

APPENDIX E
WWTF PROCESS AND EQUIPMENT IDENTIFICATION

Process and Equipment Information

Theresa Street WWTP

Plant Headworks	Qty/Maker	Equip ID's/Comments
Bar Screens (4 units)		
Bar Screens 1 & 2	Smith & Loveless	BS-A201, BS-A202
Clear Screen Opening	1.0 inches	
Bar Screens 3 & 4	Infilco Degremont	BS-A301, BS-A302
Clear Screen Opening	0.5 inches	
Influent Pumping (8)		
RWP-A201	Worthington	
Capacity MGD	10	
HP	125	
VFD (Y/N)	Y	
RWP-A202	Worthington	
Capacity MGD	10	
HP	125	
VFD (Y/N)	Y	
RWP-A203	Aurora	
Capacity MGD	10	
HP	125	
VFD (Y/N)	N	
RWP-A204	Worthington	
Capacity MGD	10	
HP	125	
VFD (Y/N)	N	
RWP-A305	Fairbanks	
Capacity MGD	15	
HP	200	
VFD (Y/N)	Y(mag-coupler)	
RWP-A306	Fairbanks	
Capacity MGD	15	
HP	200	
VFD (Y/N)	Y(mag-coupler)	
RWP-A307	Patterson	
Capacity MGD	15	
HP	200	
VFD (Y/N)	N	
RWP-A308	Patterson	
Capacity MGD	22	
HP	250	
VFD (Y/N)	Y	

Grit Removal

Vortex Grit Chambers (2 units)	Pista Grit by Smith & Loveless	VGCT-A601, VGCT-A602
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Capacity MGD	50 each	
Grit Pumps (3 units)	Aurora	GRP-A601, GRP-A602, GRP-A603
Capacity GPM	250	
TDH	30.4	
HP	15	
Mud Waste Pumps (2)	Aurora	MWP-A601, MWP-A602
Capacity GPM	250	
TDH	35	
HP	20	

Primary Treatment

Primary Clarifiers (5 units)		Spiral Scrapers
Primary Clarifier 1		Serves Central and West Treatment Train (A-7A)
Diameter (ft)	100	
SWD (ft)	12.9	
Surface Area (sq ft)	7,854	
Volume (MG)	0.836	
Weir Length (ft)	294	
Primary Clarifiers 3 & 4		Serves Central and West Treatment Train (A-7C, A-7D)
Diameter (ft)	100	
SWD (ft)	13	
Volume (MG)	0.845 ea.	
Weir Length (ft)	294 ea.	
Primary Clarifiers 5 & 6		Serves East Side Train (A-8A, A-8B)
Diameter (ft)	125	
SWD (ft)	12.5	
Volume (MG)	1.307 ea.	
Weir Length (ft)	372	
Primary Sludge Pumps		
West Side & Central Train (5)	Moyno Progressive Cavity	Sludge Pumps, (PSP-A701, PSP-A702, PSP-A703, PSP-A704, Scum Pump PSCP-A701)
Capacity gpm	120 @ 45 psi	
Hp	10	
Inlet/Outlet size inches	6/6	
East Side Train (3)	Moyno/Tarby	PSP-A801 Moyno, PSP-A802 Tarby, PSP-A803 Moyno
Capacity gpm	150	
Hp	7.5	
Inlet/Outlet size inches	8	

Secondary Treatment

Aeration Basins (6)		Sanitaire Fine Bubble Ceramic Diffusers
West Train (2)		A-12A, A-12B
Total Basin Volume (mg)	0.639 ea.	
Anoxic Volume (mg)	0.1945 ea.	
Aerobic Volume (mg)	0.4445 ea.	
Central Train (2)		A-14A, A-14B

Total Basin Volume (mg)	2.0350 ea.	
Anoxic Volume (mg)	0.42 ea	
Aerobic Volume (mg)	1.615 ea.	
Pre-Nitrification Basin		
Total Basin Volume (mg)	0.7300	
East Train (2)		A-13A, A-13B
Total Basin Volume (mg)	1.6493 ea.	
Anoxic Volume (mg)	0.4131 ea.	
Aerobic Volume (mg)	1.2362 ea.	
Aeration		
West Train (3)		
AB-A1601	Continental	Multistage
Capacity (cfm)	3,500	
HP	200	
AB-A1602	Continental	Multistage
Capacity (cfm)	3,500	
HP	200	
AB-A1603	Turblex	Singlestage
Capacity (cfm)		
HP		
Central Train (1)	Turblex	Single Stage Blowers on East Side are inter-connected to aeration piping on Central Train (AB-A3401) Model KA44SV-GL225
Capacity (cfm)	9,000/20,000	
Hp	1,250	@ 2400 V and 3600 rpm
East Train (2)	Turblex	Singlestage (AB-A1501, AB-A1502)
Capacity (cfm)	20,825	
Hp	1,000	WEG Motor
Secondary Clarifiers (6)		
West Train (2)		Walker
Diameter (ft)	110	Organ-Suction (A-9A, A-9B)
SWD (ft)	9.875	
Surface Area ft ²	9500	
Volume (MG)	0.7015	
Weir Length (ft)	345.5 ea	Inboard Weirs
Central Train (2)		Eimco
Diameter (ft)	120	Suction Plenum (A-35A, A-35B)
SWD (ft)	15.5	
Surface Area ft ²	11,310 ea.	
Volume (MG)	1.311 ea.	
Weir Length (ft)	357 ea.	Outboard Weir
East Train (2)		Walker
Diameter (ft)	130	Organ-Suction (A-10A, A-10B)
SWD (ft)	12	
Volume (MG)	1.37 ea.	
Weir Length (ft)	776 ea.	Inboard Weirs
RAS Pumping (9)		
West Train (3)		Cascade
		Vertical Turbine - Mixed Flow (RASP-A901, RASP-A902)
Capacity (gpm)	2,000	1,700 secondary condition
TDH (ft)	11	13 secondary condition
Hp	10	

Central Train (3)	Flygt	Submersible Dry Pit - (RASP-A3501, RASP-A3502, RASP-A3503)
Capacity gpm	4,000	2,500 secondary condition
TDH (ft)	20	30 secondary condition
Hp	30	
East Train (3)	Fairbanks Morse	End Suction Centrifugal
Capacity gpm	5,212	2,780 secondary condition
TDH (ft)	20	5 secondary condition
Hp	40	

Disinfection

UV Disinfection (2 channels)	WEDECO	Low Pressure - High Intensity
Rated Capacity ADF (mgd)	20	
Rated Capacity MDF (mgd)	36	Expandable to 54 MGD
Number of bulbs	432	Future 648
Max Electrical Requirement (KW)	143	Future 214 KW

Solids Processing

WAS Pumping		
West & Central Train (5)	Fairbanks Morse	Centrifugal (WASP-A1501, WASP-A1502, WASP-A1503, WASP-A1504, WASP-A1505)
Capacity gpm	200	
TDH (ft)	14	
Hp	2	
Central Train WAS Pumps (2)	Flygt	Submersible Dry Pit, WASP-A3041, WASP-A3042)
Capacity gpm	500	
TDH (ft)	23	
Hp	7.4	
Central Train Scum Pumps (2)	Flygt	Submersible Dry Pit, FSP-A3501, FSP-A3502)
Capacity gpm	200	
TDH (ft)	20	
Hp	2.2	
Thickening		
DAF Thickeners (3)	Rex	
Surface Area (sq ft)	400	ea.
TWAS Pumps (2)	Robbin Myers	Progressive Cavity (TSP-A1501, TST-A1502)
Capacity gpm	50-125	
TDH (ft)	100	
Hp		
Digestion		
Anaerobic Digesters (3)	CBI-Walker	Egg-Shaped
Volume (cu ft)	144,000 ea.	
Volume (gal)	1,077,120 ea.	
Sludge Recirculation Pumps (3)	Morris	(DCP-A501, DCP-A502, DCP-A503)
Capacity gpm	500	
TDH (ft)	46	

Hp	20	
Enginators (2)	Waukesha	
Power Generation (kw)	450 ea.	
Hp	800	
Boiler (1)		Natural Gas
Rated Output MM BTU/HR	3.3	
Digested Sludge Pumps (3)	Robbin Myers	Progressive Cavity (DSP-A501, DSP-A502, DSP-A503)
Capacity gpm	150	
TDH (ft)	50	
Hp	10	
Sludge Holding Tank (1)		
Volume (cu ft)	68,000	
Volume (gal)	508,640	

Process and Equipment Information

Northeast WWTP

Plant Headworks

Bar Screens (2)	US Filter	Climber Screens (MBS-B201, MBS-B202)
Clear Opening (in)	0.375	
Influent Pumping (5)	Worthington	RWP-B201, RWP-B202, RWP-B203, RWP-B204, RWP-B205
Capacity gpm	5,600	
TDH (ft)	38	
Hp	75	

Grit Removal

Aerated Grit Basins (2)		Clam Shell Grit Removal (B-3A, B-3B)
Dimensions (ft)	15x25x13.25	
Volume (MG)	0.0372 ea.	
Aerated Grit Blowers (3)		Rotary Lobe (AGB-B301, AGB-B302, AGB-B#03)
Capacity (CFM)	5,600	
HP	7.5	

Primary Treatment

Primary Clarifiers (2)	US Filter	Spiral Scrapers (B-4A, B-4B)
Diameter (ft)	90	
SWD (ft)	12	
Volume (MG)	0.627 ea.	
Weir Length (ft)	259.2 ea.	

Secondary Treatment

Aeration Basins (4)		
West Train (2)		AB-1A, AB-1B
Diameter (ft)	79	
Depth (ft)	16	
Total volume (MG)	0.587 ea.	
Oxic Zone Vol (MG)	0.47 ea.	
Anoxic Zone Vol (MG)	0.117 ea.	
East Train (2)		AB-2, AB-3
Dimensions (FT) Oxic	200x45x18	
Oxic Volume (MG)	0.9385	
Anoxic Volume (MG)	0.2346	
Aeration		
Blowers (2)	Turblex	AB-B1301, AB-B1302
Discharge Capacity (SCFM)	12,170	
Motor HP	700	WEG Motor
Secondary Clarifiers (3)	US Filter	Spiral Scrapers (B-6A, B-6B, B-6C)
West Train (2)		

Diameter (ft)	90	
SWD (ft)	15	
Volume (MG)	0.762	
Weir Length (ft)	132	
East Train (1)		
Diameter (ft)	90	
SWD (ft)	15	
Volume (MG)	0.762	
Weir Length (ft)	132	
RAS Pumps (2)	Fairbanks	Vertical End Suction Centrifugal (RASP-B501, RASP-B502)
Rated Capacity (MGD)	10	
TDH (ft)	19	
HP	50	
Size (in)	16	
RPM	588	

Disinfection

UV Disinfection (2 channels)	WEDECO	Low Pressure - High Intensity
Rated Capacity ADF (mgd)	8	
Rated Capacity MDF (mgd)	16	Expandable to 54 MGD
Number of bulbs	192	Future 288
Max Electrical Requirement (KW)	64	Future 95 KW

Solids Processing

Pri Sludge & Scum Pumps (3)	Moyno	Progressive Cavity (PSP-B401, PSP-B402, PSP-B403)
Capacity (GPM)	50	
TDH (ft)	40	
HP	5	
WAS Pumps	Flygt	Dry Pit Submersible (WSP-B601, WSP-B602, WSP-B603, WSP-B604)
Rated Capacity (GPM)	300	
TDH (ft)	23	
Motor HP	5	
Thickening		
Rotary Drum Thickeners (2)	Parkson	RDT-B1001, RDT-B1002
Capacity (gpm)	400	
Thickener Feed Pumps (2)	Moyno	Progressive Cavity (TFP-B1001, TFP-B1002)
Capacity (GPM)	400	
TDH (psi)	30	
HP	30	
TWAS Pumps	Moyno	Progressive Cavity (TWASP-B1001, TWASP-B1002)
Capacity (GPM)	200	
TDH (psi)	40	
HP	15	
Digester Feed Pumps	Moyno	DFP-B901, DFP-B902
Capacity (GPM)	275	

HP	20	
Digestion		
Digesters (2)		Cylindrical Fixed Cover
Volume (Gal)	467,000 ea.	
Digester Sludge Mixing	Philedelphia	
HP	20	
Digested Sludge Pumps	Moyno	DSP-B901, DSP-B902
Capacity (GPM)	275	
TDH (ft)	92	
HP	20	
Boilers (2)	Burnham	Natural Gas/Digester Gas
Rated Output MM BTU/HR		
Gas Storage	JDV Equipment Corp.	Double Membrane
Gas Storage Volume (cf)	36,600	minimum
Injection Site		
Total Usable Acres	441	Cultivated Area
Sludge Holding Tank (1)		
Volume (MG)	0.29	
Diameter (ft)	60	
Total Depth (ft)	16	
Usable Depth (ft)	13	
Sludge Storage Lagoon		
Volume (MG)	8	
Surface Area (sq ft)	107,400	
Sludge Injection Pump (1)		Centrifugal
Rated Capacity (gpm)	700	
Rated TDH	162	
Motor HP	50	
Dredge Pump		

THERESA STREET PLANT / STRUCTURES IDENTIFICATION

ID #	DESCRIPTION	ID #	DESCRIPTION
A-2	South Influent Pumping Station	A-15	DAF Building
A-3	North Influent Pumping Station	A-15A	Blower MCC Room
A-3A	Wetwell Area	A-15B	Aeration Blower Room
A-3B	Office Area	A-15C	DAF Office
A-3C	Restroom	A-16	Operations/SCADA Control Building
A-3D	Bar Screen Room	A-16A	Showers & Restrooms
A-4	CO-Generation Building	A-16B	Operator Lab/Office
A-5	Digester Complex	A-16C	HVAC Room
A-6	Grit Handling/Diversion Facility	A-16D	Sludge Loading Room
A-7	Primary Sludge Pumping Station	A-16E	Polymer Storage Room
A-7A	Primary Clarifier # 1	A-16F	Aeration Blower Room
A-7B	Primary Clarifier # 2 (Future)	A-16G	Offices
A-7C	Primary Clarifier # 3	A-16H	Belt Filter Press Room
A-7D	Primary Clarifier # 4	A-17	Laboratory
A-7E	Primary Distribution Structure	A-18	Plant Maintenance Building
A-8	East Primary Pumping Station	A-18A	Shop Parts & Tool Room
A-8A	Primary Clarifier # 5	A-18B	Main Shop Area
A-8B	Primary Clarifier # 6	A-18C	Offices & Lunch Room
A-8C	Distribution Box (A-8A & A-8B)	A-19	
A-9	West RAS / Scum Pumping Station	A-20	Electrical Structures
A-9A	Final Clarifier # 1	A-21	Gate Structure
A-9B	Final Clarifier # 2	A-22	Collection Shop
A-9C	Final Clarifier Distribution Box	A-23	Dry Dirt Storage Shed
A-10	East RAS / Scum Pumping Station	A-25	Administration Building
A-10A	Final Clarifier # 3	A-26	
A-10B	Final Clarifier # 4	A-27	
A-11	Chlorine Contact Facility	A-28	Plant Substation
A-11A	North Chlorine Contact Basin	A-29	
A-11B	South Chlorine Contact Basin	A-30	Plant Lighting System
A-11C	Sample Building @ Contact Basin	A-31	
A-12	Distribution / Primary to Aeration	A-32	Liquid Waste Hauling Station
A-12A	West Circular Aeration Basin	A-33	Odor Control Facility
A-12B	East Circular Aeration Basin	A-34	Central Blower Building
A-13A	West Rectangle Aeration Basin	A-35	Final Pumping Station
A-13B	East Rectangle Aeration Basin	A-35A	Final Clarifier # 5
A-14	Central Flow Distribution Structure	A-35B	Final Clarifier # 6
A-14A	Rectangle Aeration Basin AB-#5	A-36	UV Disinfection Facility
A-14B	Rectangle Aeration Basin AB-#6		

NORTHEAST PLANT / STRUCTURE IDENTIFICATION

ID #	DESCRIPTION	ID #	DESCRIPTION
B-1	Administration Building	C-1	NW 44th & Cummings
B-1A	Laboratory	C-2	952 N Lakeshore Drive
B-1B	Service bay	C-3	412 W Lakeshore Drive
B-1C	Gate House	C-4	52 W Lakeshore Drive
B-2	Influent Pumping Station	C-5	1721 Surfside Drive
B-2A	Wetwell	C-6	550 W Industrial Lake Drive
B-3	Aerated Grit Basin Station	C-6A	Wetwell
B-3A	Grit Basin # 1	C-7	1598 E Industrial Lake Drive
B-3B	Grit Basin #2	C-7A	Wetwell
B-3C	Valve Vault	C-8	West P & Sun Valley Blvd.
B-4	Primary Pumping Station	C-8A	Wetwell
B-4A	Primary Clarifier # 1	C-9	NW 6th West E Street
B-4B	Primary Clarifier # 2	C-9A	Wetwell
B-5	Recirculation Pumping Station	C-10	3rd & Rose Street
B-5A	RAS Wetwell West	C-11	3700 N 31st Street
B-5B	RAS Wetwell Eastt	C-11A	Wetwell
B-5C	Primary Effluent Wetwell	C-12	66th & Burlington Street
B-6	Final pumping Station	C-13	NW 3rd & W Charleston Street
B-6A	Final Clarifier # 1	C-14	Coddington & W. Millstone Rd.
B-6B	Final Clarifier # 2	D-1	48th Storm Water Station
B-6C	Final Clarifier # 3	D-2	Havelock Storm Water Station
B-7	Chemical Feed Building	D-3	Havelock Storm Water Station
B-7A	Contact Basin # 1	D-4	3rd & F Pedestrian Underpass
B-7B	Contact basin # 2		
B-8	Aeration Equipment Building		
B-8A	Aeration Basin A		
B-8B	Aeration Basin B		
B-9	Digester Buildiing		
B-9A	Digester # 1		
B-9B	Digester # 2		
B-9C	Methane Gas Holder		
B-10	Solids Handling Building		
B-10A	WAS Holding Tank # 1		
B-10B	WAS/TWAS Holding Tank # 2		
B-11	Maintenance Shop		
B-12	UV Disinfection Building		
B-13	Nitrification Blower Building		
B-13A	Aeration Basin West #2		
B-13B	Aeration Basin West #3		
B-14	Injection Facility		
B-14A	Sludge Holding Tank		
B-14B	Lagoon		