00	360	1,080.00	1,080	
6" 90-Degree Bends	1	EA	520.00	520	260.00	260	780.00	780	
6" 22.5-Degree Bends	1	EA	520.00	520	260.00	260	780.00	780	
Backfill and Compaction	741	CY	28.25	20,926	9.04	6,696	37.29	27,622	
CONSTRUCTION COST SUBTOTALS			\$ 2,203,000		\$ 1,434,000		3,141,000		
APPLICABLE SALES TAX (6%)								\$	132,000
MOBILIZATION/DEMobilIZATION (3%)								\$	94,000
ON-SITE SUPERVISION, SUPPORT STAFF (8%)								\$	251,000
CONTRACTOR INSURANCE AND BONDS (2%)								\$	63,000
OVERHEAD (5%)								\$	157,000
PROFIT (10%)								\$	314,000
CONTINGENCY (30%)								\$	1,246,000
TOTAL ESTIMATED CONSTRUCTION COST								\$ 5,398,000	

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

Newterra IX Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Park Ridge								951,000
Supply Main								
4" DIP Force Main (incl. excavation)	3400	LF	100.00	340,000	110.00	374,000	210.00	714,000
Air Release Valves	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800
4" 45-Degree Bends	6	EA	320.00	1,920	160.00	960	480.00	2,880
4" 90-Degree Bend	3	EA	320.00	960	160.00	480	480.00	1,440
Backfill	2519	CY	28.25	71,148	9.04	22,767	37.29	93,916
Pavement Restoration (4' wide)	1511	SY	36.16	54,642	21.47	32,444	57.63	87,085
New Well Pump A	1	EA	10,000.00	10,000	5,000.00	5,000	15,000.00	15,000
New Well Pump B	1	EA	13,000.00	13,000	6,500.00	6,500	19,500.00	19,500
Electrical Work								
Modifications to Ex. Well A Control Panel	1	LS	150.00	150	150.00	150	300.00	300
New Well A Feeder/Connection	200	LF	32.00	6,400	16.00	3,200	48.00	9,600
New Well A Disconnect Switch at Pump	1	EA	450.00	450	280.00	280	730.00	730
New Well B Disconnect Switch at Pump	1	EA	450.00	450	280.00	280	730.00	730
New LED Emergency Light Fixtures	2	EA	275.00	550	150.00	300	425.00	850
Breaker Replacements in MDP For Well A	1	EA	860.00	860	150.00	150	1,010.00	1,010
Replace Exterior Light Fixture with LED Fixture	1	EA	200.00	200	175.00	175	375.00	375
Miscellaneous Work	1	LS	500.00	500	500.00	500	1,000.00	1,000
Patricia Court								495,000
Supply Main								
4" DIP Force Main (incl. excavation)	1700	LF	100.00	170,000	110.00	187,000	210.00	357,000
Air Release Valves	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800
4" 45-Degree Bends	2	EA	320.00	640	160.00	320	480.00	960
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
Backfill	1259	CY	28.25	35,574	9.04	11,384	37.29	46,958
Pavement Restoration (4' wide)	756	SY	36.16	27,321	21.47	16,222	57.63	43,543
New Well Pump	1	EA	9,000.00	9,000	4,500.00	4,500	13,500.00	13,500

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

Newterra IX Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Electrical Work								
New Well Pump Connection	1	EA	25.00	25	110.00	110	135.00	135
New Well Pump Disconnect Switch	1	EA	400.00	400	260.00	260	660.00	660
New Well Pump Capacitor	1	EA	75.00	75	75.00	75	150.00	150
New Well Pump Feeder	50	LF	18.00	900	10.00	500	28.00	1,400
New Well Power Panel, Feeder, Breaker in LC Panel	1	EA	860.00	860	150.00	150	1,010.00	1,010
Modifications to Ex. Well Power Panel/SCADA Panel	1	LS	150.00	150	150.00	150	300.00	300
New LED Ceiling Light Fixtures	1	EA	275.00	275	150.00	150	425.00	425
New Emergency Light Fixture	1	EA	375.00	375	150.00	150	525.00	525
Replace Exterior Light Fixture with LED Fixture	1	EA	200.00	200	175.00	175	375.00	375
New Diesel Generator Set and ATS	1	EA	12,100.00	12,100	5,500.00	5,500	17,600.00	17,600
Structural Concrete - Generator Pad	7	CY	500.00	3,500	300.00	2,100	800.00	5,600
Miscellaneous Work	1	LS	500.00	500	500.00	500	1,000.00	1,000
Site Work								287,000
Clear and Grub Site	1	LS	5,000.00	5,000	1,500.00	1,500	6,500.00	6,500
Super Silt Fence	1000	LF	10.00	10,000	5.00	5,000	15.00	15,000
Stabilized Construction Entrance	1	EA	2,000.00	2,000	2,400.00	2,400	4,400.00	4,400
Perimeter Fencing - 8'-0" high	240	LF	25.00	6,000	8.00	1,920	33.00	7,920
Concrete Sidewalks	4	CY	500.00	1,852	300.00	1,111	800.00	2,963
New Gate along Perimeter Fence	1	EA	2,000.00	2,000	1,000.00	1,000	3,000.00	3,000
New Bituminous Paving - Extend Access Road/Parking	127	SY	20.00	2,533	5.00	633	25.00	3,167
Site Work, Cont'd								
Final Grading & Stabilization	1	LS	20,000.00	20,000	6,000.00	6,000	26,000.00	26,000
Stormwater Management	1	LS	10,000.00	10,000	5,000.00	5,000	15,000.00	15,000
Final Seeding/Mulch	1	LS	10,000.00	10,000	2,000.00	2,000	12,000.00	12,000
Manchester Farms Well Pump B	1	EA	15,000.00	15,000	7,500.00	7,500	22,500.00	22,500
Manchester Farms Well Pump D	1	EA	8,000.00	8,000	4,000.00	4,000	12,000.00	12,000
New Power and Control Wiring to Well Pumps	600	LF	25.00	15,000	25.00	15,000	50.00	30,000
New Well B Supply Line								
4" DIP Force Main (incl. excavation)	100	LF	100.00	10,000	80.00	8,000	180.00	18,000
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
Backfill	74	CY	28.25	2,093	9.04	670	37.29	2,762

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

Newterra IX Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
<i>New Well D Supply Line</i>								
4" DIP Force Main (incl. excavation)	500	LF	100.00	50,000	80.00	40,000	180.00	90,000
4" 90-Degree Bend	2	EA	320.00	640	160.00	320	480.00	960
4" 45-Degree Bends	1	EA	320.00	320	160.00	160	480.00	480
Backfill	370	CY	28.25	10,463	9.04	3,348	37.29	13,811
New WTP Building								646,000
Excavation	109	CY	-	-	25.00	2,731	25.00	2,731
Structural Concrete - Slab and Footers	61	CY	500.00	30,704	300.00	18,422	800.00	49,126
Backfill	32	CY	28.25	901	9.04	288	37.29	1,190
Vapor Barrier	1292	SF	7.57	9,787	3.78	4,886	11.36	14,672
4" Compacted Stone under Floor Slab	16	CY	28.00	447	7.00	112	35.00	558
Roll-up Door (12' wide x 15' feet high)	1	EA	7,200.00	7,200	1,500.00	1,500	8,700.00	8,700
Personnel Doors (3' wide x 7' high) HM with hardware	5	EA	1,500.00	7,500	500.00	2,500	2,000.00	10,000
New Masonry Walls	2928	SF	15.00	43,920	15.00	43,920	30.00	87,840
4" Brick Exterior Walls	2424	SF	10.00	24,240	15.00	36,360	25.00	60,600
Building Insulation	2424	SF	2.50	6,060	1.50	3,636	4.00	9,696
Emergency Shower/Eyewash Station	3	EA	6,780.00	20,340	3,390.00	10,170	10,170.00	30,510
Electric Tankless Water Heater & Appurtenances	1	LS	15,000.00	15,000	4,500.00	4,500	19,500.00	19,500
2" Potable water pipe PVC	120	LF	11.24	1,349	20.00	2,400	31.24	3,749
6-inch DIP Sewer	220	LF	130.00	28,600	70.00	15,400	200.00	44,000
6" DIP 45-Degree Bends	2	EA	520.00	1,040	260.00	520	780.00	1,560
6" x 6" Wye	9	EA	800.00	7,200	400.00	3,600	1,200.00	10,800
Clean-outs	3	EA	123.00	369	60.00	180	183.00	549
Cast Iron Floor Drains	6	EA	87.00	522	40.00	240	127.00	762
P-Traps	6	EA	26.00	156	15.00	90	41.00	246
Paint Exposed Masonry Walls	2928	SF	8.00	23,424	4.00	11,712	12.00	35,136
Paint Metal Doors	1	LS	3,200.00	3,200	1,200.00	1,200	4,400.00	4,400
Paint Process Piping	1	LS	2,000.00	2,000	1,200.00	1,200	3,200.00	3,200
Instrumentation, SCADA and Controls	1	LS	120,236.45	120,236	60,118.23	60,118	180,354.68	180,355
Fire Extinguishers (2 treatment room, 2 chem, 1 elec)	5	EA	100.00	500	60.00	300	160.00	800
Roof with Membrane	1221	SF	35.00	42,735	16.00	19,536	51.00	62,271
Aluminum Drip Fascia	142	LF	15.00	2,130	9.00	1,278	24.00	3,408

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

Newterra IX Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Treatment Room	736,000							
Fe/Mn Filter	1	LS	255,000.00	255,000	127,500.00	127,500	382,500.00	382,500
Motor Actuated Valve	2	EA	6,000.00	12,000	2,000.00	4,000	8,000.00	16,000
3" DIP - Fe/Mn Pretreatment Piping	20	LF	100.00	2,000	50.00	1,000	150.00	3,000
6" x 4" Tee	2	EA	800.00	1,600	400.00	800	1,200.00	2,400
4" 90-Degree Bend	3	EA	320.00	960	160.00	480	480.00	1,440
4" x 3" Reducer	2	EA	700.00	1,400	210.00	420	910.00	1,820
GAC Treatment Skid	1	LS	195,900.00	195,900	58,770.00	58,770	254,670.00	254,670
4" DIP - Raw Water from Wells	20	LF	100.00	2,000	50.00	1,000	150.00	3,000
6" x 4" Reducer	1	EA	700.00	700	210.00	210	910.00	910
4" Plug Valve	4	EA	3,000.00	12,000	1,000.00	4,000	4,000.00	16,000
4" Check Valve	4	EA	300.00	1,200	90.00	360	390.00	1,560
4" 90-Degree Bend	1	EA	320.00	320	160.00	160	480.00	480
6" x 4" Tee	3	EA	800.00	2,400	400.00	1,200	1,200.00	3,600
6" DIP	120	LF	130.00	15,600	70.00	8,400	200.00	24,000
6" 90-Degree Bends	10	EA	520.00	5,200	260.00	2,600	780.00	7,800
6" Check Valve	1	EA	600.00	600	180.00	180	780.00	780
6" x 6" Tee	2	EA	800.00	1,600	400.00	800	1,200.00	2,400
Backflow Preventer	1	EA	10,000.00	10,000	4,000.00	4,000	14,000.00	14,000
Chemical Rooms	166,000							
Soda Ash Feed System	1	EA	30,000.00	30,000	10,000.00	10,000	40,000.00	40,000
Hypochlorite Feed System	2	EA	30,000.00	60,000	10,000.00	20,000	40,000.00	80,000
Sulfur Dioxide Feed System	1	EA	30,000.00	30,000	10,000.00	10,000	40,000.00	40,000
Chemical Tubing and Conduit	120	LF	21.13	2,536	32.96	3,955	54.09	6,491
Electrical Room & Service	55,000							
Existing Building								
Modifications to Ex Well B Control Panel	1	LS	250.00	250	400.00	400	650.00	650
Replace Ex Well B Encl Feeder Breaker	1	EA	600.00	600	200.00	200	800.00	800
New LED Emergency Light Fixtures	2	EA	375.00	750	150.00	300	525.00	1,050
Replace Exterior Light Fixtures with LED Fixtures	3	EA	200.00	600	175.00	525	375.00	1,125

TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS

CENTRALIZED PFAS TREATMENT SYSTEM

Newterra IX Treatment

Item/Structure	Quantity		Material		Labor		Engineer's Estimate	
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
<i>New Building</i>								
Interior LED Light Fixtures	10	EA	275.00	2,750	150.00	1,500	425.00	4,250
Emergency Light Fixtures	4	EA	375.00	1,500	150.00	600	525.00	2,100
Light Switches	3	EA	50.00	150	75.00	225	125.00	375
Interior Receptacles	8	EA	50.00	400	75.00	600	125.00	1,000
480V Panel	1	EA	5,700.00	5,700	1,500.00	1,500	7,200.00	7,200
480V to 208/120V Transformer	1	EA	2,200.00	2,200	1,100.00	1,100	3,300.00	3,300
208/120V Panel	1	EA	2,800.00	2,800	1,500.00	1,500	4,300.00	4,300
480V Feeder from Ex Building	75	LF	45.00	3,375	20.00	1,500	65.00	4,875
Exterior LED Light Fixtures	3	EA	280.00	840	100.00	300	380.00	1,140
Unit Heater Connections	4	EA	15.00	60	40.00	160	55.00	220
Vent Fan/MOD Connections	6	EA	10.00	60	75.00	450	85.00	510
Chemical Pump Connections	4	EA	10.00	40	75.00	300	85.00	340
Vent Fan Control Panels	3	EA	1,000.00	3,000	250.00	750	1,250.00	3,750
Unit Heater Disconnect Switches	3	EA	90.00	270	150.00	450	240.00	720
Ethernet Signal to Ex SCADA Panel	75	LF	17.00	1,275	9.00	675	26.00	1,950
Feeder Breaker in Ex Building	1	EA	650.00	650	250.00	250	900.00	900
Basic Conduit and Wiring	1000	LF	4.00	4,000	8.00	8,000	12.00	12,000
Misc. Work	1	LS	1,000.00	1,000	1,500.00	1,500	2,500.00	2,500
Mechanical Services								30,000
Propellar Fans	2	EA	850.00	1,700	265.00	530	1,115.00	2,230
Inline Fans	1	EA	2,000.00	2,000	665.00	665	2,665.00	2,665
Unit Heaters	4	EA	1,100.00	4,400	120.00	480	1,220.00	4,880
Motor Operated Dampers	3	EA	1,500.00	4,500	150.00	450	1,650.00	4,950
Louvers	36	SF	65.00	2,340	21.00	756	86.00	3,096
Ductwork	1	LS	2,500.00	2,500	3,500.00	3,500	6,000.00	6,000
Ductwork Accessories	1	LS	1,000.00	1,000	1,500.00	1,500	2,500.00	2,500
Controls	1	LS	1,250.00	1,250	2,250.00	2,250	3,500.00	3,500

**TOWN OF MANCHESTER WATER TREATMENT IMPROVEMENTS
CENTRALIZED PFAS TREATMENT SYSTEM
Newterra IX Treatment**

Item/Structure	Quantity		Material		Labor		Engineer's Estimate		
	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	
Treated Water Line from Manchester Farms WTP to Distribution System								263,000	
6" DIP Force Main (incl. excavation)	1000	LF	130.00	130,000	100.00	100,000	230.00	230,000	
Air Release Valve	1	EA	2,000.00	2,000	800.00	800	2,800.00	2,800	
6" x 6" Tee	1	EA	720.00	720	360.00	360	1,080.00	1,080	
6" 90-Degree Bends	1	EA	520.00	520	260.00	260	780.00	780	
6" 22.5-Degree Bends	1	EA	520.00	520	260.00	260	780.00	780	
Backfill and Compaction	741	CY	28.25	20,926	9.04	6,696	37.29	27,622	
CONSTRUCTION COST SUBTOTALS			\$ 2,199,000		\$ 1,432,000		3,134,000		
APPLICABLE SALES TAX (6%)								\$	132,000
MOBILIZATION/DEMobilIZATION (3%)								\$	94,000
ON-SITE SUPERVISION, SUPPORT STAFF (8%)								\$	251,000
CONTRACTOR INSURANCE AND BONDS (2%)								\$	63,000
OVERHEAD (5%)								\$	157,000
PROFIT (10%)								\$	313,000
CONTINGENCY (30%)								\$	1,243,000
TOTAL ESTIMATED CONSTRUCTION COST								\$ 5,387,000	

ELECTRICAL COST

\$ 13,470

Equipment	QTY		Kilowatts	HP	Total KW	Total HP	Hours Operating	Operating Cost per Hour	Operating cost per Month	Operating Cost per year
	Total	In Use								
Manchester Farms Well B	1	1		15.0	0.0	15.0	12	\$ 1.12	\$ 408.44	\$ 4,901
Manchester Farms Well D	1	1		2.0	0.0	2.0	12	\$ 0.15	\$ 54.46	\$ 653
Patricia Court Well	1	1		5.0	0.0	5.0	12	\$ 0.37	\$ 136.15	\$ 1,634
Park Ridge Well A Pump	1	1		7.5	0.0	7.5	12	\$ 0.56	\$ 204.22	\$ 2,451
Park Ridge Well B Pump	1	1		5.0	0.0	5.0	12	\$ 0.37	\$ 136.15	\$ 1,634
Electric Unit Heaters	4	4			5.0	0.0	24	\$ 0.50	\$ 365.00	\$ 2,190

CHEMICAL COST

\$ 19,800

Chemical	Feed Rate (gpd)	Cost per Gallon	Operating Cost per year
pH/Alkalinity	12	\$ 3.00	\$ 13,140
Sulfur Dioxide	1	\$ 5.00	\$ 1,825
Chlorination	5	\$ 2.75	\$ 4,826

OPERATIONS AND MAINTENANCE PERSONNEL

\$ 88,900

	WEEKLY VISITS	ANNUAL VISITS	HOURS PER DAY	TOTAL HOURS	LABOR COSTS INCL. BENEFITS
WWTP Personnel					
Holiday Shifts	N/A	10	2.0	20	\$ 1,000
Weekend Shifts	2	52	2.0	208	\$ 10,400
2nd/Emergency shifts	N/A	10	4.0	40	\$ 2,000
Groundkeeping shifts	1	40	2.0	80	\$ 4,000
Monday 1st Shifts	1	52	2.0	104	\$ 5,200
Tuesday 1st Shifts	1	52	2.0	104	\$ 5,200
Wednesday 1st Shifts	1	52	2.0	104	\$ 5,200
Thursday 1st Shifts	1	52	2.0	104	\$ 5,200
Friday 1st Shifts	1	52	2.0	104	\$ 5,200
Supervisor Shifts	5	52	2.0	520	\$ 26,000
PERSONNEL SUBTOTAL					\$ 69,400

LAB SERVICES

52 WEEKS
 1 SAMPLES PER WEEK
 \$375.00 PER SAMPLE

TOTAL
\$19,500

MAINTENANCE MATERIALS & REPLACEMENT COSTS

\$ 86,040

	Estimated Equipment Cost	Annual Maintenance Cost
Maintenance Cost		3% \$ 21,390.00
Replacement Cost	\$713,000	5% \$ 35,650.00

Media Replacement

Media Replacement Frequency: 645 days
 Media Replacement Cost: \$52,000
 Media Replacement Cost per Year: \$29,000

ANNUAL O&M COST

\$208,210

ELECTRICAL COST

\$ 13,470

Equipment	QTY		Kilowatts	HP	Total KW	Total HP	Hours Operating	Operating Cost per Hour	Operating cost per Month	Operating Cost per year
	Total	In Use								
Manchester Farms Well B	1	1		15.0	0.0	15.0	12	\$ 1.12	\$ 408.44	\$ 4,901
Manchester Farms Well D	1	1		2.0	0.0	2.0	12	\$ 0.15	\$ 54.46	\$ 653
Patricia Court Well	1	1		5.0	0.0	5.0	12	\$ 0.37	\$ 136.15	\$ 1,634
Park Ridge Well A Pump	1	1		7.5	0.0	7.5	12	\$ 0.56	\$ 204.22	\$ 2,451
Park Ridge Well B Pump	1	1		5.0	0.0	5.0	12	\$ 0.37	\$ 136.15	\$ 1,634
Electric Unit Heaters	4	4			5.0	0.0	24	\$ 0.50	\$ 365.00	\$ 2,190

CHEMICAL COST

\$ 19,800

Chemical	Feed Rate (gpd)	Cost per Gallon	Operating Cost per year
pH/Alkalinity	12	\$ 3.00	\$ 13,140
Sulfur Dioxide	1	\$ 5.00	\$ 1,825
Chlorination	5	\$ 2.75	\$ 4,826

OPERATIONS AND MAINTENANCE PERSONNEL

\$ 88,900

	WEEKLY VISITS	ANNUAL VISITS	HOURS PER DAY	TOTAL HOURS	LABOR COSTS INCL. BENEFITS
WWTP Personnel					
Holiday Shifts	N/A	10	2.0	20	\$ 1,000
Weekend Shifts	2	52	2.0	208	\$ 10,400
2nd/Emergency shifts	N/A	10	4.0	40	\$ 2,000
Groundkeeping shifts	1	40	2.0	80	\$ 4,000
Monday 1st Shifts	1	52	2.0	104	\$ 5,200
Tuesday 1st Shifts	1	52	2.0	104	\$ 5,200
Wednesday 1st Shifts	1	52	2.0	104	\$ 5,200
Thursday 1st Shifts	1	52	2.0	104	\$ 5,200
Friday 1st Shifts	1	52	2.0	104	\$ 5,200
Supervisor Shifts	5	52	2.0	520	\$ 26,000
PERSONNEL SUBTOTAL					\$ 69,400

LAB SERVICES

52 WEEKS
 1 SAMPLES PER WEEK
 \$375.00 PER SAMPLE

TOTAL
\$19,500

MAINTENANCE MATERIALS & REPLACEMENT COSTS

\$ 83,440

	Estimated Equipment Cost	Annual Maintenance Cost
Maintenance Cost		3% \$ 17,790.00
Replacement Cost	\$593,000	5% \$ 29,650.00

Media Replacement

Media Replacement Frequency: 680 days
 Media Replacement Cost: \$67,000
 Media Replacement Cost per Year: \$ 36,000

ANNUAL O&M COST

\$205,610

ELECTRICAL COST

\$ 13,470

Equipment	QTY		Kilowatts	HP	Total KW	Total HP	Hours Operating	Operating Cost per Hour	Operating cost per Month	Operating Cost per year
	Total	In Use								
Manchester Farms Well B	1	1		15.0	0.0	15.0	12	\$ 1.12	\$ 408.44	\$ 4,901
Manchester Farms Well D	1	1		2.0	0.0	2.0	12	\$ 0.15	\$ 54.46	\$ 653
Patricia Court Well	1	1		5.0	0.0	5.0	12	\$ 0.37	\$ 136.15	\$ 1,634
Park Ridge Well A Pump	1	1		7.5	0.0	7.5	12	\$ 0.56	\$ 204.22	\$ 2,451
Park Ridge Well B Pump	1	1		5.0	0.0	5.0	12	\$ 0.37	\$ 136.15	\$ 1,634
Electric Unit Heaters	4	4			5.0	0.0	24	\$ 0.50	\$ 365.00	\$ 2,190

CHEMICAL COST

\$ 19,800

Chemical	Feed Rate (gpd)	Cost per Gallon	Operating Cost per year
pH/Alkalinity	12	\$ 3.00	\$ 13,140
Sulfur Dioxide	1	\$ 5.00	\$ 1,825
Chlorination	5	\$ 2.75	\$ 4,826

OPERATIONS AND MAINTENANCE PERSONNEL

\$ 88,900

	WEEKLY VISITS	ANNUAL VISITS	HOURS PER DAY	TOTAL HOURS	LABOR COSTS INCL. BENEFITS
WWTP Personnel					
Holiday Shifts	N/A	10	2.0	20	\$ 1,000
Weekend Shifts	2	52	2.0	208	\$ 10,400
2nd/Emergency shifts	N/A	10	4.0	40	\$ 2,000
Groundkeeping shifts	1	40	2.0	80	\$ 4,000
Monday 1st Shifts	1	52	2.0	104	\$ 5,200
Tuesday 1st Shifts	1	52	2.0	104	\$ 5,200
Wednesday 1st Shifts	1	52	2.0	104	\$ 5,200
Thursday 1st Shifts	1	52	2.0	104	\$ 5,200
Friday 1st Shifts	1	52	2.0	104	\$ 5,200
Supervisor Shifts	5	52	2.0	520	\$ 26,000
PERSONNEL SUBTOTAL					\$ 69,400

LAB SERVICES

52 WEEKS
 1 SAMPLES PER WEEK
 \$375.00 PER SAMPLE

TOTAL
\$19,500

MAINTENANCE MATERIALS & REPLACEMENT COSTS

\$ 60,560

	Estimated Equipment Cost	Annual Maintenance Cost
Maintenance Cost		3% \$ 17,460.00
Replacement Cost	\$582,000	5% \$ 29,100.00

Media Replacement

Media Replacement Frequency: 1247 days
 Media Replacement Cost: \$48,000
 Media Replacement Cost per Year: \$ 14,000

ANNUAL O&M COST

\$182,730

ELECTRICAL COST

\$ 13,470

Equipment	QTY		Kilowatts	HP	Total KW	Total HP	Hours Operating	Operating Cost per Hour	Operating cost per Month	Operating Cost per year
	Total	In Use								
Manchester Farms Well B	1	1		15.0	0.0	15.0	12	\$ 1.12	\$ 408.44	\$ 4,901
Manchester Farms Well D	1	1		2.0	0.0	2.0	12	\$ 0.15	\$ 54.46	\$ 653
Patricia Court Well	1	1		5.0	0.0	5.0	12	\$ 0.37	\$ 136.15	\$ 1,634
Park Ridge Well A Pump	1	1		7.5	0.0	7.5	12	\$ 0.56	\$ 204.22	\$ 2,451
Park Ridge Well B Pump	1	1		5.0	0.0	5.0	12	\$ 0.37	\$ 136.15	\$ 1,634
Electric Unit Heaters	4	4			5.0	0.0	24	\$ 0.50	\$ 365.00	\$ 2,190

CHEMICAL COST

\$ 19,800

Chemical	Feed Rate (gpd)	Cost per Gallon	Operating Cost per year
pH/Alkalinity	12	\$ 3.00	\$ 13,140
Sulfur Dioxide	1	\$ 5.00	\$ 1,825
Chlorination	5	\$ 2.75	\$ 4,826

OPERATIONS AND MAINTENANCE PERSONNEL

\$ 88,900

	WEEKLY VISITS	ANNUAL VISITS	HOURS PER DAY	TOTAL HOURS	LABOR COSTS INCL. BENEFITS
WWTP Personnel					
Holiday Shifts	N/A	10	2.0	20	\$ 1,000
Weekend Shifts	2	52	2.0	208	\$ 10,400
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Wednesday 1st Shifts	1	52	2.0	104	\$ 5,200
Thursday 1st Shifts	1	52	2.0	104	\$ 5,200
Friday 1st Shifts	1	52	2.0	104	\$ 5,200
Supervisor Shifts	5	52	2.0	520	\$ 26,000
PERSONNEL SUBTOTAL					\$ 69,400

LAB SERVICES

52 WEEKS
 1 SAMPLES PER WEEK
 \$375.00 PER SAMPLE

TOTAL
\$19,500

MAINTENANCE MATERIALS & REPLACEMENT COSTS

\$ 77,080

	Estimated Equipment Cost	Annual Maintenance Cost
Maintenance Cost		3% \$ 14,277.00
Replacement Cost	\$475,900	5% \$ 23,795.00

Media Replacement

Media Replacement Frequency: 835 days
 Media Replacement Cost: \$90,000
 Media Replacement Cost per Year: \$ 39,000

ANNUAL O&M COST

\$199,250