SEWERAGE SYSTEM MASTER PLAN

FOR THE

CITY OF SOCIAL CIRCLE, GEORGIA

January 2018

Project No. 172115

TURNIPSEED ENGINEERS

SEWERAGE SYSTEM MASTER PLAN

FOR THE

CITY OF SOCIAL CIRCLE, GEORGIA

January 2018

Project No. 172115

Prepared by:

TURNIPSEED ENGINEERS

Atlanta • 2255 Cumberland Parkway • Building 400 • Atlanta, Georgia 30339 • Tel: 770-333-0700
Augusta • 4210 Columbia Road • Building 3 • Augusta, Georgia 30907 • Tel: 706-863-8800

TABLE OF CONTENTS

FIGURES

I. EXECUTIVE SUMMARY

The City of Social Circle has experienced significant growth over the last 25 years as the City's population increased from 2,755 in 1990 to 4,452 in 2016 according to the United States Census Bureau. Growth in and around the City is expected to continue, as the Governor's Office of Planning and Budget projects Walton County will see a 67% increase in population over the next 30 years. Due to the length of time required to design and construct sewerage system infrastructure, the City of Social Circle instructed Turnipseed Engineers to develop a Sewerage System Master Plan that would allow the City to plan for the expected growth and correct existing deficiencies in their sewerage system.

Recommendations provided in this Sewerage System Master Plan will be based upon a 30-year planning period and will discuss inflow and infiltration (I/I) reduction, sewershed consolidation, pump station upgrades and improvements to the City's Little River Water Pollution Control Plant (WPCP). Detailed cost estimates and an implementation schedule for the recommended improvements will also be provided in this Master Plan to assist in the City's planning.

II. GROWTH

A. Population Growth

The population in Social Circle was 3,379 in 2000 and 4,262 in 2010 according to the United States Census Bureau, which correlates to a 26% increase in population over the 10-year period. Population projections for Social Circle and Walton County are shown below in Table 1.

Table 1 - Population Projections

Year	City of Social Circle*	Walton County**
2000	3,379	60,687
2010	4,262	83,768
2015	4,533	89,098
2020	4,975	97,786
2025	5,454	107,206
2030	5,960	117,138
2035	6,486	127,484
2040	7,043	138,437
2045	7,647	150,289
2050	8,309	163,301

* Projections estimated at rate of Walton County Growth
* 2000 United States Census, 2010 United States Census and Governor's Office of Planning and Budget County Residential Projections 2015 to 2050

The population projections for Walton County are based on data published by the Governor's Office of Planning and Budget through year 2050. Growth inside Social Circle is based upon proportionate growth to Walton County. As Table 1 indicates, the City's population is expected to nearly double over the next 30 years, yielding a projected population of 8,309 in 2050.

B. Land Usage

According to Social Circle's comprehensive plan, updated in 2017, the majority of the City's future land use is characterized as one of three areas: neighborhoods, agriculture/large lot residential or industrial. Exhibit 1 displays the City's future

land use plan. The comprehensive plan also identifies two areas, the industrial character area and gateway interchange character area as industrial growth locations. These areas, which cover approximately 36% of the City, provide easy access to rail and Interstate 20.

C. Wastewater Demand Projections

According to the City's discharge monitoring reports, average daily flow (ADF) at the Little River WPCP for the two-year period of 2015-2016 was 0.278 million gallons per day (MGD). Figure 1 presents three demand projection models:

1. Population Growth Model (shown in green) – this model assumes wastewater demand will increase at the same rate population is projected to increase as shown in Table 1. This is a conservative (low end) projection. Using this model, the City would expect flows to increase to approximately 0.51 MGD by 2050, or 0.37 MGD by the end of the study period (2028).
2. Mid-Range Model (shown in gold) – this model takes into consideration actual numbers of houses, calculated commercial flows, and actual top 10 customer flows and projects them through the study period according to the City's land use plan, construction of recommended sewer projects, projected home construction, and other factors. Industrial and Commercial growth is estimated at 20% between 2023 and 2028. This is the model used for the analysis in this report. Using this model, 2028 average wastewater demand is 0.64 MGD.
3. Industrial Growth Model (shown in red) – this model uses the mid-range model, but assumes industrial and commercial growth of 0.50 MGD. Using this model, 2028 average wastewater demand is 0.95 MGD.

Figure 1 - Wastewater Flow Projections

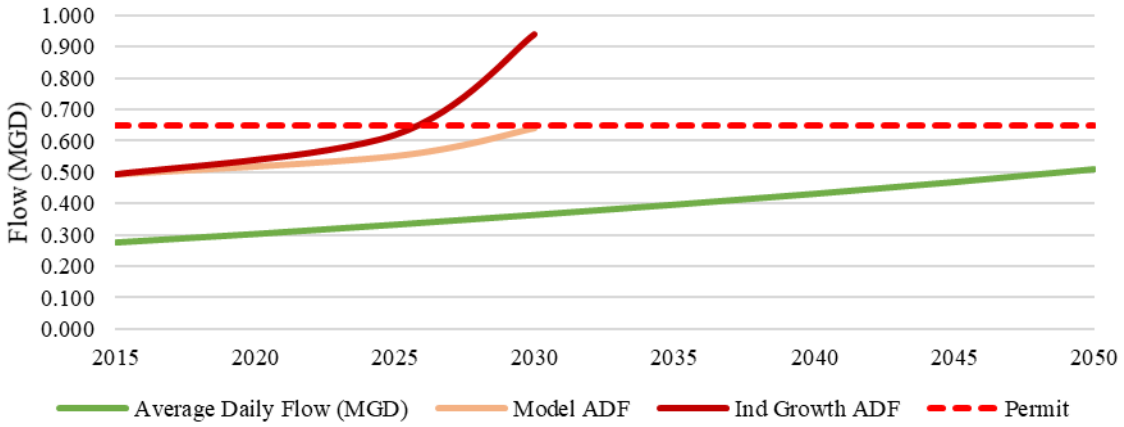


Table 2, shown below, contains historic sewer demand from fiscal year 2016 for the City's 10 largest sewer customers.

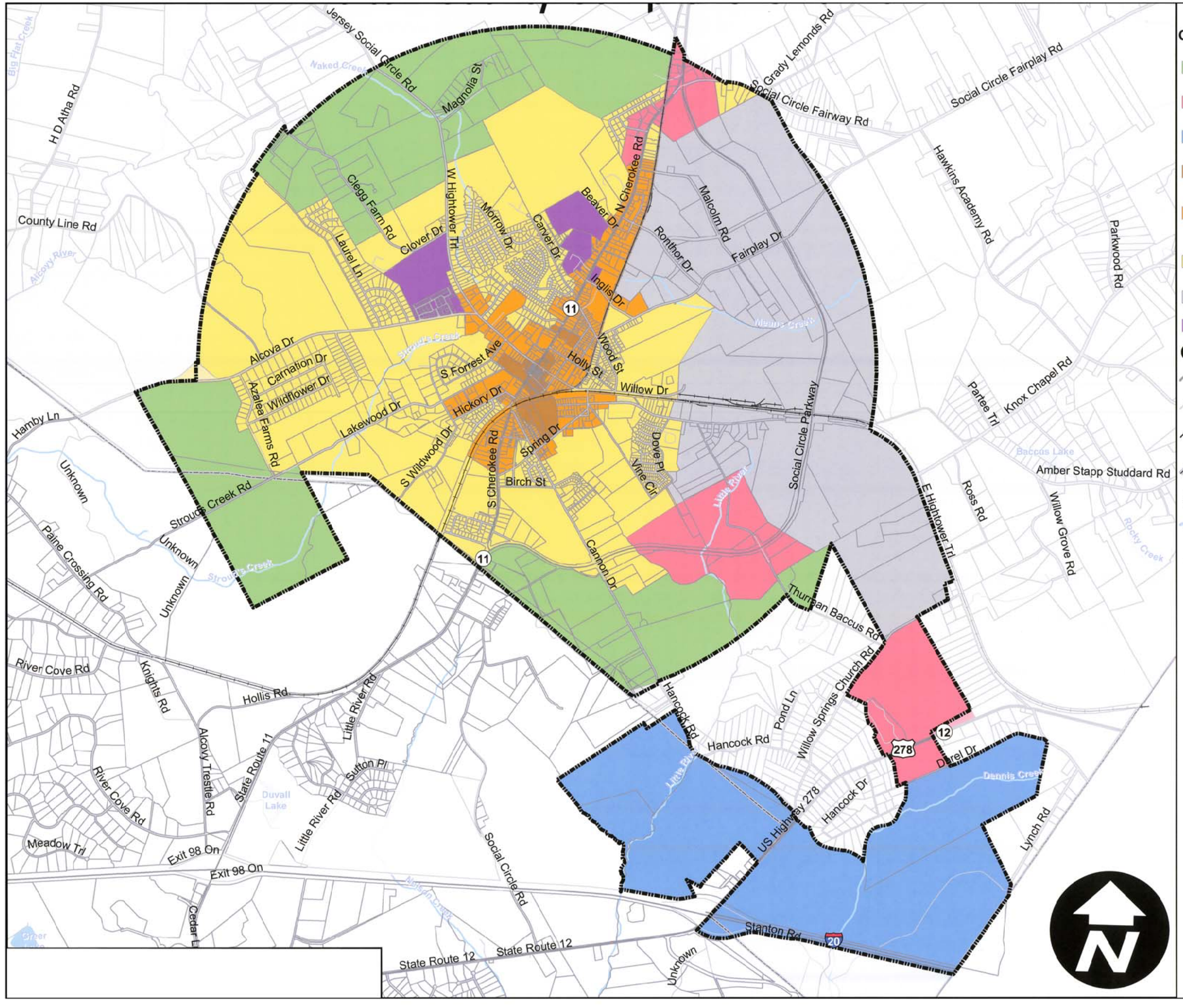
Table 2 - Fiscal Year 2016 Largest Sewer Users

Customer	Sewer Usage (GPY)	Sewer Usage (GPD)	
Isonova Technologies	23,381,000	29,482	[1]
Standridge	13,753,000	17,341	[1]
Board of Education	4,441,000	17,081	[2]
Goodyear	6,610,000	6,236	[1]
Senior Solutions	3,184,059	8,723	[2]
Department of Transportation	2,149,000	5,888	
Certainteed	2,394,000	9,208	[3]
Dialysis Newco	1,264,000	4,862	[3]
Social Circle Nursing Home	971,000	2,661	[3]
Blue Willow	850,000	3,270	[3]

[1] Estimated from pump station run times

[2] Estimated

[3] Estimated based on work days



Character Areas

- Agricultural and Large Lot Residential Character Area
- Commercial and Institutional Character Area
- Gateway Interchange Character Area
- Imagine Social Circle - Downtown Character Area
- Imagine Social Circle - Historic District Character Area
- Imagine Social Circle - Neighborhoods Character Area
- Industrial Character Area
- Urban Village Character Area

Other

- State Route
- Local Road
- Railroad
- County Boundary
- City Limits
- Rivers and Streams
- Lakes
- Parcels

This map is for planning purposes only.

NEGRC
NORTHEAST GEORGIA REGIONAL COMMISSION

6/9/2017

EXHIBIT I

CITY OF SOCIAL CIRCLE, GEORGIA
SEWERAGE SYSTEM MAP

SOCIAL CIRCLE LAND USE PLAN

SCALE: N.T.S. DATE: OCTOBER 2017

TURNIPSEED ENGINEERS | ATLANTA AUGUSTA ST. SIMONS ISLAND

P:\Social Circle\172115 Collection System Master Plan\Design\WRCP RSPS and Improvements\WRCP Maps\Land Use Plan.dwg

III. EXISTING SANITARY SEWERAGE SYSTEM

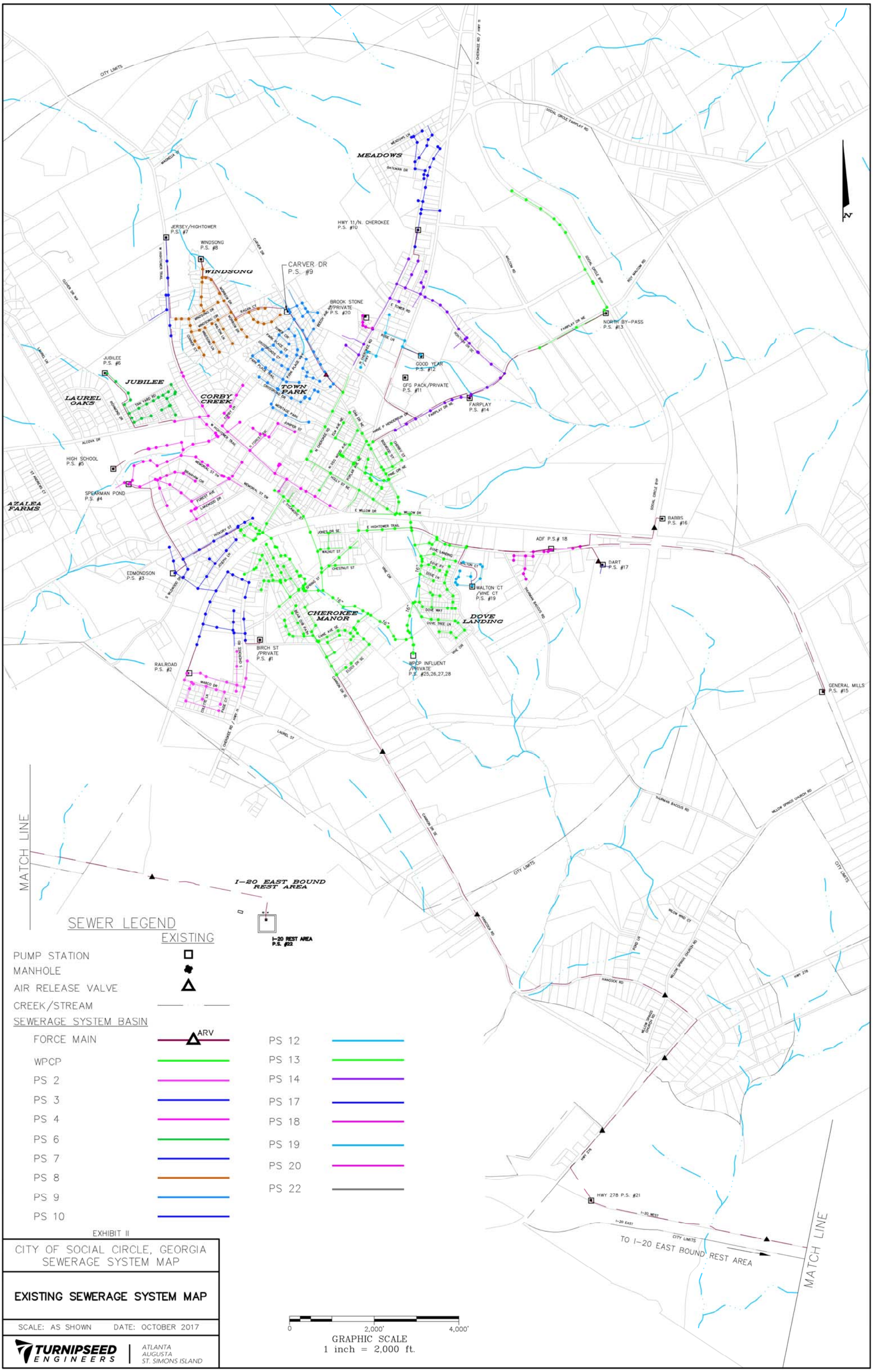
A. Collection System

Social Circle is located on top of a localized ridge. Consequently, gravity sewer generally flows outward towards the outskirts of the City. Due to the local topography and the City's outward growth, a total of 18 pump stations have been installed to return sewage to the gravity sewershed which serves downtown and flows southeast to the Little River WPCP. Combined, these 18 pump stations provide sewerage service to approximately 1,400 customers and cover approximately 2.6 square miles. The City's service area is bounded by Social Circle Parkway south and east of the City Center and by residential developments to the north and west. Immediately outside of the City's sewerage service area are large swaths of farmland and several residential developments that are currently not provided with sewer. Exhibit II shows the City's sewerage system.

Sewer lines inside the City's service area range in size from 16-inches to 8-inches and cover approximately 30 miles. The sewer lines are comprised of 3 different materials: PVC, vitrified clay and ductile iron pipe. The 16" trunk lines installed in the mid 2,000's are ductile iron pipe. The rest of the system is primarily PVC pipe and clay pipe, with clay pipe serving the oldest portions of the collection system.

Social Circle's collection system has been skeletonized and displayed in Exhibit III to provide the City with design information related to the hydraulic capacity of its collection system. The schematic shows pump station capacity, sewer line capacity and illustrates where the demand of the City's 10 largest sewer users is located.

P:\Social Circle\172115 Collection System Master Plan\Design\WPCP RSPS and Improvements\Drawings\Exhibit 2,3,6,7 – SSI Map 9/1/2010



SEWER LEGEND

EXISTING

- PUMP STATION
- MANHOLE
- AIR RELEASE VALVE
- CREEK/STREAM

SEWERAGE SYSTEM BASIN

- FORCE MAIN (ARV)
- WPCP
- PS 2
- PS 3
- PS 4
- PS 6
- PS 7
- PS 8
- PS 9
- PS 10
- PS 12
- PS 13
- PS 14
- PS 17
- PS 18
- PS 19
- PS 20
- PS 22

EXHIBIT II

CITY OF SOCIAL CIRCLE, GEORGIA
SEWERAGE SYSTEM MAP

EXISTING SEWERAGE SYSTEM MAP

SCALE: AS SHOWN DATE: OCTOBER 2017

TURNIPSEED ENGINEERS | ATLANTA AUGUSTA ST. SIMONS ISLAND

0 2,000' 4,000'

GRAPHIC SCALE
1 inch = 2,000 ft.

B. Sewage Pumping Stations

Social Circle owns and maintains 18 pump stations located throughout their collection system. Both submersible pumps and wetwell mounted pumps are widely used by the City. Table 3, shown below, provides pertinent information about the City's pump stations. Exhibit II shows the location of the City's pump stations.

Table 3 - Pump Station Inventory

Pump Station	*HP*	*Design Flow (gpm)*	*Design Head (ft)*	*Pump Type*	*Manufacturer*
PS 1 – Birch St.					
PS 2 - Railroad	5	100	43	wet/dry pit	Daveco
PS 3 - Edmondson	7.5	200	45	wetwell	S&L
PS 4 - Spearman Pond	15	240	76	wetwell	S&L
PS 6 - Jubilee	15	245	73	wetwell	S&L
PS 7 - Jersey/Hightower	15	80	98.5	wetwell	S&L
PS 8 - Windsong	15	125	112	wetwell	S&L
PS 9 - Carver Dr.	20	280	102	wetwell	S&L
PS 10 - Hwy11/N.Cherokee		180*		subm	Myers
PS 12 - Goodyear	5	100	44	wetwell	S&L
PS 13 - North By-Pass	35	320	128	subm	Flygt
PS 14 - Fairplay	47	420	102	subm	Flygt
PS 15 - General Mills	70	320	215	subm	Flygt
PS 16 - Babbs		100*		subm	Myers
PS 17 - Dart		100*		subm	Flygt
PS 18 - ADF	30	220	152	subm	Hydromatic
PS 19 - Walton Ct./Vine Cir.	3	100	39	wetwell	S&L
PS 20 – Brookstone (private)					
PS 21 - Hwy 278	25	195		subm	Grundfos
PS 22 - I-20 Rest Area	25	195		subm	KSB
* Assumed Design Flow					

Note: Design flow is per pump. All pump stations are duplex stations.

C. Model Methodology

This study characterizes I/I by comparing observed flows to theoretical usage calculations. First, using the City's GIS based sewerage system maps, the City was divided into sewersheds – areas that drain to a common point, frequently a sewage pumping station. Within each sewershed, houses were counted and expected sewage demand was tallied based on typical customer usage. Flows for commercial customers were tallied using published estimates for different business types (e.g. number of beds, square footage, number of tables, etc.). Actual usage data for large customers was assigned to the proper sewershed. Since some homes are vacant, the customer counts were then reduced to match actual records. Using this method, the total 2018 model flow is 0.49 MGD. Although the average flow from April 2014 to June 2017 was 0.28 MGD, an average flow of 0.39 MGD occurred in January of 2016. The model flow was therefore used in the analysis.

Flows were then projected for the two future study periods, 2023 and 2018. Residential growth in currently sewered areas was increased at 2% per year. The new customers were assigned to sewersheds based on current growth patterns and likely development. Commercial customers were increased at the same rate and assigned to existing commercial areas.

D. Inflow and Infiltration

Water entering the sewer system that is not sewage from system customers is termed inflow or infiltration based on its origin. Inflow refers to water (primarily stormwater) entering the sanitary sewer collection system through illicit or unintended connections, such as rainwater running into an open manhole. Infilttration refers to groundwater entering the sanitary sewer collection system through cracks in the sewer pipes and manholes. While the difference between inflow and infiltration are important, differentiating between the two is difficult on a large-scale study. This study therefore attempts to characterize the total amount (inflow + infiltration) and refers to this total as I/I. Where there are clues as to which I is suspected in a certain area, it will be discussed.

Table 4 - Inflow and Infiltration Summary by Sewershed

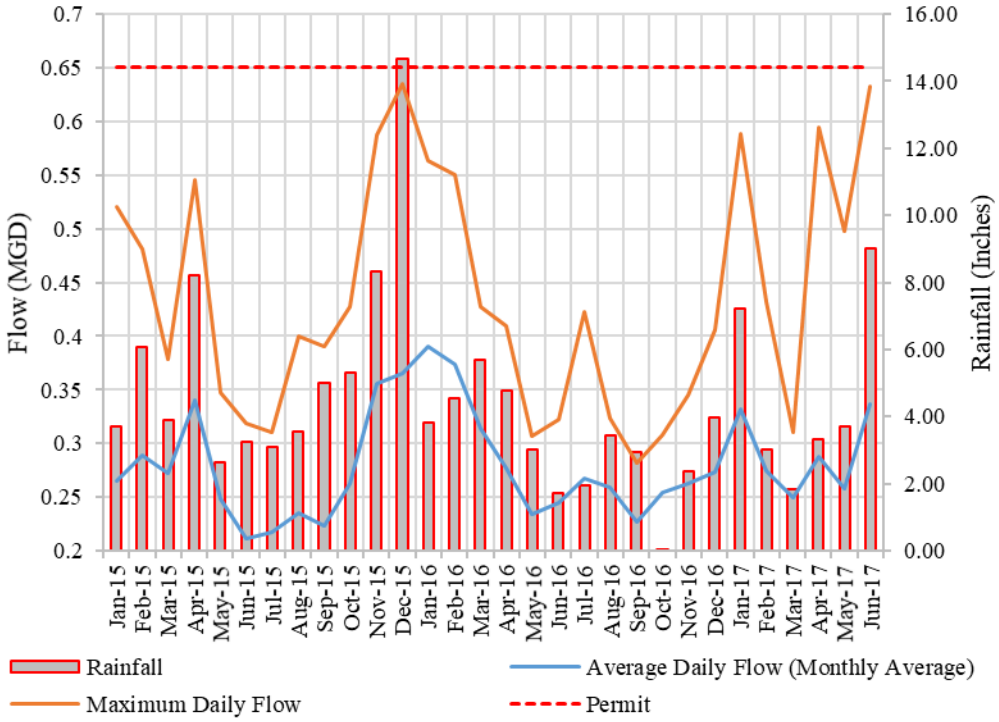
Sewershed	*Pump Station Run Time Analysis*	*PF*	*I&I*
2-Railroad	Fine roots at joints throughout	2.60	High
3-Edmondson	Fine roots, breaks, leaks in wetwell joints	3.23	High
4-Spearman	Mostly PVC, large spikes suggest inflow	2.27	High
6-Jubilee	Newer PVC, some spikes from pump priming problems	1.15	Low
7-Jersey	Few Houses, PVC sewers, spikes from pump priming problems	1.18	Low
8-Windsong	PVC sewers, spikes from pump priming problems	1.30	Low
9-Carver Dr.	Newer PVC, some I/I from Beech Street, H2S problem at wetwell	1.13	Medium
10-Hwy 11	Old Clay on Hwy 11, new PVC in subdivision	2.40	High
12-Goodyear	Few res customers.	1.94	Medium
13-N By-Pass	Currently no flow		N/A
14-Fairplay	Numerous defects on Fairplay and Ronthor. Most sewers need rehabilitation	4.02	High
15-Gen Mills	Commercial Only		Low
16-Babbs	Commercial Only		Low
17-Dart	Commercial Only		Low
18-ADF	Mostly Commercial	1.46	Low
19- Vine Ct.	Small, PVC sewershed. Pump station H2S damage.	2.70	High
21-Hwy 278	No customers, transfers I-20 only		Low
22-I-20	Commercial Only		Low
Oak St. Area	Much rehabilitated in 2007 CDBG. Older sewers along N. Cherokee and Holly St		Medium
Cherokee Manor	Mixed old and new. Known I/I in Canon Drive area		High
Dove Landing Area	Newer PVC		Low

PF = Peaking Factor

I/I can be characterized by installing flow meters to record actual sewage flows and comparing peaks to rainfall data. This approach, however, is costly and has significant drawbacks such as the limited amount of data points and dependence on the weather. I/I was characterized in this study therefore by comparing actual flow data, where possible, with the modeled sewer flows.

Figure 2 shows the Little River WPCP's average daily flow and maximum daily flow against rainfall totals. As the figure indicates, spikes in the maximum daily flow closely coincide with increases in rainfall totals. This suggests inflow and infiltration has a substantial effect on the WPCP. The frequency and extent of I/I can also be seen by looking at the operational changes at the WPCP during rain events. For example, plant operators are often required to use a portable pump at the plant headworks to prevent overflows during rain events, as influent flows often exceed the capacity of the existing influent pump station.

Figure 2 - Little River WPCP Historical Flows and Rainfall



Inflow and infiltration also has negative effects on the collection system. High water alarms are frequently triggered during rain events at both the Railroad Pump

Station and Edmondson Pump Station due to flows exceeding the capacities of the pumps. These pump stations are in need of repair or replacement or diversion to a gravity sewer. The increased flows caused by I/I have also been responsible for several sanitary sewer overflows in the collection system. One such spill occurred in December 2015 at the Edmondson Pump Station and was estimated to total 23,400 gallons.

One way to gauge the presence and severity of I/I in any given sewershed is to compare rainfall totals to pump station run times. If pump station run times remain relatively consistent from month to month, irrespective of rainfall, then inflow and infiltration do not have a significant impact on said sewershed. However, if pump station run times closely mirror fluctuations in rainfall totals, then inflow and infiltration likely occur in significant amounts in said sewershed. Run times that do not follow rainfall fluctuations and significantly vary when compared to historical monthly averages can indicate mechanical issues with the pumping system such as air pockets in the force main or malfunctioning floats.

Ideally, pump station runtimes should be recorded at least on a daily basis. Since daily records are not currently stored on the City's SCADA RTU's, this information was not available. Recording increments ranging from 13-35 days were therefore averaged. Since daily events are not captured, the peaking factors shown below are dampened by the averaging. We recommend the City install a daily recording device and repeat the analysis below for confirmation.

Figure 3 shows the run times of Pump Stations 2, 3, and 4 against rainfall totals. PS2-Railroad pumps to the PS3-Edmondson sewershed, which pumps to the PS4-Spearman Pond sewershed. All three stations have similar peaks, suggesting the basins are in similar condition. These basins are characterized as high I/I due to high peaking factors and known defects.

Figure 3 - Pump Station Runtimes – PS2, PS3, PS4

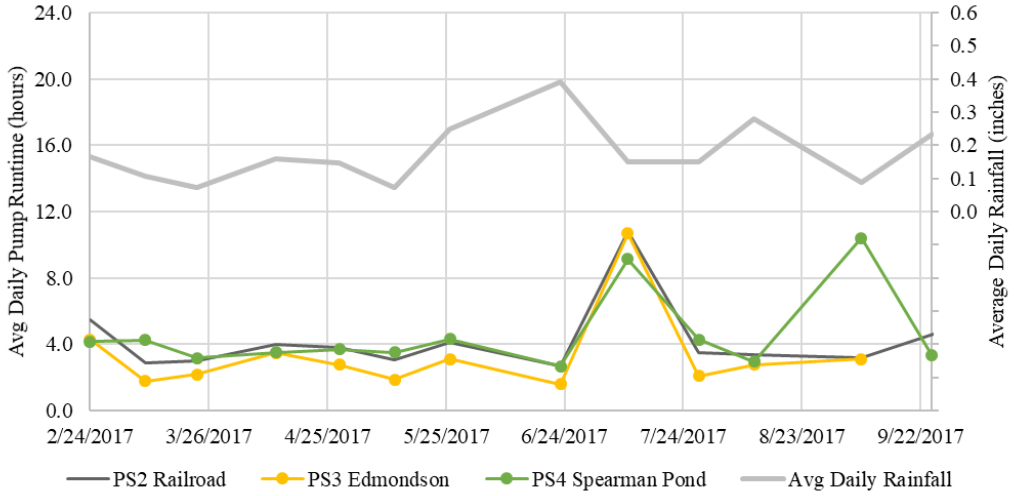


Figure 4 shows the run times of Pump Stations 7, 8, and 9 against rainfall totals. PS7-Jersey, PS8-Windsong, and PS9-Carver serve newer sewersheds with mostly PVC sewers. The PS9 wetwell shows signs of hydrogen sulfide (H2S) corrosion, while PS7 and PS8 have priming problems that can contribute to overflows. Some older clay sewers off of Beech Street should be addressed All three stations have relatively low peaks. These basins are characterized as low I/I (PS7-Jersey and PS8-Windsong) and Medium I/I (PS9-Carver).

Figure 4 - Pump Station Runtimes – PS7, PS8, PS9

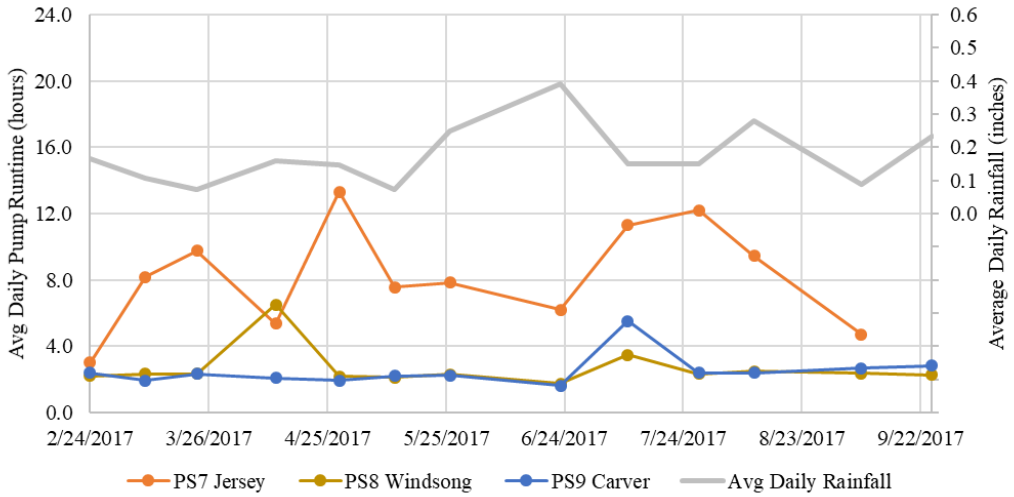
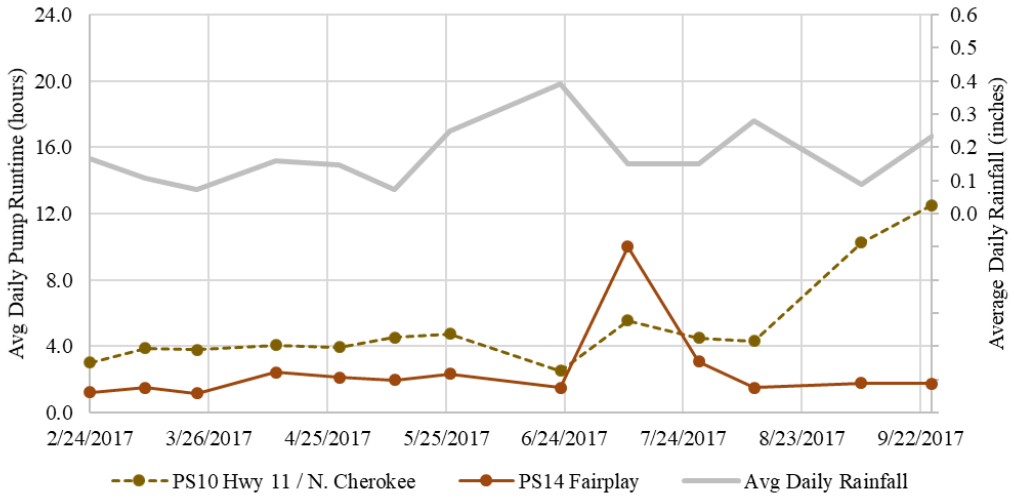


Figure 5 shows the run times of Pump Stations 10 and 14 against rainfall totals. PS10-Hwy 11 includes newer PVC in subdivisions but an older clay sewer on N. Cherokee with known defects. PS14-Fairplay is served by sewers on N. Cherokee, Ronthor Drive, and Fairplay Drive, all of which are in poor condition. These basins are characterized as high I/I.

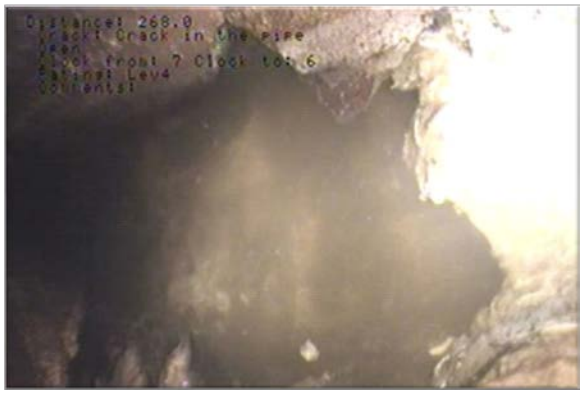
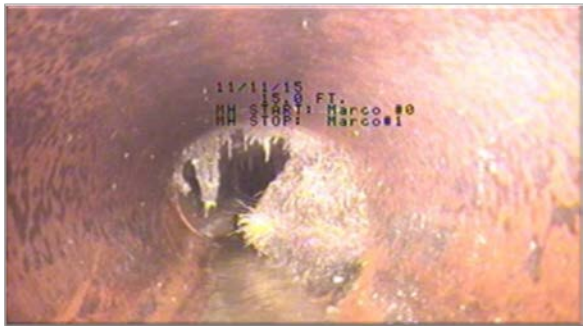
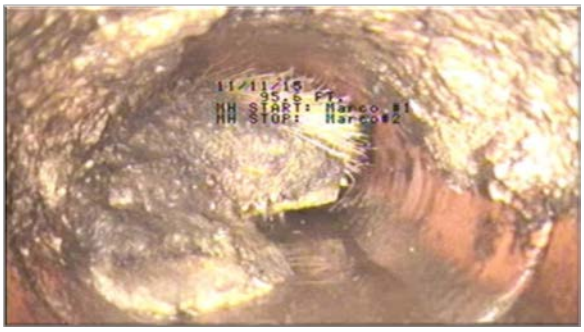
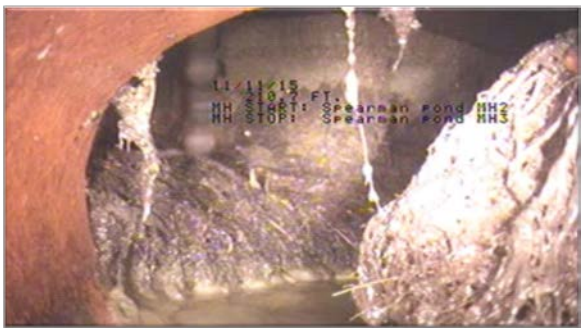
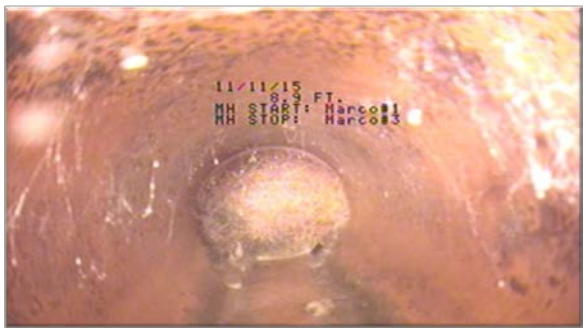
Figure 5 - Pump Station Runtimes – PS10, PS14

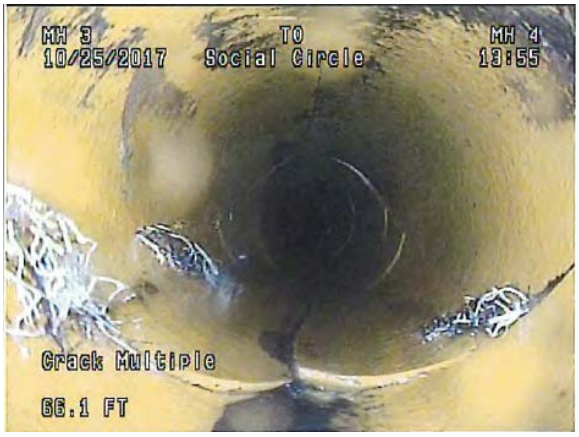
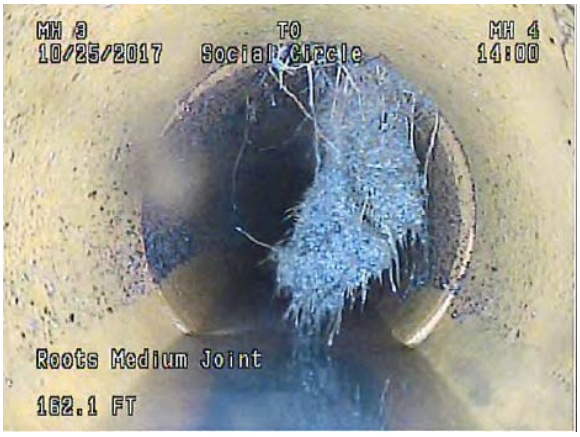


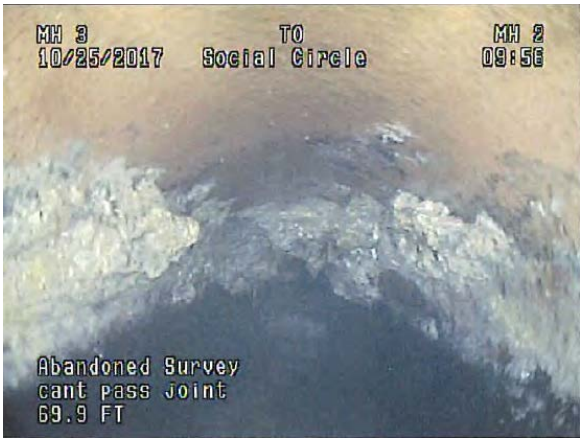
E. Recent Sewer Videos

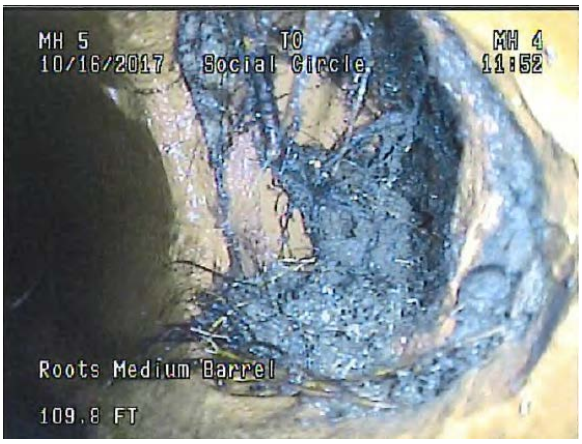
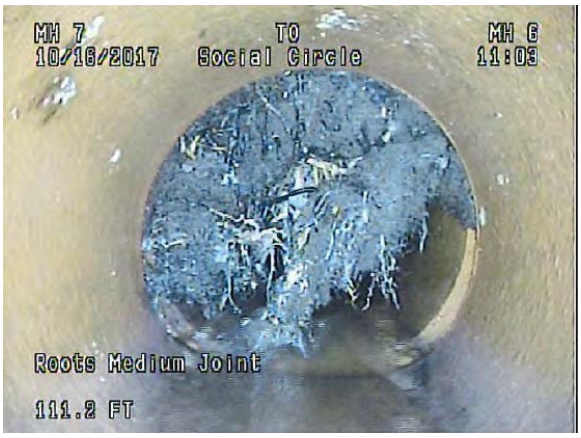
Recent Sewer Videos were performed on representative areas throughout the City in October 2017 by Townley Construction. A summary of the videos is included in the appendix and a map of the sewers surveyed is shown as EXHIBIT IV. Figure 6 shows selected images of defects found in these surveys. Since the sewers surveyed were selected as representative samples, we assume adjacent sewers of the same age and location to have similar defects.

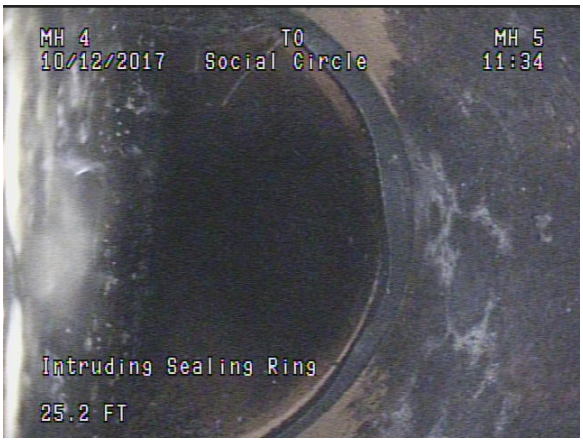
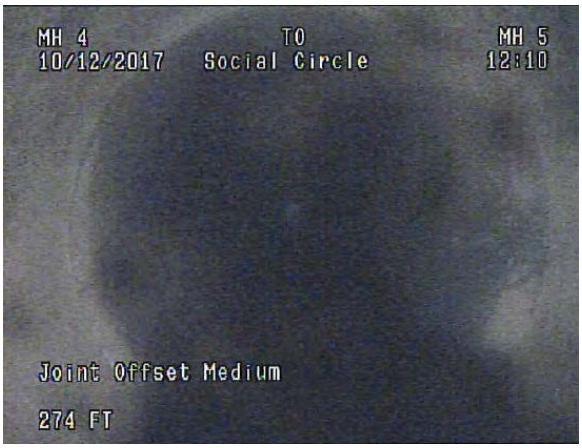
Figure 6 - Selected Sewer Video Images

	
Hole in Clay Gravity Sewer Pipe on West Hightower Trail Street (Spearman Pond Sewershed)	Root Intrusion in Clay Gravity Sewer Pipe in Marco Estates (Railroad Sewershed)
	
Hole in Clay Gravity Sewer Pipe on West Hightower Trail Street (Spearman Pond Sewershed)	Root Intrusion in Clay Gravity Sewer Pipe in Marco Estates. (Railroad Sewershed)
	
Root Intrusion at a Manhole (Spearman Pond Sewershed)	Clay Gravity Sewer Pipe Blockage Caused by Root Intrusion in Marco Estates (Railroad Sewershed)

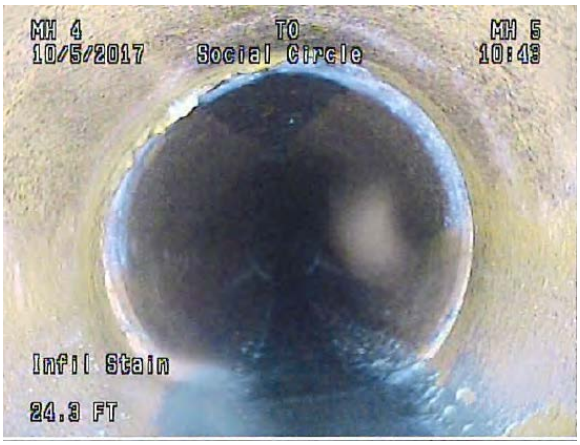
	
Root Intrusion in Clay Sewer Pipe South Cherokee Road Outfall	Root Intrusion in Clay Sewer Pipe Hickory Drive
	
Spiral Crack in Clay Sewer at Carvar Drive Wetwell	Cracks and Roots in Clay Sewer at Carvar Drive Wetwell
	
Multiple Cracks in Clay Pipe on North Cherokee	Root Intrusion in Clay Pipe on North Cherokee

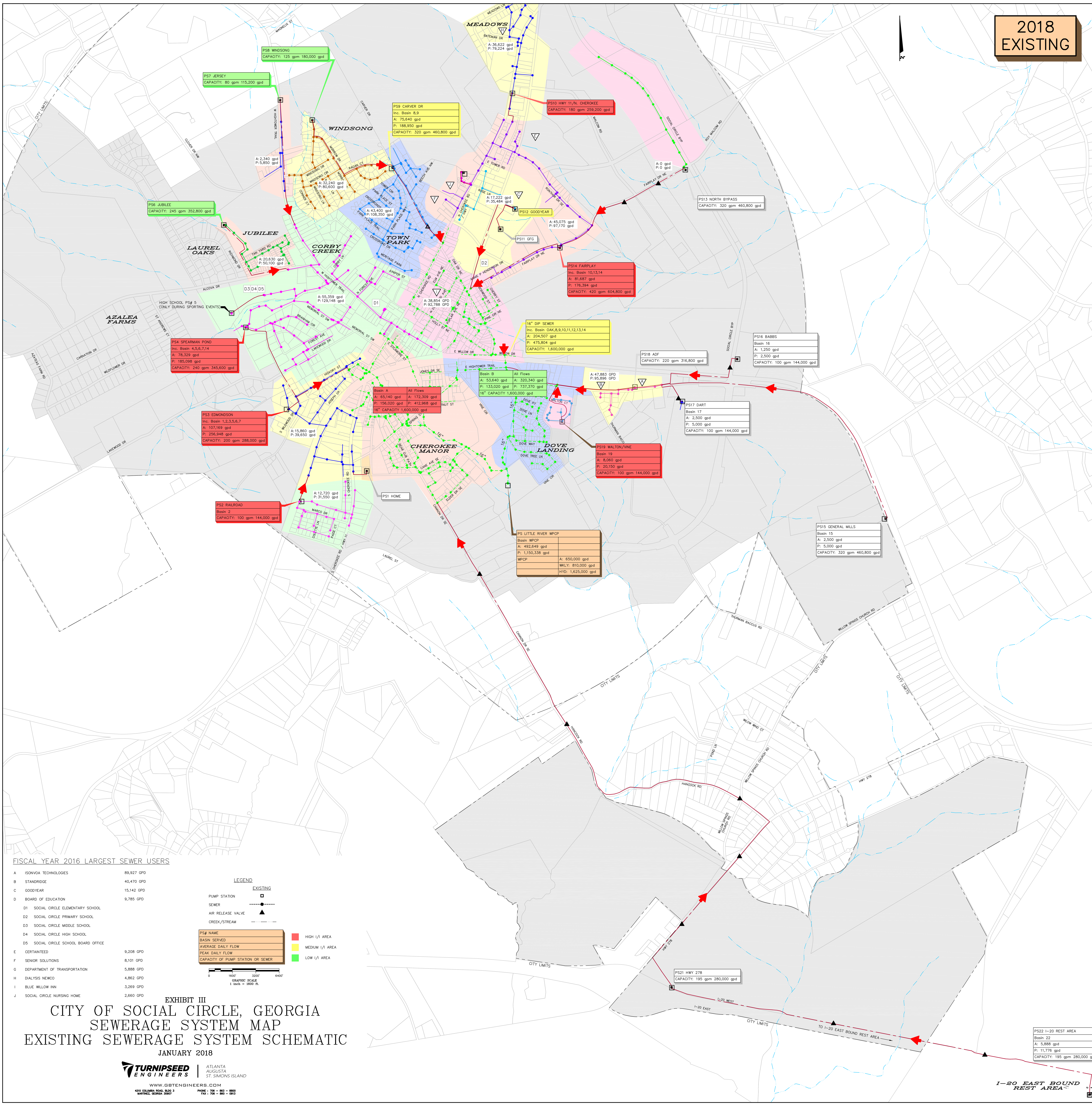
	
Root Intrusion at a Tap in Clay Pipe on North Cherokee	Root Intrusion in Clay Pipe on North Cherokee
	
Encrustation in Clay Pipe on Ronthor Drive	Hole in Clay Pipe on Ronthor Drive
	
Broken Pipe at Material Change of Pipe on Ronthor Drive	Impassable, Separated Joint with Grease Build-Up in Clay Pipe on Fairplay Drive

	
High Water Level in Clay Pipe on Fairplay Drive	Root Intrusion at a Tap in Clay Pipe on Fairplay Drive
	
Root Intrusion in Clay Pipe on Fairplay Drive	Impassable Root Intrusion at a Tap in Clay Pipe on Fairplay Drive
	
Root Intrusion in Clay Pipe on Fairplay Drive	Root Intrusion in Clay Pipe on Fairplay Drive

	
Intruding Sealing Ring on Ash Street	Offset Joint with Roots on Ash Street
	
Root Intrusion in Clay Pipe on Ash Street	Root Intrusion in Clay Pipe on Ash Street
	
Root Intrusion in Clay Pipe at Marco Estates	Crack in Clay Pipe at Marco Estates

	
Root Intrusion at a Tap in Clay Pipe at Marco Estates	Crack in Clay Pipe at Paige Court
	
Impassable Root Intrusion with Grease Build-Up at Paige Court	Impassable Root Intrusion at a Tap on Paige Court
	
Camera Underwater and Grease Deposits at Memorial Street Creek Crossing	Hole in Clay Pipe at West Hightower Trail

	
Infiltration Stains in Clay Pipe on Alcova Drive	Offset Joint at Material Change in Pipe on Alcova Drive
	
Root Intrusion in Clay Pipe on Alcova Drive	


2018 EXISTING
MEADOWS
A: 36,622 gpd
P: 79,224 gpd
PS8 WINDSONG
CAPACITY: 125 gpm 180,000 gpd
PS7 JERSEY
CAPACITY: 80 gpm 115,200 gpd
WINDSONG
PS9 CARVER DR
Inc. Basin 8,9
A: 75,640 gpd
P: 188,950 gpd
CAPACITY: 320 gpm 460,800 gpd
PS10 HWY 11/N. CHEROKEE
CAPACITY: 180 gpm 259,200 gpd
A: 2,340 gpd
P: 5,850 gpd
A: 32,240 gpd
P: 80,600 gpd
A: 43,400 gpd
P: 108,350 gpd
A: 17,222 gpd
P: 35,484 gpd
PS12 GOODYEAR
A: 0 gpd
P: 0 gpd
PS13 NORTH BYPASS
CAPACITY: 320 gpm 460,800 gpd
PS6 JUBILEE
CAPACITY: 245 gpm 352,800 gpd
JUBILEE
LAUREL OAKS
CORBY CREEK
TOWN PARK
PS11 GFG
A: 45,075 gpd
P: 97,170 gpd
A: 20,630 gpd
P: 50,100 gpd
PS14 FAIRPLAY
Inc. Basin 10,13,14
A: 81,687 gpd
P: 176,394 gpd
CAPACITY: 420 gpm 604,800 gpd
D2
D3 D4 D5
A: 55,359 gpd
P: 129,148 gpd
D1
A: 38,854 GPD
P: 92,788 GPD
HIGH SCHOOL PS# 5
(ONLY DURING SPORTING EVENTS)
AZALEA FARMS
PS4 SPEARMAN POND
Inc. Basin 4,5,6,7,14
A: 78,329 gpd
P: 185,098 gpd
CAPACITY: 240 gpm 345,600 gpd
16" DIP SEWER
Inc. Basin OAK,8,9,10,11,12,13,14
A: 204,507 gpd
P: 475,804 gpd
CAPACITY: 1,600,000 gpd
PS18 ADF
CAPACITY: 220 gpm 316,800 gpd
PS16 BABBS
Basin 16
A: 1,250 gpd
P: 2,500 gpd
CAPACITY: 100 gpm 144,000 gpd
Basin B
A: 53,640 gpd
P: 133,020 gpd
All Flows
A: 320,340 gpd
P: 737,370 gpd
16" CAPACITY 1,600,000 gpd
A: 47,883 GPD
P: 95,896 GPD
Basin A
A: 65,140 gpd
P: 156,020 gpd
All Flows
A: 172,309 gpd
P: 412,968 gpd
16" CAPACITY 1,600,000 gpd
PS17 DART
Basin 17
A: 2,500 gpd
P: 5,000 gpd
CAPACITY: 100 gpm 144,000 gpd
PS3 EDMONDSON
Inc. Basin 1,2,3,5,6,7
A: 107,169 gpd
P: 256,948 gpd
CAPACITY: 200 gpm 288,000 gpd
A: 15,860 gpd
P: 39,650 gpd
CHEROKEE MANOR
DOVE LANDING
PS19 WALTON/VINE
Basin 19
A: 8,060 gpd
P: 20,150 gpd
CAPACITY: 100 gpm 144,000 gpd
PS1 HOME
A: 12,720 gpd
P: 31,550 gpd
PS2 RAILROAD
Basin 2
CAPACITY: 100 gpm 144,000 gpd
PS LITTLE RIVER WPCP
Basin WPCP
A: 492,649 gpd
P: 1,150,338 gpd
WPCP
A: 650,000 gpd
WKLY: 810,000 gpd
HYD: 1,625,000 gpd
PS15 GENERAL MILLS
Basin 15
A: 2,500 gpd
P: 5,000 gpd
CAPACITY: 320 gpm 460,800 gpd
CITY LIMITS
PS21 HWY 278
CAPACITY: 195 gpm 280,000 gpd
TO I-20 EAST BOUND REST AREA
PS22 I-20 REST AREA
Basin 22
A: 5,888 gpd
P: 11,776 gpd
CAPACITY: 195 gpm 280,000 gpd
I-20 EAST BOUND REST AREA
LEGEND
EXISTING
PUMP STATION
SEWER
AIR RELEASE VALVE
CREEK/STREAM
PS# NAME
BASIN SERVED
AVERAGE DAILY FLOW
PEAK DAILY FLOW
CAPACITY OF PUMP STATION OR SEWER
HIGH I/I AREA
MEDIUM I/I AREA
LOW I/I AREA
0 1600' 3200' 6400'
GRAPHIC SCALE
1 inch = 1600 ft.

FISCAL YEAR 2016 LARGEST SEWER USERS

A	ISONVOA TECHNOLOGIES	89,927 GPD
B	STANDRIDGE	40,470 GPD
C	GOODYEAR	15,142 GPD
D	BOARD OF EDUCATION	9,785 GPD
D1	SOCIAL CIRCLE ELEMENTARY SCHOOL	
D2	SOCIAL CIRCLE PRIMARY SCHOOL	
D3	SOCIAL CIRCLE MIDDLE SCHOOL	
D4	SOCIAL CIRCLE HIGH SCHOOL	
D5	SOCIAL CIRCLE SCHOOL BOARD OFFICE	
E	CERTAINTEED	9,208 GPD
F	SENIOR SOLUTIONS	8,101 GPD
G	DEPARTMENT OF TRANSPORTATION	5,888 GPD
H	DIALYSIS NEWCO	4,862 GPD
I	BLUE WILLOW INN	3,269 GPD
J	SOCIAL CIRCLE NURSING HOME	2,660 GPD

EXHIBIT III

CITY OF SOCIAL CIRCLE, GEORGIA
SEWERAGE SYSTEM MAP
EXISTING SEWERAGE SYSTEM SCHEMATIC

JANUARY 2018

TURNIPSEED ENGINEERS | ATLANTA AUGUSTA ST. SIMONS ISLAND
WWW.GBTENGINEERS.COM
4210 COLUMBIA ROAD, BLDG 3
MARTINEZ, GEORGIA 30907
PHONE : 706 - 863 - 8800
FAX : 706 - 860 - 0913

JERSEY/HIGHTOWER
P.S. #7

WINDSONG
P.S. #8

CARVER DR
P.S. #9

HWY 11/N. CHEROKEE
P.S. #10

BROOK STONE
/PRIVATE
P.S. #20

NORTH BY-PAS
P.S. #13

GOOD YEAR
P.S. #12

GFG PACK/PRIVATE
P.S. #11

FAIRPLAY
P.S. #14

JUBILEE
P.S. #6

HIGH SCHOOL
P.S. #5

SPEARMAN POND
P.S. #4

EDMONDSON
P.S. #3

BIRCH ST
/PRIVATE
P.S. #1

RAILROAD
P.S. #2

WPCP INFLUENT
/PRIVATE
P.S. #25,26,27,28

WALTON CT
/VINE CT
P.S. #19

ADF P.S.# 18

DART
P.S. #17

WINDSONG

JUBILEE

LAUREL OAKS

CORBY CREEK

TOWN PARK

CHEROKEE MANOR

DOVE LANDING

Video
First Priority
Second Priority

EXHIBIT IV

CITY OF SOCIAL CIRCLE, GEORGIA
SEWERAGE SYSTEM IMPROVEMENTS

VIDEO INSPECTION MAP

SCALE: N.T.S. DATE: OCTOBER 2017

TURNIPSEED ENGINEERS | ATLANTA AUGUSTA ST. SIMONS ISLAND

IV. EXISTING WASTEWATER TREATMENT PLANT

A. Permit Limits

NPDES Permit GA0026107 effective August 1, 2013, expires July 31, 2018. The City is permitted to discharge under the b.1. limits (0.65 MGD). At the time the permit was issued, the City had requested a preliminary wasteload allocation (PWLA) to expand the existing facility to 1.40 MGD. The limits from the PWLA were included on the permit under section B.2. This would allow the City to operate at the higher flow once the plant is expanded and authorized by EPD. The existing B.1. limits are within the capability of a well operated plant designed to treat sewage to secondary limits. The B.2. limits, however, are more stringent and would require tertiary, or advances, wastewater treatment including biological nutrient removal (BNR).

Table 5 - Little River WPCP Existing Permit

	B.1. limits (active)		***B.2. limits (proposed)***	
Parameter	***Monthly Avg.***	***Weekly Avg.***	***Monthly Avg.***	***Weekly Avg.***
Flow - MGD	**0.65**	0.81	1.40	1.75
BOD – mg/L	**23.0**	34.5	5	7.5
TSS – mg/L	**30**	45	20	30
Fecal Coliform (#/100 mL)	**138**	276	138	276
Ammonia (as N) mg/L	**2.0**	3.0	1.0	1.5
Ttl Phos. (as P) mg/L	**Report**	Report	1.0	1.5
Ttl Res. Chlorine – mg/L	**0.012**	0.012		
Ttl Recov. Copper – mg/L	**0.046**	0.059	0.043	0.055

Assumed Peaking Factor –Typically, a facility of this size would be expected to see peak flows of 2.5 times the average daily flow or 0.65 mgd x 2.5 = 1.625 mgd. This peak flow will be assumed in evaluating the existing facility.

EXHIBIT V

CITY OF SOCIAL CIRCLE, GEORGIA
SEWERAGE SYSTEM IMPROVEMENTS

EXISTING WATER POLLUTION CONTROL PLANT

SCALE: AS SHOWN DATE: OCTOBER 2017

TURNIPSEED ENGINEERS
ATLANTA AUGUSTA ST. SIMONS ISLAND

GRAPHIC SCALE
1 inch = 40 ft.
0 40' 80'

4" WATER
8 X 45° BEND
FLOW SPLITTER BOX
8 X 45° BEND
AERATION BASIN EFFLUENT STRUCTURE
8 X 45° BEND
EX. CLARIFIER W.S. EL. 767.50 I.E. 765.50
SLUDGE DISCHARGE
2" WATER
CLARIFIER EFFLUENT
4" PVC DRAIN
2 X 2 X 2 TEE
CLARIFIER EFFLUENT
CHLORINE BLDG
CONTROL BLDG
6" MAGNETIC FLOW METER
RETURN SLUDGE
INFLUENT TO AERATION BASIN
WET WELL
INFLUENT PUMP STATION
INFLUENT SCREEN
INFLUENT SEWAGE
INFLUENT SEWER
FLOW METER
2" PVC WL
RAS/WAS PUMP
WASTE SLUDGE
6" MAGNETIC FLOW METER
SLUDGE DIGESTER
SLUDGE PUMP
DEWATERING BLDG
TO DRYING BEDS
TO LIFT STATION
DRYING BED DRAIN
STORAGE BLDG
EFFLUENT TO CREEK
SUPERNATENT PUMP
FILTRATE PUMP STATION. I.E. 747.00
SLUDGE DRYING BEDS
CHLORINE CONTACT CHAMBER
DE-CHLORINATION BLDG.
DITCH
CREEK
CREEK
N

P:\Social Circle\122115 Collection System Master Plan\Dwgs\MPSP BDS and Improvements\MPSP Maps\Exhibit 5 10/1/2010

B. Treatment Plant Compliance

See Figure 7. Based on plant records from January 2015 to September 2017, the plant is currently operating at approximately 60% of its permitted design flow, leaving the City with approximately 250,000 gallons per day of excess capacity.

Figure 7 - WPCP Flow

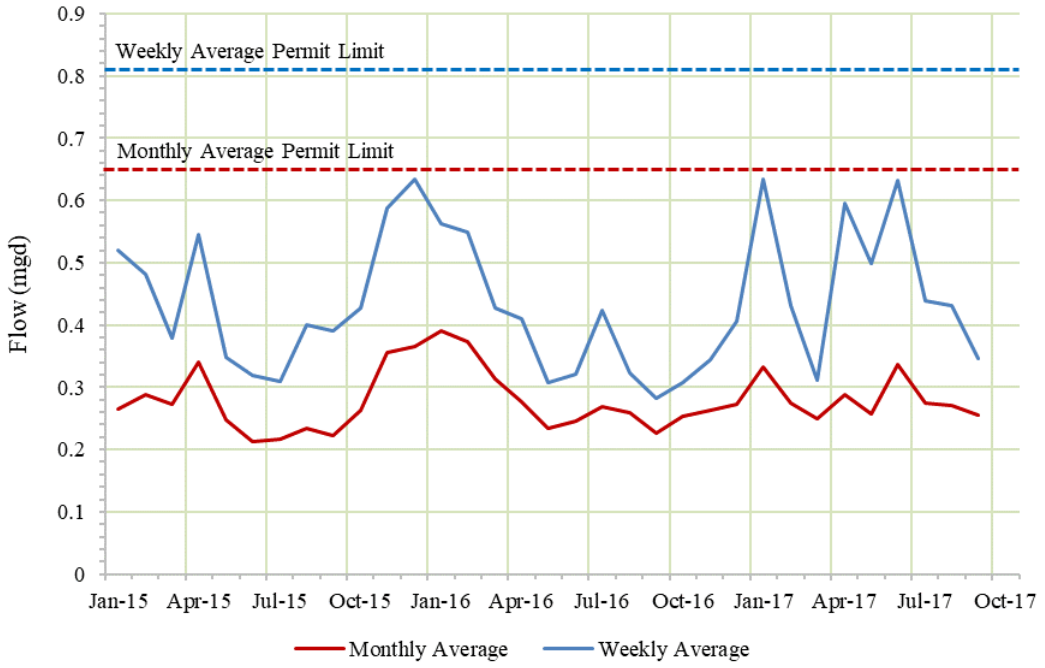
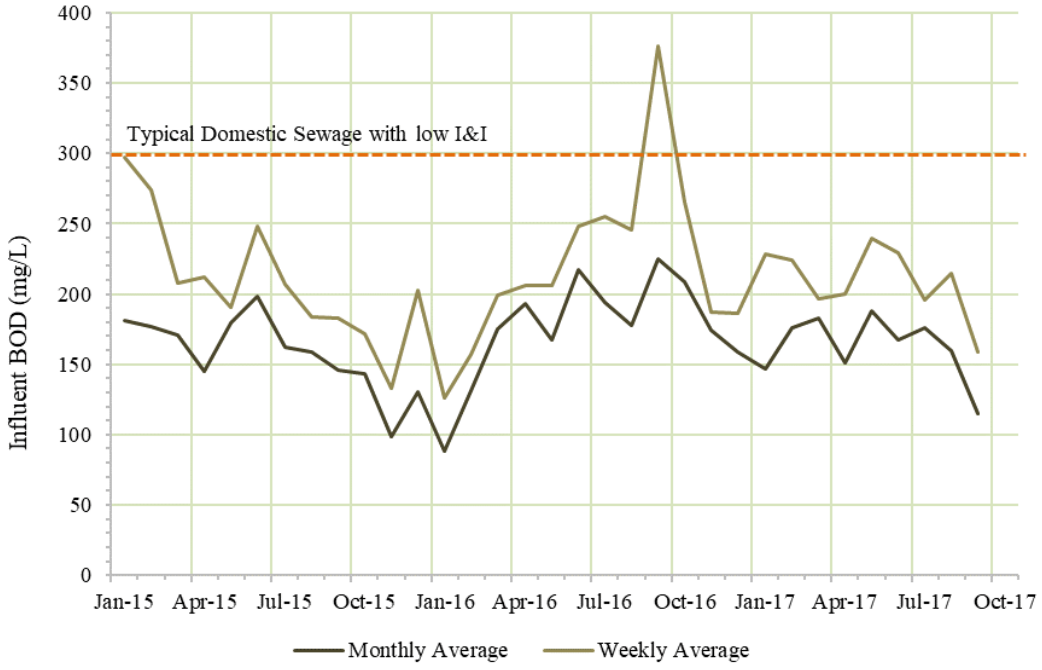


Figure 8 shows the 5-day Biochemical Oxygen Demand (BOD) of the plant's influent sewage. This provides a measure of the strength of the sewage and is compared to typical domestic waste in the figure. Low sewage strength may be an indicator of I/I problems, since the sewage is diluted with rainwater. Note that the plant influent BOD was below 100 in January 2016, coinciding with the plant's highest flows.

Figure 8 - Influent BOD



Plant records indicate the plant effluent is consistently within permit limits. Figure 9 shows effluent BOD averages 4.8 mg/L, well below the 23 mg/L limit. Note that the B.2. limit is 5.0, indicating that while the existing process is adequate for the current permit limits, additional treatment will be required if the City decides to expand the facility.

Figure 9 - Effluent BOD

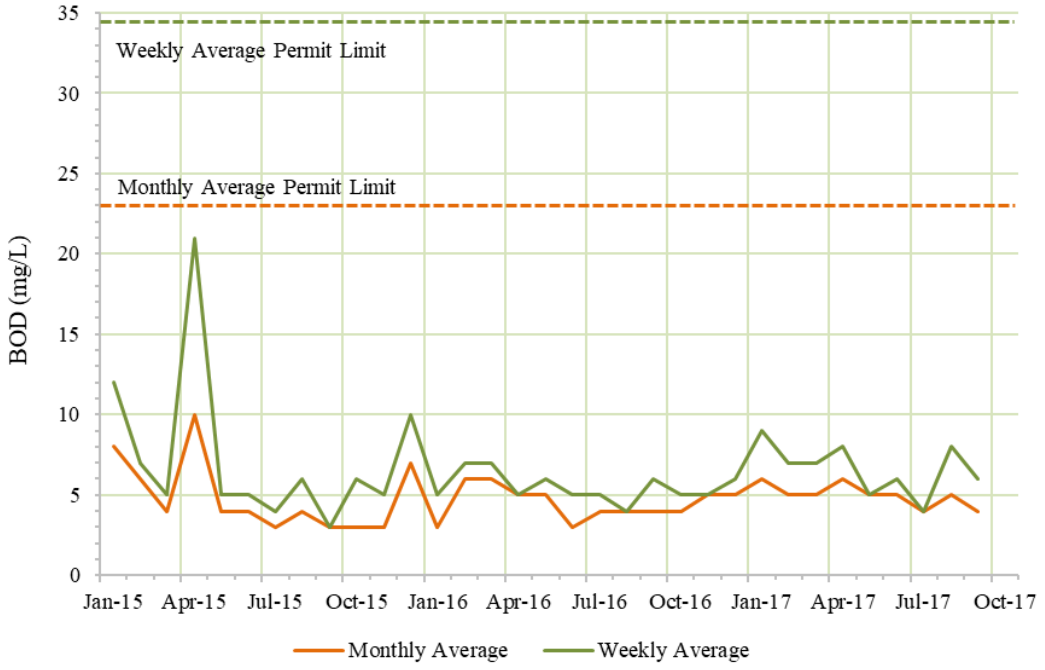
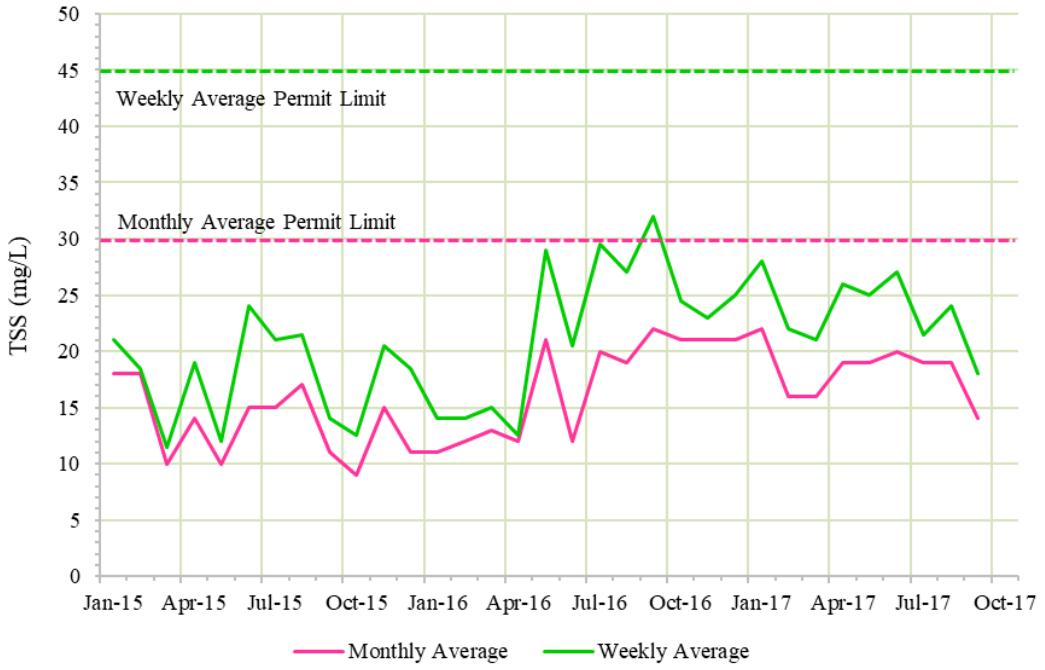
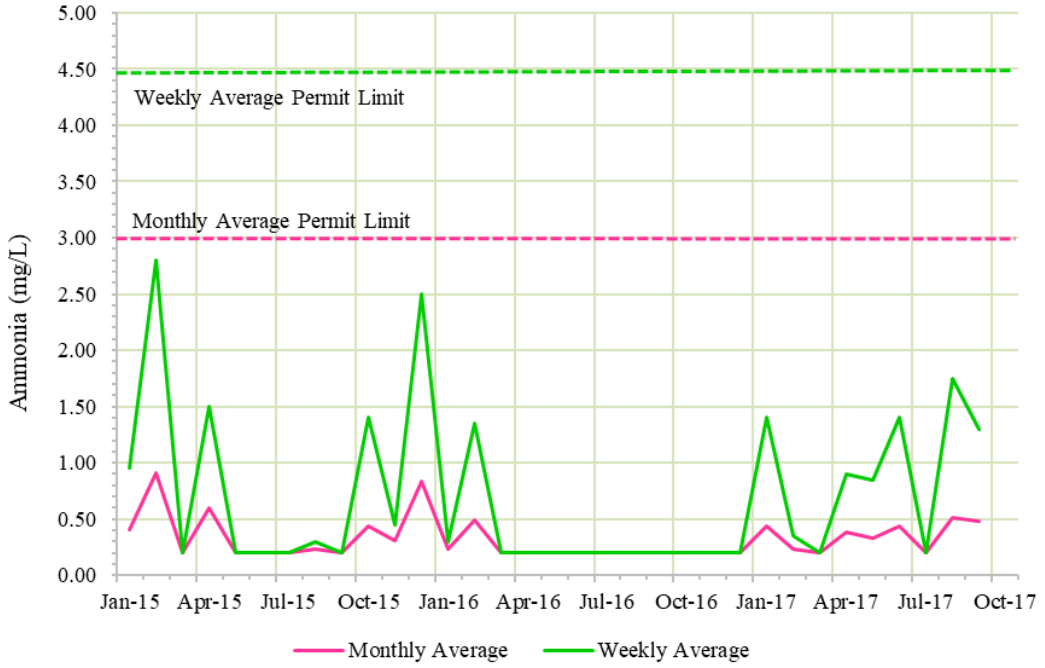


Figure 10 - Effluent TSS



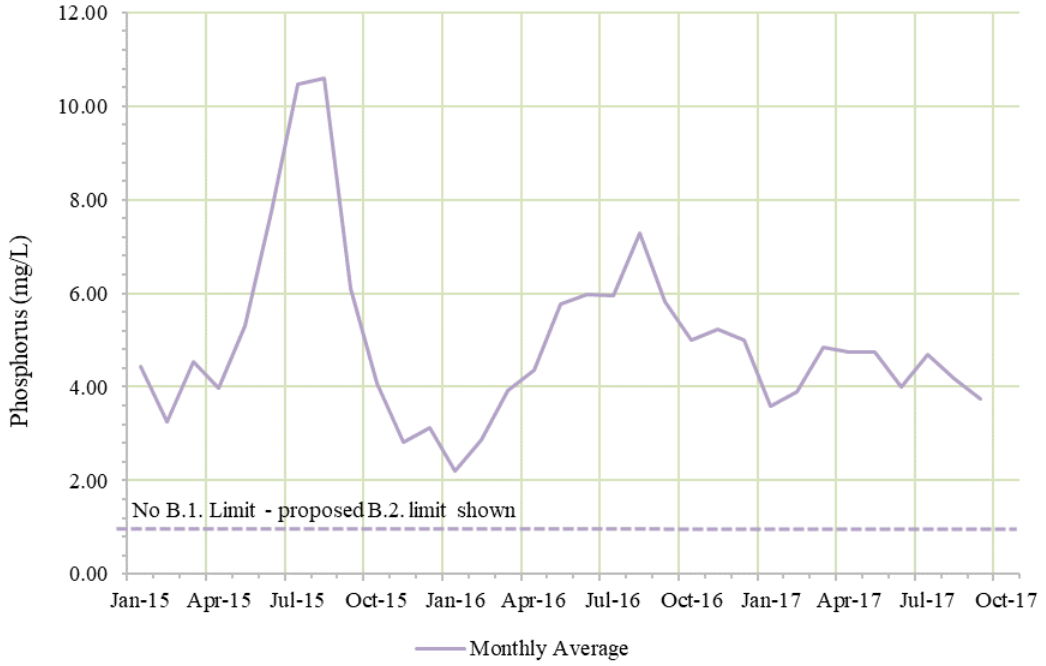
As shown in Figure 11, the plant provides adequate nitrification to reduce ammonia below permit limits.

Figure 11 - Effluent Ammonia



Effluent Phosphorus is shown in Figure 12. The current permit does not impose a phosphorus limit, but requires the City to sample and report the value. If the facility were to be expanded, however, the facility would not be able to meet the B.2. limit without the addition of an additional treatment process such as Biological Nutrient Removal. Phosphorus is a plant nutrient (a component of fertilizer) that has been increasingly regulated throughout the Country to prevent eutrophication or the depletion of oxygen in waters due to overgrowth of vegetation. Since the City is now required to monitor the nutrient, the parameter could be added by EPD to the City's permit during renewal. The City therefore should consider this possibility. Based on the current amount of phosphorus removal achieved at the plant, it is unlikely that chemical addition alone (the least expensive treatment alternative) would be adequate. Although these options are beyond the scope of this report, treatment would likely require the addition of tertiary filtration with chemical addition and construction of an anoxic selector or modification of the aeration process.

Figure 12 - Effluent Phosphorus



C. Little River WPCP Components

1. Influent Sewer

   - Two (2) 16-inch DIP Influent Sewers installed approx. 2004 combine just outside plant gate.
   - Capacity of single combined 16-inch sewer inside plant is 1.6 mgd.

2. Headworks

   - Screening - Manual Bar Screen and platform
   - Grinding - Comminutor (out of service)

3. Grit Removal – None

4. Raw Sewage Pumping Station

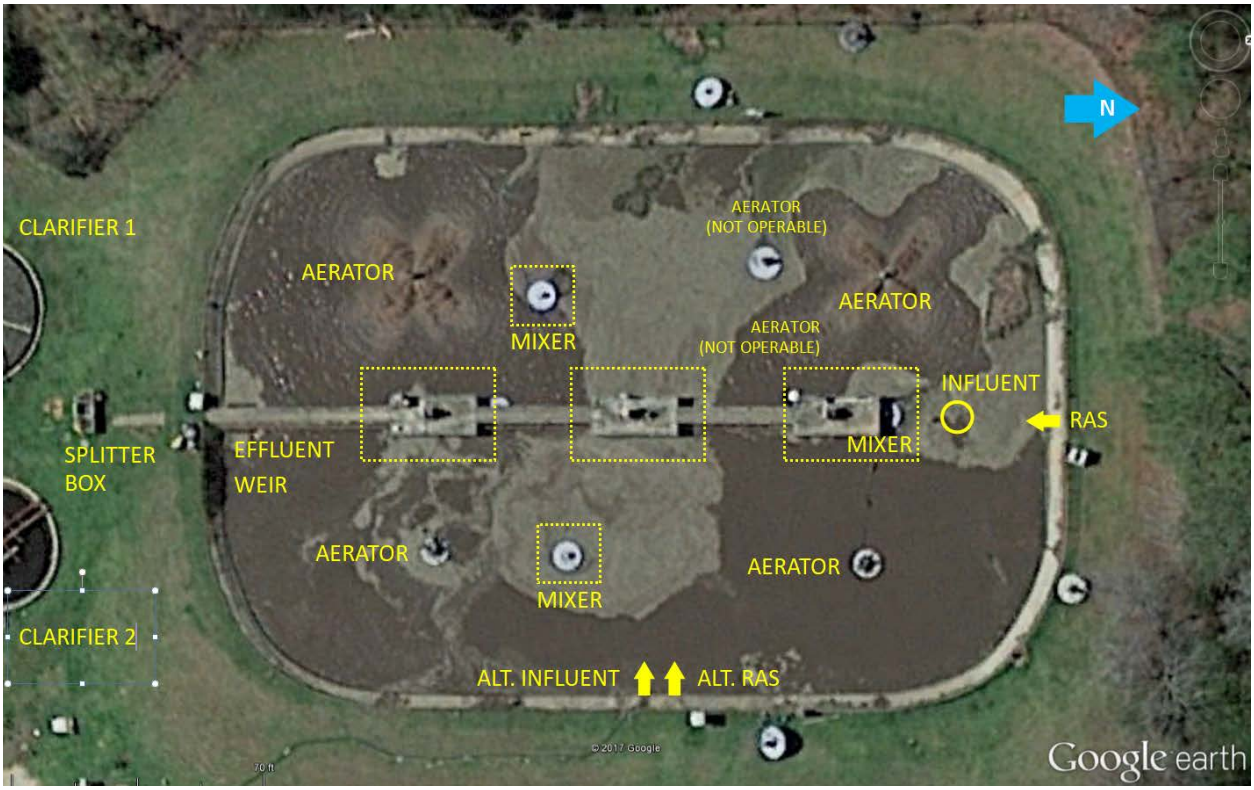
   - Triplex dry-pit Clow “canned” pump station c.1962
   - 5 HP pumps. Replaced volutes 2016. Middle and left replaced 2001 +/-, other 1962
   - Doesn’t keep up with storm flows – since 2007 when installed two 16-inch lines

Figure 13 - Raw Sewage Pumping Station

5. Aeration Basin

- Units – One. Oval, plug flow, unbaffled
- Approx 10 ft. operating depth, clay bottom, 1-2 ft. sludge/grit accumulation estimated by operators. 3 ft. freeboard
- Volume – 1.75 MG. At 0.65 mgd, detention time = 65 hours.
- Four (4) 25 Hp Floating Aerators, all have timers, two typically run continuously. Operators keep one spare available
- Three (3) 15 Hp Floating Mixers, two moored above 11 ft. square SS erosion plate, one moored above concrete erosion pad at platform
- Two (2) unused and apparently inoperable floating aerators
- Chain link fence around structure makes access difficult
- Target MLSS = 3,000 mg/L
- Effluent box baffles are deteriorated and need replacing
- Electrical conduits along walkway are deteriorated and need replacing.

Figure 14 - Existing Aeration Basin



6. Splitter Box

- 8" pipe from aeration basin is undersized
- Two chamber splitter box constructed 1993. Two 4-ft weirs.

7. Clarifiers

- Clarifier 1 – c.1965 concrete circular bridge-mounted, center feedwell
  - replaced motor and gearbox 12 years ago
  - 36 ft. dia., 12 ft SWD, 16 ft center depth
  - Surface area 1018 ft^2. Capacity at 350 gpd/ft^2 = 0.36 mgd
- Clarifier 2 –1988 steel, perimeter feed, outside-in flow
  - 32.5 ft. dia, 12 ft center, 10.5 ft. swd
  - Surface area 830 ft^2. Capacity at 350 gpd/ft^2 = 0.29 mgd
  - Metal deterioration evident
- Combined Surface Area = 1848 ft^2. Capacity at 350 gpd/ft^2 = 0.65 mgd

Figure 15 - Clarifiers

8. Flow Metering

- V-notch weir with ultrasonic sensor. 30-inch channel.
- 10-inch height. Capacity = 0.34 mgd

9. Disinfection

- Chlorine Gas. Two chlorinators, one not working.
- Scale not working
- Two gas sulfonators, one not working.
- No Chlorine Detector
- Dual channel concrete contact chamber, subject to flooding
- Retrofitted air header in effluent

10. Return Activated Sludge (RAS) Pump Station

- Constructed 1992.
- Two (2) 5 hp Flygt submersible pumps
- Refurbished 2012 with new pumps, base elbows, check valves, and piping

11. Sludge Digester

- Repurposed concrete tank with cone bottom, 53 ft. diameter, 17 ft. SWD
- Single __ Hp Aqua DDM Aerator Mixer

- Volume approximately 280,000 gallons
- Submersible sludge pump station inoperable. Operators installed submersible pump in tank with flex piping
- Subject to flooding

12. Sludge Dewatering

- 2m Roediger Tower Press, installed 1993
- Approximately 6000 hours
- Bearings and spindles are worn. Operator obtained estimate of $90,000.
- Operator has spare belt but has not installed due to condition of the bearings.

13. Control Building/MCC/Laboratory

- Control Building, Motor Control Center, and Laboratory are housed in a single small building
- Motor Control Center does not have adequate clearance to meet electrical codes
- Laboratory, storage, and operational space is inadequate

V. WASTEWATER TREATMENT OPTIONS

A. WPCP Rehabilitation Needs

The City of Social Circle's existing treatment plant operates sufficiently well at average flows, but peak flows encounter influent flow constraints at the headworks and influent pump station. Sewer rehabilitation, discussed in other sections of this report, will mitigate the peak flow problem by lowering I/I, but will not eliminate the plant's influent flow problem. A wastewater plant improvements project could correct these issues, and provide a foundation for a long term treatment solution.

Existing facility improvements must include a new headworks and pump station to remove the influent bottleneck. Additional modifications should include improved aeration electrical systems, clarification refurbishment, digester rehabilitation, and an emergency stand-by generator. These improvements will increase reliability and reduce repair and maintenance costs.

Each of the recommended improvements is discussed in Table 6 with an estimated construction cost for each. A detailed cost estimate is included in the Appendix.

Table 6 - Rehabilitation of Existing Plant Description and Cost Estimate

Item	*WPCP Improvements*	*Cost*
Headworks	New Mechanical Barscreen and Grit Removal to improve the influent process and protect equipment from trash and abrasive sand.	$220,000
Influent Pumping	New Raw Sewage Pump Station to eliminate the influent bottleneck	$260,000
Aeration Basin	Aeration Basin electrical rehabilitation for reliability and safety, and also including replacement of effluent baffles.	$45,000
Clarification	Refurbishment of Clarifiers 1 & 2 for better effluent quality.	$275,000
RAS Pumping	Pump Station rehabilitation.	$25,000

Item	*WPCP Improvements*	*Cost*
Aerobic Digester	Renovate the existing digester to allow removal of solids from the plant.	$85,000
Control Building	Rewiring of the Control Building to bring it up to electrical code standards.	$110,000
Sludge Dewatering	Rebuild of the existing Belt Press to replace bearings and other worn parts.	$160,000
Disinfection	None	$0
Emergency Pwr	Generator and ATS for back-up power.	$100,000
Other Items	Includes Mobilization, Site Work and Insurance.	$65,000
	Construction Cost Estimate Total:	***$1,345,000***

1. Construction Considerations

Plant rehabilitations are difficult because treatment operations must continue throughout construction. Staging the improvements can be complex, but there are many contractors in the state that specialize in this type of work and have built improvements to other facilities under similar constraints.

2. Expansion

The improvements listed above address the primary treatment issues of the plant. In addition to these basic modifications, long term needs include several additions that would increase the practical capacity of the treatment plant beyond its permitted level of 0.6 million gallons per day (MGD) to 1.3 MGD. These include the addition of a third clarifier, aeration basin sludge removal, new disinfection facilities and a new lab. Facilities for expansion could be added to the improvements to provide for the immediate needs of the plant. A detailed cost estimate of an expansion of the WPCP is included

in the Appendix. The expansion cost is in addition to the cost of the improvements listed above.

3. Alternatives

The City of Social Circle also has the option to build a new WPCP in lieu of improving the existing WPCP. Although a higher capital expense, building a new plant in conjunction with new sewers downstream of the existing site may allow cost effective treatment of potential growth areas. A detailed cost estimate of this option is also included in the Appendix.

B. Construction, Operations, Maintenance and Long Term Costs

The goal of any improvement to the treatment process is to provide environmentally sound and operationally simple wastewater treatment that conforms to Environmental Protection Division (EPD) requirements. Other collection system improvements, such as inflow and infiltration reduction and pump station refurbishment, will enhance the wastewater treatment plant's performance by reducing peaks and evening out the influent flow. In addition, improving the WPCP facilities will reduce maintenance costs and down-time.

1. Current Cost of Treatment

Using the City's Wastewater budget and the existing plant's quantity of sewage treated, the cost of wastewater treatment can be calculated. Table 7 and Table 8 below show the current treatment cost per year and the calculated cost per thousand gallons of sewage treated. The WPCP portion of each line item was assumed to be the ratio of full time employees, i.e. 1½ to 3½, unless otherwise noted.

Table 7 – Current Yearly Costs of Treatment

Item	*2016-2017 Wastewater Budget*	*WPCP Portion of Costs*	
Salaries	$130,330	$55,855.71	
Insurance	$28,400	$12,171.43	
SSI	$8,100	$3,471.43	
Medicare	$1,950	$835.71	
Retirement	$6,400	$2,742.86	
Workers Comp	$2,700	$1,157.14	
Cell Phones	$1,300	$557.14	
Software & Support	$1,700	$728.57	
Disposal	$25,000	$25,000.00	
Repair & Maintenance	$85,000	$42,500.00	[1]
Other insurance	$21,545	$10,772.50	[1]
Telephone	$3,500	$500.00	[2]
Ads	$500	$200.00	[2]
Dues and Fees	$1,000	$200.00	[2]
Education and Training	$4,000	$1,000.00	[2]
Contract Labor	$10,000	$0.00	[2]
Postage	$1,000	$0.00	[2]
General supplies	$30,000	$12,857.14	
Electricity	$120,000	$82,878.63	[3]
Gas	$5,000	$500.00	[2]
Other chemicals	$1,000	$714.29	[2]
Uniforms	$1,200	$514.29	
Total	***$489,625.00***	***$255,156.85***	

[1] *Estimated as one half of total cost*

[2] *Estimated Cost*

[3] *Electrical costs were tabulated from power company billing.*

Table 8 – Current Costs of Treatment Per Thousand Gallons

Description	*Value*
WPCP Operating Cost	$255,156.85
Flow Treated, Average (MGD)	0.278
Million Gallons Treated Per Year	101.47
Cost per 1,000 gallons treated	**$2.51**
Billed Sewage (7/16-6/17), Average (MGD)	0.289
Cost per 1,000 gallons billed	**$2.42**

VI. PROPOSED SEWERAGE SYSTEM IMPROVEMENTS

A. Sewage Pumping Stations

Social Circle owns and operates 18 sewage pump stations throughout its collection system. As the City grew, pump stations were installed where growth occurred in areas that due to topography could not be served to the then existing sewer system, or where the cost of installing gravity sewers was considered prohibitive. Reducing the number of pump stations in Social Circle is recommended for several reasons.

First, due to the City's topography, most of the pump stations are located at the outer edge of the sewer service area. City land use plans project growth beyond the pump stations. PS3-Edmondson, PS4-Spearman Pond, and PS6-Jubilee are located on the west side of the City, well inside the projected growth area. Outward growth would require the pump stations be moved further outward, or new pump stations must be installed.

Secondly, sewage pump stations are the source of the largest operating and maintenance costs in the collection system and reducing the number of pump station should positively impact the City's annual budget. The stations require periodic replacement of pumps and electrical components and consume electricity.

Thirdly, pump stations are prone to power outages and mechanical failures and therefore are the frequent cause of spills. Pump stations also require emergency power and must be attended during inclement weather emergencies.

Finally, many of the City's sewage pump stations are aged and have deteriorated and will need to be refurbished or replaced in the near future. This capital expense could be used instead to construct interceptor sewers to eliminate the pump stations and reduce annual O&M expenditures. The cost of fully rehabilitating or replacing (where recommended) these pump stations is given in Table 9.

Table 9 – Sewage Pumping Stations Needing Replacement in the Near Future

Pump Station	*Comments and recommendation*	*Cost*
2-Railroad	1960's era station. Dry-pit requires controlled entry, poor condition – replace	$225,000
3-Edmondsn	4ft dia. wetwell. Pumps 20+ years old lose prime, worn impellers, leaks in wetwell joints - replace	$225,000
4-Spearman	2002 pumps average condition, replace impellers, install SCADA – rehab	$75,000
6-Jubilee	2002 pumps have priming problems, float issues due to large wetwell, needs SCADA - rehab	$75,000
7-Jersey	4ft dia. wetwell. Pumps 30+ years old, poor condition, lose prime, worn impesllers - replace	$225,000
8-Windsong	2000 fair condition, install SCADA – rehab	$25,000
9-Carver Dr.	Upgraded 2000, wetwell shallow with H2S damage, priming issues – replace	$225,000
10-Hwy 11	Low flows, older pumps, install SCADA – rehab	$35,000
12-Goodyear	1988 in fair condition – replace pumps, install SCADA – rehab	$45,000
13-N ByPass	Relatively new station – no current customers	
14-Fairplay	Newer station, deep wetwell, fair condition, install SCADA – rehab	$20,000
15-Gen Mills	2009 submersibles. Settling at wetwell. Pumps oversized. Install SCADA, some rehab	$20,000
16-Babbs		
17-Dart		
18-ADF	2016, good condition, install SCADA	$16,000
19- Vine Cir.	1982 retrofit, severe H2S damage – replace	$225,000
21-Hwy 278	1998, H2S wetwell and pipe damage – rehab, install SCADA	$55,000
22-I-20	1998, replaced both pumps 2016, install SCADA, rehab	$20,000
Emergency Generators	EPD recommend one generator per three pumping stations. All stations need outlet and transfer switch. Recommend pad mount at PS3-Edmondson, PS4-Spearman Pond, PS9 Carver, PS14 Fairplay and two trailer mounted units	$250,000
Total Pump Station Replacement or Rehabilitation Cost		**$1,761,000**

Table 10 presents projects that eliminate sewage pumping stations. These projects are shown on Exhibits VI and VII.

Projects S01 and S02 construct interceptor sewers to abandon these pump stations.

Projects S03 and S04 consolidates three pump stations into one by constructing a new interceptor sewer to replace the existing PS9-Carver, PS7-Jersey, and PS8-Windsong with a new PS23, eliminating two pump stations.

Projects S05, S06, and S07 also consolidate three pump stations into one by constructing interceptors to PS2-Railroad, PS3-Edmondson, and PS4-Spearman Pond from the confluence of the three drainage basins at Lakewood Drive and constructing a new PS24 there. These projects eliminate two pump stations.

Table 10 - Pump Station Elimination Projects

No.	***Project***	***Pump Station Eliminated***	***Cost***
S01	Goodyear Interceptor	PS12 Goodyear	$148,368
S02	Brookstone Interceptor	PS20 Brookstone	$81,476
S03	Carver Interceptor	PS9 Carver	$173,729
S04	New Jersey Hightower PS23	PS8 Windsong	$583,980
S05	New Spearman Pond PS	PS4 Spearman Pond	$558,892
S06	Edmondson Interceptor	PS3 Edmondson	$189,738
S07	Railroad Interceptor	PS2 Railroad	$273,806
S08	Birch Street Sewer	PS1 Birch Street	$111,304
S09	Walton Ct. PS Interceptor	PS19 Walton Court	$64,809
S40	General Mills Interceptor	PS15 General Mills	$222,777
S41	Dart Interceptor	PS17 Dart	$107,882
S42	Babbs Interceptor	PS16 Babbs	$97,351
S43	Fairplay PS Relief Sewer	PS14 Fairplay	$193,062
S44	North Bypass PS Relief Sewer	PS13 North Bypass	$529,419

Project S08 constructs an interceptor sewer to eliminate PS1-Birch Street, which serves a single customer.

Project S09 constructs an interceptor sewer to eliminate PS19-Vine.

Project S40, S41, and S42 construct interceptors to eliminate three pump stations that serve individual industries.

Project S43 and S44 contstruct interceptors to eliminate PS13-N. Bypass and PS14-Fairplay at such time as a new PS25 is constructed to serve east of the City.

B. Growth and Industrial Development

Table 11 – Growth and Industrial Development Projects

No.	*Project*	*Cost*
S10	Bypass Thurman Baccus Sewer	$470,710
S11	Little River Interceptor - Phase II	$279,427
S12	Little River Interceptor - Phase III	$413,899
S13	Little River Interceptor to I-20	$464,235
S14	E. Hightower to Little River Interceptor	$748,424
S15	FM from New Hawkins Academy PS	$597,500
S16	New Hawkins Academy PS	$285,450
S17	Fairplay PS Relief Sewer	$334,049
S19	Willow Drive Interceptor	$203,161
S20	Dennis Creek Sewer	$387,988
S21	Dennis Creek PS and Forcemain	$384,350
S23	Little River Interceptor Phase IV	$189,742
S24	Little River Interceptor - Phase I	$282,016
S25	Carver North Sewer	$308,931
S27	Roy Malcom Road Sewer	$192,108

Table 11 presents recommended growth and industrial development projects. These projects are shown on Exhibits VI and VII.

These projects extend sewer into most areas of the City other than those shown as agricultural/large lot on the City land use plan (See Exhibit I). The extreme western side of the City is not shown as being developed within the study period of this report.

C. Sewer Rehabilitation

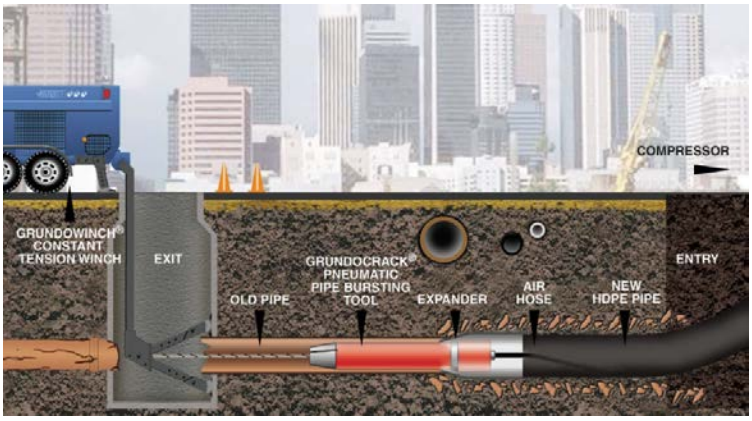
Table 12 presents identified sewer rehabilitation projects. These projects were identified using sewer video survey results, interviews with City personnel, and available records. Sewer rehabilitation can take many forms including dig-and-replace, cured-in-place-pipe (CIPP), and pipe bursting.

Where sewers are to be rehabilitated are located away from pavement and other utilities, dig-and-replace is usually the least expensive method.

Joining Pipe and Entry Pit for Pipe Bursting (Turnipseed Projects)

Under pavement or around utilities, pipe-bursting is preferred. This method requires an excavation at one or both ends of a sewer segment. A cable is passed through the existing sewer and a pneumatic or static splitting head is attached at the other end. A continuous length of butt-fusion welded HDPE pipe is attached to the head and the new pipe is pulled though the old one, bursting the old pipe as the pull

progresses. The new pipe is then connected to each manhole and the excavations are backfilled. An excavation is made at each service connection and a new saddle, insertion tee, or electro-weld tee is installed. New service lines are recommended to be installed to the right-of-way where a cleanout should be installed. New service lines can be installed by dig-and-replace or by pipe bursting if this is made economical by avoiding pavement or utilities.



Pipe Bursting Concept *(TT Technologies)*

Under pavement or around utilities, CIPP is another method that can be used to install a plastic liner inside the existing pipe. The pipe to be rehabilitated is first cleaned to prepare the pipe for the liner. If there are any intruding services or severe structural damage, these must be dug up and repaired before lining. A continuous flexible liner is then pulled through the pipe. Air, hot water, or UV is used to cure the flexible liner into a rigid plastic liner that conforms to the old sewer pipe. A robotic cutter then cuts holes in the liner from the inside of the pipe where each service connects. Although not always included, each service should be dug up and replaced to the right-of-way and a cleanout installed. Although this method is generally 10-20% less expensive than pipe bursting, there are disadvantages. Since a hole is cut at each service, there is a possibility of damaging the system and water entering behind the liner. Also, new services are difficult to attach since they old pipe material forms the outside of the pipe. Finally, depending on how many defects require point repairs prior to lining, this method may be more expensive.

Manholes can be rehabilitated or replaced. Rehabilitation consists of cleaning the manhole, pointing holes, and installing a cementitious liner. On lines with H2S problems, an epoxy coat is placed over the cementitious liner. Benches are repaired as required, and manhole frames and covers are replaced or adjusted. For deteriorated brick manholes, replacement is usually preferred and although typically more expensive, may not be depending on quantity and condition.

For the following projects, we estimated costs based on recently bid costs assuming different percentages of the total pipe in the area would need to be rehabilitated. For projects S31, and S32, we assumed all of the pipe would be rehabilitated. For the others, we used percentages based on our knowledge of the defects and experience with similar projects. These costs can be refined once video surveys are available. We based our estimates on pipe-bursting projects where services were replaced to the right-of-way. Services in some areas of the City are known to be Orangeburg pipe – an obsolete pipe material composed of tar-impregnated paper. Where Orangeburg pipe or other severely deficient service materials are found, the City should consider replacing the service material to the house since these lines can be a significant source of infiltration. Alternately, the City should notify the homeowners.

Project S45 – Abandon Spearman Treatment Pond. This sewage treatment pond was previously taken out of service when the Spearman Pond pump station was constructed. This project removes any remaining sludge and structures and regrades the site according to EPD pond abandonment guidelines.

Project S46 – City Wide Sewer Video includes cleaning and performing video surveys on roughly 75% of the City's gravity sewers. This effort will identify sewer defects that can be immediately addressed or prioritized and repaired in a future project. Performing the surveys may also reduce the cost of other rehabilitation projects by helping to identify and prioritize work in each area.

Table 12 – Sewer Rehabilitation Projects

No.	*Project*	*Cost*
S29	Ronthor and Fairplay Sewer Rehab	$611,820
S30	I-20 PS Rehab	$50,000
S31	Marco Estates Rehab (Possible CDBG)	$567,600
S32	Beech Street Area Sewer Rehab	$297,000
S33	N. Cherokee Sewer Rehab	$338,580
S34	Ronthor Drive Sewer Rehab	$250,000
S35	Holly Street Sewerage System Improvements	$412,500
S36	North Hightower Sewer Rehab	$455,400
S37	Spearman Pond Sewer Rehab	$511,500
S38	Cannon Drive Sewer Rehab	$577,500
S39	Edmondson Sewer Rehab	$495,000
S45	Abandon Spearman Treatment Pond	$150,000
S46	City Wide Sewer Video	$240,000

VII. SEWERAGE SYSTEM MASTER PLAN

Table 13 - Summary of Recommended Projects

	Project	*Pump Station Eliminated*	*Cost*
S01	Goodyear Interceptor	PS12 Goodyear	$148,368
S02	Brookstone Interceptor	PS20 Brookstone	$81,476
S03	Carver Interceptor	PS9 Carver	$173,729
S04	New Jersey Hightower PS23	PS8 Windsong	$583,980
S05	New Spearman Pond PS	PS14 Spearman Pond	$558,892
S06	Edmondson Interceptor	PS3 Edmondson	$189,738
S07	Railroad Interceptor	PS2 Railroad	$273,806
S08	Birch Street Sewer	PS1 Birch Street	$111,304
S09	Walton Ct. PS Interceptor	PS19 Walton Court	$64,809
S10	Bypass Thurman Baccus Sewer		$470,710
S11	Little River Interceptor - Phase II		$279,427
S12	Little River Interceptor - Phase III		$413,899
S13	Little River Interceptor to I-20		$464,235
S14	E. Hightower to Little River Interceptor		$748,424
S15	FM from New Hawkins Academy PS		$597,500
S16	New Hawkins Academy PS		$285,450
S17	Fairplay PS Relief Sewer		$334,049
S19	Willow Drive Interceptor		$203,161
S20	Dennis Creek Sewer		$387,988
S21	Dennis Creek PS and Forcemain		$384,350
S23	Little River Interceptor Phase IV		$189,742
S24	Little River Interceptor - Phase I		$282,016
S25	Carver North Sewer		$308,931
S27	Roy Malcom Road Sewer		$192,108
S29	Ronthor and Fairplay Sewer Rehab		$611,820
S30	I-20 PS Rehab		$50,000
S31	Marco Estates Rehab (Possible CDBG)		$567,600
S32	Beech Street Area Sewer Rehab		$297,000
S33	N. Cherokee Sewer Rehab		$338,580
S34	Ronthor Drive Sewer Rehab		$250,000
S35	Holly Street Sewerage System Improvements		$412,500

	Project	*Pump Station Eliminated*	*Cost*
S36	North Hightower Sewer Rehab		$455,400
S37	Spearman Pond Sewer Rehab		$511,500
S38	Cannon Drive Sewer Rehab		$577,500
S39	Edmondson Sewer Rehab		$495,000
S40	General Mills Interceptor	PS15 General Mills	$222,777
S41	Dart Interceptor	PS17 Dart	$107,882
S42	Babbs Interceptor	PS16 Babbs	$97,351
S43	Fairplay PS Relief Sewer	PS14 Fairplay	$193,062
S44	North Bypass PS Relief Sewer	PS13 North Bypass	$529,419
S45	Abandon Spearman Treatment Pond		
S46	City Wide Sewer Video		$240,000
Total Estimated Cost of All Projects			**$13,835,479**

Table 14 – 2023 Recommended Projects – 5-Year Plan

	Project	*Pump Station Eliminated*	*Cost*
S01	Goodyear Interceptor	PS12 Goodyear	$148,368
S02	Brookstone Interceptor	PS20 Brookstone	$81,476
S03	Carver Interceptor	PS9 Carver	$173,729
S04	New Jersey Hightower PS23	PS8 Windsong	$583,980
S05	New Spearman Pond PS	PS14 Spearman Pond	$558,892
S06	Edmondson Interceptor	PS3 Edmondson	$189,738
S07	Railroad Interceptor	PS2 Railroad	$273,806
S08	Birch Street Sewer	PS1 Birch Street	$111,304
S11	Little River Interceptor - Phase II		$279,427
S12	Little River Interceptor - Phase III		$413,899
S13	Little River Interceptor to I-20		$464,235
S14	E. Hightower to Little River Interceptor		$748,424
S15	FM from New Hawkins Academy PS		$597,500
S16	New Hawkins Academy PS		$285,450
S23	Little River Interceptor Phase IV		$189,742
S24	Little River Interceptor - Phase I		$282,016
S27	Roy Malcom Road Sewer		$192,108
S29	Ronthor and Fairplay Sewer Rehab		$611,820
S30	I-20 PS Rehab		$50,000
S31	Marco Estates Rehab (Possible CDBG)		$567,600
S46	City Wide Sewer Video		$240,000
Total Estimated Cost of 2023 Projects			**$7,043,512**

Table 15 – 2028 Recommended Projects – 10-Year Plan

	Project	*Pump Station Eliminated*	*Cost*
S09	Walton Ct. PS Interceptor	PS19 Walton Court	$64,809
S10	Bypass Thurman Baccus Sewer		$470,710
S17	Fairplay PS Relief Sewer		$334,049
S19	Willow Drive Interceptor		$203,161
S20	Dennis Creek Sewer		$387,988
S21	Dennis Creek PS and Forcemain		$384,350
S25	Carver North Sewer		$308,931
S32	Beech Street Area Sewer Rehab		$297,000
S33	N. Cherokee Sewer Rehab		$338,580
S34	Ronthor Drive Sewer Rehab		$250,000
S35	Holly Street Sewerage System Improvements		$412,500
S36	North Hightower Sewer Rehab		$455,400
S37	Spearman Pond Sewer Rehab		$511,500
S38	Cannon Drive Sewer Rehab		$577,500
S39	Edmondson Sewer Rehab		$495,000
S40	General Mills Interceptor	PS15 General Mills	$222,777
S41	Dart Interceptor	PS17 Dart	$107,882
S42	Babbs Interceptor	PS16 Babbs	$97,351
S43	Fairplay PS Relief Sewer	PS14 Fairplay	$193,062
S44	North Bypass PS Relief Sewer	PS13 North Bypass	$529,419
S45	Abandon Spearman Treatment Pond		$150,000
Total Estimated Cost of 2028 Projects			**$6,791,967**

2023 PROJECTION

PS23 NEW JERSERY HIGHTOWER
CAPACITY: 350 gpm 504,000 gpd

PS7 ABANDONED

A: 91,040 gpd
P: 191,170 gpd

PS8 ABANDONED

PS9 ABANDONED

PS20 ABANDONED

A: 17,222 gpd
P: 35,484 gpd

PS12 ABANDONED

PS11 GFG

A: 49,764 gpd
P: 101,348 gpd

PS14 FAIRPLAY
Inc. Basin 10,13,14
A: 92,846 gpd
P: 193,492 gpd
CAPACITY: 420 gpm 604,800 gpd

PS10 CHEROKEE
CAPACITY: 180 gpm 259,200 gpd

A: 2,500 gpd
P: 5,000 gpd

PS13 NORTH BYPASS
CAPACITY: 320 gpm 460,800 gpd

PS6 JUBILEE
CAPACITY: 245 gpm 352,800 gpd

A: 34,220 gpd
P: 51,280 gpd

A: 40,582 gpd
P: 87,144 gpd

A: 39,939 GPD
P: 94,958 GPD

16" DIP SEWER
Inc. Basin OAK,23,10,11,12,13,14
A: 232,141 gpd
P: 491,442 gpd
CAPACITY: 1,600,000 gpd

PS18 ADF
CAPACITY: 220 gpm 316,800 gpd

PS16 BABBS
Basin 16
A: 1,500 gpd
P: 3,000 gpd
CAPACITY: 100 gpm 144,000 gpd

A: 48,043 GPD
P: 96,216 GPD

Basin B	All Flows
A: 54,072 gpd	A: 349,816 gpd
P: 133,884 gpd	P: 756,692 gpd
16" CAPACITY 1,600,000 gpd	

Basin A	All Flows
A: 67,872 gpd	A: 202,021 gpd
P: 161,484 gpd	P: 415,472 gpd
16" CAPACITY 1,600,000 gpd	

PS17 DART
Basin 17
A: 3,000 gpd
P: 6,000 gpd
CAPACITY: 100 gpm 144,000 gpd

PS19 WALT
Basin 19
A: 8,060 gpd
P: 20,150 gpd
CAPACITY: 100 gpm 144,000 gpd

PS24 LAKEWOOD DR
Inc. Basin 24,6
A: 133,889 gpd
P: 253,338 gpd
CAPACITY: 350 gpm 504,000 gpd

A: 17,720 gpd
P: 31,550 gpd

PS2 ABANDONED

PS3 ABANDONED

PS4 ABANDONED

PS1 ABANDONED

WPCP
OPTION A REHAB

PS LITTLE RIVER WPCP	
Basin WPCP	
A: 551,837 gpd	
P: 1,172,164 gpd	
WPCP	A: 650,000 gpd
	WKLY: 810,000 gpd
	HYD: 1,625,000 gpd

PS15 GENERAL MILLS
Basin 15
A: 3,000 gpd
P: 6,000 gpd
CAPACITY: 320 gpm 460,800 gpd

NEW WPCP
OPTION

REGIONALIZATION
OPTION

PS21 HWY 278
CAPACITY: 195 gpm 280,000 gpd

PS22 I-20 REST AREA
Basin 22
A: 5,888 gpd
P: 11,776 gpd
CAPACITY: 195 gpm 280,000 gpd

I-20 EAST BOUND
REST AREA

LARGEST SEWER USERS

- ISONVOA TECHNOLOGIES
- STANDRIDGE
- GOODYEAR
- BOARD OF EDUCATION
  - D1 SOCIAL CIRCLE ELEMENTARY SCHOOL
  - D2 SOCIAL CIRCLE PRIMARY SCHOOL
  - D3 SOCIAL CIRCLE MIDDLE SCHOOL
  - D4 SOCIAL CIRCLE HIGH SCHOOL
  - D5 SOCIAL CIRCLE SCHOOL BOARD OFFICE
- CERTAINTEED
- SENIOR SOLUTIONS
- DEPARTMENT OF TRANSPORTATION
- DIALYSIS NEWCO
- BLUE WILLOW INN
- SOCIAL CIRCLE NURSING HOME

LEGEND

	EXISTING	PROPOSED
PUMP STATION	□	■
SEWER	●---●	●——●
FORCE MAIN	———	- - -
AIR RELEASE VALVE	▲	
CREEK/STREAM	— · — · —	

PROPOSED SEWER PROJECT

ADDITIONAL CUSTOMER — S1 — *NUMBER OF RESIDENTIAL SEWER CUSTOMERS ADDED THIS PERIOD

PS# NAME
BASIN SERVED
AVERAGE DAILY FLOW
PEAK DAILY FLOW
CAPACITY OF PUMP STATION OR SEWER

SEWER PER LAND USE PLAN

SEWERSHEDS

0 1600' 3200' 6400'
GRAPHIC SCALE
1 inch = 1600 ft.

EXHIBIT VI

CITY OF SOCIAL CIRCLE, GEORGIA SEWERAGE SYSTEM MAP 5 – YEAR PLAN

JANUARY 2018

TURNIPSEED ENGINEERS | ATLANTA AUGUSTA ST. SIMONS ISLAND

WWW.GBTENGINEERS.COM

4210 COLUMBIA ROAD, BLDG 3
MARTINEZ, GEORGIA 30907

PHONE : 706 – 863 – 8500
FAX : 706 – 860 – 0913

2028 PROJECTION

PS23 NEW JERSERY HIGHTOWER
CAPACITY: 350 gpm 504,000 gpd

A: 104,112 gpd
P: 223,814 gpd

A: 47,928 gpd
P: 85,196 gpd

A: 45,334 gpd
P: 96,648 gpd

A: 17,222 gpd
P: 35,484 gpd

PS10 CHEROKEE
CAPACITY: 180 gpm 259,200 gpd

A: 2,500 gpd
P: 5,000 gpd

A: 64,750 gpd
P: 112,861 gpd

PS11 GFG

PS13 ABANDONED

PS14 ABANDONED

PS25
Inc. Basin 10,11,12,13,14
A: 120,900 gpd
P: 232,181 gpd
CAPACITY: 350 gpm 504,000 gpd

16" DIP SEWER
Inc. Basin OAK,23,10,11,12,13,14
A: 145,353 gpd
P: 533,019 gpd
CAPACITY: 1,600,000 gpd

A: 41,241 GPD
P: 97,562 GPD

Basin A	All Flows
A: 71,150 gpd	A: 228,783 gpd
P: 168,041 gpd	P: 494,997 gpd
16" CAPACITY 1,600,000 gpd	

Basin B	All Flows
A: 54,590 gpd	A: 103,891 gpd
P: 134,921 gpd	P: 252,633 gpd
16" CAPACITY 1,600,000 gpd	

A: 131,617 GPD
P: 263,364 GPD

PS16 ABANDONED

PS17 ABANDONED

PS18 ABANDONED

PS19 ABANDONED

PS24 LAKEWOOD DR
Inc. Basin 24,6
A: 157,373 gpd
P: 326,306 gpd
CAPACITY: 350 gpm 504,000 gpd

A: 109,445 gpd
P: 241,110 gpd

PS LITTLE RIVER WPCP	
Basin WPCP	
A: 332,675 gpd	
P: 747,630 gpd	
WPCP	A: 650,000 gpd
	WKLY: 810,000 gpd
	HYD: 1,625,000 gpd

PS15 ABANDONED

21" SEWER	
A:	A: 189,223 gpd
P:	P: 365,057 gpd
CAPACITY: 3,000,000 gpd	

NEW WPCP OPTION

REGIONALIZATION OPTION

PS21 HWY 278
CAPACITY: 195 gpm 280,000 gpd

PS22 I-20 REST AREA
Basin 22
A: 5,888 gpd
P: 11,776 gpd
CAPACITY: 195 gpm 280,000 gpd

I-20 EAST BOUND REST AREA

LARGEST SEWER USERS

- ISONVOA TECHNOLOGIES
- STANDRIDGE
- GOODYEAR
- BOARD OF EDUCATION
  - D1 SOCIAL CIRCLE ELEMENTARY SCHOOL
  - D2 SOCIAL CIRCLE PRIMARY SCHOOL
  - D3 SOCIAL CIRCLE MIDDLE SCHOOL
  - D4 SOCIAL CIRCLE HIGH SCHOOL
  - D5 SOCIAL CIRCLE SCHOOL BOARD OFFICE
- CERTAINTEED
- SENIOR SOLUTIONS
- DEPARTMENT OF TRANSPORTATION
- DIALYSIS NEWCO
- BLUE WILLOW INN
- SOCIAL CIRCLE NURSING HOME

LEGEND

	EXISTING	PROPOSED
PUMP STATION	2023	2028
SEWER		
PROJECTED SEWERS	2023	2028
FORCE MAIN	2023	2028
AIR RELEASE VALVE		
CREEK/STREAM		

PROPOSED SEWER PROJECT — S1

ADDITIONAL CUSTOMER — 50 *NUMBER OF RESIDENTIAL SEWER CUSTOMERS ADDED THIS PERIOD

PS# NAME
BASIN SERVED
AVERAGE DAILY FLOW
PEAK DAILY FLOW
CAPACITY OF PUMP STATION OR SEWER

SEWER PER LAND USE PLAN

SEWERSHEDS

0 1600' 3200' 6400'
GRAPHIC SCALE
1 inch = 1600 ft.

EXHIBIT VII

CITY OF SOCIAL CIRCLE, GEORGIA SEWERAGE SYSTEM MAP 10 – YEAR PLAN

JANUARY 2018

TURNIPSEED ENGINEERS | ATLANTA AUGUSTA ST. SIMONS ISLAND
WWW.GBTENGINEERS.COM
4210 COLUMBIA ROAD, BLDG 3
MARTINEZ, GEORGIA 30907
PHONE : 706 – 863 – 8800
FAX : 706 – 860 – 0913

VIII. FUNDING OPTIONS

Funding the construction of the sewerage system will require loan and grant assistance from federal and state agencies. Some possible sources of funds are as follows:

Agency	*Type*	*Limit*
OneGeorgia Authority Equity Funds	Grant	$200,000-$1,000,000
Georgia Dept of Community Affairs (EIP)	Grant	$500,000
Economic Development Administration	Grant 50% max	$2,000,000
Rural Business Enterprise Grant (RBEG)	Grant	$99,999
GEFA Georgia Fund	2.39% 1.0% Closing	$3,000,000
GEFA State Revolving Loan Fund (SRF)	1.89% or lower 1.0% Closing	$25,000,000
USDA Rural Development	2.25 – 4.625% Grant	Unlimited (75% max or $4M)
Georgia Dept of Community Affairs (CDBG)	Grant	$750,000

Each source has different criteria in determining project eligibility.

The City has applied for GEFA loan funds on other projects. GEFA currently offers Georgia Fund financing at low interest for a term of 20 years with a 1% closing fee. The maximum loan amount is $3 million. GEFA also administers the State Revolving Fund, which offers loan funds at low interest with a 1% closing fee. Generally, loan terms are 20-years, but extended terms of 25 and 30 years are available for projects such as treatment plants. Limited subsidy (grant) funds are available.

The USDA Rural Development has loan and grant funds available based on certain criteria. Rural Development loan funds are currently offered at 2.25% interest (poverty rate) for a term of 40 years. Rural Development determines the City's ability to repay loan funds based on a percentage of median household income. If the project cost exceeds the loan amount, the City may be eligible for grant funds up to 75-percent of the project cost.

The City has successfully completed several Georgia Department of Community Affairs offers Community Development Block Grants for improvements in low to moderate income areas. The maximum amount of CDBG funds per project is $750,000. Several areas throughout the City in need of rehabilitation would not qualify. The City has already utilized CDBG funds to improve the sewerage system in low to moderate income areas.

The OneGeorgia Authority administers grant and loan funds to promote economic growth in Georgia. These funds may be used for capacity building to attract industry. Grant amounts of $200,000 to $1,000,000 are available for infrastructure, with the amount depending upon whether the economic impact will affect one, two, or multiple counties. To receive a OneGeorgia grant, the applicant must demonstrate the inability to obtain other funding.

The funds from Georgia Department of Community Affairs Employment Incentive Program (EIP) offer grants for job creation or retention. The City should consider this funding when a prospective industry is identified. We will work with the City when this becomes a feasible funding alternative. This program offers a maximum grant of $750,000 and requires private investment and job creation.

The Economic Development Administration (EDA) offers grant funds for job creation. Funds can be used to pay for water, sewerage, gas, rail and road improvements. EDA funds may be used to leverage up to 50% of other project funds and typically a maximum of $2,000,000 when there are a high number of jobs created. The City should consider this funding when a prospective industry is identified. We will work with the City when this becomes a feasible funding alternative.

Rural Business Enterprise Grants (RBEG) of less than $100,000 are offered by USDA to public bodies to assist businesses with less than 50 employees and $1,000,000 annual gross revenues. The City should consider this source when a suitable business is found.

Completion of the City's selected 5-year and 10-year Capital Improvement Plan will likely require multiple funding sources. Individual projects in low income areas may be funded by CDBG. Economic Development related projects may be eligible for OneGeorgia, EIP,

or EDA funding. The remainder of the projects may be combined into one or more USDA or GEFA SRF funding projects. Turnipseed Engineers has extensive experience coordinating projects with multiple funding sources and will be happy to assist the City.

TABLE OF APPENDICES

A. SEWAGE PUMP STATION RUNTIME RECORDS

PS2 Railroad

Pump gpm 100
ADF (gpd) 17720

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		3315.3			473.7			0						
2/24/2017	3315.3	3507.8	192.5	473.7	473.7	0		192.5	35	840	22.9%	5.5	33000	1.86
3/10/2017	3507.8	3548	40.2	473.7	473.7	0		40.2	14	336	12.0%	2.9	17229	0.97
3/23/2017	3548	3587.2	39.2	473.7	473.7	0		39.2	13	312	12.6%	3.0	18092	1.02
4/12/2017	3587.2	3666.9	79.7	473.7	473.7	0		79.7	20	480	16.6%	4.0	23910	1.35
4/28/2017	3666.9	3728.3	61.4	473.7	473.7	0		61.4	16	384	16.0%	3.8	23025	1.30
5/12/2017	3728.3	3771.6	43.3	473.7	473.7	0		43.3	14	336	12.9%	3.1	18557	1.05
5/26/2017	3771.6	3828.9	57.3	473.7	473.7	0		57.3	14	336	17.1%	4.1	24557	1.39
6/23/2017	3828.9	3903.6	74.7	473.7	473.7	0		74.7	28	672	11.1%	2.7	16007	0.90
7/10/2017	3903.6	4086.9	183.3	473.7	473.7	0		183.3	17	408	44.9%	10.8	64694	3.65
7/28/2017	4086.9	4149.4	62.5	473.7	473.7	0		62.5	18	432	14.5%	3.5	20833	1.18
8/11/2017	4149.4	4196.4	47	473.7	473.7	0		47	14	336	14.0%	3.4	20143	1.14
9/7/2017	4196.4	4282.5	86.1	473.7	473.7	0		86.1	27	648	13.3%	3.2	19133	1.08
9/26/2017	4282.5	4371.6	89.1	473.7	473.7	0		89.1	19	456	19.5%	4.7	28137	1.59
												Actual ADF	**25178**	**1.42**
												Max, Actual PF	**64694**	**2.57**

PS3 Edmondson

Pump gpm 200
ADF (gpd) 107169

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		27531.1			7854.72			0						
2/24/2017	27531.1	27624.4	93.3	7854.72	7911.12	56.4		149.7	35	840	17.8%	4.3	51326	0.48
3/10/2017	27624.4	27632.3	7.9	7911.12	7928.26	17.14		25.04	14	336	7.5%	1.8	21463	0.20
3/23/2017	27632.3	27640.2	7.9	7928.26	7948.71	20.45		28.35	13	312	9.1%	2.2	26169	0.24
4/12/2017	27640.2	27665.1	24.9	7948.71	7993.58	44.87		69.77	20	480	14.5%	3.5	41862	0.39
4/28/2017	27665.1	27681.8	16.7	7993.58	8021.15	27.57		44.27	16	384	11.5%	2.8	33203	0.31
5/12/2017	27681.8	27692.4	10.6	8021.15	8036.7	15.55		26.15	14	336	7.8%	1.9	22414	0.21
5/26/2017	27692.4	27709.6	17.2	8036.7	8063.12	26.42		43.62	14	336	13.0%	3.1	37389	0.35
6/23/2017	27709.6	27729.4	19.8	8063.12	8088.42	25.3		45.1	28	672	6.7%	1.6	19329	0.18
7/10/2017	27729.4	27907.7	178.3	8088.42	8092.01	3.59		181.89	17	408	44.6%	10.7	128393	1.20
7/28/2017	27907.7	27911.3	3.6	8092.01	8126.25	34.24		37.84	18	432	8.8%	2.1	25227	0.24
8/11/2017	27911.3	27912.7	1.4	8126.25	8163.64	37.39		38.79	14	336	11.5%	2.8	33249	0.31
9/7/2017	27912.7	27916.1	3.4	8163.64	8243.98	80.34		83.74	27	648	12.9%	3.1	37218	0.35
9/26/2017	27916.1	27935.4		8243.98	8328.96									
												Actual ADF	**39770**	**4.93**
												Max, Actual PF	**128393**	**3.23**

PS4 Spearman Pond

Pump gpm 240
ADF (gpd) 78329

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		14243.62			6826.07			0						
2/24/2017	14243.62	14373.82	130.2	6826.07	6841.47	15.4		145.6	35	840	17.3%	4.2	59904	0.76
3/10/2017	14373.82	14417.71	43.89	6841.47	6857.16	15.69		59.58	14	336	17.7%	4.3	61282	0.78
3/23/2017	14417.71	14438.52	20.81	6857.16	6877.72	20.56		41.37	13	312	13.3%	3.2	45825	0.59
4/12/2017	14438.52	14505.99	67.47	6877.72	6880.41	2.69		70.16	20	480	14.6%	3.5	50515	0.64
4/28/2017	14505.99	14543.02	37.03	6880.41	6902.79	22.38		59.41	16	384	15.5%	3.7	53469	0.68
5/12/2017	14543.02	14585.96	42.94	6902.79	6909.03	6.24		49.18	14	336	14.6%	3.5	50585	0.65
5/26/2017	14585.96	14622.79	36.83	6909.03	6932.84	23.81		60.64	14	336	18.0%	4.3	62373	0.80
6/23/2017	14622.79	14685.24	62.45	6932.84	6945.73	12.89		75.34	28	672	11.2%	2.7	38746	0.49
7/10/2017	14685.24	14799.02	113.78	6945.73	6987.26	41.53		155.31	17	408	38.1%	9.1	131557	1.68
7/28/2017	14799.02	14850.76	51.74	6987.26	7012.67	25.41		77.15	18	432	17.9%	4.3	61720	0.79
8/11/2017	14850.76	14882.81	32.05	7012.67	7021.91	9.24		41.29	14	336	12.3%	2.9	42470	0.54
9/7/2017	14882.81	15152.32	269.51	7021.91	7033.12	11.21		280.72	27	648	43.3%	10.4	149717	1.91
9/25/2017	15152.32	15210.89	58.57	7033.12	7034.71	1.59		60.16	18	432	13.9%	3.3	48128	0.61
												Actual ADF	**65869**	**0.84**
												Max, Actual PF	**149717**	**2.27**

PS6 Jubilee

Pump gpm 245
ADF (gpd) 20630

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		1647.71			1543.28			0						
2/24/2017	1647.71	1647.71	0	1543.28	1570.93	27.65		27.65	35	840	3.3%	0.8	11613	0.56
3/10/2017	1647.71	1647.72	0.01	1570.93	1579.99	9.06		9.07	14	336	2.7%	0.6	9523	0.46
3/23/2017	1647.72	1647.72	0	1579.99	1590	10.01		10.01	13	312	3.2%	0.8	11319	0.55
4/12/2017	1647.72	1647.73	0.01	1590	1604.36	14.36		14.37	20	480	3.0%	0.7	10562	0.51
4/28/2017	1647.73	1647.74	0.01	1604.36	1618.7	14.34		14.35	16	384	3.7%	0.9	13184	0.64
5/12/2017	1647.74	1647.74	0	1618.7	1629.99	11.29		11.29	14	336	3.4%	0.8	11855	0.57
5/26/2017	1647.74	1647.74	0	1629.99	1644.45	14.46		14.46	14	336	4.3%	1.0	15183	0.74
6/23/2017	1647.74	1647.74	0	1644.45	1664.87	20.42		20.42	28	672	3.0%	0.7	10720	0.52
7/10/2017	1647.74	1648.69	0.95	1664.87	1708.52	43.65		44.6	17	408	10.9%	2.6	38566	1.87
7/28/2017	1648.69	1648.69	0	1708.52	1723.42	14.9		14.9	18	432	3.4%	0.8	12168	0.59
8/11/2017	1648.69	1648.69	0	1723.42	1728.87	5.45		5.45	14	336	1.6%	0.4	5722	0.28
9/7/2017	1648.69	1648.69	0	1728.87	1744.01	15.14		15.14	27	648	2.3%	0.6	8243	0.40
9/25/2017	1648.69	1649.39	0.7	1744.01	1759.99	15.98		16.68	18	432	3.9%	0.9	13622	0.66
												Actual ADF	**13252**	**1.64**
												Max, Actual PF	**38566**	**2.91**
												Max, Actual PF neglecting probable priming problem	**15183**	**1.15**

PS7 Jersey

Pump gpm 80
ADF (gpd) 2340

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		937.16			6234			0						
2/24/2017	937.16	939	1.84	6234	6338.2	104.2		106.04	35	840	12.6%	3.0	14543	6.21
3/10/2017	939	940.84	1.84	6338.2	6451.09	112.89		114.73	14	336	34.1%	8.2	39336	16.81
3/23/2017	940.84	942.87	2.03	6451.09	6576.08	124.99		127.02	13	312	40.7%	9.8	46900	20.04
4/12/2017	942.87	945.01	2.14	6576.08	6681.2	105.12		107.26	20	480	22.3%	5.4	25742	11.00
4/28/2017	945.01	948.6	3.59	6681.2	6890.76	209.56		213.15	16	384	55.5%	13.3	63945	27.33
5/12/2017	948.6	950	1.4	6890.76	6995.23	104.47		105.87	14	336	31.5%	7.6	36298	15.51
5/26/2017	950	952.2	2.2	6995.23	7103.04	107.81		110.01	14	336	32.7%	7.9	37718	16.12
6/23/2017	952.2	955.32	3.12	7103.04	7273.36	170.32		173.44	28	672	25.8%	6.2	29733	12.71
7/10/2017	955.32	959.27	3.95	7273.36	7461.84	188.48		192.43	17	408	47.2%	11.3	54333	23.22
7/28/2017	959.27	998.59	39.32	7461.84	7641.99	180.15		219.47	18	432	50.8%	12.2	58525	25.01
8/11/2017	998.59	1001.45	2.86	7641.99	7771.64	129.65		132.51	14	336	39.4%	9.5	45432	19.42
9/7/2017	1001.45	1004.16	2.71	7771.64	7896.5	124.86		127.57	27	648	19.7%	4.7	22679	9.69
9/26/2017	955.32	1006.86		7273.36	8065.1									
9/26/2017	1004.16			7896.5										
												Actual ADF	**39599**	**16.92**
												Max, Actual PF	**63945**	**1.61**
												Max, Actual PF neglecting probable priming problem	**46900**	**1.18**

PS8 Windsong

Pump gpm 125
ADF (gpd) 32240

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		5007.69			5042.17			0						
2/24/2017	5007.69	5047.16	39.47	5042.17	5080.29	38.12		77.59	35	840	9.2%	2.2	16626	0.52
3/10/2017	5047.16	5064.27	17.11	5080.29	5095.96	15.67		32.78	14	336	9.8%	2.3	17561	0.54
3/23/2017	5064.27	5094.62	30.35	5095.96	5095.96	0		30.35	13	312	9.7%	2.3	17510	0.54
4/12/2017	5094.62	5138.81	44.19	5095.96	5181.88	85.92		130.11	20	480	27.1%	6.5	48791	1.51
4/28/2017	5138.81	5157.31	18.5	5181.88	5198.59	16.71		35.21	16	384	9.2%	2.2	16505	0.51
5/12/2017	5157.31	5173.64	16.33	5198.59	5211.92	13.33		29.66	14	336	8.8%	2.1	15889	0.49
5/26/2017	5173.64	5190.53	16.89	5211.92	5227.21	15.29		32.18	14	336	9.6%	2.3	17239	0.53
6/23/2017	5190.53	5218.65	28.12	5227.21	5248.66	21.45		49.57	28	672	7.4%	1.8	13278	0.41
7/10/2017	5218.65	5251.16	32.51	5248.66	5275.36	26.7		59.21	17	408	14.5%	3.5	26122	0.81
7/28/2017	5251.16	5274.97	23.81	5275.36	5293.53	18.17		41.98	18	432	9.7%	2.3	17492	0.54
8/11/2017	5274.97	5294.9	19.93	5293.53	5308.62	15.09		35.02	14	336	10.4%	2.5	18761	0.58
9/7/2017	5294.9	5330.37	35.47	5308.62	5336.95	28.33		63.8	27	648	9.8%	2.4	17722	0.55
9/25/2017	5330.37	5353.11	22.74	5336.95	5355.31	18.36		41.1	18	432	9.5%	2.3	17125	0.53
												Actual ADF	**20048**	**0.62**
												Max, Actual PF	**48791**	**2.43**
												Max, Actual PF neglecting probable priming problem	**26122**	**1.30**

PS9 Carver

Pump gpm 320 (2807)
ADF (gpd) 75640

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		4292.3			9956.5			0						
2/24/2017	4292.3	4331.1	38.8	9956.5	10002.1	45.6		84.4	35	840	10.0%	2.4	46299	0.61
3/10/2017	4331.1	4343.7	12.6	10002.1	10016.8	14.7		27.3	14	336	8.1%	1.9	37440	0.49
3/23/2017	4343.7	4357.7	14	10016.8	10033.2	16.4		30.4	13	312	9.7%	2.3	44898	0.59
4/12/2017	4357.7	4378.6	20.9	10033.2	10054.4	21.2		42.1	20	480	8.8%	2.1	40416	0.53
4/28/2017	4378.6	4393.3	14.7	10054.4	10070.6	16.2		30.9	16	384	8.0%	1.9	37080	0.49
5/12/2017	4393.3	4410.1	16.8	10070.6	10084.7	14.1		30.9	14	336	9.2%	2.2	42377	0.56
5/26/2017	4410.1	4413.3	3.2	10084.7	10113.2	28.5		31.7	14	336	9.4%	2.3	43474	0.57
6/23/2017	4413.3	4419.4	6.1	10113.2	10152.6	39.4		45.5	28	672	6.8%	1.6	31200	0.41
7/10/2017	4419.4	4427.7	8.3	10152.6	10238.3	85.7		94	17	408	23.0%	5.5	106165	1.40
7/28/2017	4427.7	4431	3.3	10238.3	10278.1	39.8		43.1	18	432	10.0%	2.4	45973	0.61
8/11/2017	4431	4441.3	10.3	10278.1	10301.5	23.4		33.7	14	336	10.0%	2.4	46217	0.61
9/7/2017	4441.3	4449.7	8.4	10301.5	10365.4	63.9		72.3	27	648	11.2%	2.7	51413	0.68
9/25/2017	4449.7	4451.6	1.9	10365.4	10414.7	49.3		51.2	18	432	11.9%	2.8	54613	0.72
												Actual ADF	**48274**	**0.64**
												Max, Actual PF	**106165**	**2.20**
												Max, Actual PF neglecting probable priming problem	**54613**	**1.13**

PS10 Hwy 11 / N. Cherokee

Pump gpm 180 (assumed)
ADF (gpd) 36622

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		23586.06			10650.16			0						
2/24/2017	23586.06	23645.36	59.3	10650.16	10696.55	46.39		105.69	35	840	12.6%	3.0	32613	0.89
3/10/2017	23645.36	23677.81	32.45	10696.55	10718.34	21.79		54.24	14	336	16.1%	3.9	41842	1.14
3/23/2017	23677.81	23705.88	28.07	10718.34	10739.43	21.09		49.16	13	312	15.8%	3.8	40841	1.12
4/12/2017	23705.88	23752.37	46.49	10739.43	10774.39	34.96		81.45	20	480	17.0%	4.1	43983	1.20
4/28/2017	23752.37	23789.2	36.83	10774.39	10800.86	26.47		63.3	16	384	16.5%	4.0	42728	1.17
5/12/2017	23789.2	23825.75	36.55	10800.86	10828.05	27.19		63.74	14	336	19.0%	4.6	49171	1.34
5/26/2017	23825.75	23858.31	32.56	10828.05	10861.87	33.82		66.38	14	336	19.8%	4.7	51207	1.40
6/23/2017	23858.31	23900.38	42.07	10861.87	10890.66	28.79		70.86	28	672	10.5%	2.5	27332	0.75
7/10/2017	23900.38	23953.74	53.36	10890.66	10932	41.34		94.7	17	408	23.2%	5.6	60162	1.64
7/28/2017	23953.74	23999.38	45.64	10932	10967.42	35.42		81.06	18	432	18.8%	4.5	48636	1.33
8/11/2017	23999.38	24036.04	36.66	10967.42	10991.06	23.64		60.3	14	336	17.9%	4.3	46517	1.27
9/7/2017	24036.04	24222.07	186.03	10991.06	11082.14	91.08		277.11	27	648	42.8%	10.3	110844	3.03
9/25/2017	24222.07	24368.18	146.11	11082.14	11161.02	78.88		224.99	18	432	52.1%	12.5	134994	3.69
												Actual ADF	**56221**	**1.54**
												Max, Actual PF	**134994**	**2.40**

PS12 Goodyear

Pump gpm 100
ADF (gpd) 17222

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		2696.8			1493.7			0						
2/24/2017	2696.8	2720.75	23.95	1493.7	1518.7	25		48.95	35	840	5.8%	1.4	8391	0.49
3/10/2017	2720.75	2727.71	6.96	1518.7	1525.8	7.1		14.06	14	336	4.2%	1.0	6026	0.35
3/23/2017	2727.1	2749.32	22.22	1525.8	1535.7	9.9		32.12	13	312	10.3%	2.5	14825	0.86
4/12/2017	2749.32	2762.98	13.66	1535.7	1550.3	14.6		28.26	20	480	5.9%	1.4	8478	0.49
4/28/2017	2762.98	2773.56	10.58	1550.3	1561.3	11		21.58	16	384	5.6%	1.3	8092	0.47
5/12/2017	2773.56	2780.91	7.35	1561.3	1568.9	7.6		14.95	14	336	4.4%	1.1	6407	0.37
5/26/2017	2780.91	2788.57	7.66	1568.9	1576.8	7.9		15.56	14	336	4.6%	1.1	6669	0.39
6/23/2017	2788.57	2800.19	11.62	1576.8	1588.6	11.8		23.42	28	672	3.5%	0.8	5019	0.29
7/10/2017	2800.19	2821.92	21.73	1588.6	1612.2	23.6		45.33	17	408	11.1%	2.7	15999	0.93
7/28/2017	2821.92	2831.03	9.11	1612.2	1621.3	9.1		18.21	18	432	4.2%	1.0	6070	0.35
8/11/2017	2831.03	2837.85	6.82	1621.3	1627.8	6.5		13.32	14	336	4.0%	1.0	5709	0.33
9/7/2017	2837.85	2853.6	15.75	1627.8	1642.9	15.1		30.85	27	648	4.8%	1.1	6856	0.40
9/22/2017	2853.6	2868.62	15.02	1642.9	1649.2	6.3		21.32	15	360	5.9%	1.4	8528	0.50
												Actual ADF	**8236**	**0.48**
												Max, Actual PF	**15999**	**1.94**

PS14 Fairplay

Pump gpm 420
ADF (gpd) 81687

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		2597.1			3208			0						
2/24/2017	2597.1	2622.4		3208	3250.8	42.8		42.8	35	840	5.1%	1.2	30816	0.38
3/10/2017	2622.4	2632.1		3250.8	3271.9	21.1		21.1	14	336	6.3%	1.5	37980	0.46
3/23/2017	2632.1	2641.4		3271.9	3287	15.1		15.1	13	312	4.8%	1.2	29271	0.36
4/12/2017	2641.4	2656.1	14.7	3287	3321.2	34.2		48.9	20	480	10.2%	2.4	61614	0.75
4/28/2017	2656.1	2666.5	10.4	3321.2	3344.7	23.5		33.9	16	384	8.8%	2.1	53393	0.65
5/12/2017	2666.5	2675.9	9.4	3344.7	3362.8	18.1		27.5	14	336	8.2%	2.0	49500	0.61
5/26/2017	2675.9	2684.5	8.6	3362.8	3387.1	24.3		32.9	14	336	9.8%	2.3	59220	0.72
6/23/2017	2684.5	2695.9	11.4	3387.1	3417.7	30.6		42	28	672	6.3%	1.5	37800	0.46
7/10/2017	2695.9	2712.2	16.3	3417.6	3571.7	154.1		170.4	17	408	41.8%	10.0	252593	3.09
7/28/2017	2712.2	2722.8	10.6	3571.7	3616.7	45		55.6	18	432	12.9%	3.1	77840	0.95
8/11/2017	2722.8	2731.6	8.8	3616.7	3629.2	12.5		21.3	14	336	6.3%	1.5	38340	0.47
9/7/2017	2731.6	2750.7	19.1	3629.2	3658.3	29.1		48.2	27	648	7.4%	1.8	44987	0.55
9/25/2017	2750.7	2764.4	13.7	3658.3	3676.2	17.9		31.6	18	432	7.3%	1.8	44240	0.54
												Actual ADF	**62892**	**0.77**
												Max, Actual PF	**252593**	**4.02**

PS15 General Mills

Pump gpm 320
ADF (gpd) 2500

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
1/20/2017		81.3			102			0						
2/24/2017	81.3	82.2	0.9	102	102.7	0.7		1.6	35	840	0.2%	0.0	878	0.35
3/10/2017	82.2	82.6	0.4	102.7	102.7	0		0.4	14	336	0.1%	0.0	549	0.22
3/23/2017	82.6	82.9	0.3	102.7	102.7	0		0.3	13	312	0.1%	0.0	443	0.18
4/12/2017	82.9	83.6	0.7	102.7	103.4	0.7		1.4	20	480	0.3%	0.1	1344	0.54
4/28/2017	83.6	83.7	0.1	103.4	103.5	0.1		0.2	16	384	0.1%	0.0	240	0.10
5/12/2017	83.7	83.9	0.2	103.5	103.7	0.2		0.4	14	336	0.1%	0.0	549	0.22
5/26/2017	83.9	84.2	0.3	103.7	104.1	0.4		0.7	14	336	0.2%	0.0	960	0.38
6/23/2017	84.2	84.6	0.4	104.1	104.4	0.3		0.7	28	672	0.1%	0.0	480	0.19
10-Jul	84.6	85.5	0.9	104.4	104.4	0		0.9	17	408	0.2%	0.1	1016	0.41
28-Jul	85.5	85.6	0.1	104.4	104.9	0.5		0.6	18	432	0.1%	0.0	640	0.26
11-Aug	85.6	86.1	0.5	104.9	105.1	0.2		0.7	14	336	0.2%	0.0	960	0.38
7-Sep	86.1	87.4	1.3	105.1	105.1	0		1.3	27	648	0.2%	0.0	924	0.37
26-Sep	87.4	88.9	1.5	105.1	105.1	0		1.5	19	456	0.3%	0.1	1516	0.61
												Actual ADF	**808**	**0.14**
												Max, Actual PF	**1516**	**1.88**

PS16 Babbs (Smyrna Cargo)

Pump gpm 100 assumed
ADF (gpd) 1250

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		2827.89			2175.99			0						
2/24/2017	2827.89	2830.69	2.8	2175.99	2268.85	92.86		95.66	35	840	11.4%	2.7	16399	13.12
3/10/2017	2830.69	**2832.1**	1.41	2268.85	2270.07	1.22		2.63	14	336	0.8%	0.2	1127	0.90
3/23/2017	**2832.1**	2832.88	0.78	2270.07	2271.08	1.01		1.79	13	312	0.6%	0.1	826	0.66
4/12/2017	2832.88	2834.56	1.68	2271.08	2272.7	1.62		3.3	20	480	0.7%	0.2	990	0.79
4/28/2017	2834.56	2835.81	1.25	2272.7	2273.94	1.24		2.49	16	384	0.6%	0.2	934	0.75
5/12/2017	2835.81	2836.74	0.93	2273.94	2274.89	0.95		1.88	14	336	0.6%	0.1	806	0.64
5/26/2017	2836.74	2837.89	1.15	2274.89	2276.05	1.16		2.31	14	336	0.7%	0.2	990	0.79
6/23/2017	2837.89	2839.69	1.8	2276.05	2277.71	1.66		3.46	28	672	0.5%	0.1	741	0.59
7/10/2017	2839.69	2841.84	2.15	2277.71	2279.96	2.25		4.4	17	408	1.1%	0.3	1553	1.24
7/28/2017	2841.84	2843.18	1.34	2279.96	2281.2	1.24		2.58	18	432	0.6%	0.1	860	0.69
8/11/2017	2843.18	2844.38	1.2	2281.2	2282.44	1.24		2.44	14	336	0.7%	0.2	1046	0.84
9/7/2017	2844.38	2846.57	2.19	2282.44	2284.65	2.21		4.4	27	648	0.7%	0.2	978	0.78
9/25/2017	2846.57	2849.06	2.49	2284.65	2287.11	2.46		4.95	18	432	1.1%	0.3	1650	1.32
												Actual ADF	**2223**	**1.78**
												Max, Actual PF	**16399**	**7.38**

PS17 Dart

Pump gpm 100 assumed
ADF (gpd) 2500

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		331.86			1175.99			0						
2/24/2017	331.86	339.02	7.16	1175.99	1183.29	7.3		14.46	35	840	1.7%	0.4	2479	0.99
3/10/2017	339.02	341	1.98	1183.29	1185.1	1.81		3.79	14	336	1.1%	0.3	1624	0.65
3/23/2017	341	342.87	1.87	1185.1	1187.78	2.68		4.55	13	312	1.5%	0.4	2100	0.84
4/12/2017	342.87	346.37	3.5	1187.78	1190.27	2.49		5.99	20	480	1.2%	0.3	1797	0.72
4/28/2017	346.37	348.85	2.48	1190.27	1192.57	2.3		4.78	16	384	1.2%	0.3	1792	0.72
5/12/2017	348.85	351.34	2.49	1192.57	1193.74	1.17		3.66	14	336	1.1%	0.3	1569	0.63
5/26/2017	351.34	357.08	5.74	1193.74	1193.74	0		5.74	14	336	1.7%	0.4	2460	0.98
6/23/2017	357.08	360.6	3.52	1193.74	1197.02	3.28		6.8	28	672	1.0%	0.2	1457	0.58
7/10/2017	360.6	366.85	6.25	1197.02	1203.16	6.14		12.39	17	408	3.0%	0.7	4373	1.75
7/28/2017	366.85	369.75	2.9	1203.16	1205.42	2.26		5.16	18	432	1.2%	0.3	1720	0.69
8/11/2017	369.75	372.12	2.37	1205.42	1207.27	1.85		4.22	14	336	1.3%	0.3	1809	0.72
9/7/2017	372.12	397.84	25.72	1207.27	1229.68	22.41		48.13	27	648	7.4%	1.8	10696	4.28
9/21/2017	397.84	409.35	11.51	1229.68	1230.96	1.28		12.79	14	336	3.8%	0.9	5481	2.19
												Actual ADF	**3027**	**1.21**
												Max, Actual PF	**10696**	**3.53**

PS18 ADF (IsoNova)

Pump gpm 220
ADF (gpd) 316800

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
1/20/2017		646.7			464.8			0						
2/24/2017	646.7	731.1	84.4	464.8	523.5	58.7		143.1	35	840	17.0%	4.1	53969	0.17
3/10/2017	731.1	758.5	27.4	523.5	543.4	19.9		47.3	14	336	14.1%	3.4	44597	0.14
3/23/2017	758.5	786.2	27.7	543.4	563	19.6		47.3	13	312	15.2%	3.6	48028	0.15
4/12/2017	786.2	829.3	43.1	563	592.9	29.9		73	20	480	15.2%	3.6	48180	0.15
4/28/2017	829.3	861.3	32	592.9	616.7	23.8		55.8	16	384	14.5%	3.5	46035	0.15
5/12/2017	861.3	882.5	21.2	616.7	631.5	14.8		36	14	336	10.7%	2.6	33943	0.11
5/26/2017	882.5	909.4	26.9	631.5	649.9	18.4		45.3	14	336	13.5%	3.2	42711	0.13
6/23/2017	909.4	950.5	41.1	649.9	679	29.1		70.2	28	672	10.4%	2.5	33094	0.10
7/10/2017	950.5	1002.7	52.2	679	715	36		88.2	17	408	21.6%	5.2	68485	0.22
7/28/2017	1002.7	1036.4	33.7	715	738.6	23.6		57.3	18	432	13.3%	3.2	42020	0.13
8/11/2017	1036.4	1068	31.6	738.6	759.4	20.8		52.4	14	336	15.6%	3.7	49406	0.16
9/7/2017	1068	1127.1	59.1	759.4	800	40.6		99.7	27	648	15.4%	3.7	48742	0.15
9/25/2017	1127.1	1165.8	38.7	800	828.8	28.8		67.5	18	432	15.6%	3.8	49500	0.16
												Actual ADF	**46824**	**0.15**
												Max, Actual PF	**68485**	**1.46**

PS19 Vine Circle

Pump gpm 100
ADF (gpd) 8060

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Avg Rainfall		Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
1/20/2017		4411.16			5025.05		4			0						
2/24/2017	4411.16	4448.66	37.5	5025.05	5025.05	0	5.75	0.16		37.5	35	840	4.5%	1.1	6429	0.80
3/10/2017	4448.66	4454.3	5.64	5025.05	5031.53	6.48	1.5	0.11		12.12	14	336	3.6%	0.9	5194	0.64
3/23/2017	4454.3	4462.07	7.77	5031.53	5037.53	6	0.95	0.07		13.77	13	312	4.4%	1.1	6355	0.79
4/12/2017	4462.07	4471.18	9.11	5037.53	5046.84	9.31	3.2	0.16		18.42	20	480	3.8%	0.9	5526	0.69
4/28/2017	4471.18	4480.15	8.97	5046.84	5053.14	6.3	2.375	0.15		15.27	16	384	4.0%	1.0	5726	0.71
5/12/2017	4480.15	4488.22	8.07	5053.14	5058.5	5.36	1	0.07		13.43	14	336	4.0%	1.0	5756	0.71
5/26/2017	4488.22	4497.11	8.89	5058.5	5065.88	7.38	3.5	0.25		16.27	14	336	4.8%	1.2	6973	0.87
6/23/2017	4497.11	4509.25	12.14	5065.88	5081.1	15.22	10.975	0.39		27.36	28	672	4.1%	1.0	5863	0.73
7/10/2017	4509.25	4544.18	34.93	5081.1	5102.72	21.62	2.55	0.15		56.55	17	408	13.9%	3.3	19959	2.48
7/28/2017	4544.18	4556	11.82	5102.72	5112.53	9.81	2.675	0.15		21.63	18	432	5.0%	1.2	7210	0.89
8/11/2017	4556	4562.34	6.34	5112.53	5120.78	8.25	3.925	0.28		14.59	14	336	4.3%	1.0	6253	0.78
9/7/2017	4562.34	4580.01	17.67	5120.78	5134.6	13.82	2.4	0.09		31.49	27	648	4.9%	1.2	6998	0.87
9/25/2017	4580.01	4595.07	15.06	5134.6	5142.93	8.33	4.2	0.23		23.39	18	432	5.4%	1.3	7797	0.97
														Actual ADF	**7388**	**0.92**
														Max, Actual PF	**19959**	**2.70**

PS21 Hwy 278

Pump gpm 195
ADF (gpd) 5888

Motor 1 Date	Beginning	End	Total Hours	Motor 2 Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		2815.7			2881.5			0						
2/24/2017	2815.7	2815.7	0	2881.5	2901.8	20.3		20.3	35	840	2.4%	0.6	6786	1.15
3/10/2017	2815.7	2815.7	0	2901.8	2910.7	8.9		8.9	14	336	2.6%	0.6	7438	1.26
3/23/2017	2815.7	2815.8	0.1	2910.7	2919.6	8.9		9	13	312	2.9%	0.7	8100	1.38
4/12/2017	2815.8	2831.8	16	2919.6	2937.2	17.6		33.6	20	480	7.0%	1.7	19656	3.34
4/28/2017	2831.8	2862.4	30.6	2937.2	2958.23	21.03		51.63	16	384	13.4%	3.2	37754	6.41
5/12/2017	2862.4	3010.1	147.7	2958.23	2961.3	3.07		150.77	14	336	44.9%	10.8	126001	21.40
5/26/2017	3010.1	3116.8	106.7	2961.3	2965.4	4.1		110.8	14	336	33.0%	7.9	92597	15.73
6/23/2017	3116.8	3123.8	7	2965.4	2975	9.6		16.6	28	672	2.5%	0.6	6936	1.18
7/10/2017	3123.8	3202.1	78.3	2975	2983.7	8.7		87	17	408	21.3%	5.1	59876	10.17
7/28/2017	3202.1	3220.8	18.7	2983.7	2983.7	0								
8/11/2017	3220.8	3233.1	12.3	2983.7	2983.7	0								
9/7/2017	3233.1	3257.2	24.1	2983.7	2983.7	0								
10/12/2017	3265.3	3273.3		2983.7	2988.5									
*9/19/17	3257.2	3265.3	8.1	2983.7	2983.7	0								
												Actual ADF	**40572**	**6.89**
												Max, Actual PF	**126001**	**3.11**

PS22 I-20 Rest Area

Pump gpm **100** estimated

Motor 1				Motor 2								ADF (gpd)	**5888**	
Date	Beginning	End	Total Hours	Beginning	End	Total Hours	Rain	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan		12183.8			13874			0						
2/24/2017	12183.8	12247.9	64.1	13874	13901.3	27.3		91.4	35	840	10.9%	2.6	15669	2.66
3/10/2017	12247.9	12267.9	20	13901.3	13914.5	13.2		33.2	14	336	9.9%	2.4	14229	2.42
3/23/2017	12267.9	12281.2	13.3	13914.5	13927.2	12.7		26	13	312	8.3%	2.0	12000	2.04
4/12/2017	12281.2	12310.8	29.6	13927.2	13951.7	24.5		54.1	20	480	11.3%	2.7	16230	2.76
4/28/2017	12310.8	12336.4	25.6	13951.7	13965	13.3		38.9	16	384	10.1%	2.4	14587	2.48
5/12/2017	12336.4	12371.2	34.8	13965	13984	19		53.8	14	336	16.0%	3.8	23057	3.92
5/26/2017	12371.2	12411.9	40.7	13984	13998.3	14.3		55	14	336	16.4%	3.9	23571	4.00
6/23/2017	12411.9	12446.6	34.7	13998.3	14025.4	27.1		61.8	28	672	9.2%	2.2	13243	2.25
7/10/2017	12446.6	12549.2	102.6	14025.4	14050.4	25		127.6	17	408	31.3%	7.5	45035	7.65
7/28/2017	12549.2	12714.7	165.5	14050.4	14050.4	0								
8/11/2017	12714.7	12802.7	88	14050.4	14050.4	0								
9/7/2017	12802.7	12951.1	148.4	14050.4	14050.4	0								
9/19/2017	12951.1	13001.7	50.6	14050.4	14050.4	0								
10/10/2017	13001.7	13071.5		14050.4	14050.4									
												Actual ADF	**19736**	**3.35**
												Max, Actual PF	**45035**	**2.28**

PS Little River WPCP Influent - Not Accurate - City Runs Diesel Pump during high flows

Pump gpm **300**

Motor 1				Motor 2			Motor 3							ADF (gpd)	**585129**	
Date	Beginning	End	Total Hours	Beginning	End	Total Hours	Beginning	End	Total Hours	Total Hour	Elapsed d	Elapsed H	%run	hrs/day	gal/day	PF
20-Jan										0						
2/24/2017		8148.83			23194.4			54591.4		0	35	840	0.0%	0.0	0	0.00
3/10/2017	8148.83	8201.64	52.81	23191.4	23234.1	42.7	54591.4	54765.2	173.8	269.31	14	336	80.2%	19.2	346256	0.59
3/23/2017	8201.64	8226.96	25.32	23234.1	23307.1	73	54765.2	54906.2	141	239.32	13	312	76.7%	18.4	331366	0.57
4/12/2017	8226.96	8402.74	175.78	23307.1	23526.3	219.2	54906.2	55018.2	112	506.98	20	480	105.6%	25.3	456282	0.78
4/28/2017	8402.74	8480.03	77.29	23526.3	23744.2	217.9	55018.2	55079.9	61.7	356.89	16	384	92.9%	22.3	401501	0.69
5/12/2017	8480.03	8546.3	66.27	23744.2	23882.6	138.4	55079.9	55174.8	94.9	299.57	14	336	89.2%	21.4	385161	0.66
5/26/2017	8546.3	8603.6	57.3	23882.6	23990.5	107.9	55174.8	55274	99.2	264.4	14	336	78.7%	18.9	339943	0.58
6/23/2017	8603.6			23990.5			55274			0	28	672	0.0%	0.0	0	0.00
7/10/2017	8603.6	8984.16	380.56	23990.5	24371.5	381	55274	55844.7	570.7	1332.26	17	408	326.5%	78.4	1410628	2.41
7/28/2017	8984.16	9089.08	104.92	24371.5	24423.4	51.9	55844.7	56060.2	215.5	372.32	18	432	86.2%	20.7	372320	0.64
8/11/2017	9089.08	9221.28	132.2	24423.4	24490.7	67.3	56060.2	56197.4	137.2	336.7	14	336	100.2%	24.1	432900	0.74
9/7/2017	9221.28	9363.54	142.26	24490.7	24597.9	107.2	56197.4	56533.3	335.9	585.36	27	648	90.3%	21.7	390240	0.67
9/26/2017	9363.54	9620.55	257.01	24597.9	24733	135.1	56533.3	56704.6	171.3	563.41	19	456	123.6%	29.7	533757	0.91
														Actual ADF	**415412**	**0.71**
														Max, Actual PF	**1410628**	**3.40**

B. RECENT SEWER VIDEO SUMMARIES

Project Name	Date	Operator	Distance	City	Flow Direction	Asset Type	Asset Size	Asset Location	Start ID	End ID
Social Circle	10/27/2017 12:28:00 PM	Dustin Wofford	134.1	Social Circle	Downstream	Ductile Iron Pipe	16	DOVE OUTFALL	18	19
Social Circle	10/27/2017 12:11:00 PM	Dustin Wofford	104.6	Social Circle	Upstream	Ductile Iron Pipe	16	DOVE OUTFALL	12	13
Social Circle	10/27/2017 12:02:00 PM	Dustin Wofford	52.9	Social Circle	Upstream	Ductile Iron Pipe	16	DOVE OUTFALL	13	14
Social Circle	10/27/2017 11:45:00 AM	Dustin Wofford	159	Social Circle	Upstream	Ductile Iron Pipe	16	DOVE OUTFALL	9	10
Social Circle	10/27/2017 11:29:00 AM	Dustin Wofford	191.7	Social Circle	Upstream	Ductile Iron Pipe	16	DOVE OUTFALL	10	11
Social Circle	10/27/2017 10:50:00 AM	Dustin Wofford	31.5	Social Circle	Upstream	Clay Tile	8	S CHEROKEE RD OUTFALL	1	2
Social Circle	10/27/2017 10:10:00 AM	Dustin Wofford	152	Social Circle	Upstream	Clay Tile	8	HICKORY DR	5	6
Social Circle	10/27/2017 9:47:00 AM	Dustin Wofford	248.5	Social Circle	Upstream	Polyvinyl Chloride	8	PARK PLACE CREEK EXING	1	2
Social Circle	10/27/2017 9:17:00 AM	Dustin Wofford	196.2	Social Circle	Upstream	Clay Tile	8	CARVAR DR WET WELL	5	4
Social Circle	10/25/2017 3:07:00 PM	Dustin Wofford	130	Social Circle	Upstream	Clay Tile	8	CARVAR DR WET WELL	4	3
Social Circle	10/25/2017 2:55:00 PM	Dustin Wofford	158.2	Social Circle	Upstream	Clay Tile	8	CARVAR DR WET WELL	3	2
Social Circle	10/25/2017 2:45:00 PM	Dustin Wofford	65.9	Social Circle	Upstream	Clay Tile	8	CARVAR DR WET WELL	2	1
Social Circle	10/25/2017 2:27:00 PM	Dustin Wofford	119.7	Social Circle	Upstream	Polyvinyl Chloride	8	CARVAR DR	2	1
Social Circle	10/25/2017 1:46:00 PM	Dustin Wofford	366.9	Social Circle	Downstream	Clay Tile	8	N CHEROKEE	3	4
Social Circle	10/25/2017 1:15:00 PM	Dustin Wofford	236.7	Social Circle	Downstream	Clay Tile	8	N CHEROKEE	2	3
Social Circle	10/25/2017 12:40:00 PM	Dustin Wofford	237.5	Social Circle	Downstream	Clay Tile	8	N CHEROKEE	1	2
Social Circle	10/25/2017 11:44:00 AM	Dustin Wofford	115.8	Social Circle	Upstream	Clay Tile	8	Ronthor Dr.	3	4
Social Circle	10/25/2017 11:36:00 AM	Dustin Wofford	13.9	Social Circle	Downstream	Clay Tile	8	Ronthor Dr.	3	4
Social Circle	10/25/2017 11:06:00 AM	Dustin Wofford	385.5	Social Circle	Downstream	Clay Tile	8	Ronthor Dr.	2	3
Social Circle	10/25/2017 10:00:00 AM	Dustin Wofford	220.9	Social Circle	Downstream	Clay Tile	8	Ronthor Dr.	1	2

Social Circle	10/25/2017 9:33:00 AM	Dustin Wofford	69.9	Social Circle	Downstream	Clay Tile	8	FAIRPLAY DR.	3	2
Social Circle	10/16/2017 1:16:00 PM	Dustin Wofford	90	Social Circle	Downstream	Clay Tile	8	SWEETGUM ST	1	2
Social Circle	10/16/2017 11:58:00 AM	Dustin Wofford	105.2	Social Circle	Downstream	Clay Tile	8	FAIRPLAY DR.	4	3
Social Circle	10/16/2017 11:46:00 AM	Dustin Wofford	178.4	Social Circle	Downstream	Clay Tile	8	FAIRPLAY DR.	5	4
Social Circle	10/16/2017 11:18:00 AM	Dustin Wofford	109.3	Social Circle	Downstream	Clay Tile	8	FAIRPLAY DR.	6	5
Social Circle	10/16/2017 10:46:00 AM	Dustin Wofford	116.5	Social Circle	Downstream	Clay Tile	8	FAIRPLAY DR.	7	6
Social Circle	10/16/2017 9:59:00 AM	Dustin Wofford	196.2	Social Circle	Upstream	Ductile Iron Pipe	16	WILLOW DR R&R EXING	1	2
Social Circle	10/12/2017 12:58:00 PM	Dustin Wofford	70.7	Social Circle	Upstream	Cast Iron	8	SYCAMORE ST R&R EXING	1	2
Social Circle	10/12/2017 12:46:00 PM	Dustin Wofford	0	Social Circle	Downstream	Clay Tile	8	SYCAMORE ST R&R EXING	1	2
Social Circle	10/12/2017 11:28:00 AM	Dustin Wofford	309.1	Social Circle	Downstream	Clay Tile	8	ASH ST R&R	4	5
Social Circle	10/12/2017 11:00:00 AM	Dustin Wofford	101.7	Social Circle	Downstream	Cast Iron	8	ASH ST R&R EXING	1	2
Social Circle	10/12/2017 9:59:00 AM	Dustin Wofford	300.9	Social Circle	Downstream	Clay Tile	8	ASH ST R&R	A	B
Social Circle	10/11/2017 2:31:00 PM	Dustin Wofford	244.1	Social Circle	Upstream	Clay Tile	8	ASH ST R&R	B	C
Social Circle	10/11/2017 2:01:00 PM	Dustin Wofford	104.6	Social Circle	Downstream	Clay Tile	8	R&R WET WELL CREEK EXING	1	2
Social Circle	10/11/2017 1:33:00 PM	Dustin Wofford	164.7	Social Circle	Downstream	Clay Tile	8	CORINTH CHURCH	4	5
Social Circle	10/11/2017 1:16:00 PM	Dustin Wofford	261.5	Social Circle	Downstream	Clay Tile	8	CORINTH CHURCH	3	4
Social Circle	10/11/2017 12:43:00 PM	Dustin Wofford	301.2	Social Circle	Downstream	Clay Tile	8	MARCO EST	7	6
Social Circle	10/11/2017 12:12:00 PM	Dustin Wofford	362.1	Social Circle	Downstream	Clay Tile	8	MARCO EST	4	5
Social Circle	10/11/2017 11:54:00 AM	Dustin Wofford	257.6	Social Circle	Downstream	Clay Tile	8	MARCO EST	3	4
Social Circle	10/11/2017 10:43:00 AM	Dustin Wofford	296.1	Social Circle	Downstream	Clay Tile	8	PAIGE CT	1	2
Social	10/11/2017	Dustin	137.2	Social	Downstream	Polyvinyl	8	MEMORIAL ST CREEK	1	2

Circle	9:55:00 AM	Wofford		Circle		Chloride		EXING		
Social Circle	10/5/2017 2:22:00 PM	Dustin Wofford	43.8	Social Circle	Downstream	Polyvinyl Chloride	8	PAIGE CT	3	4
Social Circle	10/5/2017 2:06:00 PM	Dustin Wofford	39.3	Social Circle	Downstream	Polyvinyl Chloride	8	PAIGE CT	1	2
Social Circle	10/5/2017 1:33:00 PM	Dustin Wofford	12.3	Social Circle	Upstream	Polyvinyl Chloride	8	PAIGE CT	1	2
Social Circle	10/5/2017 1:15:00 PM	Dustin Wofford	6	Social Circle	Downstream	Polyvinyl Chloride	8	MEMORIAL ST CREEK EXING	1	2
Social Circle	10/5/2017 11:16:00 AM	Dustin Wofford	426.1	Social Circle	Downstream	Clay Tile	8	WEST HIGHTOWER TRL	2	3
Social Circle	10/5/2017 10:57:00 AM	Dustin Wofford	328.5	Social Circle	Downstream	Clay Tile	8	WEST HIGHTOWER TRL	1	2
Social Circle	10/5/2017 10:38:00 AM	Dustin Wofford	58.3	Social Circle	Downstream	Clay Tile	8	Alcova Dr	4	5
Social Circle	10/5/2017 10:29:00 AM	Dustin Wofford	4.5	Social Circle	Upstream	Clay Tile	8	Alcova Dr	3	4
Social Circle	10/5/2017 10:09:00 AM	Dustin Wofford	99.1	Social Circle	Downstream	Clay Tile	8	Alcova Dr	3	4
Social Circle	10/5/2017 9:57:00 AM	Dustin Wofford	186.7	Social Circle	Upstream	Clay Tile	8	Alcova Dr	2	3
Social Circle	10/5/2017 9:30:00 AM	Dustin Wofford	8.8	Social Circle	Downstream	Clay Tile	8	Alcova Dr	2	3
Total Project Name	**Total Date**	**Total Operator**	**Total Distance**	**Total City**	**Total Flow Direction**	**Total Asset Type**	**Total Asset Size**	**Total Asset Location**	**Total Start ID**	**Total End ID**
1	6	1	8311.9	1	2	4	2	21	14	13

C. PUMP STATION ELIMINATION PROJECTS – DETAILED COST ESTIMATES

ITEM NO.	UNIT	DESCRIPTION	UNIT PRICE	LINE 1 QTY	TOTAL PRICE	LINE 2 QTY	TOTAL PRICE	LINE 3 QTY	TOTAL PRICE	LINE 4 QTY	TOTAL PRICE
1.		8-INCH SDR 26 PVC SEWER PIPE									
a.	L.F.	0-6' Cut, or in casing	$37.50	500	$18,750.00	300	$11,250.00	700	$26,250.00		$0.00
b.	L.F.	6' - 8' Cut	$37.50	500	$18,750.00	300	$11,250.00	600	$22,500.00	950	$35,625.00
c.	L.F.	8' - 10' Cut	$38.16	500	$19,080.00	300	$11,448.00	500	$19,080.00	950	$36,252.00
d.	L.F.	10' - 12' Cut	$39.50	280	$11,060.00	110	$4,345.00	400	$15,800.00	950	$37,525.00
e.	L.F.	12' - 14' Cut	$41.50		$0.00		$0.00	270	$11,205.00		$0.00
2.		6-INCH C900 PVC FORCE MAIN									
a.	L.F.	0-6' Cut	$14.34		$0.00		$0.00		$0.00	6146	$88,133.64
3.		6-INCH D.I. FORCE MAIN, CERAMIC EPOXY LINED									
a.	EA	Force Main Connection to Existing Force Mai	$3,043.00		$0.00		$0.00		$0.00		$0.00
4.		HOUSE SERVICES									
a.	EA.	Service Complete (incl. locate & connect to existing drain, tee-wye, fittings, coupling, and cleanout & box)	$712.00		$0.00		$0.00	4	$2,848.00		$0.00
b.	L.F.	4" SDR 35 PVC Pipe	$11.43		$0.00		$0.00	400	$4,572.00		$0.00
c.	EA.	Locate, Pump Out, and Backfill Existing Septic Tank	$784.67		$0.00		$0.00	4	$3,138.68		$0.00
d.	EA.	Extra Cleanouts	$221.67		$0.00		$0.00	4	$886.68		$0.00
5.		4'-0" DIAMETER PRECAST CONCRETE MANHOLE									
a.	EA.	Base, Riser, Cone	$1,863.33	5	$9,316.65	3	$5,589.99	7	$13,043.31	3	$5,589.99
b.	V.F.	Additional Depth	$120.67	5	$603.35	3	$362.01	7	$844.69	3	$362.01
c.	EA	Connect Sewer to Existing Manhole	$1,513.00	2	$3,026.00	2	$3,026.00	2	$3,026.00	2	$3,026.00
6.		MANHOLE FRAME & COVER									
a.	EA.	285# USF 668 Type KL	$258.33	5	$1,291.65	3	$774.99	7	$1,808.31	3	$774.99
7.	EA	AIR RELEASE VALVE & MANHOLE (COMPLETE)	$5,531.67		$0.00		$0.00		$0.00	1	$5,531.67
8.		ROADWAY CROSSINGS (BY JACK AND BORE)									
a.	L.F.	16" Steel Casing, 0.375" W.T. - Washington Highway	$295.43	80	$23,634.40		$0.00		$0.00	160	$47,268.80
9.		REMOVE AND REPLACE DRIVEWAY									
a.	L.F.	Asphalt	$51.67		$0.00		$0.00		$0.00		$0.00
b.	L.F.	Concrete	$57.33		$0.00		$0.00		$0.00		$0.00
10.	L.F.	REMOVING AND REPLACING PAVEMENT	$55.67		$0.00		$0.00		$0.00		$0.00

ITEM NO.	UNIT	DESCRIPTION	UNIT PRICE	LINE 1 QTY	TOTAL PRICE	LINE 2 QTY	TOTAL PRICE	LINE 3 QTY	TOTAL PRICE	LINE 4 QTY	TOTAL PRICE
11.		SOIL EROSION AND SEDIMENT CONTROL									
a.	L.F.	Silt Fence, Type "C"	$2.05	3600	$7,380.00	2020	$4,141.00	4950	$10,147.50	5500	$11,275.00
b.	L.F.	Grassing Disturbed Areas	$1.87	1800	$3,366.00	1010	$1,888.70	2470	$4,618.90	5356	$10,015.72
c.	S.Y.	Rip-Rap	$48.33	30	$1,449.90		$0.00		$0.00		$0.00
12.	LS	PUMP STATION ABANDONMENT	$25,000.00	1	$25,000.00	1	$25,000.00	1	$25,000.00	1	$25,000.00
				#12		#20		#9		#8	
13.	LS	PUMP STATION UPGRADE	$250,000.00		$0.00		$0.00		$0.00	1	$250,000.00
14.	LS	NEW PUMP STATION	$250,000.00		$0.00		$0.00		$0.00		$0.00
15.	AC	CLEARING	$6,000.00		$0.00		$0.00		$0.00	2.2	$13,200.00
EXTRA WORK, IF ORDERED BY THE ENGINEER											
16.	C.Y.	ROCK EXCAVATION	$80.00	27	$2,160.00	15	$1,200.00	37	$2,960.00	150	$12,000.00
17.	C.Y.	CRUSHED STONE STABILIZATION (INCL. EXCAVATION AND DISPOSAL OF UNSUITABLE MATERIAL)	$40.00	50	$2,000.00	30	$1,200.00	100	$4,000.00	60	$2,400.00
18.		DRIVEWAY PIPE									
a.	L.F.	15" Driveway Pipe, C.P.P.	$30.00		$0.00		$0.00		$0.00		$0.00
19.	L.S.	MISC, WETLANDS, ETC.	$1,000.00	1.5	$1,500.00		$0.00	2	$2,000.00		$0.00
TOTAL CONSTRUCTION COST					**$148,367.95**		**$81,475.69**		**$173,729.07**		**$583,979.82**

ITEM NO.	UNIT	DESCRIPTION	UNIT PRICE	LINE 5 QTY	Line 5 - Add Frcmn	TOTAL PRICE	LINE 6 QTY	TOTAL PRICE	LINE 7 QTY	TOTAL PRICE	LINE 8 QTY	TOTAL PRICE	LINE 9 QTY	TOTAL PRICE
1.		8-INCH SDR 26 PVC SEWER PIPE												
a.	L.F.	0-6' Cut, or in casing	$37.50	800		$30,000.00	1000	$37,500.00	2200	$82,500.00	600	$22,500.00		$0.00
b.	L.F.	6' - 8' Cut	$37.50	700		$26,250.00	800	$30,000.00	900	$33,750.00	400	$15,000.00		$0.00
c.	L.F.	8' - 10' Cut	$38.16	600		$22,896.00	700	$26,712.00	800	$30,528.00	270	$10,303.20	300	$11,448.00
d.	L.F.	10' - 12' Cut	$39.50	300		$11,850.00	320	$12,640.00	670	$26,465.00		$0.00	316	$12,482.00
e.	L.F.	12' - 14' Cut	$41.50			$0.00		$0.00		$0.00		$0.00		$0.00
2.		6-INCH C900 PVC FORCE MAIN												
a.	L.F.	0-6' Cut	$14.34	2400	1650	$58,077.00		$0.00	620	$8,890.80		$0.00		$0.00
3.		6-INCH D.I. FORCE MAIN, CERAMIC EPOXY LINED												
a.	EA	Force Main Connection to Existing Force Mai	$3,043.00	1	2	$9,129.00		$0.00		$0.00		$0.00		$0.00
4.		HOUSE SERVICES												
a.	EA.	Service Complete (incl. locate & connect to existing drain, tee-wye, fittings, coupling, and cleanout & box)	$712.00			$0.00		$0.00		$0.00	4	$2,848.00		$0.00
b.	L.F.	4" SDR 35 PVC Pipe	$11.43			$0.00		$0.00		$0.00	400	$4,572.00		$0.00
c.	EA.	Locate, Pump Out, and Backfill Existing Septic Tank	$784.67			$0.00		$0.00		$0.00	4	$3,138.68		$0.00
d.	EA.	Extra Cleanouts	$221.67			$0.00		$0.00		$0.00	4	$886.68		$0.00
5.		4'-0" DIAMETER PRECAST CONCRETE MANHOLE												
a.	EA.	Base, Riser, Cone	$1,863.33	5	5	$18,633.30	9	$16,769.97	10	$18,633.30	4	$7,453.32	3	$5,589.99
b.	V.F.	Additional Depth	$120.67	5	5	$1,206.70	9	$1,086.03	10	$1,206.70	4	$482.68	12	$1,448.04
c.	EA	Connect Sewer to Existing Manhole	$1,513.00	2	1	$4,539.00	2	$3,026.00	1	$1,513.00	2	$3,026.00	2	$3,026.00
6.		MANHOLE FRAME & COVER												
a.	EA.	285# USF 668 Type KL	$258.33	5	5	$2,583.30	9	$2,324.97	10	$2,583.30	4	$1,033.32	3	$774.99
7.	EA	AIR RELEASE VALVE & MANHOLE (COMPLETE)	$5,531.67	1	1	$11,063.34		$0.00		$0.00		$0.00		$0.00
8.		ROADWAY CROSSINGS (BY JACK AND BORE)												
a.	L.F.	16" Steel Casing, 0.375" W.T. - Washington Highway	$295.43	80	80	$47,268.80		$0.00		$0.00		$0.00		$0.00
9.		REMOVE AND REPLACE DRIVEWAY												
a.	L.F.	Asphalt	$51.67		100	$5,167.00		$0.00		$0.00	30	$1,550.10		$0.00
b.	L.F.	Concrete	$57.33		40	$2,293.20		$0.00		$0.00	50	$2,866.50		$0.00
10.	L.F.	REMOVING AND REPLACING PAVEMENT	$55.67		40	$2,226.80		$0.00		$0.00	25	$1,391.75	35	$1,948.45

ITEM NO.	UNIT	DESCRIPTION	UNIT PRICE	LINE 5 QTY	Line 5 - Add Frcmn	TOTAL PRICE	LINE 6 QTY	TOTAL PRICE	LINE 7 QTY	TOTAL PRICE	LINE 8 QTY	TOTAL PRICE	LINE 9 QTY	TOTAL PRICE
11.		SOIL EROSION AND SEDIMENT CONTROL												
a.	L.F.	Silt Fence, Type "C"	$2.05	4800	300	$10,455.00	5640	$11,562.00	8940	$18,327.00	1540	$3,157.00	400	$820.00
b.	L.F.	Grassing Disturbed Areas	$1.87	2400	1650	$7,573.50	2820	$5,273.40	4470	$8,358.90	1270	$2,374.90	616	$1,151.92
c.	S.Y.	Rip-Rap	$48.33			$0.00	10	$483.30	30	$1,449.90		$0.00		$0.00
12.	LS	PUMP STATION ABANDONMENT	$25,000.00	1		$25,000.00	1	$25,000.00	1	$25,000.00	1	$25,000.00	1	$25,000.00
				#4			#3		Railroad Street Abando		#1			
13.	LS	PUMP STATION UPGRADE	$250,000.00			$0.00		$0.00		$0.00		$0.00		$0.00
14.	LS	NEW PUMP STATION	$250,000.00	1		$250,000.00		$0.00		$0.00		$0.00		$0.00
15.	AC	CLEARING	$6,000.00					$0.00		$0.00		$0.00		$0.00
EXTRA WORK, IF ORDERED BY THE ENGINEER														
16.	C.Y.	ROCK EXCAVATION	$80.00	42	4	$3,680.00	42	$3,360.00	70	$5,600.00	19	$1,520.00	9	$720.00
17.	C.Y.	CRUSHED STONE STABILIZATION (INCL. EXCAVATION AND DISPOSAL OF UNSUITABLE MATERIAL)	$40.00	140	10	$6,000.00	100	$4,000.00	150	$6,000.00	25	$1,000.00	10	$400.00
18.		DRIVEWAY PIPE												
a.	L.F.	15" Driveway Pipe, C.P.P.	$30.00			$0.00		$0.00		$0.00	40	$1,200.00		$0.00
19.	L.S.	MISC, WETLANDS, ETC.	$1,000.00	3		$3,000.00	10	$10,000.00	3	$3,000.00		$0.00		$0.00
TOTAL CONSTRUCTION COST						**$558,891.94**		**$189,737.67**		**$273,805.90**		**$111,304.13**		**$64,809.39**

D. SEWER LINE PROJECTS – DETAILED COST ESTIMATES

ITEM NO.	QTY.	UNIT	DESCRIPTION	UNIT PRICE	S12 Qty	S12 Total	S13 Qty	S13 Total	S14 Qty	S14 Total	S15 Total	S16 Total	
1.	1	L.S.	MOBILIZATION	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	$0.00		$0.00
2.	1	L.S.	TRAFFIC CONTROL	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	$0.00		$0.00
3.		L.F.	8-INCH SDR 26 PVC SEWER PIPE	$43.00									
4.	18730	L.F.	15-INCH SDR 26 PVC SEWER PIPE	$57.00	4942	$281,694.00	4203	$239,571.00	9585	$546,345.00	$0.00		$0.00
5.		L.F.	21-INCH SDR 26 PVC SEWER PIPE	$76.00									
6.	320	L.F.	15-INCH D.I. SEWER PIPE	$81.00		$0.00	320	$25,920.00		$0.00	$0.00		$0.00
7.	14800	L.F.	8-INCH C900 PVC FORCE MAIN	$30.00		$0.00		$0.00		$0.00	14800 $444,000.00		$0.00
8.		L.F.	6-INCH C900 PVC FORCE MAIN	$24.00									
9.	0.20	TON	M.J., D.I., OR C.I. FITTINGS, CERAMIC EPOXY LINED	$15,000.00		$0.00		$0.00		$0.00	2 $30,000.00		$0.00
10.			4'-0" DIAMETER PRECAST CONCRETE MANHOLE										
a.	56	EA	Base, Riser, Cone	$3,000.00	15	$45,000.00	13	$39,000.00	28	$84,000.00	$0.00		$0.00
b.	112	V.F.	Additional Depth	$275.00	30	$8,250.00	25	$6,875.00	57	$15,675.00	$0.00		$0.00
c.	1	EA	Connect Sewer to Existing Manhole	$1,500.00		$0.00	1	$1,500.00		$0.00	$0.00		$0.00
11.			MANHOLE FRAME & COVER										
a.	56	EA	285# USF 668 Type KL	$500.00	15	$7,500.00	13	$6,500.00	28	$14,000.00	$0.00		$0.00
b.	3	EA	AIR RELEASE VALVE & MANHOLE (COMPLETE)	$11,000.00		$0.00		$0.00		$0.00	3 $33,000.00		$0.00
12.			ROADWAY CROSSINGS (BY JACK AND BORE)										
a.	300	L.F.	24" Steel Casing, 0.375" W.T.	$325.00		$0.00	300	$97,500.00		$0.00	$0.00		$0.00
b.	80	L.F.	16" Steel Casing, 0.375" W.T.	$240.00		$0.00		$0.00		$0.00	80 $19,200.00		$0.00
13.			REMOVE AND REPLACE DRIVEWAY										
a.	50	L.F.	Asphalt	$70.00	50	$3,500.00		$0.00		$0.00	50 $3,500.00		$0.00
b.	60	L.F.	Concrete	$70.00	60	$4,200.00		$0.00		$0.00	60 $4,200.00		$0.00
14.	40	L.F.	REMOVING AND REPLACING PAVEMENT	$150.00	40	$6,000.00		$0.00		$0.00	$0.00		$0.00
15.	12	TON	ASPHALT CONC. TYPE "H" (incl. bitum. mat'l. overlay at road cuts in addition to normal road cut repair)	$400.00	12	$4,800.00		$0.00		$0.00	12 $4,800.00		$0.00
16.	1	L.S.	PUMP STATION	$225,000.00		$0.00		$0.00		$0.00	$0.00	1.25	$281,250.00
17.			SOIL EROSION AND SEDIMENT CONTROL										
a.	20000	L.F.	Silt Fence, Type A	$2.00	2471	$4,942.00	2102	$4,204.00	4793	$9,586.00	7400 $14,800.00		$0.00
b.	23400	L.F.	Grassing Disturbed Areas	$1.50	4942	$7,413.00	4203	$6,304.50	9585	$14,377.50	14800 $22,200.00		$0.00
c.	40	S.Y.	Rip-Rap	$50.00	11	$550.00	9	$450.00	20	$1,000.00	10 $500.00		$0.00
18.			STORMWATER MONITORING										
a.	1	EA	Establishing Monitoring Site and Complete Monthly Reports	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1 $5,000.00		$0.00
b.	2	EA	Sampling Event	$300.00	2	$600.00	2	$600.00	2	$600.00	2 $600.00		$0.00
19.		Ac	Clearing	$6,500.00									
20.	1000	C.Y.	ROCK EXCAVATION	$70.00	264	$18,480.00	224	$15,680.00	512	$35,840.00	100 $7,000.00		$0.00
21.		L.F.	ALL WEATHER ACCESS ROAD	$20.00									
22.			CONCRETE										
a.	5	C.Y.	Class "A"	$140.00	1	$140.00	1	$140.00	3	$420.00	10 $1,400.00	10	$1,400.00
b.	5	C.Y.	Class "B"	$140.00	1	$140.00	1	$140.00	3	$420.00	10 $1,400.00	10	$1,400.00
c.	5	C.Y.	Class "C"	$140.00	1	$140.00	1	$140.00	3	$420.00	10 $1,400.00	10	$1,400.00
23.	700	C.Y.	CRUSHED STONE STABILIZATION (INCL. EXCAVATION AND DISPOSAL OF UNSUITABLE MATERIAL)	$30.00	185	$5,550.00	157	$4,710.00	358	$10,740.00	150 $4,500.00		$0.00
Total Estimated Construction Cost						**$413,899.00**		**$464,234.50**		**$748,423.50**	**$597,500.00**		**$285,450.00**

ITEM NO.	QTY.	UNIT	DESCRIPTION	UNIT PRICE	S24 Qty	S24 Total	S10 Qty	S10 Total	S11 Qty	S11 Total	S17 Qty	S17 Total	S19 Qty	S19 Total
1.	1	L.S.	MOBILIZATION	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00
2.	1	L.S.	TRAFFIC CONTROL	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00
3.		L.F.	8-INCH SDR 26 PVC SEWER PIPE	$43.00			5690	$244,670.00			4486	$192,898.00	2597	$111,671.00
4.	18730	L.F.	15-INCH SDR 26 PVC SEWER PIPE	$57.00		$0.00		$0.00		$0.00		$0.00		$0.00
5.		L.F.	21-INCH SDR 26 PVC SEWER PIPE	$76.00	2776	$210,976.00			2743	$208,468.00		$0.00		$0.00
6.	320	L.F.	15-INCH D.I. SEWER PIPE	$81.00		$0.00		$0.00		$0.00		$0.00		$0.00
7.	14800	L.F.	8-INCH C900 PVC FORCE MAIN	$30.00		$0.00		$0.00		$0.00		$0.00		$0.00
8.		L.F.	6-INCH C900 PVC FORCE MAIN	$24.00				$0.00						
9.	0.20	TON	M.J., D.I., OR C.I. FITTINGS, CERAMIC EPOXY LINED	$15,000.00		$0.00		$0.00		$0.00		$0.00		$0.00
10.			4'-0" DIAMETER PRECAST CONCRETE MANHOLE											
a.	56	EA	Base, Riser, Cone	$3,000.00	6	$18,000.00	23	$69,000.00	6	$18,000.00	18	$54,000.00	10	$30,000.00
b.	112	V.F.	Additional Depth	$275.00	12	$3,300.00	69	$18,975.00	12	$3,300.00	54	$14,850.00	30	$8,250.00
c.	1	EA	Connect Sewer to Existing Manhole	$1,500.00		$0.00		$0.00		$0.00		$0.00		$0.00
11.			MANHOLE FRAME & COVER											
a.	56	EA	285# USF 668 Type KL	$500.00	6	$3,000.00	23	$11,500.00	6	$3,000.00	18	$9,000.00	10	$5,000.00
b.	3	EA	AIR RELEASE VALVE & MANHOLE (COMPLETE)	$11,000.00		$0.00		$0.00		$0.00		$0.00		$0.00
12.			ROADWAY CROSSINGS (BY JACK AND BORE)											
a.	300	L.F.	24" Steel Casing, 0.375" W.T.	$325.00		$0.00		$0.00		$0.00		$0.00		$0.00
b.	80	L.F.	16" Steel Casing, 0.375" W.T.	$240.00		$0.00	250	$60,000.00		$0.00		$0.00		$0.00
13.			REMOVE AND REPLACE DRIVEWAY											
a.	50	L.F.	Asphalt	$70.00	50	$3,500.00		$0.00	50	$3,500.00		$0.00		$0.00
b.	60	L.F.	Concrete	$70.00	60	$4,200.00		$0.00	60	$4,200.00		$0.00		$0.00
14.	40	L.F.	REMOVING AND REPLACING PAVEMENT	$150.00	40	$6,000.00		$0.00	40	$6,000.00	25	$3,750.00	25	$3,750.00
15.	12	TON	ASPHALT CONC. TYPE "H" (incl. bitum. mat'l. overlay at road cuts in addition to normal road cut repair)	$400.00	12	$4,800.00		$0.00	12	$4,800.00	6	$2,400.00	6	$2,400.00
16.	1	L.S.	PUMP STATION	$225,000.00		$0.00		$0.00		$0.00		$0.00		$0.00
17.			SOIL EROSION AND SEDIMENT CONTROL											
a.	20000	L.F.	Silt Fence, Type A	$2.00	1388	$2,776.00	5690	$11,380.00	1372	$2,744.00	4486	$8,972.00	2597	$5,194.00
b.	23400	L.F.	Grassing Disturbed Areas	$1.50	2776	$4,164.00	5690	$8,535.00	2743	$4,114.50	4486	$6,729.00	2597	$3,895.50
c.	40	S.Y.	Rip-Rap	$50.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00
18.			STORMWATER MONITORING											
a.	1	EA	Establishing Monitoring Site and Complete Monthly Reports	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00
b.	2	EA	Sampling Event	$300.00	2	$600.00	2	$600.00	2	$600.00	2	$600.00	2	$600.00
19.		Ac	Clearing	$6,500.00			3.9	$25,350.00			3.1	$20,150.00	1.8	$11,700.00
20.	1000	C.Y.	ROCK EXCAVATION	$70.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00
21.		L.F.	ALL WEATHER ACCESS ROAD	$20.00										
22.			CONCRETE											
a.	5	C.Y.	Class "A"	$140.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00
b.	5	C.Y.	Class "B"	$140.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00
c.	5	C.Y.	Class "C"	$140.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00
23.	700	C.Y.	CRUSHED STONE STABILIZATION (INCL. EXCAVATION AND DISPOSAL OF UNSUITABLE MATERIAL)	$30.00	50	$1,500.00	50	$1,500.00	50	$1,500.00	50	$1,500.00	50	$1,500.00
Total Estimated Construction Cost						**$282,016.00**		**$470,710.00**		**$279,426.50**		**$334,049.00**		**$203,160.50**

ITEM NO.	QTY.	UNIT	DESCRIPTION	UNIT PRICE	S20 Qty	S20 Total	S21 Qty	S21 Total	S23 Qty	S23 Total	S25 Qty	S25 Total	S27 Qty	S27 Total
1.	1	L.S.	MOBILIZATION	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00
2.	1	L.S.	TRAFFIC CONTROL	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00
3.		L.F.	8-INCH SDR 26 PVC SEWER PIPE	$43.00	4782	$205,626.00		$0.00			4184	$179,912.00	2812	$120,916.00
4.	18730	L.F.	15-INCH SDR 26 PVC SEWER PIPE	$57.00		$0.00		$0.00		$0.00		$0.00		$0.00
5.		L.F.	21-INCH SDR 26 PVC SEWER PIPE	$76.00		$0.00		$0.00	1712	$130,112.00		$0.00		$0.00
6.	320	L.F.	15-INCH D.I. SEWER PIPE	$81.00		$0.00		$0.00		$0.00		$0.00		$0.00
7.	14800	L.F.	8-INCH C900 PVC FORCE MAIN	$30.00		$0.00		$0.00		$0.00		$0.00		$0.00
8.		L.F.	6-INCH C900 PVC FORCE MAIN	$24.00			2800	$67,200.00						
9.	0.20	TON	M.J., D.I., OR C.I. FITTINGS, CERAMIC EPOXY LINED	$15,000.00		$0.00	1	$15,000.00		$0.00		$0.00		$0.00
10.			4'-0" DIAMETER PRECAST CONCRETE MANHOLE											
a.	56	EA	Base, Riser, Cone	$3,000.00	19	$57,000.00	0	$0.00	4	$12,000.00	17	$51,000.00	8	$24,000.00
b.	112	V.F.	Additional Depth	$275.00	57	$15,675.00	0	$0.00	10	$2,750.00	51	$14,025.00	16	$4,400.00
c.	1	EA	Connect Sewer to Existing Manhole	$1,500.00		$0.00		$0.00		$0.00		$0.00	1	$1,500.00
11.			MANHOLE FRAME & COVER											
a.	56	EA	285# USF 668 Type KL	$500.00	19	$9,500.00	0	$0.00	4	$2,000.00	17	$8,500.00	8	$4,000.00
b.	3	EA	AIR RELEASE VALVE & MANHOLE (COMPLETE)	$11,000.00		$0.00	3	$33,000.00		$0.00		$0.00		$0.00
12.			ROADWAY CROSSINGS (BY JACK AND BORE)											
a.	300	L.F.	24" Steel Casing, 0.375" W.T.	$325.00		$0.00		$0.00		$0.00		$0.00		$0.00
b.	80	L.F.	16" Steel Casing, 0.375" W.T.	$240.00		$0.00		$0.00		$0.00		$0.00		$0.00
13.			REMOVE AND REPLACE DRIVEWAY											
a.	50	L.F.	Asphalt	$70.00		$0.00		$0.00	50	$3,500.00		$0.00		$0.00
b.	60	L.F.	Concrete	$70.00		$0.00		$0.00	60	$4,200.00		$0.00		$0.00
14.	40	L.F.	REMOVING AND REPLACING PAVEMENT	$150.00		$0.00		$0.00	40	$6,000.00		$0.00	22	$3,300.00
15.	12	TON	ASPHALT CONC. TYPE "H" (incl. bitum. mat'l. overlay at road cuts in addition to normal road cut repair)	$400.00		$0.00		$0.00	12	$4,800.00		$0.00	5	$2,000.00
16.	1	L.S.	PUMP STATION	$225,000.00		$0.00	1	$225,000.00		$0.00		$0.00		$0.00
17.			SOIL EROSION AND SEDIMENT CONTROL											
a.	20000	L.F.	Silt Fence, Type A	$2.00	4782	$9,564.00	2800	$5,600.00	856	$1,712.00	4184	$8,368.00	2812	$5,624.00
b.	23400	L.F.	Grassing Disturbed Areas	$1.50	4782	$7,173.00	2800	$4,200.00	1712	$2,568.00	4184	$6,276.00	2812	$4,218.00
c.	40	S.Y.	Rip-Rap	$50.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	20	$1,000.00
18.			STORMWATER MONITORING											
a.	1	EA	Establishing Monitoring Site and Complete Monthly Reports	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00
b.	2	EA	Sampling Event	$300.00	2	$600.00	2	$600.00	2	$600.00	2	$600.00	2	$600.00
19.		Ac	Clearing	$6,500.00	3.3	$21,450.00	1.9	$12,350.00			2.9	$18,850.00		
20.	1000	C.Y.	ROCK EXCAVATION	$70.00	10	$700.00	10	$700.00	0	$0.00	10	$700.00	15	$1,050.00
21.		L.F.	ALL WEATHER ACCESS ROAD	$20.00	2000	$40,000.00		$0.00						
22.			CONCRETE											
a.	5	C.Y.	Class "A"	$140.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00
b.	5	C.Y.	Class "B"	$140.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00
c.	5	C.Y.	Class "C"	$140.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00
23.	700	C.Y.	CRUSHED STONE STABILIZATION (INCL. EXCAVATION AND DISPOSAL OF UNSUITABLE MATERIAL)	$30.00	50	$1,500.00	50	$1,500.00	10	$300.00	50	$1,500.00	10	$300.00
Total Estimated Construction Cost						**$387,988.00**		**$384,350.00**		**$189,742.00**		**$308,931.00**		**$192,108.00**

ITEM NO.	QTY.	UNIT	DESCRIPTION	UNIT PRICE	S40 Qty	S40 Total	S41 Qty	S41 Total	S42 Qty	S42 Total	S43 Qty	S43 Total	S44 Qty	S44 Total
1.	1	L.S.	MOBILIZATION	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00
2.	1	L.S.	TRAFFIC CONTROL	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00
3.		L.F.	8-INCH SDR 26 PVC SEWER PIPE	$43.00	3128	$134,504.00	1241	$53,363.00	707	$30,401.00	2511	$107,973.00	7409	$318,587.00
4.	18730	L.F.	15-INCH SDR 26 PVC SEWER PIPE	$57.00		$0.00		$0.00		$0.00		$0.00		$0.00
5.		L.F.	21-INCH SDR 26 PVC SEWER PIPE	$76.00		$0.00		$0.00		$0.00		$0.00		$0.00
6.	320	L.F.	15-INCH D.I. SEWER PIPE	$81.00		$0.00		$0.00		$0.00		$0.00		$0.00
7.	14800	L.F.	8-INCH C900 PVC FORCE MAIN	$30.00		$0.00		$0.00		$0.00		$0.00		$0.00
8.		L.F.	6-INCH C900 PVC FORCE MAIN	$24.00										
9.	0.20	TON	M.J., D.I., OR C.I. FITTINGS, CERAMIC EPOXY LINED	$15,000.00		$0.00		$0.00		$0.00		$0.00		$0.00
10.			4'-0" DIAMETER PRECAST CONCRETE MANHOLE											
a.	56	EA	Base, Riser, Cone	$3,000.00	13	$39,000.00	5	$15,000.00	3	$9,000.00	10	$30,000.00	30	$90,000.00
b.	112	V.F.	Additional Depth	$275.00	39	$10,725.00	15	$4,125.00	9	$2,475.00	30	$8,250.00	90	$24,750.00
c.	1	EA	Connect Sewer to Existing Manhole	$1,500.00		$0.00		$0.00		$0.00		$0.00		$0.00
11.			MANHOLE FRAME & COVER											
a.	56	EA	285# USF 668 Type KL	$500.00	13	$6,500.00	5	$2,500.00	3	$1,500.00	10	$5,000.00	30	$15,000.00
b.	3	EA	AIR RELEASE VALVE & MANHOLE (COMPLETE)	$11,000.00		$0.00		$0.00		$0.00		$0.00		$0.00
12.			ROADWAY CROSSINGS (BY JACK AND BORE)											
a.	300	L.F.	24" Steel Casing, 0.375" W.T.	$325.00		$0.00		$0.00		$0.00		$0.00		$0.00
b.	80	L.F.	16" Steel Casing, 0.375" W.T.	$240.00		$0.00		$0.00	100	$24,000.00		$0.00		$0.00
13.			REMOVE AND REPLACE DRIVEWAY											
a.	50	L.F.	Asphalt	$70.00		$0.00		$0.00		$0.00		$0.00		$0.00
b.	60	L.F.	Concrete	$70.00		$0.00	40	$2,800.00	25	$1,750.00		$0.00		$0.00
14.	40	L.F.	REMOVING AND REPLACING PAVEMENT	$150.00		$0.00	25	$3,750.00	25	$3,750.00		$0.00		$0.00
15.	12	TON	ASPHALT CONC. TYPE "H" (incl. bitum. mat'l. overlay at road cuts in addition to normal road cut repair)	$400.00		$0.00		$0.00		$0.00		$0.00		$0.00
16.	1	L.S.	PUMP STATION	$225,000.00		$0.00		$0.00		$0.00		$0.00		$0.00
17.			SOIL EROSION AND SEDIMENT CONTROL											
a.	20000	L.F.	Silt Fence, Type A	$2.00	3128	$6,256.00	1241	$2,482.00	707	$1,414.00	2511	$5,022.00	7409	$14,818.00
b.	23400	L.F.	Grassing Disturbed Areas	$1.50	3128	$4,692.00	1241	$1,861.50	707	$1,060.50	2511	$3,766.50	7409	$11,113.50
c.	40	S.Y.	Rip-Rap	$50.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00
18.			STORMWATER MONITORING											
a.	1	EA	Establishing Monitoring Site and Complete Monthly Reports	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00
b.	2	EA	Sampling Event	$300.00	2	$600.00	2	$600.00	2	$600.00	2	$600.00	2	$600.00
19.		Ac	Clearing	$6,500.00		$0.00		$0.00		$0.00	1.7	$11,050.00	5.1	$33,150.00
20.	1000	C.Y.	ROCK EXCAVATION	$70.00	10	$700.00	10	$700.00	10	$700.00	10	$700.00	10	$700.00
21.		L.F.	ALL WEATHER ACCESS ROAD	$20.00										
22.			CONCRETE											
a.	5	C.Y.	Class "A"	$140.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00
b.	5	C.Y.	Class "B"	$140.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00
c.	5	C.Y.	Class "C"	$140.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00	10	$1,400.00
23.	700	C.Y.	CRUSHED STONE STABILIZATION (INCL. EXCAVATION AND DISPOSAL OF UNSUITABLE MATERIAL)	$30.00	20	$600.00	50	$1,500.00	50	$1,500.00	50	$1,500.00	50	$1,500.00
Total Estimated Construction Cost						**$222,777.00**		**$107,881.50**		**$97,350.50**		**$193,061.50**		**$529,418.50**

E. MONTHLY BILLING SUMMARIES

Sewer Analysis
FY2017

Month	Total No. Customers	Total Usage	Billed Amount	Commercial No. Customers	Commercial Total Usage	Commercial Billed Amount
Jul-16	1,510	8,623,000	74,938.53	108	1,015,000	9,238.26
Aug-16	1,387	7,965,000	70,337.44	108	1,146,000	10,260.98
Sep-16	1,388	9,531,000	80,778.10	107	1,139,000	10,193.64
Oct-16	1,388	8,931,000	79,008.86	107	1,340,000	11,751.69
Nov-16	1,387	8,289,000	81,768.42	110	1,242,000	18,676.34
Dec-16	1,389	8,848,000	73,504.96	109	2,965,000	19,287.36
Jan-17	1,390	7,318,000	66,241.96	110	1,007,000	9,193.74
Feb-17	1,392	7,970,000	63,688.29	113	1,291,000	7,848.00
Mar-17	1,401	9,160,000	72,518.21	114	1,484,000	9,409.47
Apr-17	1,403	10,075,000	78,175.97	113	1,658,000	9,981.33
May-17	1,542	10,023,001	79,226.90	114	1,691,000	10,687.87
Jun-17	0	0	$ -			
	15,577	96,733,001	820,187.64	1,213	15,978,000	126,528.68
Average	1,298	8,061,083	68,348.97	101	1,331,500	10,544.06
10 mo average	**1,277**	**7,749,800**	**66,949.35**	**99**	**1,283,600**	**10,713.79**
Average bill/customer			52.65			104.31
Average usage/customer			6,209.99			13,172.30
Average $/usage			0.008479			0.007919

Sewer Analysis
FY2017

Month	Commerical Out of Town No. Customers	Total Usage	Billed Amount	Industrial No. Customers	Total Usage	Billed Amount
Jul-16	1	215,000	2,583.02	17	1,963,000	15,774.47
Aug-16	1	227,000	2,762.90	17	1,787,000	14,368.23
Sep-16	1	344,000	4,129.73	17	2,249,000	18,067.60
Oct-16	1	261,000	3,134.56	17	2,273,000	18,243.38
Nov-16	1	191,000	2,295.26	17	1,935,000	15,558.74
Dec-16	1	160,000	1,923.57	17	1,590,000	12,802.19
Jan-17	1	205,000	2,463.12	17	1,169,000	9,446.39
Feb-17	1	98,000	1,180.19	18	3,085,000	19,504.36
Mar-17	1	162,000	1,947.55	18	3,583,000	23,043.52
Apr-17	1	235,000	2,822.82	18	3,464,000	22,004.80
May-17	1	185,000	2,223.32	18	3,421,000	22,311.54
Jun-17	1					
	12	2,283,000	27,466.04	191	26,519,000	191,125.22
Average	1	190,250	2,288.84	16	2,209,917	15,927.10
10 mo average	**1**	**188,600**	**2,269.57**	**16**	**1,947,200**	**14,607.69**
Average bill/cust			2,288.84			1,000.66
Average usage/c			190,250.00			138,842.93
Average $/usage			0.012031			0.007207

Sewer Analysis

FY2017	Residential			Flat Sewer - Residential		
Month	No. Customers	Total Usage	Billed Amount	No. Customers	Total Usage	Billed Amount
Jul-16	1,230	5,314,000	48,757.72	1		45.03
Aug-16	1,231	4,785,000	44,705.67	1		45.03
Sep-16	1,233	5,686,000	51,321.39	1		45.03
Oct-16	1,235	5,235,000	48,058.02	1		45.03
Nov-16	1,249	5,100,000	47,278.33	1	-	45.03
Dec-16	1,241	4,241,000	40,723.28	1		45.03
Jan-17	1,246	5,088,000	47,026.10	1		45.03
Feb-17	1,240	3,539,000	35,647.22	1		45.03
Mar-17	1,247	4,021,000	39,288.62	1		45.03
Apr-17	1,258	4,897,000	45,644.92	1		45.03
May-17	1,249	4,822,000	45,243.18	1		45.03
Jun-17						
	13,659	52,728,000	493,694.45	11	-	495.33
Average	1,138	4,394,000	41,141.20			
10 mo average	**1,115**	**4,381,000**	**40,876.09**			
Average bill/cust			36.14			
Average usage/c			3,860.31			
Average $/usage			0.009363			

Sewer Analysis
FY2017

Month	Final Bills No. Customers	Total Usage	Billed Amount
Jul-16	28	116,000	1,123.05
Aug-16	30	88,000	957.53
Sep-16	30	113,000	1,150.44
Oct-16	28	83,000	910.74
Nov-16	10	12,000	209.98
Dec-16	21	52,000	647.10
Jan-17	16	54,000	530.70
Feb-17	20	55,000	643.68
Mar-17	21	72,000	731.57
Apr-17	13	56,000	499.89
May-17	27	89,000	939.28
Jun-17			
	244	790,000.00	8,343.96
Average	20	65,833	695.33
10 mo average	**21**	**66,200**	**711.25**
Average bill/cust			34.20
Average usage/c			3,237.70
Average $/usage			0.010562

F. NPDES PERMIT GA0026107

Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr., Dr., Suite 1152, Atlanta, Georgia 30334
Judson H. Turner, Director
(404) 656-4713

July 5, 2013

Mr. Douglas White, City Manager
City of Social Circle
Post Office Box 310
Social Circle, Georgia 30025

RE: City of Social Circle
Water Pollution Control Plant (WPCP)
NPDES Permit No. GA0026107
Walton County, Oconee River Basin

Dear Mr. White:

Pursuant to the Georgia Water Quality Control Act, as amended; the Federal Water Pollution Control Act, as amended; and the Rules and Regulations promulgated thereunder, we have today issued the attached National Pollutant Discharge Elimination System (NPDES) permit for the referenced water pollution control plant.

Please be advised that on and after the effective date indicated in the attached NPDES permit, the permittee must comply with all the terms, conditions and limitations of this permit. If you have any questions, please contact Sophia Grant-Branklyn at *sophia.grant@dnr.state.ga.us* or at (404) 362-2680.

Sincerely,

Judson H. Turner
Director

JHT/sgb
ATTACHMENT

cc: Jay Link, Social Circle Plant Manager (via e-mail)
Ronnie Wood, P.E., R. J. Wood and Company (via e-mail)

PERMIT NO. GA0026107

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), hereinafter called the "State Act;" the Federal Water Pollution Control Act, as amended (33 U.S. C. 1251 et seq.), hereinafter called the "Federal Act;" and the Rules and Regulations promulgated pursuant to each of these Acts,

City of Social Circle
Post Office Box 310
Social Circle, Georgia 30025

is authorized to discharge from a facility located at

187 Vine Circle
Social Circle, Georgia 30025
(Walton County)

to receiving waters

Little River tributary to Lake Sinclair in the Oconee River Basin

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on August 1, 2013.

This permit and the authorization to discharge shall expire at midnight, July 31, 2018.

Issued on this 5th day of July 2013.

Director,
Environmental Protection Division

PART I

EPD is the Environmental Protection Division of the Department of Natural Resources.

The Federal Act referred to is The Clean Water Act.

The State Act referred to is The Water Quality Control Act (Act No. 870).

The State Rules referred to are The Rules and Regulations for Water Quality Control (Chapter 391-3-6).

A. SPECIAL CONDITIONS

1. MONITORING

The concentration of pollutants in the discharge will be limited as indicated by the table(s) labeled "Effluent Limitations and Monitoring Requirements." The effluent shall meet the requirements in the table(s) or the condition in paragraph I.A.1.a., whichever yields the higher quality effluent.

a. For 5 day biochemical oxygen demand (BOD_5) and total suspended solids (TSS), the arithmetic mean of the values of the effluent samples collected during a month shall not exceed 15 percent of the arithmetic mean of values for influent samples collected at approximately the same times (85 percent removal). In accordance with Chapter 391-3-6-.06(4)(d)2., of the State Rules, under certain conditions the 85 percent removal requirement may not be applicable, as specified in 40 CFR 133.

b. The monthly average, other than for fecal coliform bacteria, is the arithmetic mean of values obtained for samples collected during a calendar month.

c. The weekly average, other than for fecal coliform bacteria, is the arithmetic mean of values obtained for samples collected during a 7 day period. The week begins 12:00 midnight Saturday and ends at 12:00 midnight the following Saturday. To define a different starting time for the sampling period, the permittee must notify the EPD in writing. For reporting required by I.C.2. of this permit, a week that starts in one month and ends in another month shall be considered part of the second month. The permittee may calculate and report the weekly average as a 7 day moving average.

d. Fecal coliform bacteria will be reported as the geometric mean of the values for the samples collected during the time periods in I.A.1.b. and I.A.1.c.

e. Untreated wastewater influent samples required by I.B. shall be collected before any return or recycle flows. These flows include returned activated sludge, supernatants, centrates, filtrates, and backwash.

f. Effluent samples required by I.B. of this permit shall be collected after the final treatment process and before discharge to receiving waters. Composite samples may be collected before disinfection with written EPD approval.

g. A composite sample shall consist of a minimum of 5 subsamples collected at least once every 2 hours for at least 8 hours and shall be composited proportionately to flow.

h. Flow measurements shall be conducted using the flow measuring device(s) in accordance with the approved design of the facility. If instantaneous measurements are required, then the permittee shall have a primary flow measuring device that is correctly installed and maintained. If continuous recording measurements are required, then flow measurements must be made using continuous recording equipment. Calibration shall be maintained of the continuous recording instrumentation to ± 10% of the actual flow.

Flow shall be measured manually to check the flow meter calibration at a frequency of once a month. If secondary flow instruments are in use and malfunction or fail to maintain calibration as required, the flow shall be computed from manual measurements or by other method(s) approved by EPD until such time as the secondary flow instrument is repaired. For facilities which utilize alternate technologies for measuring flow, the flow measurement device must be calibrated semi-annually by qualified personnel.

Records of the calibration checks shall be maintained.

i. If secondary flow instruments malfunction or fail to maintain calibration as required in I.A.1.h., the flow shall be computed from manual measurements taken at the times specified for the collection of composite samples.

j. Quarterly analyses required in I.B. shall be performed during each quarter and submitted in March, June, September, and December. Results of analyses required twice per year will be submitted in June and December. Results of analyses required annually will be submitted in June.

k. Some parameters must be analyzed to the detection limits specified by the EPD. These parameters will be reported as "not detected" when they are below the detection limit and will then be considered in compliance with the effluent limit. The detection limit will also be reported.

2. SLUDGE DISPOSAL REQUIREMENTS

Sludge shall be disposed of according to the regulations and guidelines established by the EPD and the Federal Act section 405(d) and (e), and the Resource Conservation and Recovery Act (RCRA). In land applying nonhazardous municipal sewage sludge, the permittee shall comply with the general criteria outlined in the most current version of the EPD "Guidelines for Land Application of Sewage Sludge (Biosolids) at Agronomic Rates" and with the State Rules, Chapter 391-3-6-.17. Before disposing of municipal sewage sludge by land application or any method other than co-disposal in a permitted sanitary landfill, the permittee shall submit a sludge management plan to EPD for written approval. This plan will become a part of the NPDES Permit after approval and modification of the permit. The permittee shall notify the EPD of any changes planned in an approved sludge management plan.

If an applicable management practice or numerical limitation for pollutants in sewage sludge is promulgated under Section 405(d) of the Federal Act after approval of the plan, then the plan shall be modified to conform with the new regulations.

3. SLUDGE MONITORING REQUIREMENTS

The permittee shall develop and implement procedures to ensure adequate year-round sludge disposal. The permittee shall monitor and maintain records documenting the quantity of sludge removed from the facility. Records shall be maintained documenting that the quantity of solids removed from the facility equals the solids generated on an average day. The total quantity of sludge removed from the facility during the reporting period shall be reported each month with the Discharge Monitoring Reports as required under Part I.C.2. of this permit. The quantity shall be reported on a dry weight basis (dry tons).

Pond treatment systems are required to report the total quantity of sludge removed from the facility only during the months that sludge is removed.

4. INTRODUCTION OF POLLUTANTS INTO THE PUBLICLY OWNED TREATMENT WORKS (POTW)

The permittee must notify EPD of:

a. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to Sections 301 or 306 of the Federal Act if the pollutants were directly discharged to a receiving stream; and

b. Any substantial change in the volume or character of pollutants from a source that existed when the permit was issued.

This notice shall include information on the quality and quantity of the indirect discharge introduced and any anticipated impact on the quantity or quality of effluent to be discharged from the POTW.

5. EFFLUENT TOXICITY AND BIOMONITORING REQUIREMENTS

The permittee shall comply with effluent standards or prohibitions established by Section 307(a) of the Federal Act and with Chapter 391-3-6-.03(5) of the State Rules and may not discharge toxic pollutants in concentrations or combinations that are harmful to humans, animals, or aquatic life.

If toxicity is suspected in the effluent, the EPD may require the permittee to perform any of the following actions:

a. Acute biomonitoring tests;

b. Chronic biomonitoring tests;

c. Stream studies;

d. Priority pollutant analyses;

e. Toxicity reduction evaluations (TRE); or

f. Any other appropriate study.

The EPD will specify the requirements and methodologies for performing any of these tests or studies. Unless other concentrations are specified by the EPD, the critical concentration used to determine toxicity in biomonitoring tests will be the effluent instream wastewater concentration (IWC) based on the permitted monthly average flow of the facility and the critical low flow of the receiving stream (7Q10). The endpoints that will be reported are the effluent concentration that is lethal to 50% of the test organisms (LC50) if the test is for acute toxicity and the no observed effect concentration (NOEC) of effluent if the test is for chronic toxicity.

The permittee must eliminate effluent toxicity and supply the EPD with data and evidence to confirm toxicity elimination.

B.1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The discharge from the water pollution control plant shall be limited and monitored by the permittee as follows upon issuance of the permit and continuing until permit expiration or until the EPD provides written approval of completion of construction of the 1.4 MGD upgrade and written authorization to commence operation under Part I.B.2. of the permit has been provided by EPD.

Parameter	Discharge Limitations mg/L (kg/day) unless otherwise specified		Monitoring Requirements		
	Monthly Avg.	Weekly Avg.	Measurement Frequency	Sample Type	Sample Location
Flow – MGD	0.65	0.81	Five Days/Week	Continuous Recording	Effluent
Biochemical Oxygen Demand (5-day)	23.0 (56.7)	34.5 (70.1)	Two Days/Week	Composite	Influent and Effluent
Total Suspended Solids (TSS)	30 (74)	45 (92)	Two Days/Week	Composite	Influent and Effluent
Fecal Coliform Bacteria (#/100 mL)	138/100 mL	276/100 mL	One Day/Week	Grab	Effluent
Ammonia (as N)	2.0 (4.9)	3.0 (6.2)	Two Days/Week	Composite	Effluent
Total Phosphorus (as P)	Report (Report)	Report (Report)	Two Days/Week	Composite	Effluent
Total Residual Chlorine (TRC)[a]	0.012 (daily max.)	0.012 (daily max.)	Five Days/Week	Grab	Effluent
Total Recoverable Copper[b]	0.046 (0.12)	0.059 (0.20)	One Day/Month	Composite	Effluent
Total Recoverable Mercury	Report	NA (NA)	Refer to Part I.C.11.	Grab	Effluent
Total Recoverable Zinc	Report	NA (NA)	Refer to Part I.C.12.	Composite	Effluent
Chronic Whole Effluent Toxicity (WET)[d]	Report NOEC	NA (NA)	Annually	Composite	Effluent
Total Stream Hardness (as $CaCo_3$)[c]	Report	NA (NA)	One Day/Quarter	Grab	Little River

NA = NOT APPLICABLE

The pH shall not be less than 6.0 standard units or greater than 8.5 standard units and shall be monitored on the final effluent by analyzing grab samples taken five days per week.

The minimum effluent dissolved oxygen shall be 6.0 mg/L or higher and shall be monitored on the final effluent by analyzing grab samples taken five days per week.

[a] TRC shall be analyzed to the specific detection limit of 0.05 mg/L.
[b] Total Recoverable Copper shall be analyzed to the specific detection limit of 0.005 mg/L. Refer to Part I.C.13.
[c] Total hardness samples shall be taken concurrently with the total recoverable metals and shall be sampled on the Little River upstream of the NPDES discharge.
[d] Refer to Part I.C.10.

B.2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The discharge from the water pollution control plant shall be limited and monitored by the permittee as follows effective on the date EPD provides written approval of completion of construction of the 1.4 MGD upgrade and written authorization to commence operation under Part I.B.2. of the permit has been provided by EPD and continuing until permit expiration.

Parameter	Discharge Limitations mg/L (kg/day) unless otherwise specified		Monitoring Requirements		
	Monthly Avg.	Weekly Avg.	Measurement Frequency	Sample Type	Sample Location
Flow – MGD	1.4	1.75	Seven Days/Week	Continuous Recording	Effluent
Biochemical Oxygen Demand (5-day)	5.0 (26.5)	7.5 (33.2)	Three Days/Week	Composite	Influent and Effluent
Total Suspended Solids (TSS)	20 (106)	30 (133)	Three Days/Week	Composite	Influent and Effluent
Fecal Coliform Bacteria (#/100 mL)	138/100 mL	276/100 mL	Two Days/Week	Grab	Effluent
Ammonia (as N)	1.0 (5.31)	1.5 (6.63)	Three Days/Week	Composite	Effluent
Total Phosphorus (as P)	1.0 (5.31)	1.5 (6.63)	Three Days/Week	Composite	Effluent
Ortho-phosphate (as P)	Report (Report)	Report (Report)	Three Days/Week	Composite	Effluent
Total Recoverable Copper[a]	0.043 (0.226)	0.055 (0.290)	One Day/Month	Composite	Effluent
Long Term Biochemical Oxygen Demand	Report	NA (NA)	Refer to Part I.C.9.	Composite	Effluent
Priority Pollutants	Report	NA (NA)	Refer to Part I.C.14.	Composite	Effluent
Chronic Whole Effluent Toxicity (WET)[c]	Report NOEC	NA (NA)	Annually	Composite	Effluent
Total Stream Hardness (as $CaCO_3$)[b]	Report	NA (NA)	One Day/Quarter	Grab	Little River

NA = NOT APPLICABLE

The pH shall not be less than 6.0 standard units or greater than 8.0 standard units and shall be monitored on the final effluent by analyzing grab samples taken seven days/week.

The minimum effluent dissolved oxygen shall be 6.0 mg/L or higher and shall be monitored on the final effluent by analyzing grab samples taken seven days/week.

[a] Total Recoverable Copper shall be analyzed to the specific detection limit of 0.005 mg/L. Refer to Part I.C.13.
[b] Total hardness samples shall be taken concurrently with the total recoverable metals and shall be sampled on the Little River upstream of the NPDES discharge.
[c] Refer to Part I.C.10.

C. MONITORING AND REPORTING

1. REPRESENTATIVE SAMPLING

Samples and measurements of the monitored waste shall represent the volume and nature of the waste stream. The permittee shall maintain a written sampling and monitoring schedule.

2. REPORTING

All reports or information submitted in compliance with this permit or requested by EPD must be signed and certified by a principal executive officer, elected official, or other authorized representative. Required analytical results obtained by the permittee shall be summarized on a Discharge Monitoring Report form and any additional EPD specified forms. Monitoring results shall be submitted to the EPD postmarked no later than the 15th day of the month following the end of the reporting period. The EPD may require in writing that additional monitoring results be reported. Signed copies of these and all other required reports shall be submitted to:

Environmental Protection Division
Wastewater Regulatory Program
4220 International Parkway, Suite 101
Atlanta, Georgia 30354

3. MONITORING PROCEDURES

All analytical methods, sample containers, sample preservation techniques, and sample holding times must be consistent with the techniques and methods listed in 40 CFR Part 136. The analytical method used shall be sufficiently sensitive. EPA approved methods must be applicable to the concentration ranges of the NPDES permit samples.

4. RECORDING OF RESULTS

For each required parameter analyzed, the permittee shall record:

a. The exact place, date, and time of sampling, and the person(s) collecting the sample. For flow proportioned composite samples, this shall include the instantaneous flow and the corresponding volume of each sample aliquot, and other information relevant to document flow proportioning of composite samples;

b. The dates and times the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical procedures or methods used; and

e. The results of all required analyses.

5. ADDITIONAL MONITORING BY PERMITTEE

If the permittee monitors required parameters at the locations designated in I.B. more frequently than required, the permittee shall analyze all samples using approved analytical methods specified in I.C.3. The results of this additional monitoring shall be included in calculating and reporting the values on the Discharge Monitoring Report forms. The permittee shall indicate the monitoring frequency on the report. The EPD may require in writing more frequent monitoring, or monitoring of other pollutants not specified in this permit.

6. RECORDS RETENTION

The permittee shall retain records of:

a. All laboratory analyses performed including sample data, quality control data, and standard curves;

b. Calibration and maintenance records of laboratory instruments;

c. Calibration and maintenance records and recordings from continuous recording instruments;

d. Process control monitoring records;

e. Facility operation and maintenance records;

f. Copies of all reports required by this permit;

g. All data and information used to complete the permit application; and

h. All monitoring data related to sludge use and disposal.

These records shall be kept for at least three years. Sludge handling records must be kept for at least five years. Either period may be extended by EPD written notification.

7. PENALTIES

Both the Federal and State Acts provide that any person who falsifies or tampers with any monitoring device or method required under this permit, or who makes any false statement, representation, or certification in any record submitted or required by this permit shall, if convicted, be punished by a fine or by imprisonment or by both. The Acts include procedures for imposing civil penalties for violations or for negligent or intentional failure or refusal to comply with any final or emergency order of the Director of the EPD.

8. WATERSHED ASSESSMENT AND WATERSHED PROTECTION PLAN

The permittee shall comply with the requirement to conduct a watershed assessment and develop a watershed protection plan in accordance with the conditions and schedule contained in EPD's Notice of Violation letter dated November 30, 2012.

Upon approval of the watershed protection plan by EPD, the watershed protection plan shall be enforceable through this permit.

Watershed Assessment

The watershed assessment should include the following:

a. Develop a plan for the monitoring and assessment of all streams in the Assessment Area. This should include parameters to be monitored, monitoring frequencies, and other data to be collected.

b. Determine methods for identifying waters not supporting designated water uses.

c. Identify water resource concerns and priority issues for the Assessment Area.

Watershed Protection Plan

The watershed protection plan will provide for the following:

a. The watershed protection plan will apply to the Assessment Area as defined above. The plan will utilize the information generated in the permittee's watershed assessment to establish a baseline of watershed conditions and to provide ongoing long-term monitoring according to the approved plan to either verify that the plan is effective or to modify the plan such that water quality standards will be achieved.

b. The watershed protection plan must include a schedule for correcting current water quality problems that are causing water quality standards violations. The permittee shall provide ongoing monitoring to verify that the actions taken to correct the water quality problems are effective.

c. The permittee shall develop and put in place best management practices (BMPs) to prevent future water quality standards violations.

d. The permittee shall provide ongoing monitoring to verify that the BMPs are working or to provide the information necessary to modify the BMPs to achieve water quality standards.

Annual Report

Once the Watershed Protection Plan is approved, each June 30th the permittee is to submit the following to EPD:

a. An annual certification statement documenting that the plan is being implemented as approved. The certification statement shall read as follows: "I certify, under penalty of law, that the watershed protection plan is being implemented. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

b. All watershed plan data collected during the previous year in an electronic format. This data shall be archived using a digital format such as a spreadsheet developed in coordination with EPD. All archived records, data, and information pertaining to the watershed protection plan shall be maintained permanently.

c. A progress report that provides a summary of the BMPs that have been implemented and documented water quality improvements. The progress report shall also include any necessary changes to the Watershed Protection Plan.

9. LONG TERM BIOCHEMICAL OXYGEN DEMAND

After receiving authorization to discharge at 1.4 MGD (B.2. effluent limitations), the permittee shall perform a 120 day long term BOD test once prior to permit expiration. The test should be performed on an effluent sample collected during the critical period from June 1 through September 30. The results of this test shall be provided to EPD prior to renewal of the permit.

10. CHRONIC WHOLE EFFLUENT TOXICITY TEST

B.1. Effluent Limitations

The permittee must conduct chronic Whole Effluent Toxicity (WET) once per year while discharging under B.1. effluent limitations. The testing must incorporate the most current U.S. Environmental Protection Agency (EPA) chronic aquatic toxicity testing manuals. The referenced document is entitled Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th Edition, U.S. EPA, 821-R-02-013, October 2002. Definitive tests must be run on the same samples concurrently using both an invertebrate species (i.e., Ceriodaphnia dubia) and a vertebrate species (i.e., Fathead Minnow, Pimephales promelas) and should include a dilution equal to the facility's instream wastewater concentration (IWC) of 99%.

An effluent discharge will not be considered toxic if the No Observed Effect Concentration (NOEC) is greater than or equal to the Instream Wastewater Concentration (IWC) of 99%. If the permittee's test results indicate effluent toxicity, the permittee may be required to submit a toxicity reduction evaluation upon notification by the EPD and/or the permit may be modified to incorporate a WET limit.

B.2. Effluent Limitations

The permittee must conduct four quarterly chronic whole effluent toxicity (WET) tests during the first 12 months after EPD provides written authorization to commence operation under the B.2. effluent limitations. The first WET test must be conducted within 90 days of receiving EPD written approval to discharge under the B.2. effluent limitations. After completing the four quarterly WET test, the permittee shall continue conducting WET test once a year until permit expiration. The testing must be conducted in accordance with the most current U.S. Environmental Protection Agency (EPA) chronic aquatic toxicity testing manuals. The referenced document is entitled Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th Edition, U.S. EPA, 821-R-02-013, October 2002. Definitive tests must be run on the same samples concurrently using both Ceriodaphnia dubia and Fathead Minnows (Pimephales promelas) and should include a dilution equal to the facility's instream wastewater concentration (IWC) of 99.5%.

An effluent discharge will not be considered toxic if the No Observed Effect Concentration (NOEC) is greater than or equal to the Instream Wastewater Concentration (IWC) of 99.5%. If the permittee's test results indicate effluent toxicity, the permittee may be required to submit a toxicity reduction evaluation upon notification by the EPD and/or the permit may be modified to incorporate a WET limit.

11. TOTAL RECOVERABLE MERCURY

The permittee must conduct three samples of total recoverable mercury during the first year of issuance of the permit, with the first test being conducted within 90 days from the effective date of the permit. Sampling for total recoverable mercury must represent seasonal variations. Total recoverable mercury must be analyzed using EPA Method 1631E to the specific detection limit of 0.5 ug/L. If mercury is measured at levels of concern, then the permittee may be required to perform additional priority pollutant analyses or the permit may be modified to include effluent limitations for total recoverable mercury.

12. TOTAL RECOVERABLE ZINC

The permittee must collect samples for total recoverable zinc once a month for a period of twelve months with the first test being conducted within 90 days of permit issuance. Total recoverable zinc shall be analyzed to the specific detection limit of 10.0 ug/L. If zinc is measured at levels of concern, then the permittee may be required to perform additional priority pollutant analyses or the permit may be modified to include effluent limitations for total recoverable zinc.

13. TOTAL RECOVERABLE COPPER

In order to maintain the WER based copper effluent limitation, the permittee must reevaluate the copper Water Effect Ratio by conducting a copper toxicity test in accordance with the most current *USEPA Streamlined Water-Effect Ratio Procedure for Discharges of Copper*, and the results of the WER must be submitted 180 days prior to permit expiration.

14. PRIORITY POLLUTANTS

The permittee must conduct three scans of priority pollutants during the first twelve months of receiving EPD written authorization to commence operation under the B.2. effluent limitations (1.4 MGD) with the first scan being conducted within 90 days of this authorization. The priority pollutant scans must be measured at least to EPD detection limits and the analytical methods used shall be sufficiently sensitive. If substances are measured at levels of concern, then the permittee may be required to perform additional priority pollutant analyses or the permit may be modified to include effluent limitations for priority pollutants.

PART II

A. MANAGEMENT REQUIREMENTS

1. FACILITY OPERATION

The permittee shall maintain and operate efficiently all treatment or control facilities and related equipment installed or used by the permittee to achieve compliance with this permit. Efficient operation and maintenance include effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. Back-up or auxiliary facilities or similar systems shall be operated only when necessary to achieve permit compliance.

2. CHANGE IN DISCHARGE

Any anticipated facility expansions, or process modifications which will result in new, different, or increased discharges of pollutants requires the submission of a new NPDES permit application. If the changes will not violate the permit effluent limitations, the permittee may notify EPD without submitting an application. The permit may then be modified to specify and limit any pollutants not previously limited.

3. NONCOMPLIANCE NOTIFICATION

If, for any reason the permittee does not comply with, or will be unable to comply with any effluent limitations specified in the permitee's NPDES permit, the permittee shall provide EPD with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

a. A description of the noncompliance and its cause; and

b. The period of noncompliance, including the exact date and times; or, if not corrected, the anticipated time the noncompliance is expected to continue; and

c. The steps taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

4. ANTICIPATED NONCOMPLIANCE NOTIFICATION

The permittee shall give written notice to the EPD at least 10 days before:

a. Any planned changes in the permitted facility; or

b. Any activity which may result in noncompliance with the permit.

5. OTHER NONCOMPLIANCE

The permittee must report all instances of noncompliance not reported under other specific reporting requirements, at the time monitoring reports are submitted. The reports shall contain the information required under conditions of twenty-four hour reporting.

6. OPERATOR CERTIFICATION REQUIREMENTS

a. B.1. Effluent Limitations

The person responsible for the daily operation of the facility must be a Class III Certified Operator in compliance with the Georgia State Board of Examiners for Certification of Water and Wastewater Plant Operators and Laboratory Analysts Act, as amended, and as specified by Subparagraph 391-3-6-.12 of the Rules and Regulations for Water Quality Control. All other operators must have the minimum certification required by this Act.

b. B.2. Effluent Limitations

The person responsible for the daily operation of the facility must be a Class II Certified Operator in compliance with the Georgia State Board of Examiners for Certification of Water and Wastewater Plant Operators and Laboratory Analysts Act, as amended, and as specified by Subparagraph 391-3-6-.12 of the Rules and Regulations for Water Quality Control. All other operators must have the minimum certification required by this Act.

7. LABORATORY ANALYST CERTIFICATION REQUIREMENTS

Laboratory Analysts must be certified in compliance with the Georgia State Board of Examiners for Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended.

8. BYPASSING

Any diversion of wastewater from or bypassing of wastewater around the permitted treatment works is prohibited, except if:

a. Bypassing is unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There are no feasible alternatives to bypassing; and

c. The permittee notifies the EPD at least 10 days before the date of the bypass.

Feasible alternatives to bypassing include use of auxiliary treatment facilities and retention of untreated waste. The permittee must take all possible measures to prevent bypassing during routine preventative maintenance by installing adequate back-up equipment.

The permittee shall operate the facility and the sewer system to minimize discharge of pollutants from combined sewer overflows or bypasses and may be required by the EPD to submit a plan and schedule to reduce bypasses, overflows, and infiltration.

Any unplanned bypass must be reported following the requirements for noncompliance notification specified in II.A.3. The permittee may be liable for any water quality violations that occur as a result of bypassing the facility.

9. POWER FAILURES

If the primary source of power to this water pollution control facility is reduced or lost, the permittee shall use an alternative source of power, to reduce or control all discharges to maintain permit compliance.

10. ADVERSE IMPACT

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge disposal which might adversely affect human health or the environment.

11. NOTICE CONCERNING ENDANGERING WATERS OF THE STATE

Whenever, because of an accident or otherwise, any toxic or taste and color producing substance, or any other substance which would endanger downstream users of the waters of the State or would damage property, is discharged into such waters, or is so placed that it might flow, be washed, or fall into them, it shall be the duty of the person in charge of such substances at the time to forthwith notify EPD in person or by telephone of the location and nature of the danger, and it shall be such person's further duty to immediately take all reasonable and necessary steps to prevent injury to property and downstream users of said water.

Spills and Major Spills:

A "spill" is any discharge of raw sewage by a Publicly Owned Treatment Works (POTW) to the waters of the State.

A "major spill" means:

1. The discharge of pollutants into waters of the State by a POTW that exceeds the weekly average permitted effluent limit for biochemical oxygen demand (5-day) or total suspended solids by 50 percent or greater in one day, provided that the effluent discharge concentration is equal to or greater than 25 mg/L for biochemical oxygen demand or total suspended solids.

2. Any discharge of raw sewage that 1) exceeds 10,000 gallons or 2) results in water quality violations in the waters of the State.

"Consistently exceeding effluent limitation" means a POTW exceeding the 30 day average limit for biochemical oxygen demand or total suspended solids for at least five days out of each seven day period during a total period of 180 consecutive days.

The following specific requirements shall apply to POTW's. If a spill or major spill occurs, the owner of a POTW shall immediately:

a. Notify EPD, in person or by telephone, when a spill or major spill occurs in the system.

b. Report the incident to the local health department(s) for the area affected by the incident. The report at a minimum shall include the following:

    1. Date of the spill or major spill;
    2. Location and cause of the spill or major spill;
    3. Estimated volume discharged and name of receiving waters; and
    4. Corrective action taken to mitigate or reduce the adverse effects of the spill or major spill.

c. Post a notice as close as possible to where the spill or major spill occurred and where the spill entered State waters and also post additional notices along portions of the waterway affected by the incident (i.e. bridge crossings, boat ramps, recreational areas, and other points of public access to the affected waterway). The notice at a minimum shall include the same information required in 11(b)(1-4) above. These notices shall remain in place for a minimum of seven days after the spill or major spill has ceased.

d. Within 24 hours of becoming aware of a spill or major spill, the owner of a POTW shall report the incident to the local media (television, radio, and print media). The report shall include the same information required in 11(b)(1-4) above.

e. Within five (5) days (of the date of the spill or major spill), the owner of a POTW shall submit to EPD a written report which includes the same information required in 11(b)(1-4) above.

f. Within 7 days (after the date of a major spill), the owner of a POTW responsible for the major spill, shall publish a notice in the largest legal organ of the County where the incident occurred. The notice shall include the same information required in 11(b)(1-4) above.

g. The owner of a POTW shall immediately establish a monitoring program of the receiving waters affected by a major spill or by consistently exceeding an effluent limit, with such monitoring being at the expense of the POTW for at least one year. The monitoring program shall include an upstream sampling point as well as sufficient downstream locations to accurately characterize the impact of the major spill or the consistent exceedence of effluent limitations described in the definition of "Consistently exceeding effluent limitation" above. As a minimum, the following parameters shall be monitored in the receiving stream:

1. Dissolved Oxygen;
2. Fecal Coliform Bacteria;
3. pH;
4. Temperature; and
5. Other parameters required by the EPD.

The monitoring and reporting frequency as well as the need to monitor additional parameters, will be determined by EPD. The results of the monitoring will be provided by the POTW owner to EPD and all downstream public agencies using the affected waters as a source of a public water supply.

h. Within 24 hours of becoming aware of a major spill, the owner of a POTW shall provide notice of a major spill to every county, municipality, or other public agency whose public water supply is within a distance of 20 miles downstream and to any others which could be potentially affected by the major spill.

12. UPSET PROVISION

Provision under 40 CFR 122.41(n)(1)-(4), regarding "Upset" shall be applicable to any civil, criminal, or administrative proceeding brought to enforce this permit.

B. RESPONSIBILITIES

1. COMPLIANCE

The permittee must comply with this permit. Any permit noncompliance is a violation of the Federal Act, State Act, and the State Rules, and is grounds for:

a. Enforcement action;

b. Permit termination, revocation and reissuance, or modification; or

c. Denial of a permit renewal application.

It shall not be a defense of the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit.

2. RIGHT OF ENTRY

The permittee shall allow the Director of the EPD, the Regional Administrator of EPA, and their authorized representatives, agents, or employees after they present credentials to:

a. Enter the permittee's premises where a regulated activity or facility is located, or where any records required by this permit are kept;

b. Review and copy any records required by this permit;

c. Inspect any facilities, equipment, practices, or operations regulated or required by this permit; and

d. Sample any substance or parameter at any location.

3. SUBMITTAL OF INFORMATION

The permittee shall furnish any information required by the EPD to determine whether cause exists to modify, revoke and reissue, or terminate this permit or to determine compliance with this permit. The permittee shall also furnish the EPD with requested copies of records required by this permit. If the permittee determines that any relevant facts were not included in a permit application or that incorrect information was submitted in a permit application or in any report to the EPD, the permittee shall promptly submit the additional or corrected information.

4. TRANSFER OF OWNERSHIP OR CONTROL

A permit may be transferred to another person by a permittee if:

a. The permittee notifies the Director in writing at least 30 days in advance of the proposed transfer;

b. An agreement is written containing a specific date for transfer of permit responsibility including acknowledgment that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on. This agreement must be submitted to the Director at least 30 days in advance of the proposed transfer; and

c. The Director does not notify the current permittee and the new permittee within 30 days of EPD intent to modify, revoke and reissue, or terminate the permit. The Director may require that a new application be filed instead of agreeing to the transfer of the permit.

5. AVAILABILITY OF REPORTS

Except for data determined to be confidential by the Director of EPD under O.C.G.A. 12-5-26 or by the Regional Administrator of EPA under the Code of Federal Regulations, Title 40, Part 2, all reports prepared to comply with this permit shall be available for public inspection at an EPD office. Effluent data, permit applications, permittees' names and addresses, and permits shall not be considered confidential.

6. PERMIT MODIFICATION

This permit may be modified, terminated, or revoked and reissued in whole or in part during its term for causes including, but not limited to:

a. Permit violations;

b. Obtaining this permit by misrepresentation or by failure to disclose all relevant facts;

c. Changing any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

d. Changes in effluent characteristics; and

e. Violations of water quality standards.

The filing of a request by the permittee for permit modification, termination, revocation and reissuance, or notification of planned changes or anticipated noncompliance does not negate any permit condition.

7. CIVIL AND CRIMINAL LIABILITY

The permittee is liable for civil or criminal penalties for noncompliance with this permit and must comply with applicable State and Federal laws including promulgated water quality standards. The permit cannot be interpreted to relieve the permittee of this liability even if it has not been modified to incorporate new requirements.

8. PROPERTY RIGHTS

The issuance of this permit does not convey any property rights of either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, or any infringement of Federal, State or local laws or regulations.

9. EXPIRATION OF PERMIT

The permittee shall submit an application for permit reissuance at least 180 days before the expiration date of this permit. The permittee shall not discharge after the permit expiration date without written authorization from the EPD. To receive this authorization, the permittee shall submit the information, forms, and fees required by the EPD no later than 180 days before the expiration date.

10. CONTESTED HEARINGS

Any person aggrieved or adversely affected by any action of the Director of the EPD shall petition the Director for a hearing within 30 days of notice of the action.

11. SEVERABILITY

The provisions of this permit are severable. If any permit provision or the application of any permit provision to any circumstance is held invalid, the provision does not affect other circumstances or the remainder of this permit.

12. PREVIOUS PERMITS

All previous State water quality permits issued to this facility for construction or operation are revoked by the issuance of this permit. The permit governs discharges from this facility under the National Pollutant Discharge Elimination System (NPDES).

PART III

A. APPROVED INDUSTRIAL PRETREATMENT PROGRAM FOR PUBLICLY OWNED TREATMENT WORKS (POTWs)

1. The permittee's approved pretreatment program shall be enforceable through this permit. The permittee shall also comply with the provisions of 40 CFR 403.

2. The permittee shall administer the approved pretreatment program by:

   a. Maintaining records identifying the character and volume of pollutants contributed by industrial users to the POTW.

   b. Enforcing and obtaining appropriate remedies for noncompliance by any industrial user with any applicable pretreatment standard or requirement defined by Section 307(b) and (c) of the Federal Act, 40 CFR Part 403.5 and 403.6 or any State or local requirement, whichever is more stringent.

   c. Revising the adopted local limits based on technical analyses to ensure that the local limits continue to prevent:

      1. Interference with the operation of the POTW;
      2. Pass-through of pollutants in violation of this permit;
      3. Municipal sludge contamination; and
      4. Toxicity to life in the receiving stream.

      Within 180 days of the effective date of this permit issuance or reissuance (excluding permit modifications), the permittee shall review the local limits of the program and submit to EPD a written technical evaluation of the need to revise the local limits.

   d. Ensuring that industrial wastewater discharges from industrial users are regulated through discharge permits or equivalent individual control mechanisms. Compliance schedules will be required of each industrial user for the installation of control technologies to meet applicable pretreatment standards and the requirements of the approved program.

   e. Inspecting, surveying, and monitoring to determine if the industrial user is in compliance with the applicable pretreatment standards.

   f. Equitably maintaining and adjusting revenue levels to ensure adequate and continued pretreatment program implementation.

   g. Preparing a list of industrial users which, during the previous twelve months, have been in significant noncompliance with the pretreatment requirements enumerated in 40 CFR Part 403.8 (f)(2)(viii). This list will be published annually in the newspaper with the largest circulation in the service area in May with the first publication due June 2012.

B. APPROVED PRETREATMENT PROGRAM ANNUAL REPORT

1. Within 30 days of the close of the reporting period May through April, with the report due each June, the permittee shall submit a report to the EPD that includes:

   a. An updated list of POTW industrial users;

   b. The results of POTW sampling and analyses required by the EPD;

   c. A summary of POTW industrial user inspections;

   d. A summary of POTW operations including information on upsets, interferences, pass through events, or violations of the permit related to industrial user discharges;

   e. A summary of all activities to involve and inform the public of pretreatment requirements;

   f. A summary of the annual pretreatment program budget;

   g. A descriptive summary of any compliance activities initiated, ongoing, or completed against industrial users which shall include the number of administrative orders, show cause hearings, penalties, civil actions, and fines;

   h. A list of contributing industries using the treatment works, divided into Standard Industrial Classification Code (SIC) categories, which have been issued permits or similar enforceable individual control mechanisms, and a status of compliance for each industrial user. The list should also identify the industries that are categorical or significant industrial users

   i. The name and address of each industrial user that has received a conditionally revised discharge limit;

   j. A list of all industrial users who were in significant noncompliance with applicable pretreatment standards and requirements;

   k. A list of all industrial users showing the date that each was notified that a categorical pretreatment standard had been promulgated by EPA for their industrial category and the status of each industrial user in achieving compliance within the 3 year period allowed by the Federal Act; and

   l. A description of all substantial changes proposed for the program. All substantial changes must first be approved by the EPD before formal adoption by the POTW. Substantial changes shall include but not be limited to:

      1. Changes in legal authority;
      2. Changes in local limits;
      3. Changes in the control mechanisms;
      4. Changes in the method for implementing categorical pretreatment standards.
      5. A decrease in the frequency of self-monitoring or reporting required of industrial users;
      6. A decrease in the frequency of industrial user inspections or sampling by the POTW;
      7. Significant reductions in the program resources including personnel commitments, equipment, and funding levels;
      8. Changes in confidentiality procedures; and
      9. Changes in the POTW sludge disposal and management practices.

2. Reports submitted by an industrial user will be retained by the permittee for at least 3 years and shall be available to the EPD for inspection and copying. This period shall be extended during the course of any unresolved litigation concerning the discharge of pollutants by an industrial user or concerning the operations of the program or when requested by the Director.

C. INDUSTRIAL PRETREATMENT STANDARDS

Effluent limitations for the permittee's discharge are listed in Part I. Other pollutants attributable to industrial users may also be present in the discharge. When sufficient information becomes available, this permit may be revised to specify effluent limitations for these pollutants based on best practicable technology or water quality standards. Once the specific nature of industrial contributions has been identified, data collection and reporting may be required for parameters not specified in Part I.

D. REQUIREMENTS FOR EFFLUENT LIMITATIONS ON POLLUTANTS ATTRIBUTABLE TO INDUSTRIAL USERS

1. The permittee shall require all industrial dischargers to the POTW to meet State pretreatment regulations promulgated in response to Section 307(b) of the Federal Act. Other information about new industrial discharges may be required and will be requested from the permittee after the EPD has received notice of the discharge.

2. The permittee may be required to supplement the requirements of the State and Federal pretreatment regulations to ensure compliance with all applicable effluent limitations listed in Part I. Supplemental actions by the permittee concerning some or all of the industries discharging to the POTW may be necessary.

E. RETAINER

EPD may require the permittee to amend an approved pretreatment program to incorporate revisions in State Pretreatment Regulations or other EPD requirements. Any approved POTW pretreatment program identified by EPD that needs to modify its program to incorporate requirements that have resulted from revision to the Rules shall develop and submit those revisions to EPD no later than one (1) year of notification by EPD to modify the Program. Any modifications made to the approved pretreatment program must be incorporated into the permit and the program pursuant to Chapter 391-3-6-.09(7) of the State Rules. Implementation of any revision or amendments to the program shall be described in the subsequent annual report to the EPD.

G. MONTHLY DMR DATA SUMMARY

Name: City of Social Circle WPCP
Address: P.O. Box 310
City: Social Circle - County: Walton
Facility Contact:
DMR Frequency: Monthly

Permit No.: GA0026107 (expires 7/31/2017)
Receiving Stream: Little River tributary
River Basin: Oconee River
Phone Number: 770-464-2380
Measurement Frequency: daily, total

				Influent						Effluent												
	Rainfall Inches	Flow(MGD) Monthly Avg.	Flow (MGD) Daily Max.	Inf BOD monthly mg/l	Inf BOD weekly mg/l	Inf TSS monthly mg/l	Inf TSS weekly mg/l	Inf. NH3 monthly mg/l	Inf. NH3 weekly mg/l	BOD monthly mg/l	BOD weekly mg/l	TSS monthly mg/l	TSS weekly mg/l	NH3 monthly mg/l	NH3 weekly mg/l	Fecal monthly /100ml	Fecal weekly /100ml	Effl Phos mg/l	Copper mg/L	Mercury mg/L	Zinc mg/L	BOD % rem	TSS % rem
Permit Limits=		**0.65**	**0.81**			**30**	**45**	**2.0**	**3.0**	**23**	**34.5**	**30**	**45**	**2.0**	**3.0**	**138**	**276**		**0.043**				
January-15	3.72	0.265	0.521	181	297	157	203	22	32	8	12	18.0	21.0	0.41	0.95	14	60	4.44	0.0197	0.0	0.0410	96%	89%
February-15	6.06	0.289	0.481	177	274	133	159	23	27	6	7	18.0	18.5	0.91	2.80	2	6	3.25	0.0311	0.0	0.0803	96%	87%
March-15	3.91	0.272	0.379	171	208	151	171	22	25	4	5	10.0	11.5	0.20	0.20	5	23	4.54	0.0240	0.0	0.0554	98%	93%
April-15	8.20	0.34	0.545	145	212	141	216	21	33	10	21	14.0	19.0	0.60	1.50	28	145	3.98	0.0157	0.0	0.0289	93%	89%
May-15	2.65	0.248	0.348	179	191	193	210	28	30	4	5	10.0	12.0	0.20	0.20	3	11	5.30	0.0164	0.0	0.0285	98%	95%
June-15	3.26	0.212	0.319	198	248	215	338	31	39	4	5	15.0	24.0	0.20	0.20	23	44	7.76	0.0418	0.0	0.0561	98%	93%
July-15	3.09	0.217	0.31	162	207	227	330	40	75	3	4	15.0	21.0	0.20	0.20	40	100	10.46	0.0392	0.0	0.0453	98%	93%
August-15	3.55	0.235	0.4	159	184	181	216	28	32	4	6	17.0	21.5	0.23	0.30	54	103	10.60	0.0362	0.0	0.0331	98%	91%
September-15	4.99	0.223	0.391	146	183	186	225	29	35	3	3	11.0	14.0	0.20	0.20	5	146	6.11	0.0291	0.0	0.0384	98%	94%
October-15	5.30	0.263	0.428	143	172	170	191	22	32	3	6	9.0	12.5	0.44	1.40	3	80	4.08	0.0197	0.0	0.0248	98%	95%
November-15	8.31	0.356	0.587	99	133	109	151	15	30	3	5	15.0	20.5	0.31	0.45	52	134	2.83	0.0179	0.0	0.0307	97%	87%
December-15	14.66	0.365	0.635	130	203	132	179	14	27	7	10	11.0	18.5	0.84	2.50	54	210	3.12	0.0199	0.0	0.0249	95%	91%
January-16	3.84	0.391	0.563	88	126	129	179	14	16	3	5	11.0	14.0	0.23	0.30	8	46	2.21	0.0109	0.0	0.0463	97%	91%
February-16	4.55	0.374	0.55	131	157	127	142	15	22	6	7	12.0	14.0	0.49	1.35	17	50	2.88	0.0148	0.0	0.0352	95%	91%
March-16	5.69	0.314	0.428	175	199	149	176	19	25	6	7	13.0	15.0	0.20	0.20	31	85	3.91	0.0197	0.0	0.0406	96%	91%
April-16	4.78	0.277	0.409	193	206	178	204	30	37	5	5	12.0	12.5	0.20	0.20	16	44	4.35	0.0205	0.0	0.0521	98%	93%
May-16	3.02	0.234	0.307	167	206	206	276	27	31	5	6	21.0	29.0	0.20	0.20	19	36	5.78	0.0245	0.0	0.0496	97%	90%
June-16	1.71	0.245	0.322	217	248	204	235	34	43	3	5	12.0	20.5	0.20	0.20	16	80	5.97	0.0259	0.0	0.0255	99%	95%
July-16	1.94	0.268	0.423	194	255	186	219	37	43	4	5	20.0	29.5	0.20	0.20	38	120	5.96	0.0252	0.0	0.0272	90%	89%
August-16	3.43	0.259	0.323	178	246	212	260	39	57	4	4	19.0	27.0	0.20	0.20	19	62	7.29	0.0285	0.0	0.0345	98%	91%
September-16	2.96	0.227	0.282	225	376	211	225	44	50	4	6	22.0	32.0	0.20	0.20	39	121	5.82	0.0425	0.0	0.0146	98%	90%
October-16	0.02	0.254	0.308	209	265	204	228	31	33	4	5	21.0	24.5	0.20	0.20	67	143	4.99	0.0300	0.0	0.0432	98%	90%
November-16	2.38	0.263	0.345	174	187	223	272	34	39	5	5	21.0	23.0	0.20	0.20	32	165	5.22	0.0240	0.0	0.0513	97%	91%
December-16	3.98	0.273	0.406	159	186	232	326	27	31	5	6	21.0	25.0	0.20	0.20	20	80	5.01	0.0257	0.0	0.0498	97%	91%
January-17	7.23	0.332	0.635	147	228	180	225	26	33	6	9	22.0	28.0	0.44	1.40	12	132	3.59	0.0146	0.0	0.0332	96%	87%
February-17	3.02	0.275	0.432	176	224	180	200	29	31	5	7	16.0	22.0	0.23	0.35	4	16	3.90	0.0160	0.0	0.0437	97%	91%
March-17	1.82	0.25	0.311	183	197	205	253	33	38	5	7	16.0	21.0	0.20	0.20	7	10	4.84	0.0168	0.0	0.0343	97%	92%
April-17	3.34	0.288	0.595	151	200	169	199	24	36	6	8	19.0	26.0	0.38	0.90	27	66	4.74	0.0211	0.0	0.0457	96%	89%
May-17	3.69	0.258	0.498	188	240	213	269	29	35	5	5	19.0	25.0	0.33	0.85	36	110	4.74	0.0184	0.0	0.0194	98%	92%
June-17	9.00	0.337	0.633	167	229	191	239	24	35	5	6	20.0	27.0	0.44	1.40	15	91	4.00	0.0276	0.0	0.0413	97%	89%
July-17		0.275	0.438	176	196	177	189	27	35	4	4	19.0	21.5	0.20	0.20	64	118	4.68	0.0298	0.0	0.0391	98%	89%
August-17		0.27	0.432	160	215	181	239	25	28	5	8	19.0	24.0	0.51	1.75	63	160	4.18	0.0253	0.0	0.0419	96%	87%
September-17		0.255	0.347	115	159	167	191	21	25	4	6	14.0	18.0	0.48	1.30	14	132	3.74	0.0253	0.0	0.0449	97%	92%
October-17																							
November-17																							
December-17																							
				166	214	179	222	27	35	4.8	6.5	16.1	21.0	0.32	0.69	26	89	4.98	0.0242	0.0	0.0394	97%	91%

H. WPCP IMPROVEMENTS – DETAILED COST ESTIMATES

CITY OF SOCIAL CIRCLE, GEORGIA
WPCP IMPROVEMENTS
PRELIMINARY PROJECT COST ESTIMATE
JANUARY 2018

Item No.	Est. Qty.	Units	Description	Unit Cost	Total Cost
1.			**Mobilization, Bonds and Insurance**		**$40,000**
a.	1	LS	Bonds and Insurance	25,000.00	$25,000
b.	1	LS	Mobilization	15,000.00	$15,000
2.			**Site Work**		**$33,000**
a.	1	LS	Tree Removal - Aeration Basin	10,000.00	$10,000
c.	1	LS	Grassing	3,000.00	$3,000
d.	1	LS	Gravel Road	5,000.00	$5,000
e.	1	LS	Drying Bed Demolition and backfill	10,000.00	$10,000
f.	1	LS	Soil Erosion & Sedimentation Control	5,000.00	$5,000
3.			**Headworks Structure - Bar Screen & Grit Collection**		**$218,950**
a.	470	CY	Excavation - Structural	35.00	$16,450
b.	25	CY	Concrete - Slab on Grade	350.00	$8,750
c.	25	CY	Concrete - Walls	1,100.00	$27,500
d.	5	CY	Concrete - Elevated	1,500.00	$7,500
e.	5	CY	Grout or Concrete Fill	250.00	$1,250
f.	1	LS	Misc. Metals	15,000.00	$15,000
g.	1	LS	Piping	15,000.00	$15,000
h.	1	LS	Grit Equipment	100,000.00	$100,000
i.	1	LS	Electrical	27,500.00	$27,500
4.			**Raw Sewage Pump Station**		**$262,000**
a.	600	CY	Excavation - Structural	70.00	$42,000
b.	1	LS	Precast Wetwell and Vault	35,000.00	$35,000
c.	1	LS	Piping	45,000.00	$45,000
d.	1	LS	Misc. Metals	5,000.00	$5,000
e.	1	LS	Pumps and Controls	65,000.00	$65,000
f.	1	LS	Electrical	25,000.00	$25,000
g.	1	LS	Yard Piping	35,000.00	$35,000
h.	1	LS	Rock	10,000.00	$10,000
5.			**Existing Aeration Basin**		**$42,500**
a.	1	LS	Replace Conduit and Wiring	15,000.00	$15,000
b.	6	EA	Replace Electrical Panels	2,500.00	$15,000
d.	1	LS	Replace Effluent Baffles	12,500.00	$12,500

Item No.	Est. Qty.	Units	Description	Unit Cost	Total Cost
6.			**Clarifier 1 and 2 Modifications**		**$273,000**
a.	1	L.S.	Demolition and Renovation - No. 2	$45,000	$45,000
b.	12	CY	Concrete and Grout Fill - No. 2	500.00	$6,000
c.	1	L.S.	Repair and Repaint - No. 1	50,000.00	$50,000
d.	1	L.S.	Miscellaneous Metals	$50,000	$50,000
e.	1	L.S.	Piping	$10,000	$10,000
f.	1	LS	Clarifier Equipment	$100,000	$100,000
g.	1	L.S.	Electrical	$12,000	$12,000
7.			**Return Activated Sludge Pump Station**		**$25,000**
a.	1	LS	Miscellaneous Repairs/Refurbishment	25,000.00	$25,000
8.			**Digester**		**$82,500**
a.	1	LS	Replace Sludge Pumps and Rails	40,000.00	$40,000
b.	1	LS	Replace Decanter	10,000.00	$10,000
c.	1	LS	Piping	2,500.00	$2,500
d.	1	LS	Equipment - Floating Aerators	25,000.00	$25,000
e.	1	LS	Electrical	5,000.00	$5,000
9.			**Dewatering Rehabilitation**		**$157,500**
a.	1	LS	Piping modifications	5,000.00	$5,000
b.	1	LS	Refurbish Belt Press & Appurtenances	150,000.00	$150,000
c.	1	LS	Electrical	2,500.00	$2,500
10.			**Bring Control Building to Code**		**$110,000**
b.	1	LS	Refurbish Building	50,000.00	$50,000
	1		Electrical, Insrumentation	60,000.00	$60,000
11.			**Generator & ATS**		**$100,000**
Total Estimated Construction Cost					**$1,344,450**

Project Cost Summary	
Total Estimated Construction Cost	$1,344,450
Contingency	$134,445
Engineering	$100,296
Inspection	$40,334
Design Development Report	$10,000
Permits	$10,000
Testing, Topo Survey	$10,000
O&M Manual	$10,000

Item No.	Est. Qty.	Units	Description	Unit Cost	Total Cost
			Administration & Legal		$10,000
			Total Estimated Project Cost		**$1,669,524**

prepared by:
Turnipseed Engineers
Augusta, Georgia

I. NEW WPCP - DETAILED COST ESTIMATES

CITY OF SOCIAL CIRCLE, GEORGIA
NEW 0.65 MGD WPCP
PRELIMINARY PROJECT COST ESTIMATE
OCTOBER 2017

Item No.	Est. Qty.	Units	Description	Unit Cost	Total Cost
1.			**Mobilization, Bonds and Insurance**		**$85,000**
a.	1	LS	Bonds and Insurance	60,000.00	$60,000
b.	1	LS	Mobilization	25,000.00	$25,000
2.			**Site Work**		**$256,250**
a.	1	L.S.	Site Grading	$75,000	$75,000
b.	1	L.S.	Clearing and Grubbing	$40,000	$40,000
c.	1	L.S.	Concrete Sidewalks and Steps	$20,000	$20,000
d.	1	L.S.	Soil Erosion (Incl. Grassing)	$20,000	$20,000
e.	1	L.S.	Plant Roads and Parking Lots	$70,000	$70,000
f.	1	L.S.	Storm Drain Piping	$10,000	$10,000
g.	250	L.F.	8 Inch Water Service	$25	$6,250
h.	1	L.S.	Lighting	$15,000	$15,000
3.			**Headworks Structure - Bar Screen & Grit Collection**		**$379,450**
a.	720	CY	Excavation - Structural	35.00	$25,200
b.	40	CY	Concrete - Slab on Grade	350.00	$14,000
c.	40	CY	Concrete - Walls	1,100.00	$44,000
d.	5	CY	Concrete - Elevated	1,500.00	$7,500
e.	5	CY	Grout or Concrete Fill	250.00	$1,250
f.	1	LS	Misc. Metals	15,000.00	$15,000
g.	1	LS	Piping	15,000.00	$15,000
h.	1	LS	Mechanical Bar Screen	130,000.00	$130,000
i.	1	LS	Grit Equipment	100,000.00	$100,000
j.	1	LS	Electrical	27,500.00	$27,500
4.			**Aeration Basin**		**$1,575,500**
a.	7200	C.Y.	Structural Excavation and Backfilling	$45	$324,000
b.	815	C.Y.	Concrete	$1,100	$896,500
c.	1	L.S.	Mechanical Equipment Incl. Installation	$175,000	$175,000
d.	1	L.S.	Miscellaneous Metals	$65,000	$65,000
e.	1	L.S.	Miscellaneous Piping and Valves	$65,000	$65,000
f.	1	L.S.	Electrical	$50,000	$50,000
5.			**Final Clarifiers**		**$1,013,250**
a.	6850	C.Y.	Structural Excavation and Backfilling	$45	$308,250
b.	450	C.Y.	Concrete	$1,100	$495,000

Item No.	Est. Qty.	Units	Description	Unit Cost	Total Cost
c.	1	L.S.	Mechanical Equipment Incl. Installation	$125,000	$125,000
d.	1	L.S.	Miscellaneous Piping and Valves	$50,000	$50,000
e.	1	L.S.	Electrical	$35,000	$35,000
6.	**UV Disinfection**				**$289,700**
a.	182	CY	Excavation - Structural	50.00	$9,100
b.	18	CY	Concrete - Slab on Grade	350.00	$6,300
c.	28	CY	Concrete - Walls	1,100.00	$30,800
d.	14	CY	Concrete - Elevated	250.00	$3,500
e.	1	LS	Misc. Metals	35,000.00	$35,000
f.	1	LS	Instrumentation	15,000.00	$15,000
g.	1	LS	UV Equipment	145,000.00	$145,000
h.	1	LS	Electrical	45,000.00	$45,000
7.	**Return Sludge Pump Station**				**$253,250**
a.	750	C.Y.	Structural Excavation and Backfilling	$45	$33,750
b.	45	C.Y.	Concrete	$1,100	$49,500
c.	1	L.S.	Mechanical Equipment Incl. Installation	$70,000	$70,000
d.	1	L.S.	Miscellaneous Piping and Valves	$75,000	$75,000
e.	1	L.S.	Electrical	$25,000	$25,000
8.	**Sludge Holding Tanks**				**$545,000**
a.	4000	C.Y.	Structural Excavation and Backfilling	$45	$180,000
b.	250	C.Y.	Concrete	$1,100	$275,000
c.	1	L.S.	Mechanical Equipment Incl. Installation	$35,000	$35,000
d.	1	L.S.	Miscellaneous Metals	$15,000	$15,000
e.	1	L.S.	Miscellaneous Piping and Valves	$25,000	$25,000
f.	1	L.S.	Electrical	$15,000	$15,000
9.	**Belt Press**				**$480,000**
a.	1	L.S.	Structural Excavation and Backfilling	$10,000	$10,000
b.	1	L.S.	Concrete	$30,000	$30,000
c.	1	L.S.	Brick Building	$100,000	$100,000
d.	1	L.S.	Mechanical Equipment Incl. Installation	$270,000	$270,000
e.	1	L.S.	Miscellaneous Piping and Valves	$35,000	$35,000
f.	1	L.S.	Electrical	$35,000	$35,000
10.	**Control Building incl. Lab and MCC**				**$530,000**
a.	1	LS	Foundation and Grading	50,000.00	$50,000
b.	1	LS	Walls	80,000.00	$80,000
c.	1	LS	Plumbing	20,000.00	$20,000
d.	1	LS	Roof	50,000.00	$50,000
e.	1	LS	Finishes	100,000.00	$100,000

Item No.	Est. Qty.	Units	Description	Unit Cost	Total Cost
f.	1	LS	HVAC	35,000.00	$35,000
g.	1	LS	Casework, Furnishings	50,000.00	$50,000
h.	1	LS	Electrical, Insrumentation	70,000.00	$70,000
i.	1	LS	MCC	75,000.00	$75,000
10.	1	L.S.	**Miscellaneous Yard Piping and Valves**	$75,000	$75,000
12.	1	L.S.	**230 kW Standby Diesel Generator**	$100,000	$100,000
Total Estimated Construction Cost					**$5,500,000**

Project Cost Summary	
Total Estimated Construction Cost	$5,500,000
Contingency	$550,000
Engineering	$346,500
Inspection	$165,000
Design Development Report	$10,000
Permits	$10,000
Testing, Topo Survey	$20,000
O&M Manual	$10,000
Administration & Legal	$35,000
Total Estimated Project Cost	**$6,646,500**

prepared by:
Turnipseed Engineers
Augusta, Georgia