UPDATED CAPACITY ANALYSIS REPORT

FOR THE

CITY OF ST. PETERSBURG
SOUTHWEST WATER RECLAMATION FACILITY
3800 54th Avenue South
St. Petersburg, FL 33711
Pinellas County

FDEP Domestic WW Permit	FLA128848-016-DW1/MR	Exp. 08/16/12
Master Reuse System Permit	FLA012881-003-DW1/MR	Exp. 03/26/13
FDEP UIC Permit	0036855-008-UO/1M	Exp. 06/30/15
FDEP UIC Consent Order	OGC File 92-0092	Exp. 12/22/10
FDEP ASR Operating Permit	0036855-011-UO/5Q	Exp. 07/28/16

Prepared By:

John Parks, P.E., Technical Support Manager
Janet DeBiasio, Operations Specialist
Ralph Craig, P.G., Hydrogeologist
George K. Wise, Chief Operator

Water Resources Department
Water Reclamation Division

1650 3rd Avenue North
St. Petersburg, FL 33713

February 2012

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UPDATED CAPACITY ANALYSIS REPORT
SOUTHWEST WATER RECLAMATION FACILITY
ST. PETERSBURG, FLORIDA

PERMITTEE CERTIFICATION:

Permittee is fully aware of, and intends to comply with, the recommendations and schedules included in the report.

Permittee: _____

George B. Cassady, P.E.
City of St Petersburg
Water Resources Department
1650 3rd Avenue North
St Petersburg, FL 33713
727 892-5600

Chief Plant Operator: George K. Wise

George K. Wise
FL Wastewater License A-3188
City of Petersburg
Water Resources Department
3800 54th Avenue South
St Petersburg, FL 33711
727 893-7497

PROFESSIONAL ENGINEER CERTIFICATION:

The information contained in this report is true and correct to the best of my knowledge, the report was prepared in accordance with sound engineering principles, and I discussed the recommendations and schedules with the permittee or the permitte's delegated representative.

Professional Engineer: John Parks 2/17/2012

John F. Parks, P.E.
Florida PE - 39599
City of Petersburg
Water Resources Department
1650 3rd Avenue North
St Petersburg, FL 33713
727 892-5629

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SOUTHWEST WATER RECLAMATION FACILITY
CAPACITY ANALYSIS REPORT

TABLE OF CONTENTS

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1. Introduction

This Capacity Analysis Report is an update to the previous report prepared by the City's Water Resources Department on December 2004 during renewal of the Domestic Wastewater Facility Permit (Patricia J. Anderson, P.E.). The intent of this Report is to comply with the requirements of Chapter 62-600.405, F.A.C., Planning for Wastewater Facilities Expansion.

The Southwest Water Reclamation Facility (SWWRF) is located at 3800 54th Avenue South, immediately west of US 19, as shown in Appendix A. The SWWRF is a 20 million gallon per day (mgd) annual average daily flow (AADF) Type 1 complete mix activated sludge domestic wastewater treatment plant. The plant is a dual train facility with wastewater entering the plant by both force main and gravity lines. The wastewater from the force main is pumped directly to the headworks structure while the gravity line flows first to the 40 mgd influent pump station. The headworks has two mechanically cleaned fine bar screens and a manually cleaned by-pass bar screen prior to grit removal. There are also two in-plant recycle pumping station that returns various side stream flows back to the headworks of the plant for treatment. These side streams include filter backwash, belt press filtrate and gravity belt thickener filtrate.

Flow from the headworks can be split between the two treatment trains called the old and new plants. The process units for the old plant are rated for 4 mgd and include two circular aeration basins with a combined volume of 0.65 mg and two secondary clarifiers with a combined volume of 0.65 mg. The new plant which is rated for 16 mgd consists of two rectangular aeration basins with a total volume of 4.03 mg and three secondary clarifiers with a total volume of 3.85 mg, four manually backwashed deep bed dual media filters with a total surface area of 5,624 square feet and a dual channel chlorine contact chamber of 0.47 mg using liquid sodium hypochlorite for disinfection.

The residuals treatment system consists of one gravity belt thickener, three anaerobic digesters with a total volume of 2.32 mg operated at mesophillic temperatures (95 to 102 degrees F), and two belt filter presses. The Class B biosolids from the filter presses are hauled off-site to Florida Department of Environmental Protection (FDEP) approved land application sites.

Reclaimed water storage is provided in the 10 mg and 5 mg ground storage tanks. A project in FY 2012 will allow effluent not meeting quality standards can be sent to the 5 mg storage tank and returned to either the filters or the head of the plant for additional treatment. Reclaimed water produced in excess of demand is directed to the to the deep injection well system. Reclaimed water can also be stored in the aquifer storage and recovery well which provides a seasonal storage element. A site plan is provided in Appendix B, a process flow diagram in Appendix C and the process tank specifications are in Appendix D.

2. Existing Conditions

Permitted Capacities

The SWWRF is permitted as a 20.0 MGD Type I activated sludge sewage treatment plant, with chlorinated effluent to a public access urban reuse irrigation system. Deep well injection is used as the backup effluent disposal method.

Treatment	20.0 MGD
Residuals	No Permit Capacity Required*
Reuse System	52.65 MGD (AADF Total System)
Deep Well Injection	27.0 MGD
ASR Well	1.2 MGD (Typical, no limit in permit)
Residuals Disposal	No Permit Capacity Required*

(*) Residuals disposal site capacity is limited by the nitrogen and heavy metals loading rate per Chapter 62-640 FAC.

Basis of Capacity

Population[1]	**Design**
Population Equivalent	216,450
Average Daily Flow, gal/cap/day	92.4

Loadings	**Design**
$CBOD_5$, mg/L	200
Suspended Solids, mg/L	220

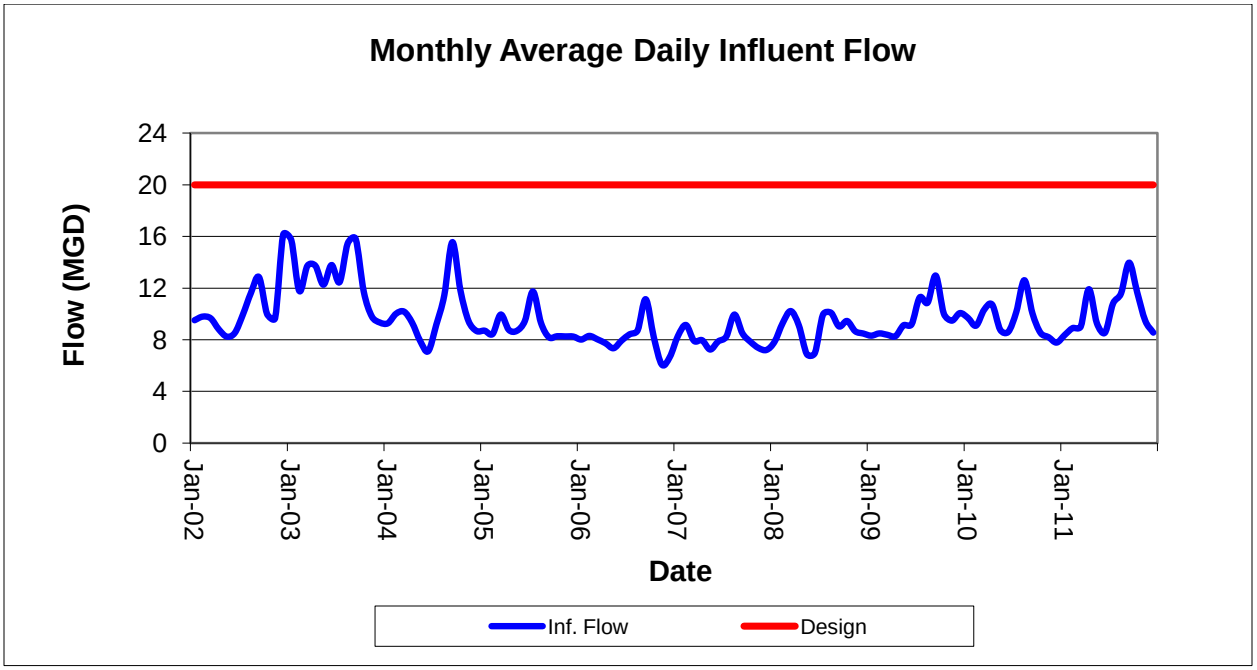
Domestic Flows	**Design**
Average Daily Flow, MGD	20.0
Peak Daily Flow Design Capacity, MGD	40.0
$CBOD_5$ Loadings, lbs/day	33,360
Suspended Solids, lbs/day	36,696
$CBOD_5$ Loadings beginning 2012, lbs/day [2]	35,000
Suspended Solids beginning 2012 lbs/day[2]	41,070

[1]Southwest WRF Service Area Population based on City of St Petersburg Development Services Traffic Analysis Zones, 2009 - Published in the 201 Facilities Plan Update April 2010. Average daily flow per capita is from actual flow data from the discharge monitoring reports for years 2006-2010.
[2]Aeration Conversion Project BODR, Boyle Engineering 2005

Current Flow Data 2002-2011

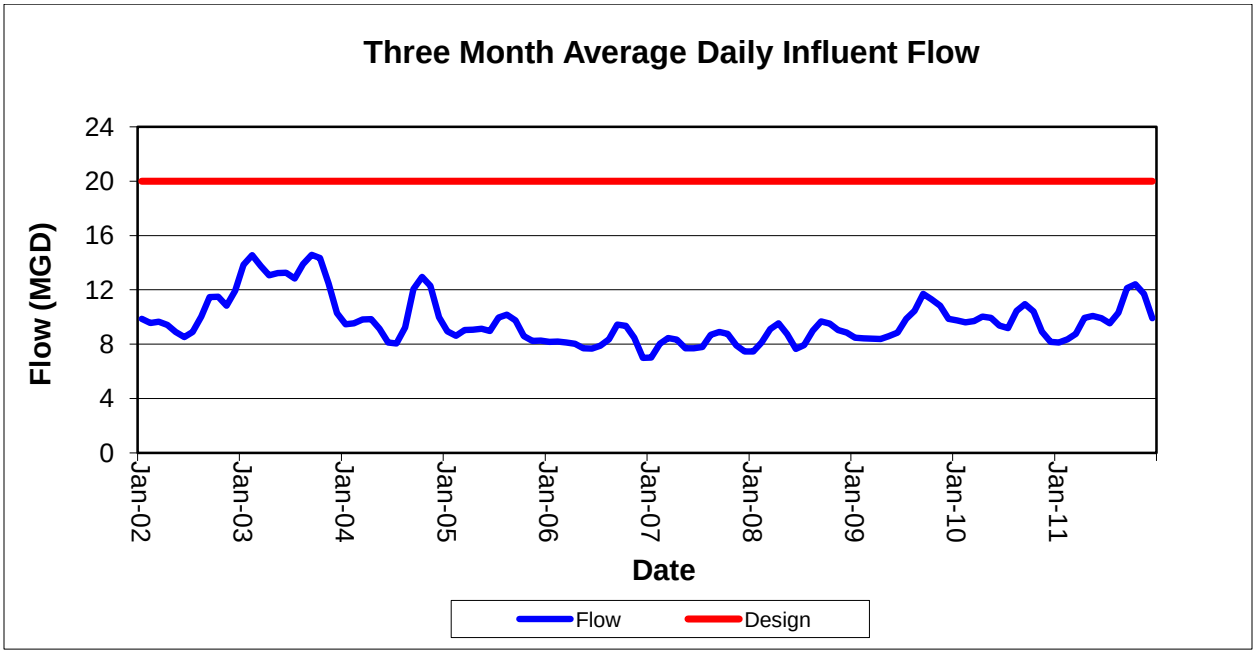
Monthly Average Daily Influent Flow (MGD)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
January	9.51	15.74	9.28	8.70	8.01	8.29	7.85	8.31	9.69	8.36
February	9.79	11.78	10.01	8.45	8.30	9.14	9.29	8.49	9.09	8.91
March	9.66	13.72	10.18	9.95	8.03	7.91	10.22	8.38	10.31	9.02
April	8.81	13.73	9.33	8.77	7.73	7.96	9.12	8.27	10.72	11.92
May	8.24	12.26	7.91	8.69	7.34	7.24	6.88	9.12	8.77	9.28
June	8.53	13.79	7.11	9.45	7.93	7.87	6.98	9.19	8.61	8.54
July	9.95	12.46	9.15	11.74	8.42	8.24	9.94	11.27	10.15	10.80
August	11.63	15.45	11.45	9.30	8.73	9.95	10.09	10.88	12.61	11.59
September	12.85	15.81	15.56	8.18	11.14	8.50	9.03	12.97	10.05	13.97
October	9.99	11.73	11.82	8.27	8.20	7.84	9.45	10.03	8.54	11.68
November	9.67	9.81	9.46	8.26	6.07	7.36	8.66	9.48	8.20	9.48
December	16.14	9.33	8.68	8.25	6.67	7.21	8.48	10.06	7.78	8.55
Design	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**
Min	8.24	9.33	7.11	8.18	6.07	7.21	6.88	8.27	7.78	8.36
Max	16.14	15.81	15.56	11.74	11.14	9.95	10.22	12.97	12.61	13.97
Average	**10.40**	**12.97**	**9.99**	**9.00**	**8.05**	**8.13**	**8.83**	**9.70**	**9.54**	**10.17**

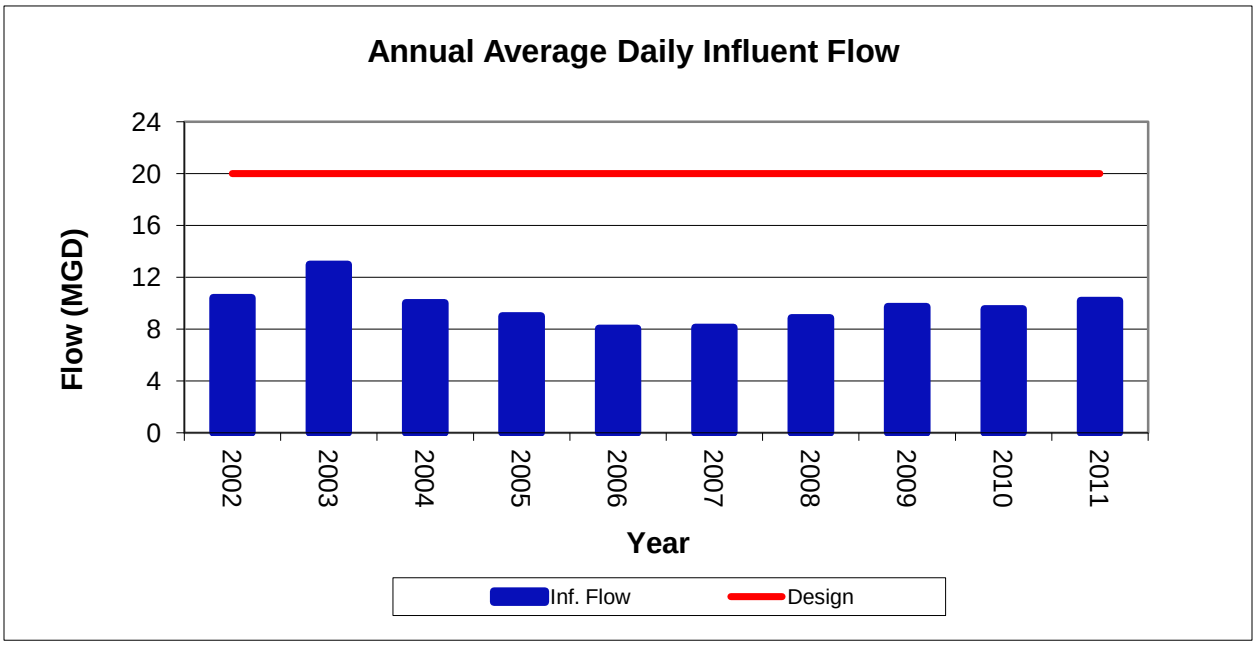


Three-month Average Daily Influent Flow (MGD)

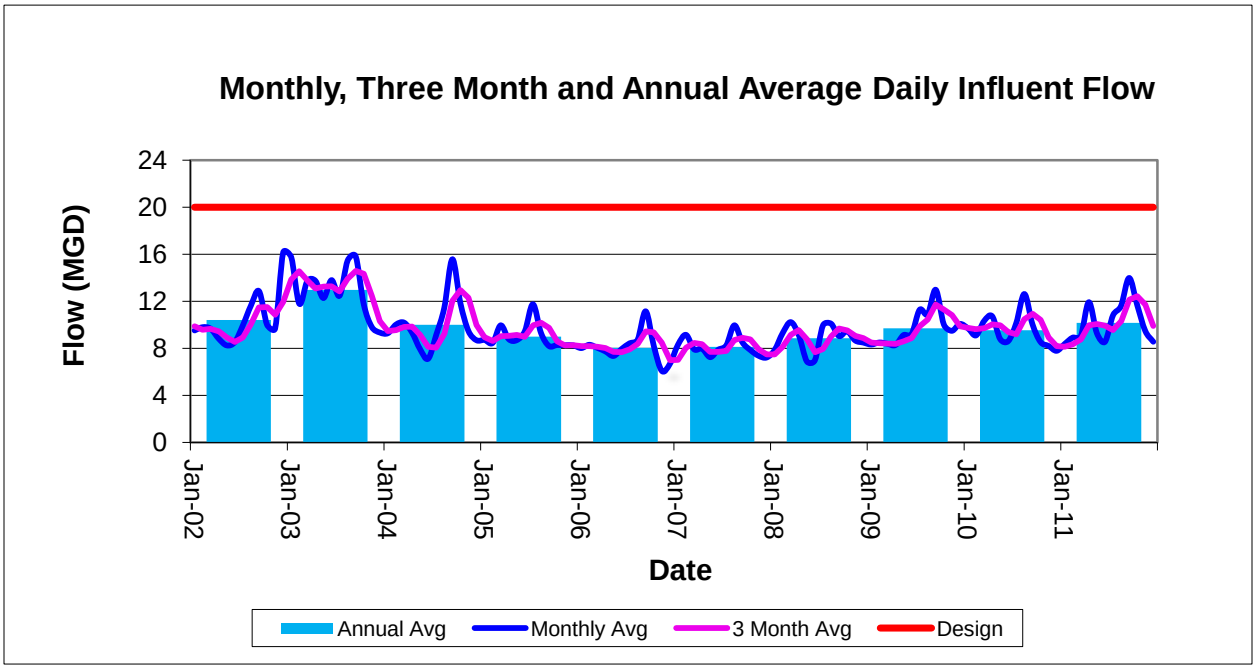
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
January	9.86	13.85	9.47	8.94	8.17	7.01	7.47	8.48	9.74	8.11
February	9.57	14.55	9.54	8.61	8.18	8.03	8.12	8.43	9.61	8.35
March	9.65	13.75	9.82	9.03	8.11	8.45	9.12	8.39	9.70	8.76
April	9.42	13.08	9.84	9.06	8.02	8.34	9.54	8.38	10.04	9.95
May	8.90	13.24	9.14	9.14	7.70	7.70	8.74	8.59	9.94	10.07
June	8.53	13.26	8.12	8.97	7.67	7.69	7.66	8.86	9.37	9.91
July	8.91	12.84	8.05	9.96	7.90	7.78	7.93	9.86	9.18	9.54
August	10.04	13.90	9.23	10.17	8.36	8.69	9.00	10.45	10.46	10.31
September	11.48	14.57	12.05	9.74	9.43	8.90	9.69	11.71	10.94	12.12
October	11.49	14.33	12.95	8.59	9.36	8.76	9.52	11.29	10.40	12.42
November	10.84	12.45	12.28	8.24	8.47	7.90	9.05	10.82	8.93	11.71
December	11.93	10.29	9.99	8.26	6.98	7.47	8.86	9.86	8.17	9.90
Design	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**
Min	8.53	10.29	8.05	8.24	6.98	7.01	7.47	8.38	8.17	8.11
Max	11.93	14.57	12.95	10.17	9.43	8.90	9.69	11.71	10.94	12.42
Average	**10.05**	**13.34**	**10.04**	**9.06**	**8.20**	**8.06**	**8.73**	**9.59**	**9.71**	**10.10**



Annual Average Daily Flow (MGD)



Monthly, Three-Month and Annual Average Daily Flow (MGD)



Seasonal Flow Variation

The AADF and the maximum three-month daily influent flow to the facility is shown below for the period from 2002 through 2011. The month when the maximum three-month average daily flow occurred is listed along with its ratio to the annual average daily flow for that year. The flow varies seasonally and is normally highest during the middle to the end of the summer rainy season, August to October (month listed is the end of the 3-month maximum period). The ratio of the maximum three-month average daily flow to the annual average daily flow is 1.16 for the years 2002 through 2011.

Influent Flow Variation (MGD)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average
Months that 3-Month Max Flow Occurred	Dec	Sept	Oct	Aug	Sept	Sept	Sept	Sept	Sept	Oct	
3-Month Max Flow	11.93	14.57	12.95	10.17	9.43	8.90	9.69	11.71	10.94	12.42	11.27
AADF	10.40	12.97	9.99	9.00	8.05	8.13	8.83	9.70	9.54	10.17	9.68
Ratio of 3-month Max to AADF	1.15	1.12	1.30	1.13	1.17	1.09	1.10	1.21	1.15	1.22	1.16

Updated Flow and Loading Information

Influent flow metering and sampling are performed on the two vertical forcemains that discharge to the headworks. One forcemain serves the influent pump station and the other serves Lift Station 28. Individual samplers take flow proportioned composite samples from each of the forcemains. The sample results are averaged with respect to flow to determine daily influent concentrations and loadings. The design parameters used as the basis of the permitted capacity and recorded actual data are summarized below:

Original Basis of Design[1]		Current Data
Parameter	**Design**	**Annual Average 2011**
Population	200,000	103,290
ADF, gpc	100	94
CBOD, mg/L	200	234
TSS, mg/L	220	414
ADF, mgd	20	10.2
BOD Loading, ppd	33,360	19,847
TSS Loading, ppd	36,696	35,115
Injection Wells, mgd	27[2]	5.2
Reclaimed Distribution, mgd	39.6	4.4
Digestion, lb VSS/CF/Day	13,900[3]	8,910

[1] SWWRF Master Plan November 2001, Black & Veatch Corp., with exceptions as noted
[2] SWWRF Underground Injection Control Permit
[3] Recommended Standards for Wastewater Facilities, 2 digesters

Since 2005, the SWWRF influent samples have shown periods of unusually high Influent CBOD and TSS concentrations uncharacteristic of a predominately residential service area. Some periods correlate with collection system cleaning. Other possible explanations are sample collection location and unpermitted high strength discharges, but to date, an explanation common to all of the occurrences has not been established. Though the 2011average influent CBOD and TSS concentrations have exceeded the Original Design Basis, total pounds per day have been within limits due to low flow rates. The changes in influent loading concentrations since 2005 are illustrated below.

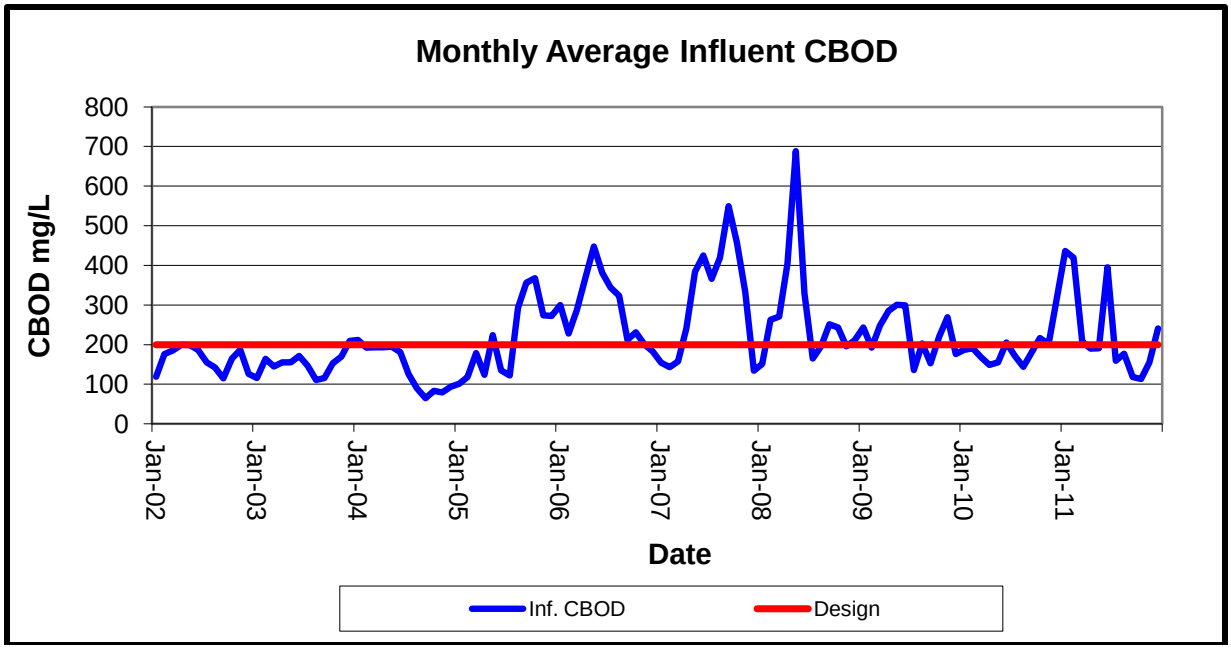
Influent CBOD and TSS Data

Parameter	2002-2004			2005-2011		
	Monthly Ave	Monthly Max	Ratio Max/Ave	Monthly Ave	Monthly Max	Ratio Max/Ave
CBOD mg/L	152	209	1.4	250	688	2.8
TSS mg/L	141	251	1.8	435	1297	3.0

Influent CBOD and TSS data for the past 10 years are provided in the following tables and graphs.

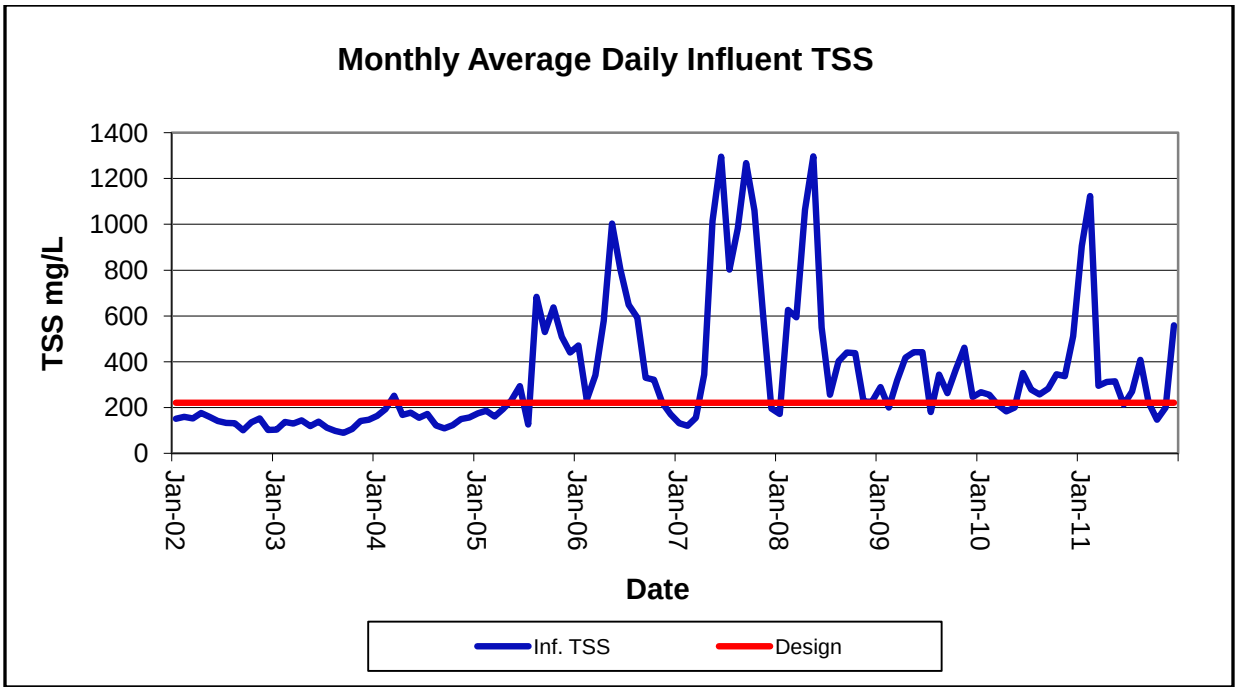
Monthly Average Influent CBOD (mg/L)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
January	119	116	212	101	300	155	151	243	187	436
February	176	164	192	118	228	143	263	192	191	419
March	185	145	193	179	288	158	271	248	168	208
April	200	155	193	124	370	241	405	285	149	190
May	199	155	195	224	448	384	688	301	155	191
June	187	171	181	135	381	425	330	299	205	395
July	155	147	125	122	344	366	165	136	172	159
August	142	111	90	293	323	419	196	203	144	177
September	115	116	65	356	212	549	251	153	180	118
October	165	153	83	368	231	457	243	220	217	113
November	187	170	79	274	201	333	196	269	201	155
December	126	209	94	272	183	134	211	176	318	241
Design	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**
Min	115	111	65	101	183	134	151	136	144	113
Max	200	209	212	368	448	549	688	301	318	436
Average	**163**	**151**	**142**	**214**	**292**	**314**	**281**	**227**	**191**	**234**



Monthly Average Influent TSS (mg/L)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
January	151	103	163	175	471	131	171	289	267	905
February	160	137	193	186	233	120	626	199	255	1124
March	152	130	251	161	341	155	594	318	212	295
April	176	144	168	193	578	343	1063	418	183	312
May	159	119	177	230	1003	1015	1297	441	199	314
June	141	138	155	293	804	1295	549	441	351	212
July	133	111	171	125	648	802	255	180	278	269
August	131	98	121	683	592	982	402	344	257	408
September	101	89	109	529	329	1267	440	263	282	221
October	135	106	122	637	321	1061	437	365	345	147
November	152	141	149	509	221	605	226	461	336	199
December	102	147	156	440	171	196	225	246	511	559
Design	**220**	**220**	**220**	**220**	**220**	**220**	**220**	**220**	**220**	**220**
Min	101	89	109	125	171	120	171	180	183	147
Max	176	147	251	683	1003	1295	1297	461	511	1124
Average	**141**	**122**	**161**	**347**	**476**	**664**	**524**	**330**	**290**	**414**



3. Future Conditions

Population and Flow Projections

The City's Albert Whitted WRF is scheduled to be decommissioned in 2014 and its wastewater flows sent to the SWWRF. Populations and flow projections in 2014 and beyond must consider both the SWWRF and AWWRF service areas.

Population estimates are based on the City of St Petersburg Development Services Traffic Analysis Zones, 2009 - Published in the 201 Facilities Plan Update April 2010 and also the City's 2007 Evaluation and Appraisal Report. Population projections indicate small increases for both areas of less than 0.2% per year through year 2030. These are presented in the first table below. The second table and following graph include projected population and flows at the SWWRF with the AWWRF flow contribution in 2014.

Population Projections 2010-2030

Parameter	2010	2015	2020	2025	2030
SWWRF Population	103,290	104,066	104,683	105,181	105,603
AWWRF Population		50,137	50,722	51,220	51,626
Total Population	103,290	154,203	155,405	156,401	157,229
Estimated population increase per year		297	240	199	166

Yearly Population and Flow Projections for the SWWRF 2012-2021

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2269
Service Area Population	103,600	103,756	153,906	154,203	154,443	154,684	154,924	155,165	155,405	155,605	196,850
Per Capita Usage*	92	92	102	102	102	102	102	102	102	102	102
AADF (MGD)	9.57	9.59	15.64	15.67	15.69	15.72	15.74	15.76	15.79	15.81	20.00
3-Month Max Flow	11.10	11.12	18.35	18.38	18.41	18.44	18.47	18.50	18.53	18.55	23.47
Ratio of 3-Month Max Flow to AADF	1.16	1.16	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17

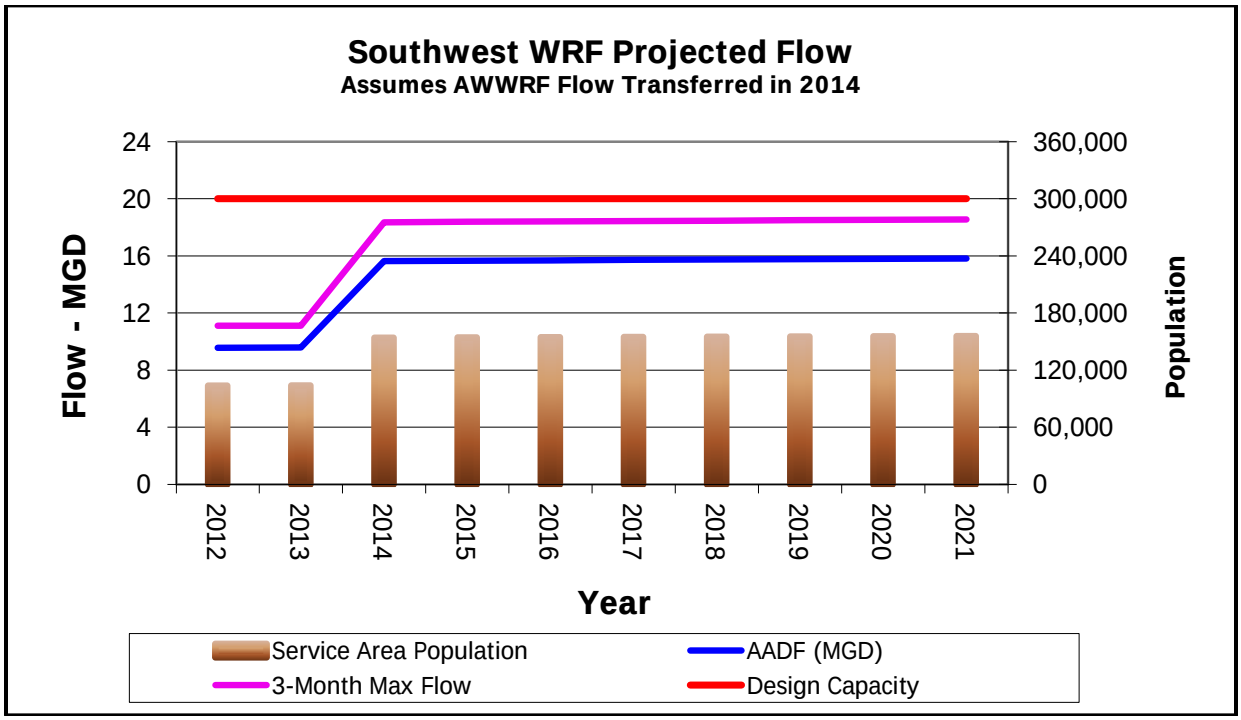
*Assumes per capita usage is 92 gpd per capita for SWWRF, 120 gpd per capita for AWWRF and 102 gpd per capita when their flows are combined in the year 2014.

Based on population projections, the annual average daily flow will not reach the SWWRF's 20 mgd Basis of Design Capacity until the year 2269 and the 3 month maximum flow will not reach it until the year 2097. Maximum Month, Maximum Day, and Peak Hour flow rate projections were determine from the previous 10 years of influent flow data. The projected Peak Hour Flow rate will exceed the 40 mgd Maximum Day Basis of Permitted Capacity. Impacts of flow rates above 40 mgd through the SWWRF have not been evaluated. Flow projections for the year 2021 are presented in the following table and graph.

Projected Flows in Year 2021 (mgd)

Flow Parameter	MGD
Design Average Day	20
Projected Average Day 2021	15.81
Projected 3-Month Maximum	18.55

Projected Influent Flow and Population to year 2021



4. Summary and Conclusions

Flows: The SWWRF influent flows will increase by approximately 60% in 2014 when the AWWRF is scheduled to go off-line. Notwithstanding, the projected three-month maximum daily flow will not exceed the SWWRF's permitted capacity of 20 mgd until year 2097.

To ensure peak flows from both WRFs can be accommodated at the SWWRF, the City has contracted with Brown and Caldwell consulting engineers to perform a hydraulic capacity evaluation of the SWWRF. Their evaluation will review data to estimate expected flow rates and develop a hydraulic model through the wet stream processes. The model will generate flow hydraulic grade lines and identify bottlenecks that create excessive hydraulic losses. The evaluation is scheduled to be completed in March 2012.

The City has also focused its ongoing collection system I &I reduction program in the AW and SW basins. The program includes flow monitoring, smoke testing, CIPP lining, pipe repairs and replacements, manhole lining, and notifying residents with private lateral defects.

Loadings: Updated loading data for 2011 identified the annual average CBOD and TSS concentrations above the original Basis of Design Capacity values, but respective average daily pounds per day were within limits. The Diffused Aeration project currently under construction will increase design loading capacities. With the addition of AWWRF flows in 2014, influent loading concentrations should decrease due to its' more consistent lower strength wastes, but total loading pounds will increase.

To ensure peak loadings from both WRFs can be accommodated at the SWWRF, Brown and Caldwell is also performing a process evaluation of the SWWRF. This evaluation includes development of a sampling plan, a calibrated BioWin® process model, and a computational fluid dynamic model to identify whether any improvements are needed to allow wastewater from both WRFs to be processed at the SWWRF. This evaluation is also scheduled to be completed in March 2012.

The SWWRF has experienced periods with higher than normal loading concentrations. The City will continue its investigations in the SW collection system and sampling processes to identify the reasons for the random high influent concentrations.

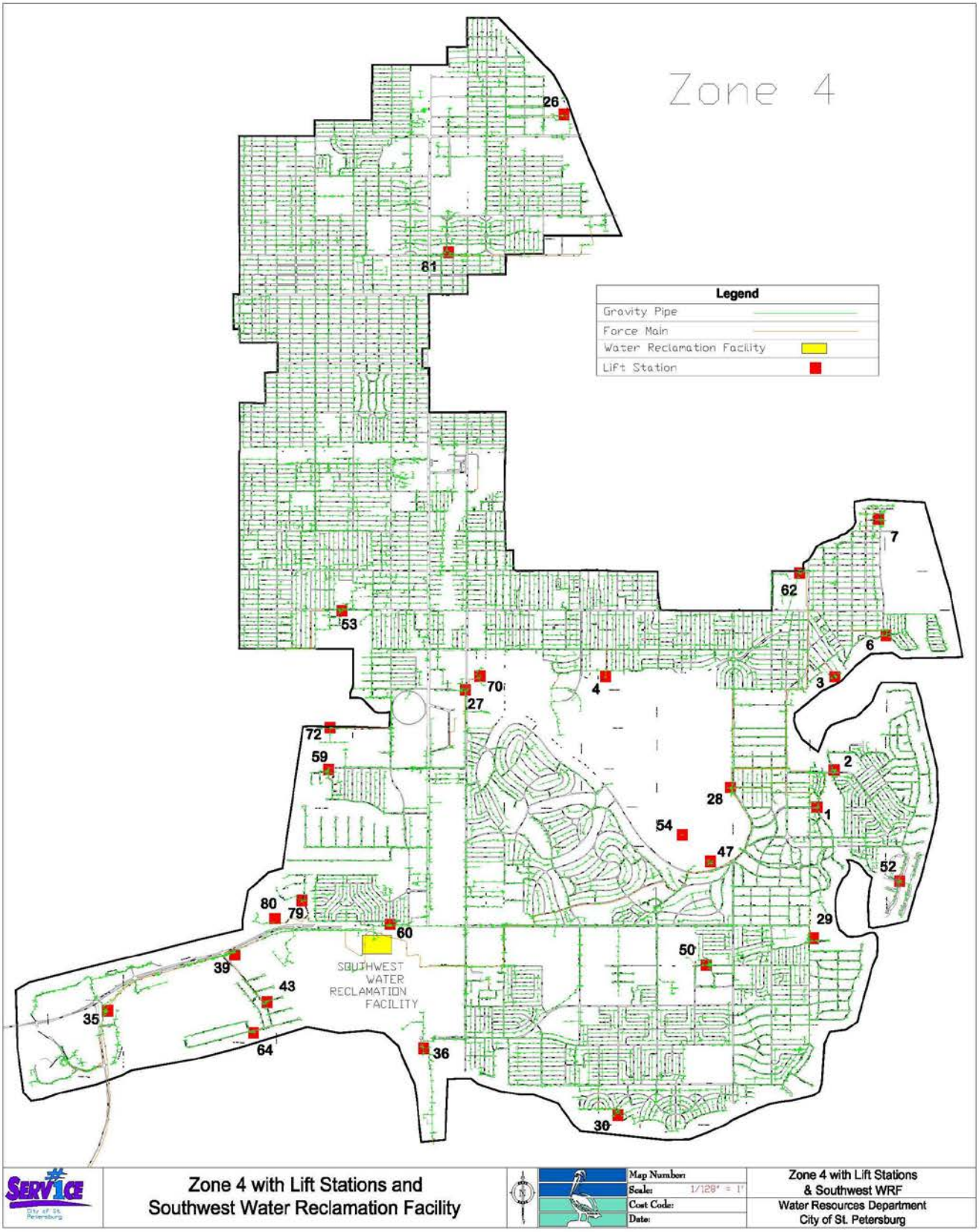
Waste Solids Processing: Waste solids projections show that additional thickening and anaerobic digestion capacity will be needed if digestion capacity is limited to 2 digesters.

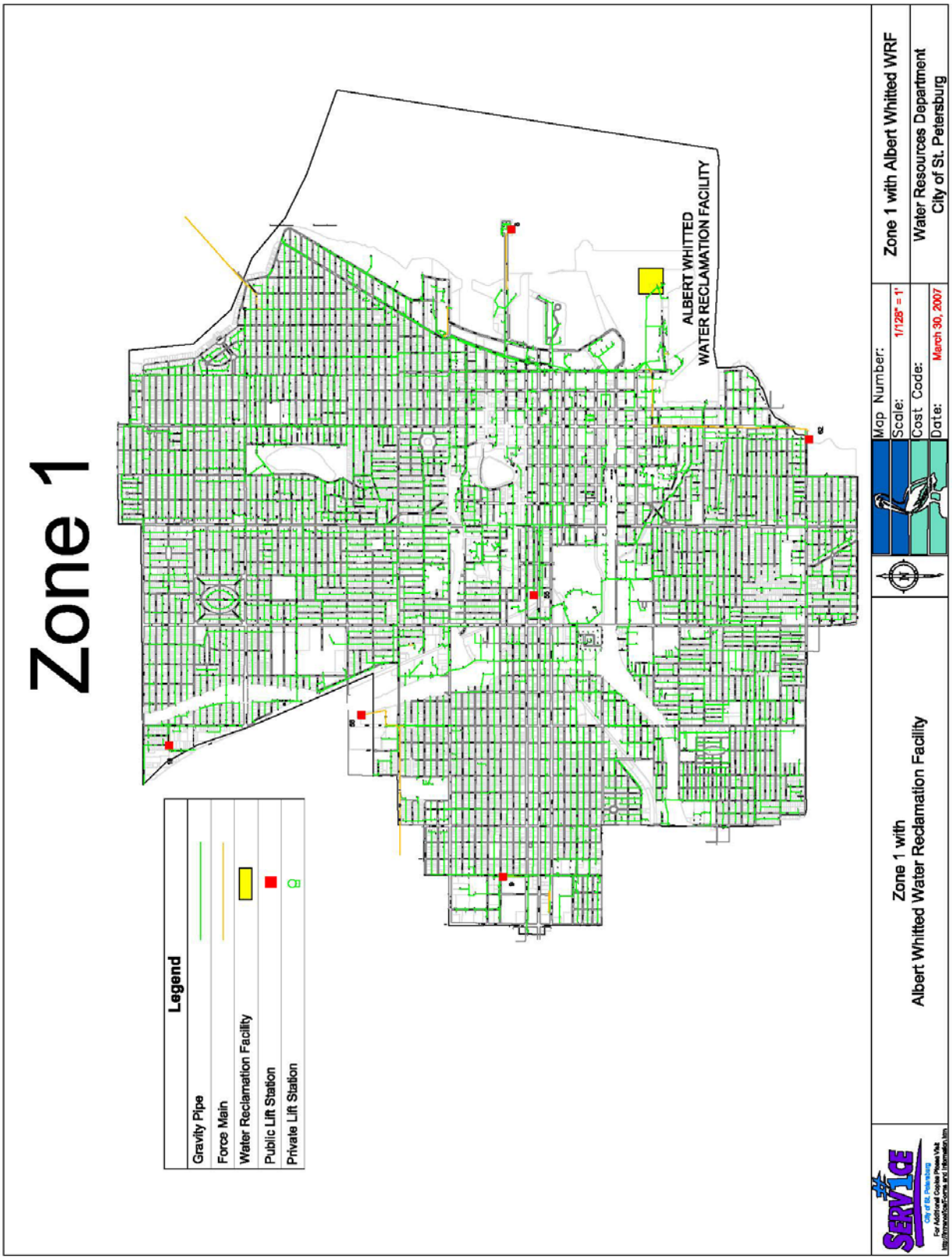
The Department's short term plan is to discontinue digestion and implement an alternative process to produce a Class AA product such as the Bioset® lime stabilization process or by contracting a service company to process WAS at an offsite facility. Proposals are being accepted at the time of this writing, with full implementation scheduled prior to January 1, 2013. The short term alternative will also include refurbishing either one or both of the two in-service digesters, and decommission digester 2.

The Department's five year plan for waste solids processing includes 2 -phase digestion to produce a Class AA product and maximize methane production. Methane will be used to generate electrical energy to power plant operations and also produce heat energy for the thermophilic digester.

Appendix A

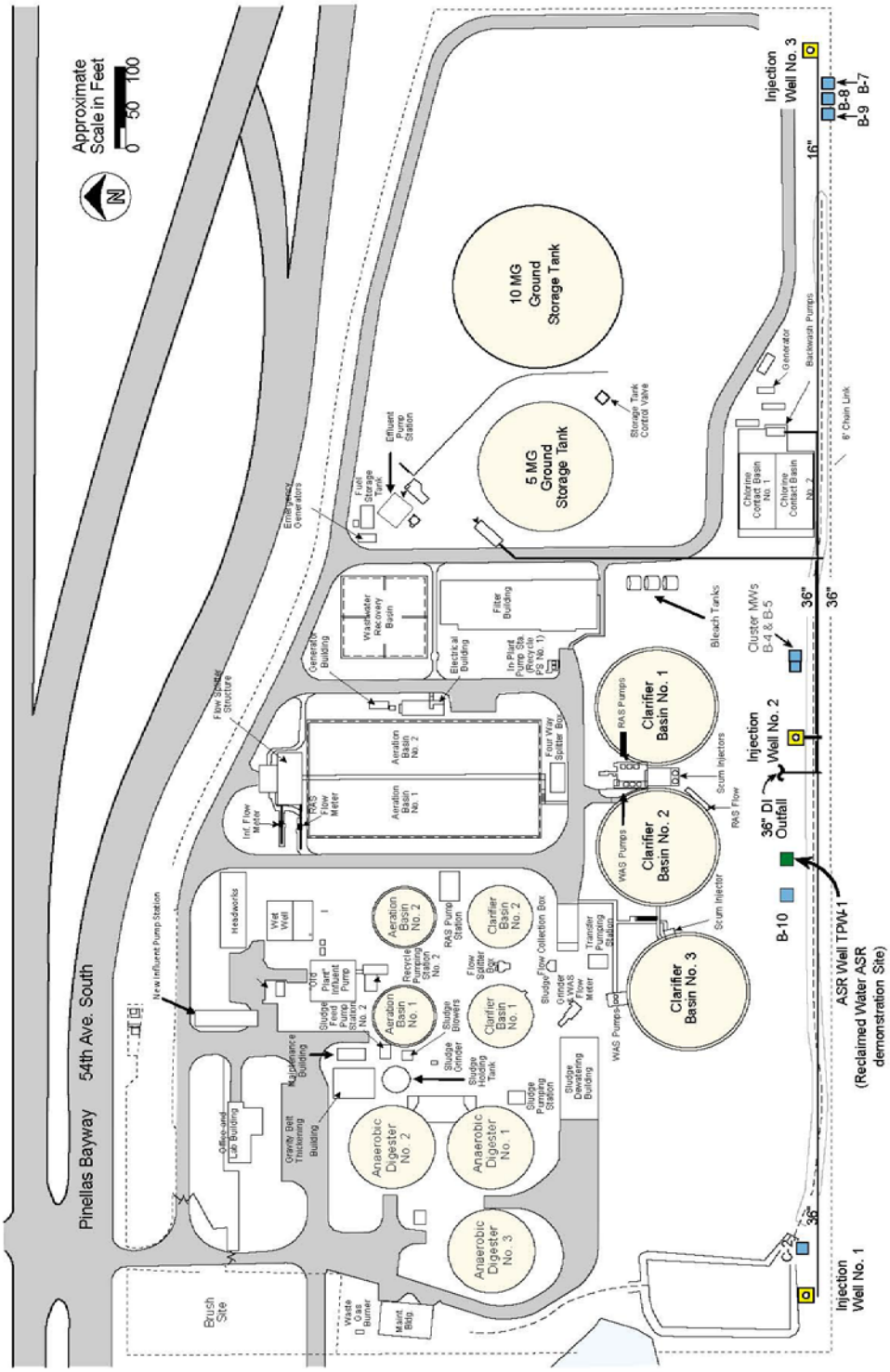
SWWRF and AWWRF Service Area Maps


Zone 4
Legend
Gravity Pipe
Force Main
Water Reclamation Facility
Lift Station
SOUTHWEST WATER RECLAMATION FACILITY
26
81
7
62
6
3
53
70
27
4
72
59
2
28
1
54
47
52
80
79
60
29
50
39
43
35
64
36
30
SERV1CE
City of St. Petersburg
Zone 4 with Lift Stations and Southwest Water Reclamation Facility
Map Number:
Scale: 1/128" = 1"
Cost Code:
Date:
Zone 4 with Lift Stations & Southwest WRF
Water Resources Department
City of St. Petersburg


Zone 1
ALBERT WHITTED
WATER RECLAMATION FACILITY
Legend
Gravity Pipe
Force Main
Water Reclamation Facility
Public Lift Station
Private Lift Station
Zone 1 with
Albert Whitted Water Reclamation Facility
Map Number:
Scale: 1/128" = 1'
Cost Code:
Date: March 30, 2007
Zone 1 with Albert Whitted WRF
Water Resources Department
City of St. Petersburg

Appendix B

SWWRF Site Plan



Plan View of the Southwest WRF

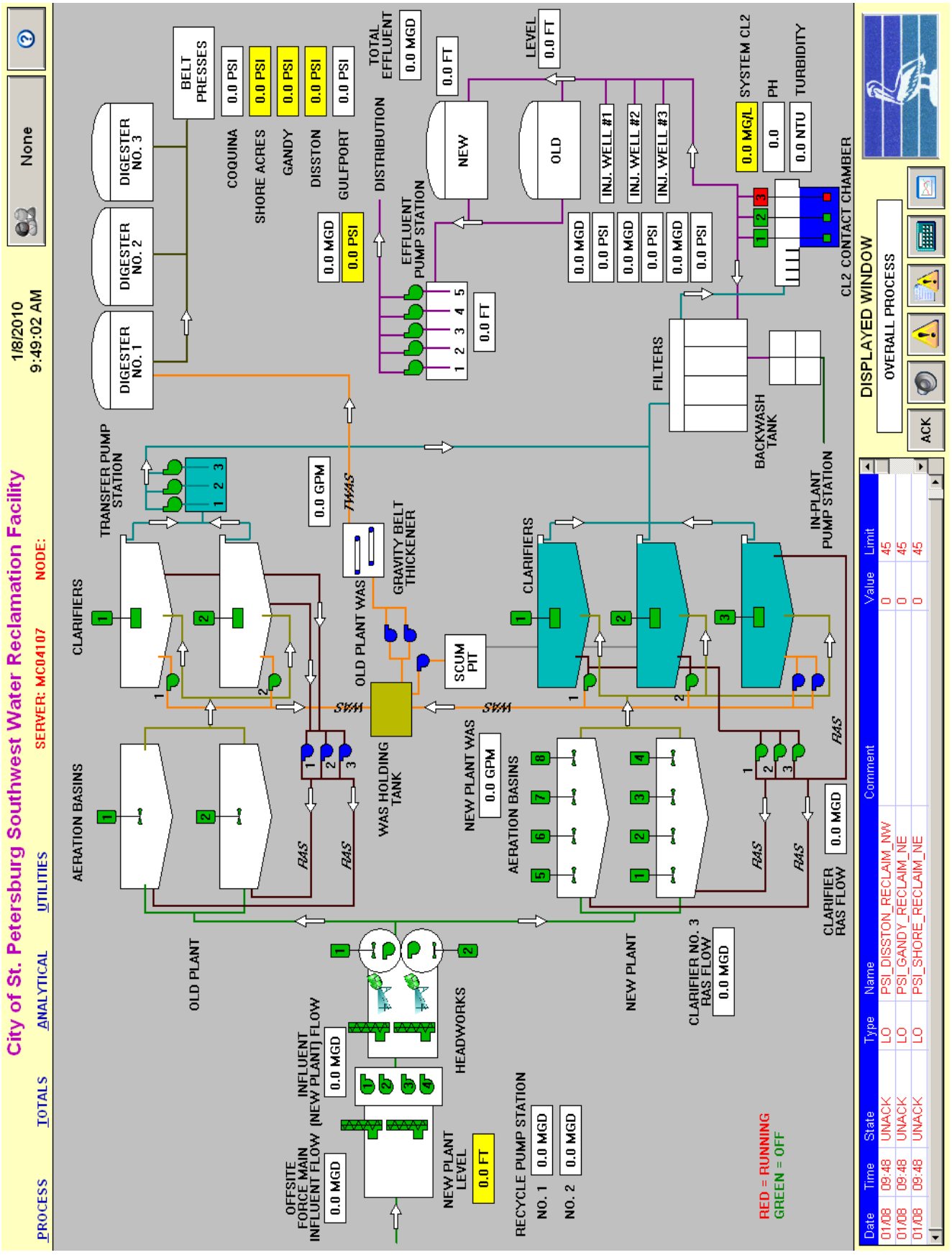
LEGEND

- Existing Monitoring Well
- Deep Injection Well

NOTE: Pipeline locations are approximate.

Appendix C

SWWRF Process Flow Diagram


City of St. Petersburg Southwest Water Reclamation Facility
PROCESS TOTALS ANALYTICAL UTILITIES
1/8/2010
9:49:02 AM
SERVER: MC04107
NODE:
None
DIGESTER NO. 1
DIGESTER NO. 2
DIGESTER NO. 3
BELT PRESSES
COQUINA
SHORE ACRES
GANDY
DISSTON
GULFPORT
DISTRIBUTION
TOTAL EFFLUENT
EFFLUENT PUMP STATION
NEW
OLD
LEVEL
INJ. WELL #1
INJ. WELL #2
INJ. WELL #3
SYSTEM CL2
PH
TURBIDITY
CL2 CONTACT CHAMBER
FILTERS
BACKWASH TANK
IN-PLANT PUMP STATION
TRANSFER PUMP STATION
CLARIFIERS
AERATION BASINS
OLD PLANT WAS
GRAVITY BELT THICKENER
SCUM PIT
WAS HOLDING TANK
NEW PLANT WAS
OLD PLANT
NEW PLANT
HEADWORKS
INFLUENT (NEW PLANT) FLOW
OFFSITE FORCE MAIN INFLUENT FLOW
NEW PLANT LEVEL
RECYCLE PUMP STATION
NO. 1
NO. 2
CLARIFIER NO. 3 RAS FLOW
CLARIFIER RAS FLOW
RED = RUNNING
GREEN = OFF
DISPLAYED WINDOW
OVERALL PROCESS
ACK
Date Time State Type Name Comment Value Limit
01/08 09:48 UNACK LO PSI_DISSTON_RECLAIM_NW 0 45
01/08 09:48 UNACK LO PSI_GANDY_RECLAIM_NE 0 45
01/08 09:48 UNACK LO PSI_SHORE_RECLAIM_NE 0 45

Appendix D

SWWRF Process Tank Specifications

SWWRF Process Tank Specifications

Aeration - Old Plant	
Number of Tanks	2
Dimensions, Ft. (Dia. X SWD)	65x 13
Total Volume, Ft^3 (2 Tanks)	82,276
Total Volume, MG (2 Tanks)	0.645
Hydraulic Detention Time @4 MGD, Hours	3.9
CBOD Loading at 4 MGD & 200 mg/L, Pounds/day	6,672
Aeration - New Plant	
Number of Tanks	2
Dimensions Ft. (L x W x D)	268 x 67 x 15
Total Volume Ft^3 (2 Tanks)	538,680
Total Volume MG (2 Tanks)	4.03
Hydraulic Detention Time @16 MGD, Hours	6.04
CBOD Loading @16 MGD & 200 mg/L, Pounds/day	26,680
Clarifiers - Old Plant	
Number of Tanks	2
Dimensions Ft. (L x W x D)	65 x 13
Total Volume Ft^3 (2 Tanks Total)	86,276
Total Volume MG (2 Tanks Total)	0.645
Surface Area Ft^2 (2 Tanks Total)	6,637
Weir Length Ft. (2 Tanks Total)	408
Clarifiers - New Plant	
Number of Tanks	3
Dimensions Each Ft. (Dia. x SWD)	135 x 12
Total Volume Ft^3 (3 Tanks Total)	515,299
Total Volume MG (3 Tanks Total)	3.85
Surface Area Ft^2 (3 Tanks Total)	42,942
Weir Length Ft. (3 Tanks Total)	1,178
Filters	
Number of Filters	4
Dimensions Each, Ft. (L x W x D)	38 x 37 x 9
Surface Area, Ft^2 (4 filters total)	5,624
Loading Rate @20 MGD, gpm/Ft^2	2.47
Chlorine Contact Basin	
Number of Tanks	2
Dimensions, 2 Tanks Total (L x W x D)	88 x 103 x 7
Total Volume Ft^3 (2 Tanks)	63,448
Total Volume MG (2 Tanks)	0.475
Contact Time @20 MGD, Minutes (2 Tanks)	34

SWWRF Process Tank Specifications (continued)

Digesters

Number of Tanks	3
Dimensions, Ft. (Dia. X SWD)	100 x 23
Total Volume (3Tanks) MG	3.9

Appendix E

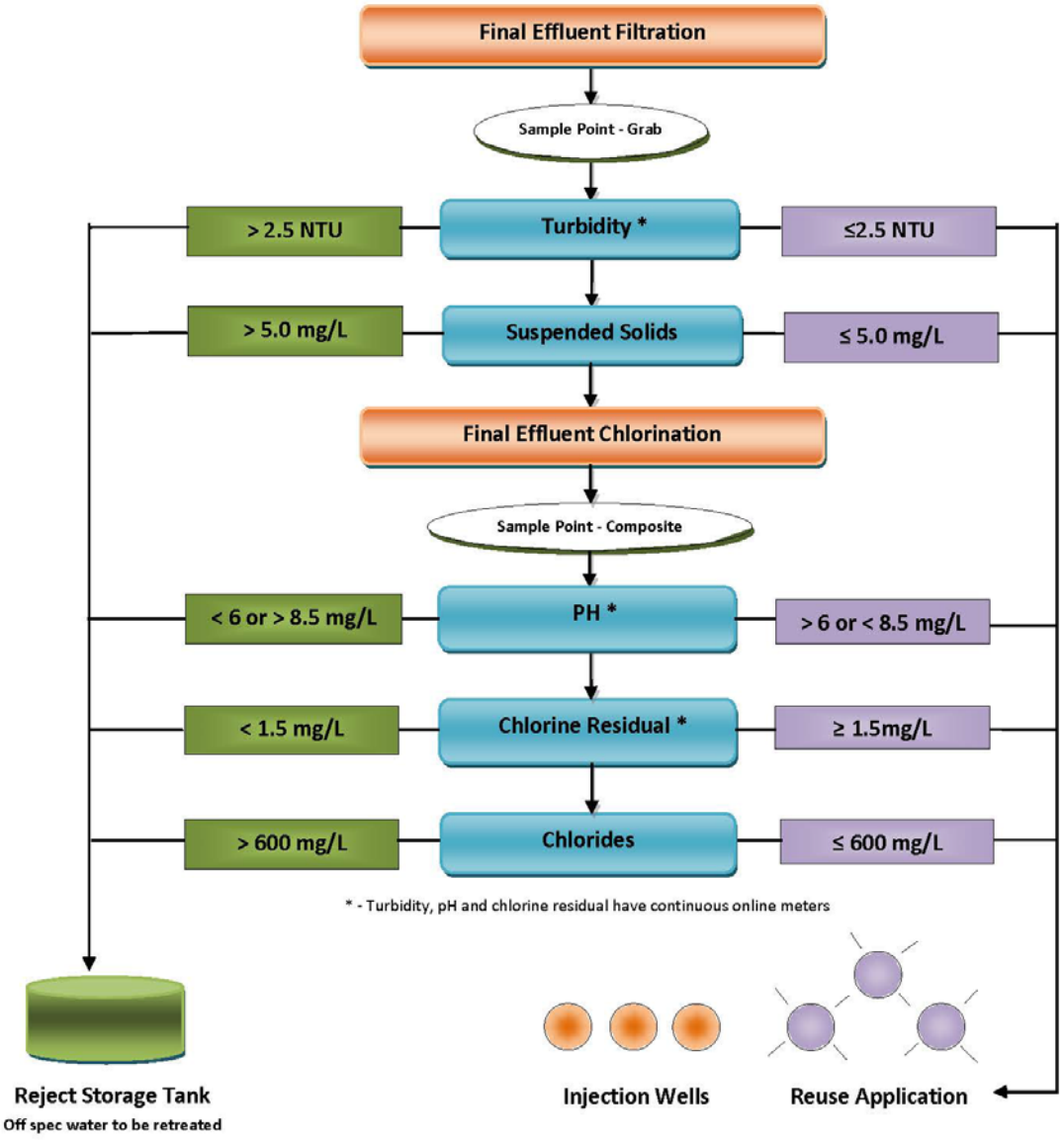
Reuse System Operating Protocol

CITY OF ST. PETERSBURG
SOUTHWEST WATER RECLAMATION FACILITY
PUBLIC ACCESS REUSE OPERATING PROTOCOL

Reclaimed Water System Operating Protocol

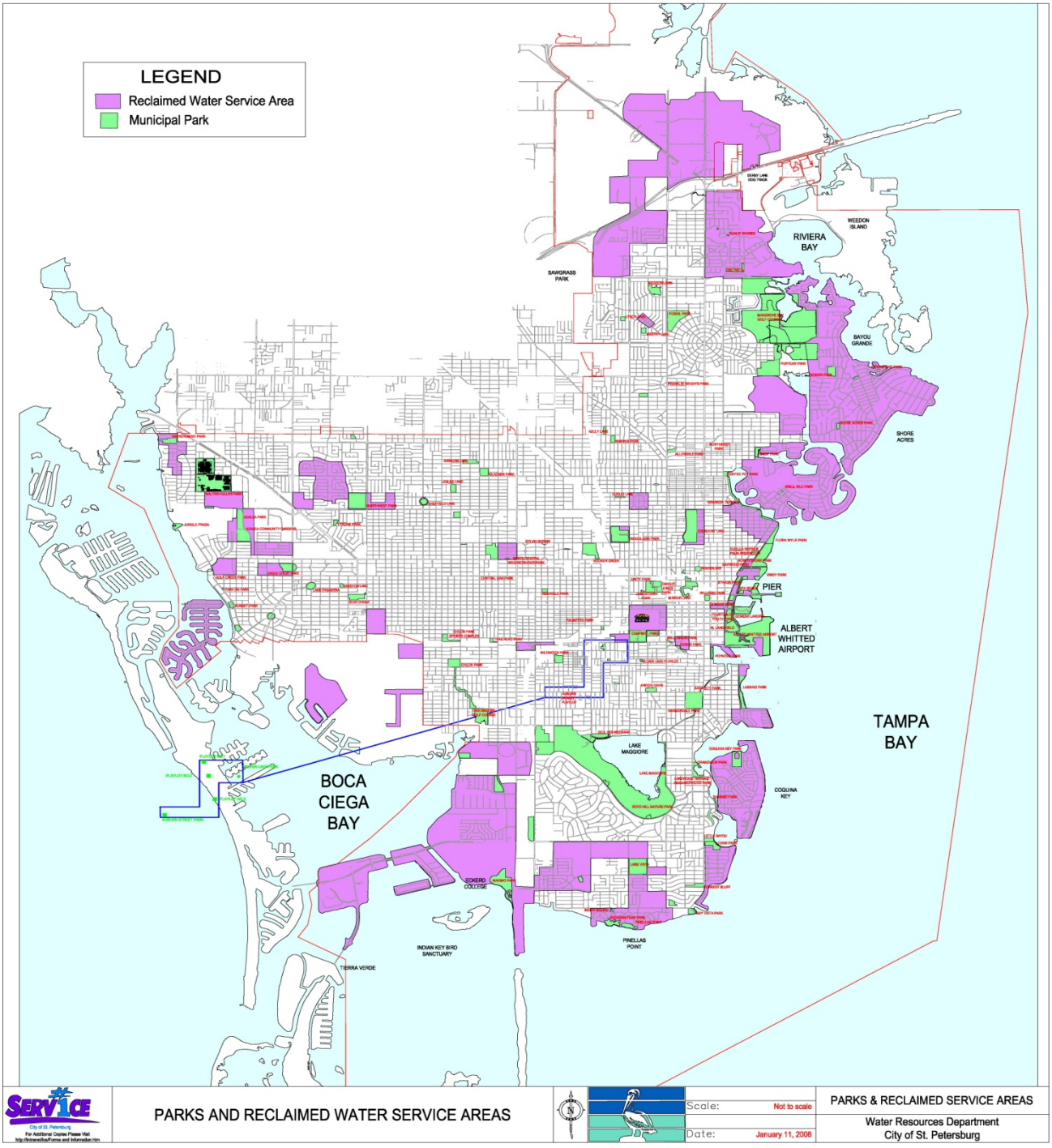
Effluent Reuse vs. Injection Well vs. Reject Water

(Operator's Decision Chart)



Appendix F

Reclaimed Water Service Area


LEGEND
Reclaimed Water Service Area
Municipal Park
RIVIERA BAY
WEEDON ISLAND
SAWGRASS PARK
BAYOU GRANDE
SHORE ACRES
PIER
ALBERT WHITTED AIRPORT
TAMPA BAY
LAKE MAGGIORE
COQUINA KEY
BOCA CIEGA BAY
ECKERD COLLEGE
INDIAN KEY BIRD SANCTUARY
TIERRA VERDE
PINELLAS POINT
PARKS AND RECLAIMED WATER SERVICE AREAS
Scale: Not to scale
Date: January 11, 2008
PARKS & RECLAIMED SERVICE AREAS
Water Resources Department
City of St. Petersburg