

Office of the Mayor
Chokwe Lumumba, Mayor



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March 7, 2014

Chief, Environmental Enforcement Section
Environment and National Resources Division
U. S. Department of Justice
Box 7611 Ben Franklin Station
Washington, DC 20044-7611
Re: DOJ No. 90-5-1-1-09841

Brad Ammons
Environmental Engineer
Clean Water Enforcement Branch
Municipal & Industrial Enforcement Section
U. S. EPA Region 4
61 Forsyth St., S. W.
Atlanta, GA 30303

Karl Fingerhood
Environmental Enforcement Section
U. S. Department of Justice
Box 7611 Ben Franklin Station
Washington, DC 20044-7611

RE: City of Jackson
EPA Consent Decree
Pump Station Preventative Maintenance Programs

Dear Gentlemen:

Attached, please find the City of Jackson's Pump Station Preventative Maintenance Programs. These programs were developed and submitted by the City of Jackson in accordance with the EPA Consent Decree dated March 1, 2013. Paragraph 40 of the Consent Decree requires the City to submit to EPA for review and approval the attached pump station preventative maintenance programs.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,


Charles H. Tillman, Acting Mayor
City of Jackson Mississippi

Cc: Les Herrington, P.E., Mississippi Department of Environmental Quality
Kwame Kenyatta, Deputy Chief Executive Officer, City of Jackson
Gail Lowery, City Attorney, City of Jackson
Willie Bell, Interim Public Works Director, City of Jackson
Mary D. Carter, Public Works Deputy Director, City of Jackson
Public Depository, Eudora Welty Public Library

Pump Station Preventative Maintenance Programs



**Department of Public Works
Wastewater Infrastructure Redevelopment Program**

February 28, 2014

City of Jackson
Wastewater Infrastructure Redevelopment
Program

**Pump Station
Preventative Maintenance
Programs**

February 28, 2014

Prepared for:

City of Jackson
Department of Public Works
P.O. Box 17
Jackson, MS 39205-0017

Prepared by:

WEI/AJA LLC
143A LeFleurs Square
Jackson, MS 39211

City of Jackson, Mississippi

Pump Station Preventative Maintenance Programs

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Charles H. Tillman
Acting Mayor

Date

Willie C. Bell, Jr., Interim Director
Department of Public Works

Date

Pump Station Preventative Maintenance Programs

Contents

1.0	Introduction	1-1
1.1	Consent Decree Requirements.....	1-1
1.2	Report Organization	1-2
2.0	Pump Station Maintenance Resources	2-1
2.1	Pump Stations Overview	2-1
2.2	UWS-MS Preventative Maintenance Program.....	2-1
2.3	eRPortal Asset and Maintenance Management System.....	2-7
2.4	Maintenance Staffing and Resource Commitments.....	2-8
2.5	Summary	2-13
3.0	Pump Station PM Programs	3-1
3.1	Guidance to Managers and Field Personnel.. ..	3-1
3.2	Pump Station Monitoring.....	3-1
3.3	Pump Station Inspections	3-1
3.4	Meter Calibration Schedule	3-4
3.5	PM Scheduling.....	3-4
3.6	Predictive Maintenance	3-4
3.7	Electrical PM Activities.....	3-8
3.8	Mechanical PM Activities.....	3-9
3.9	Physical PM Activities.....	3-10
4.0	Pump Station Corrective Maintenance	4-1
4.1	Pump Station Evaluations.....	4-1
4.2	Pump Station Repair Needs.....	4-1
4.3	Pump Station Maintenance Documentation.....	4-3

List of Tables

Table

2-1	Jackson Wastewater Pump Stations General Characteristics	2-3
2-2	Pump Types and Motor Sizes	2-6
3-1	Pump Station Electrical Maintenance Schedule	3-8
3-2	Pump Station Mechanical Maintenance Schedule.....	3-9
3-3	Pump Station Physical Maintenance Schedule.....	3-10
4-1	Pump Station Repairs Completed	4-2
4-2	Pump Station Repairs Required	4-3

List of Figures

Figure

2-1	Pump Station Locations	2-2
2-2	UWS-MS Maintenance Department Organization.....	2-8
2-3	eRPortal Computerized Maintenance Management System	2-9
2-4	United Water Job Description – Maintenance Technician.....	2-10
2-5	United Water Job Description – Electrical Technician	2-11
2-6	Maintenance Staff Training Requirements	2-12
3-1	Pump Station Monthly Report.....	3-3
3-2	Pump Station PM Schedule	3-5
3-3	Pump Station Inspection Work Order.....	3-6
3-4	Pump Station Predictive Maintenance.....	3-7
4-1	Pump Station SSO Volumes	4-4
4-2	Pump Station SSO Events by Cause.....	4-4

1.0 Introduction

The City of Jackson entered into a Consent Decree with U.S. EPA on March 1, 2013 to address inadequacies of the City's wastewater collection and transportation system (WCTS). This report describes the **Pump Station Preventative Maintenance Programs** used by the City to maintain the wastewater pumping stations. The report fulfills the requirements set forth in Consent Decree §VI(D)-40.

1.1 Consent Decree Requirements

As stated in the Consent Decree, the Pump Station Preventative Maintenance Programs shall contain the following, at a minimum:

1. An electrical maintenance component which shall provide guidance to managers and field personnel responsible for electrical maintenance to ensure that preventive maintenance on Pump Station electrical components are performed on a routine basis. This component shall include meter calibration schedules for any meter used to record data collected at or from a Pump Station.
2. A mechanical maintenance component that shall provide guidance to managers and field personnel responsible for mechanical maintenance to ensure that preventive maintenance on Pump Station mechanical components are performed on a routine basis.
3. A physical maintenance component that shall provide guidance to managers and field personnel responsible for physical maintenance (pipes, walls, inverts, covers, etc.) to ensure that preventive maintenance on Pump Station physical components are performed on a routine basis.
4. A Pump Station repair component that shall serve as a reactive maintenance system to repair Pump Stations that are currently in a state of disrepair but still cost effective to service. This component shall provide for the identification, prioritization, scheduling, and repair of Pump Stations on a timely basis once a Pump Station has deteriorated beyond the scope of the preventive maintenance programs. This component shall include, at a minimum, the following:
 - 1) Guidance outlining when a Pump Station is to be placed in the Pump Station Repair Program.
 - 2) A prioritized inventory of Pump Stations in need of repair.
 - 3) An ongoing inventory of completed repairs.

- 4) A work schedule for repairs.
- 5) Standard forms, records and performance measures, and an information management system.

1.2 Report Organization

An overview of the City of Jackson maintenance capabilities is given in Section 2, including a description of the maintenance management system software used by United Water Services Mississippi, LLC. The electrical, mechanical, and physical PM programs are described in Section 3. Section 4 presents the City's corrective maintenance program for performing required pump station repairs. Operational activities performed at the pump stations are addressed in a companion document, the ***Pump Station Operations Program*** report.

2.0 Pump Station Maintenance Resources

This section describes the overall preventative maintenance system and personnel in place for maintaining wastewater pump stations. The system was implemented by the City's contract operator for the wastewater treatment plants and pump stations, United Water Services Mississippi, LLC (UWS-MS).

2.1 Pump Stations Overview

The City of Jackson WCTS consists of approximately 5.3 million feet of gravity sewer, which includes 69,400 feet (13.1 miles) of the West Bank Interceptor. The WBI runs along the west side of the Pearl River and receives flow from most of the sewersheds. The WBI conveys flow to the Savanna Street Wastewater Treatment Plant (SSWWTP). Smaller networks of the WCTS convey flow to the City's two other plants, the Trahon/Big Creek WWTP and the Presidential Hills WWTP.

The WCTS also include 98 pump stations and their associated force mains. These consist of 29 large pump stations and 69 small pump stations. Large pump stations are defined as those with pump motors ≥ 7.5 HP, the largest being 50 HP (with the exception of the influent pump station at the Savanna Street WWTP which has one 1250 HP stormwater pump, and the 75 HP and 150 HP pumps at the Trahon WWTP pump station). Small pump stations are those with pump motor sizes ranging from 1.5 to 5 HP. Force main sizes vary from 2-in to 16-in diameter. A map showing the locations of the pump stations is provided on **Figure 2-1**. The pump station general characteristics are summarized on **Table 2-1**. The various pump types in use and distribution of motor sizes is shown on **Table 2-2**.

2.2 UWS-MS Preventative Maintenance Program

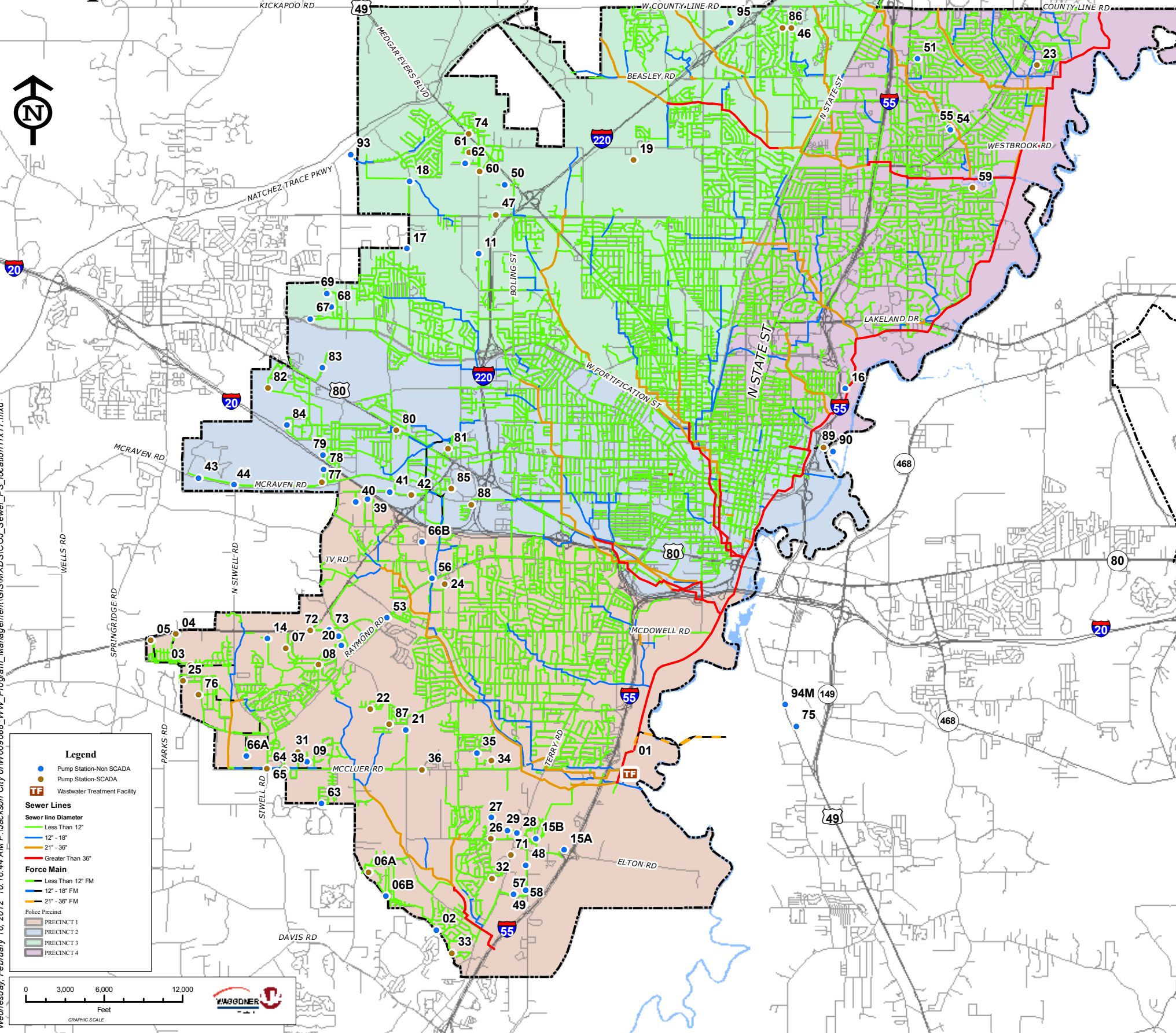
The City of Jackson has contracted operation and maintenance of the wastewater treatment plants and all pump stations to United Water Services Mississippi. The City still provides maintenance services for the gravity sewers, but essentially all mechanical and electrical equipment maintenance in the system is the responsibility of UWS-MS. The company is a subsidiary of the global private O&M conglomerate, Suez Environnement. UWS-MS has 2,350 employees in the U.S. and operates 90 municipal systems. As one of the largest private O&M companies, UWS-MS has adopted a standardized computerized maintenance management system (CMMS) at the facilities they operate. This system is developed around the eRPortal CMMS software platform, which has been fully implemented by UWS-MS in Jackson. As documented in this report, the UWS-MS preventative maintenance program is fully compliant with the requirements stipulated in the Consent Decree.



City of Jackson, MS

Sewer System

Pump Station Locations



Pump Stations					
I.D.	Site	Site Address	Potential Overflow Site	SCADA	Facility
1	SAVANNAH STREET WWTF	15 SOUTH	IT0043	YES	WWTF
2	AMANDA LANE	AWANDA LANE	TR0046	NO	PS
3	BROOKHOLLOW #2	BROOKHOLLOW DRIVE L 160	AT STATION	YES	PS
4	BROOKHOLLOW #3	8675 HWY 18	TR1516	YES	PS
5	BROOKHOLLOW #4	2102 THOUSAND OAK	AT STATION	YES	PS
6A	BROOKWOOD ESTATES	ROBWAY COVE	AT STATION	YES	PS
6B	BROOKWOOD PLACE	4911 BROOKWOOD PLACE	AT STATION	NO	PS
7	CEDAR HILLS #1	461 GREENMOUNT DRIVE	AT STATION	YES	PS
8	CEDAR HILLS #3	201 CEDARWOOD DRIVE	TR1407	YES	PS
9	CHASEWOOD	140 CHASEWOOD AVENUE	AT STATION	NO	PS
10	COLE ROAD	COLE ROAD	NO	NO	PS
11	COUNTRY CLUB #1	1452 COUNTRY CLUB DRIVE	TN3269	NO	PS
12	DELRAY	125 DELRAY AVE	CY1395	NO	PS
13	DURANVILLE	185 DURANVILLE DRIVE	TR0861	YES	PS
14	EDEN DOWNS	553 EDEN DOWNS	AT STATION	NO	PS
15A	I-55 FRONTAGE ROAD	I-55 FRONTAGE ROAD	AT STATION	NO	PS
15B	ELTON ROAD	207 ELTON ROAD	AT STATION	NO	PS
16	FEWELL WATER PLANT	1-55 WATER PLANT	AT STATION	NO	PS
17	FLAG CHAPEL #1	717 FLAG CHAPEL ROAD	AT STATION	NO	PS
18	FLAG CHAPEL #2	992 FLAG CHAPEL ROAD	BC0341	NO	PS
19	FOREST AVENUE	1851 FOREST AVENUE	HM0991	YES	PS
20	FOREST HILL #1	155 FOREST HILL DRIVE	AT STATION	NO	PS
21	FOREST HILL #2	3557 FOREST HILL ROAD	AT STATION	NO	PS
22	FOREST PARK	PARK CIRCLE	AT STATION	YES	PS
23	GREENWING	GREENWING COURT	PL0326	YES	PS
24	HICKEY DRIVE	2130 HICKORY DRIVE	CY1650	YES	PS
25	HILL DALE	561 HILLDALE DRIVE	TR1192	YES	PS
26	LAKEHORE "B"	174 LAKEHORE ROAD	TR0473	YES	PS
27	LAKEHORE "C"	4058 VENUS AVENUE	TR0557	NO	PS
28	LAKEHORE "D"	4395 TERRY ROAD	AT STATION	NO	PS
29	LAKEHORE "E"	201 RED HILL DRIVE	TR0501	NO	PS
30	J.R. LYNCH (NOT IN SERVICE)	4280 LYNCH STREET	NO	NO	PS
31	MARSHALL AVENUE	160 MARSHALL AVENUE	TR0767	YES	PS
32	MAYFAIR #1	HOLLY HILLS DRIVE	TR0275	YES	PS
33	MAYFAIR #3	ROBINWOOD DRIVE	TR0004	YES	PS
34	McCLUER #1	500 McCLUER ROAD	CY0179	YES	PS
35	McCLUER #2	3890 McCLUER ROAD	AT STATION	NO	PS
36	McCLUER #3	887 McCLUER ROAD	TR0710	YES	PS
37	McCLUER #4	1077 McCLUER ROAD	TR0661	YES	PS
38	McCLUER #5	1665 McCLUER ROAD	TR0733	YES	PS
39	McRAVEN #1	2694 MOORE DRIVE	CY1928	NO	PS
40	McRAVEN #2	155 HILLVIEW	CY1919	NO	PS
41	McRAVEN #3	4813 McRAVEN ROAD	LY0918	NO	PS
42	McRAVEN #4	4650 McRAVEN ROAD	LY0838	YES	PS
43	McRAVEN #5	6186 McRAVEN ROAD	LY0951	NO	PS
44	McRAVEN #5	8100 McRAVEN ROAD	AT STATION	NO	PS
45	MULE JAIL	6510 OLD CANTON ROAD @ COUNTY LINE	PL1045	YES	PS
46	NORTH COLONY	8112 FLORAL DRIVE	HM2315	YES	PS
47	NORTHSIDE DRIVE	3700 W. NORTHSIDE DRIVE	TN3658	YES	PS
48	OLD BYRAM ROAD #1	4937 OLD BYRAM ROAD	TR0223	NO	PS
49	OLD BYRAM ROAD #2	4681 OLD BYRAM ROAD	AT STATION	NO	PS
50	PATANN	PATANN STREET	TN3688	NO	PS
51	PLANTATION COURT	PLANTATION COURT	PL0409	NO	PS
52	PORTWOOD	155 PORTWOOD DRIVE	AT STATION	NO	PS
53	RAYMOND ROAD	2108 RAYMOND ROAD	CY1545	NO	PS
54	RIVER THAMES #1	5440 RIVER THAMES ROAD	AT STATION	NO	PS
55	RIVER THAMES #2	5407 RIVER THAMES ROAD	AT STATION	NO	PS
56	ROBINSON ROAD	5297 ROBINSON ROAD	AT STATION	NO	PS
57	SCOTTDAL #1	112 SCOTTDAL DRIVE	TR0196	NO	PS
58	SCOTTDAL #2	10 ROB LANE	TR0162	NO	PS
59	SHEFFIELD	2238 SHEFFIELD DRIVE	HM0575	YES	PS
60	SHELL ROCK "A"	6340 COUNTRY CLUB	AT STATION	YES	PS
61	SHELL ROCK "B"	255 S. SHELLROCK	BC0194	YES	PS
62	SHELL ROCK "C"	3458 DIXON SYLES ROAD	AT STATION	NO	PS
63	SHORT AVENUE	1465 SHORT AVENUE	AT STATION	NO	PS
64	SIWELL ROAD #1	4095 SIWELL ROAD	AT STATION	YES	PS
65	SIWELL ROAD #2	4071 SIWELL ROAD	AT STATION	NO	PS
66A	STRATFORD	139 STRATFORD DRIVE	TR0808	NO	PS
66B	SUMMER PARK	GREENWAY DRIVE	AT STATION	NO	PS
67	SYLVAN #1	6065 CLINTON BLVD.	AT STATION	NO	PS
68	SYLVAN #2	151 SYLVAN TRAIL	AT STATION	NO	PS
69	SYLVAN #3	351 SYLVAN TRAIL	AT STATION	NO	PS
70	SYLVAN #4	498 SYLVAN TRAIL	AT STATION	NO	PS
71	TERRY ROAD	4640 TERRY ROAD	TR0446	YES	PS
72	TIMBERLAWN #1	6115 HWY. 18	CY1439	YES	PS
73	TIMBERLAWN #2	132 TIMBERLAWN ROAD	CY1445	NO	PS
74	US HWY. 49 NORTH	6159 US HWY. 49 NORTH	AT STATION	YES	PS
75	WEST RANKIN PUMPSTATION	520 OLD HWY. 49 SOUTH	NO	NO	PS
76	WESTERN HILLS #1	WESTERN HILLS DRIVE	AT STATION	YES	PS
77	WESTSIDE #1	1900 WALLACE STREET	LY1033	YES	PS
78	WESTSIDE #2	1790 WALLACE STREET	LY1252	NO	PS
79	WESTSIDE #3	1651 WALLACE STREET	AT STATION	NO	PS
80	WESTSIDE #4	1914 US HWY. 80 WEST	AT STATION	YES	PS
81	WESTSIDE #5	4210 CHURCH CIRCLE	LY1685	YES	PS
82	WESTSIDE #6	800 E. BROWNING DRIVE	LY2536	YES	PS
83	WESTSIDE #7	1238 ZEPHYR STREET	LY2735	NO	PS
84	WESTSIDE #8	8325 YARBROUGH STREET	LY2036	NO	PS
85	WHITEHALL	4180 WHITEHALL ROAD	AT STATION	YES	PS
86	WHITESTONE	WHITESTONE ROAD	HM2365	YES	PS
87	WINDSOR FOREST #1	SHANNONDALE DRIVE	CY0698	YES	PS
88	YARBO	3855 YARBO	AT STATION	YES	PS
89	YMCA #1	E. RIVER PLACE	AT STATION	YES	PS
90	YMCA #2	OLD RIVER PLACE	IT0058	NO	PS
91	TRAHON WWTP	APACHE ROAD #1	AT STATION	NO	WWTF
92	TRAHON LIFT STATION	APACHE ROAD #2	AT STATION	NO	PS
93	PRESIDENTIAL HILLS LAAGOON	PRESIDENTIAL HILLS	BC0251	NO	WWTF
94M	RICHLAND (WEST RANKIN)	520 OLD HWY. 49 SOUTH	NO	NO	PS
95	ECHOLON	1235 ECHOLON PARKWAY	AT STATION	NO	PS

Date Source: City of Jackson & Sewer Treat Services January 2005

SCADA SITES
NOT IN SERVICE OR OWNED BY OTHER CITIES

Wednesday, February 16, 2012 10:16:44 AM P:\Jackson City of W009088_IWW_Program_Management\GIS\MXD\SICOL_Sewer_PS_Location1x17.mxd

Table 2-1
Jackson Wastewater Pump Stations
General Characteristics

City of Jackson
Pump Station Preventative Maintenance Programs

Location					Station Type				General Information																		
Map No.	PS No.	Name	Address	Drainage Basin	Submersible (X)	Self Priming (X)	Flooded Suction (X)	Other (X-Explain)	Standby Power (Y/N)	Generator Size (KW)	Bypass Connection (Y/N)	Number Of Pumps	Pump HP				Pump GPM				Pump Manufacturer	Diameter, in.	Material	Air Release Valves		In-Line Valves	
													Pump Number				Pump Number							#	Type	#	
													1	2	3	4	1	2	3	4							
1	PS1	Savanna WWTP IPS	I-55 South	Hardy Creek			X		Y		Y	4	30	30	30	1250					Hydro.	2	DI	NONE	Check	4	
2	PS2	Amanda Lane	Amanda Lane	Big Creek	X				N	N	N	2	2	2						Hydro.	4	PVC	NONE	Check	2		
3	PS3	Brookhollow #2	Brookhollow Drive L 160	Trahan Creek	X				N	N	N	2	5	5						Hydro.	8			Check	2		
4	PS4	Brookhollow #3	6675 HWY 18	Trahan Creek	X				N	N	N	2	30	30			442	442		Hydro.	6		NONE	Check	2		
5	PS5	Brookhollow #4	2102 Thousand Oak	Trahan Creek			X		N	N	N	2	5	5			300	300			4			Check	2		
6	PS6A	Brookwood Estates	Robway Cove	Trahan Creek	X							2	7.6	7.6							4						
7	PS6B	Brookwood Place	4811 Brookwood Place	Trahan Creek			X		N	N	N	2	7.5	7.5						P.B.	6	C.I.	NONE	Check	2		
8	PS7	Cedar Hills #1	461 Greenmount Drive	Trahan Creek		X			N	N	N	2	5	5			100	100		S & L	6	C.I.	NONE	Check	2		
9	PS8	Cedar Hills #3	201 Cedarwood Drive	Trahan Creek																							
10	PS9	Chasewood	140 Chasewood Avenue	Trahan Creek	X				N	N	N	2	2.5	2.5						Flygt	4		NONE	Check	2		
11	PS11	Country Club #1	1452 Country Club Drive	Bogue Chitto Creek	X				N	N	N	2	2	2						Hydro.	4						
12	PS12	Delray	125 Delray Ave	Caney Creek	X				N	N	N	2	3	3						P.B.	2						
13	PS13	Duranville	185 Duranville Drive	Trahan Creek	X				N	N	N	2	2.3	2.3						Flygt	4		NONE	Check	2		
14	PS14	Eden Downs	553 Eden Downs	Trahan Creek	X				N	N	N	2	2	2						Hydro.	2		NONE	Check	2		
15	PS15A	I-55 Frontage Road	I-55 Frontage Road	Caney Creek	X				N	N	N	2	25	25						Fair B.	8	PVC	3	Check	2		
16	PS15B	Elton Road	207 Elton Woods	Caney Creek	X				N	N	N	2	5	5						Reliant	8	PVC	3	Check	2		
17	PS16	Fewell Water Plant	1-55 Water Plant	Belhaven Creek	X				N	N	N	2												Check	2		
18	PS17	Flag Chapel #1	717 Flag Chapel Road	Bogue Chitto Creek	X				N	N	N	2	2	2													
19	PS18	Flag Chapel #2	992 Flag Chapel Road	Bogue Chitto Creek	X				N	N	N	2	2	10	10					Flygt	6		3				
20	PS19	Forest Avenue	1851 Forest Avenue	Eubanks Creek	X				N	N	N	2	15	15						Hydro	6		3	Check	2		
21	PS20	Forest Hill #1	155 Forest Hill Drive	Trahan Creek	X				N	N	N	2	4	4						Flygt	4						
22	PS21	Forest Hill #2	3557 Forest Hill Road	Trahan Creek	X				N	N	N	2	2	2						Hydro	2	PVC	NONE				
23	PS22	Forest Park	2285 Forest Park Drive	Trahan Creek		X	X		N	N	N	2	5	5			120	120		Gor Rp.	4						
24	PS23	Geenwing	Geenwing Court	Purple Creek	X				N	N	N	2	3	3			155	197			2	PVC	NONE				
25	PS24	Hickory Drive	2130 Hickory Drive	Caney Creek	X				N	N	N	2	10	10						Flygt	2 1/2						
26	PS25	Hillandale	561 Hillandale Drive	Trahan Creek	X				N	N	N	2	5	5			32	30		Myers	4						
27	PS26	Lakeshore "B"	174 Lakeshore Road	Trahan Creek	X				N	N	N	2	2	2						Fair B	4	Cast	NONE	Check	2		
28	PS27	Lakeshore "C"	4058 Venus Avenue	Trahan Creek	X				N	N	N	2	10	10			100	100		Fair B	4	Cast	NONE	Check	2		
29	PS28	Lakeshore "D"	4395 Terry Road	Caney Creek	X				N	N	N	2	10	10						Fair B	4	Cast	NONE	Check	2		
30	PS29	Lakeshore "E"	201 Red Hill Drive	Trahan Creek	X	X	X		N	N	N	2	10	10						Fair B	4	Cast	NONE	Check	2		
31	PS31	Marshall Avenue	160 Marshall Avenue	Trahan Creek	X	X	X		N	N	N	2	2.5	2.5			19	31		Flygt	4	Cast	NONE	Check	2		
32	PS32	Mayfair #1	Holly Hills Drive	Trahan Creek		X	X		N	N	N	2	7.5	7.5			300	300		Hydro	4	Cast	NONE	Check	2		
33	PS33	Mayfair #3	Robinwood Drive	Trahan Creek	X				N	N	N	2	15	15			400	400		Hydro	4	Cast	NONE	Check	2		
34	PS34	McCluer #1	500 McCluer Road	Caney Creek	X				N	N	N	2	3.5	3.5						Reli	3	Cast	NONE	Check	2		
35	PS35	McCluer #2	3890 McCluer Road	Caney Creek	X				N	N	N	2	2	2						Myers	2	Cast	NONE	Check	2		
36	PS36	McCluer #3	887 McCluer Road	Trahan Creek	X				N	N	N	2	2	2						Hydro	2	Cast	NONE	Check	2		
37	PS37	McCluer #4	1077 McCluer Road	Trahan Creek			X		N	N	N	2	10	10			450	450		Siem	4	Cast	NONE	Check	2		

Table 2-1 (continued)

Location					Station Type				General Information																		
Map No.	PS No.	Name	Address	Drainage Basin	Submersible (X)	Self Priming (X)	Flooded Suction (X)	Other (X-Explain)	Standby Power (Y/N)	Generator Size (KW)	Bypass Connection (Y/N)	Number Of Pumps	Pump HP				Pump GPM				Pump Manufacturer	Diameter, in.	Material	Air Release Valves		In-Line Valves	
													Pump Number				Pump Number							#	Type	#	
													1	2	3	4	1	2	3	4							
38	PS38	McCluer #5	1665 McCluer Road	Trahan Creek	X				N	N	N	2	10	10						Flygt	4	Cast	NONE	Check	2		
39	PS39	McRaven #1	2694 Moore Drive	Caney Creek	X				N	N	N	2	3	3						Hydro	4	Cast	NONE	Check	2		
40	PS40	McRaven #2	155 Hillview	Caney Creek	X				N	N	N	2	3	3						Hydro	4	Cast	NONE	Check	2		
41	PS41	McRaven #3	4813 McRaven Road	Lynch Creek	X				N	N	N	2	3	3						Hydro	2	Cast	NONE	Check	2		
42	PS42	McRaven #4	4660 McRaven Road	Lynch Creek	X				N	N	N	2	3	3						Hydro	4	Cast	NONE	Check	2		
43	PS43	McRaven #5	6186 McRaven Road	Lynch Creek	X				N	N	N	2	30	30						Fair B	4	Cast	NONE	Check	2		
44	PS44	McRaven #6	6100 McRaven Road	Lynch Creek	X				N	N	N	2	5	5						Fair B	6	Cast	NONE	Check	2		
45	PS45	Mule Jail	6510 Old Canton Road	Madison	X				N	N	Y	2	40	40						Hydro	10	Cast	NONE	Check	2		
46	PS46	North Colony	6112 Floral Drive	Hanging Moss Creek			X		N	N	N	2	7.5	7.5			200	200		Fair B	8	Cast	NONE	Check	2		
47	PS47	Northside Drive	3700 W. Northside Drive	Bogue Chitto Creek	X				N	N	N	2	10	10						Flygt	6	Cast	NONE	Check	2		
48	PS48	Old Byram Road #1	4837 Old Byram Road	Trahan Creek	X				N	N	N	2	2	2						Hydro	2	PVC	NONE	Check	2		
49	PS49	Old Byram Road #2	4681 Old Byram Road	Trahan Creek	X				N	N	N	2	3	3						Hydro	2	PVC	NONE	Check	2		
50	PS50	Patann	Patann Street	Bogue Chitto Creek	X				N	N	N	2	5	5			75	75		Chicgo	4	Cast	NONE	Check	2		
51	PS51	Plantation Court	Plantation Court	White Oak Creek	X				N	N	N	2	3	3						Hydro	2	Cast	NONE	Check	2		
52	PS52	Portwood	155 Portwood Drive	Trahan Creek	X				N	N	N	2	3	3						Pebod	2	Cast	NONE	Check	2		
53	PS53	Raymond Road	2108 Raymond Road	Caney Creek	X				N	N	N	2	5	5						Flygt	6	Cast	NONE	Check	2		
54	PS54	River Thames #1	5440 River Thames Road	White Oak Creek	X				N	N	N	1	2							Hydro	2			Check	1		
55	PS55	River Thames #2	5407 River Thames Road	White Oak Creek	X				N	N	N	1	2							Hydro	2			Check	1		
56	PS56	Robinson Road	5297 Robinson Road	Caney Creek	X				N	N	N	2	1.5	1.5						Hydro	4	Cast	NONE	Check	2		
57	PS57	Scottdale #1	112 Scottdale Road	Trahan Creek	X				N	N	N	2	3	3						Hydro	4	Cast	NONE	Check	2		
58	PS58	Scottdale #2	10 Rob Lane	Trahan Creek	X				N	N	N	2	3	3						Hydro	2	Cast	NONE	Check	2		
59	PS59	Sheffield	2238 Sheffield Drive	Hanging Moss Creek	X				N	N	N	2	2.3	2.3						Flygt	4	Cast	NONE	Check	2		
60	PS60	Shell Rock "A"	6340 Country Club	Bogue Chitto Creek	X				N	N	N	2	2	2						Hydro	4		NONE	Check	2		
61	PS61	Shell Rock "B"	255 S. Shellrock	Bogue Chitto Creek	X				N	N	N	2	1.5	1.5						Hydro	4	Cast	NONE	Check	2		
62	PS62	Shell Rock "C"	3458 Dixon Syles Road	Bogue Chitto Creek	X				N	N	N	2	1.5	1.5						Hydro	4	Cast	NONE	Check	2		
63	PS63	Short Avenue	1465 Short Avenue	Trahan Creek	X				N	N	N	2	7.5	7.5						Flygt	4	Cast	NONE	Check	2		
64	PS64	Siwell Road #1	4095 Siwell Road	Big Creek	X				N	N	N	2	50	50						Fair B	16	Cast	NONE	Check	2		
65	PS65	Siwell Road #2	4071 Siwell Road	Trahan Creek	X				N	N	N	2	15	15						Hydro	6	Cast	NONE	Check	2		
66	PS66A	Stratford	139 Stratford Drive	Trahan Creek	X				N	N	N	2	2	2						Flygt	2		1	Check	2		
67	PS66B	Summer Park	2010 Chadwick Drive	Caney Creek		X	X		N	N	N	2	7.5	7.5						Crown			NONE	Check	2		
68	PS67	Sylvan #1	6065 Clinton Blvd.	Lynch Creek	X				N	N	N	2	5	5						Hydro	2			Check	2		
69	PS68	Sylvan #2	151 Sylvan Trail	Lynch Creek	X				N	N	N	2	5	5						Hydro	2		NONE	Check	2		
70	PS69	Sylvan #3	351 Sylvan Trail	Lynch Creek	X				N	N	N	2	5	5						Hydro	2		NONE	Check	2		
71	PS70	Sylvan #4	498 Sylvan Trail	Trahan Creek	X				N	N	N	2	5	5						Hydro	2		NONE	Check	2		
72	PS71	Terry Road	4640 Terry Road	Trahan Creek	X				N	N	N	2	3	3						Hydro	2 1/2		NONE	Check	2		
73	PS72	Timberlawn #1	6115 HWY. 18	Trahan Creek	X				N	N	Y	2	10	10						Flygt	4		NONE	Check	2		
74	PS73	Timberlawn #2	132 Timberlawn Road	Trahan Creek	X				N	N	N	2	3	3						Pebod	4		NONE	Check	2		

Table 2-1 (continued)

Location					Station Type				General Information																		
Map No.	PS No.	Name	Address	Drainage Basin	Submersible (X)	Self Priming (X)	Flooded Suction (X)	Other (X-Explain)	Standby Power (Y/N)	Generator Size (KW)	Bypass Connection (Y/N)	Number Of Pumps	Pump HP				Pump GPM				Pump Manufacturer	Diameter, in.	Material	Air Release Valves	In-Line Valves		
													Pump Number				Pump Number								#	Type	#
													1	2	3	4	1	2	3	4							
75	PS74	HWY. 49 North	6159 US HWY. 49 North	Bogue Chitto Creek	X				N	N	N	2	3	3							Hydro	4		NONE	Check	2	
76	PS75	Western Hills #1	Western Hills Drive	Trahon Creek	X				N	N	N	2	1	1							Dayton	4		NONE	Check	2	
77	PS76	Westside #1	1900 Wallace Street	Lynch Creek	X				N	N	N	2	5	5							Hydro	6		NONE	Check	2	
78	PS77	Westside #2	1790 Wallace Street	Lynch Creek	X				N	N	N	2	2	2							Hydro	4		NONE	Check	2	
79	PS78	Westside #3	1651 Wallace Street	Lynch Creek	X				N	N	N	2	5	5							Hydro	2		NONE	Check	2	
80	PS79	Westside #4	1914 US HWY. 80 West	Lynch Creek	X				N	N	N	2	15	15							ABS	8		NONE	Check	2	
81	PS80	Westside #5	4210 Church Circle	Lynch Creek	X				Y	N	N	4	40	40	40	40					Hydro	14	Ductile	6	Check	5	
82	PS81	Westside #6	500 E. Browning Drive	Lynch Creek	X				N	N	N	2	40	40			400	400				8	PVC	5	Check	2	
83	PS82	Westside #7	1238 Zephyr Street	Lynch Creek	X				N	N	N	2	3	3							Hydro	2 1/2	PVC	NONE	Check	2	
84	PS83	Westside #8	6325 Yarbrough Street	Lynch Creek	X				N	N	N	2	5	5							Hydro	3	PVC	NONE	Check	2	
85	PS84	Whitehall	4180 Whitehall Road	Lynch Creek	X				N	N	N	2	3	3							Hydro	3				2	
86	PS85	Whitestone	Whitestone Road	Hanging Moss Creek	X				N	N	N	2	15	7.5							Wem	6	Cast	NONE	Check	2	
87	PS86	Windsor Forest #1	Shannondale Drive	Trahon Creek	X				N	N	N	2	15	15							Hydro	4			Check	2	
88	PS88	Yarbrough	3855 Yarbrough	Lynch Creek	X				N	N	N	2	5	5							Hydro	4			Check	2	
89	PS89	YMCA #1	E. River Place	Belhaven Creek		X	X		N	N	N	2	3	3							GorR	6	Cast	NONE	Check	2	
90	PS90	YMCA #2	Old River Place	Belhaven Creek	X				N	N	N	2	3	3							Hydro	4	Ductile	1	Check	2	
91	PS91	Trahon WWTP	Apache Road #1	Big Creek					Y	500	N																
92	PS92	Trahon Lift Station	Apache Road #2	Big Creek	X				Y	500	N	4									Flygt					4	
93	PS93	Presidential Hills	Presidential Hills WWTP	Bogue Chitto Creek		X	X		Y		N	2									S & L					2	
94	PS95	Echelon	1235 Echelon Parkway	Hanging Moss Creek	X				N	N	N	2	3	3							Hydro	4		NONE	Check	2	
95	PS96	Siwell	4414 Siwell Road		X				N	N	N	2	50	50							Hydro					2	
96	PS97	Jericho Estates	McLure Road																								
97	PS98	Brookwood Estates	Brookwood Estates		X				N	N	N	2	7.6	7.6							Flygt						
98	PS99	Belle Chase	Belle Chase		X				N	N	N	2	5	5							Hydro						

Table 2-2
Jackson Wastewater Pump Stations
Pump Types and Motor Sizes

Category	Total	Large PSs ≥7.5 HP	Small PSs ≤5 HP
No. of Pump Stations	98	31	67
Submersible	85	22	63
Self-Priming	6 ¹	4	2
Flooded Suction	5	4	1
Mixed	2 ²	1	1

Motor Sizes	No.	Remarks
30 HP, 1250 HP	1	Savanna St. WWTP Influent PS
75 HP, 150 HP	1	Trahan WWTP Influent PS
50 HP	2	Siwell Road #1 & #2
40 HP	3	Mule Jail, Westside #5, Westside #6
30 HP	2	Brookhollow #3, McRaven #5
25 HP	1	I-55 Frontage Road
15 HP	6	
10 HP	7	
7.5 HP	8	
5 HP	18	
3.5 HP	1	
3 HP	19	
2.5 HP	4	
2 HP	15	
1.5 HP	3	
1 HP	1	
Unknown	6	

¹ Five self-priming pump stations have flooded suction

² Two stations have both a submersible and a self-priming pump

2.3 eRPortal Asset and Maintenance Management System

The eRPortal software platform implemented by UWS-MS provides enterprise asset management and materials management applications designed to optimize operations, maintain assets and infrastructure, and manage all related materials, resources, and logistics. The software is user friendly and is easily configurable to each individual facility. eRPortal CMMS effectively manages both planned and unplanned work order logistics. The system is designed for operational flexibility and can be adapted to specific work environments and workflows. eRPortal also supports GASB34 accounting standards and EPA CMOM regulations with “cradle-to-grave” asset tracking capabilities and environmental protection compliance. These capabilities include tracking warranties and labor for budgeting purposes, monitoring safety hazards for work orders, making condition-based assessments, and tracking assets. The system is specifically designed to simplify maintenance and compliance tasks for water and wastewater treatment plants.



The eRPortal CMMS incorporates the following features.

- A powerful preventative maintenance (PM) scheduling module with the flexibility to control when work orders should be triggered. For triggered PM's, the work order includes procedures, parts, personnel assignments, skill/labor-code requirements, and other required data. Information displayed on the work order is only what is actually needed to complete the assignment.
- A work-order management module that allows tracking of time, materials, schedules, dates, and responsiveness.
- A supervisory control and data acquisition (SCADA) interface that permits operators to view upcoming and open work orders and full details of work-order history without leaving their operating consoles. They also can quickly enter work-order requests that send out e-mail notifications.
- The SCADA interface also allows run time-based preventive maintenance work-order triggers. The interface can also generate condition- and predictive-based orders that incorporate any combination of sensors (vibration, temperature, or pressure) or equipment usage being monitored.

- Parts tracking and management functionality that identifies, allocates, and tracks replacement parts required for repetitive tasks. Preferred vendors, blanket purchase orders, and procurement contracts can be managed from within the system. Extensive item properties can be tracked, including multiple cost methodologies, serialization/lot numbers, weight, description, type, class, and dimension. The system can utilize existing barcode IDs or create new ones on-demand or at time of purchase order receipt.
- Web browser-enabled architecture with complete supply chain connectivity. This allows the software to interface via the Web or other connectivity formats with all internal and external systems at key touch points where information exchange is critical.

The following sections provide documentation how the UWS-MS maintenance staff and the eRPortal CMMS facilitate completion of required PM activities. A screenshot of the eRPortal CMMS home screen is shown on **Figure 2-3**.

2.4 Maintenance Staffing and Resource Commitments

Maintenance Organization

UWS-MS has a single maintenance department responsible for maintaining all of the pump stations and the City's three wastewater treatment plants. An organization chart for the UWS-MS Maintenance Department is shown on **Figure 2-2**.

Figure 2-2
UWS-MS Maintenance Department Organization

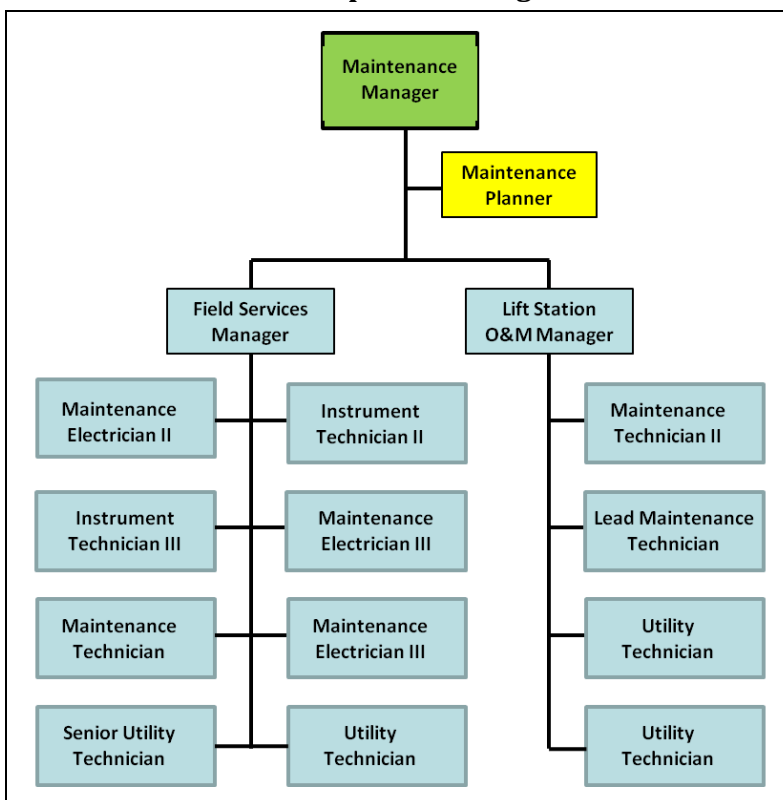


Figure 2-3
Jackson eRPortal Computerized Maintenance Management System

eRPortal

Home | Issuing | Purchasing | Inventory | Assets | Work Orders | PMs | System Config |

Work Order Finder Work Order Entry Asset Finder Logout

My Maintenance Dashboard

Open WOs	Unassigned WOs	Overdue WOs	Open PMs	Assets Down	Completed Today
414	3	345	350	4	36

Work Orders Waiting Approval

WO Nbr	DateDue	AssetDescr	CraftDescr	StatusDescr	Notes	AssignedToNa	RequestedByNa	CreatedByNa
304740	03/30/2013	FILTER/STRUCTURE	Plant Operator	Pending	Operators Gate Inspection - Monthly/OK.TWASH	Tommy	Bennie	Bennie
304955	03/08/2013	LAB TRUCK	Maintenance	Pending	head light is out also the oil need to be change/OK.T.WASH	Tommy	Tom Greene	Tom Greene
305152	03/24/2013	DEWATERING	Plant Operator	Pending	Operator Centrifuge Daily/OK-T.WASH	Tommy	System	System
305203	03/28/2013	DEWATERING	Plant Operator	Pending	Operator Centrifuge Daily/OK-T.WASH	Tommy	System	System
305241	04/29/2013	FILTER/STRUCTURE	Plant Operator	Pending	Operators Gate Inspection - Monthly/T.WASH/OK	Tommy	System	System
305242	04/29/2013	WEST STRUCTURE	Plant Operator	Pending	Operators Gate Inspection - Monthly	Tommy	System	System
305243	04/29/2013	VALVES	Plant Operator	Pending	Operators Gate Inspection - Monthly/OK-TWASH	Tommy	System	System
305244	04/29/2013	FORCE MAIN VALVE #1	Plant Operator	Pending	Operators Gate Inspection - Monthly/OK--T.WASH	Tommy	System	System

New Unassigned Work Orders

WO #	Priority	Asset Code	Asset	Asset History	Close	Work Requested	Created
306488	3	SS-PLANT-SITE	ENTIRE SITE	History	Close	The pvc potable water line to dewater is bursted.	6/05/13
306487	3	SS-CLARIFIER-1	CLARIFIER #1	History	Close	We can get only one withdrawal tube to open.	6/05/13
306478	3	SS-N-GATE-	VALVES	History	Close	The gate at the splitter box for clarifier #1 is very hard to open and close.	6/04/13

Done

Trusted sites 100%

Maintenance Staff Qualifications

The UWS-MS Maintenance Department has 13 full time maintenance positions. These individuals are responsible for conducting all PM activities required on the electrical, mechanical, and physical pump station facilities, as well as the wastewater treatment plant equipment. Performing PM is an integral part of their job, and is a defined role in UWS-MS maintenance staff job descriptions. Example UWS-MS maintenance job descriptions are shown on **Figure 2-4** and **Figure 2-5**.

Figure 2-4
UWS-MS Job Description – Maintenance Technician

JOB TITLE:	Maintenance Technician Non Exempt
LOCATION:	Jackson, MS
PRINCIPAL DUTIES:	Troubleshoot and resolve routine operational and mechanical issues. Coordinates work with Operations and others as needed. Follows standard operating procedures, safety procedures, preventive maintenance procedures and computerized maintenance management system at treatment plants, as directed. Responsible for general housekeeping of maintenance shop, job sites, work areas and other areas as assigned including, but not limited to sweeping, dusting, mopping, cleaning and painting as necessary to maintain areas to Company standards. Check and ensure vehicles are operating correctly. <u>Perform preventative and corrective maintenance of industrial plant equipment as assigned.</u> Familiarity and adherence to all environmental and safety compliance regulations.
SALARY:	Commensurate with Skills, Knowledge, Abilities and Experience
EXPERIENCE:	1-3 years industrial or mechanical maintenance environment, preferably water and/or wastewater treatment. Must have experience working on equipment components such as gearboxes, bearings and belts. Must have experience troubleshooting and replacing mechanical and oil seals.
SKILLS:	Must have High School Diploma or equivalent and valid MS Driver's License that meets risk management guidelines. CDL preferred. Must have ability or ability to learn to operate hand tools, machinery and various other equipment specific to an industrial environment.
WORKING HOURS:	Based on site specific schedules

Figure 2-5
UWS-MS Job Description – Electrical Technician

JOB TITLE:	Electrical Technician Non Exempt
LOCATION:	Jackson MS - UWES
PRINCIPAL DUTIES:	Provides highly technical electrical and electronic repair skills to ensure the efficient installation and maintenance of the various electrical and/or electronic equipment devices and circuitry required to operate water and/or wastewater facilities and sanitary storm sewer systems including lift stations. Maintain manual and/or computerized work orders and records as directed. Must comply with all safety procedures and be knowledgeable in environmental regulations as it impacts the facilities.
SALARY:	Based on skills, knowledge and abilities
EXPERIENCE:	7-10 years experience in an industrial environment with minimum two (2) years of related education at a college or technical training school. Apprentice certification preferred. Experience may be substituted for education.
SKILLS:	Ability to read and understand operating manuals and written instructions, complex wiring diagrams, schematics, blueprints and technical materials. Must have a demonstrated math ability and knowledge of and/or experience with electrical codes, principles and theories applicable to the installation and maintenance of electrical equipment to include solid state electronic components and electrical/electronic circuits, both single phase and multiphase circuits. Knowledge of and <u>familiarity with preventive and predictive maintenance management programs.</u>
WORKING HOURS:	Full time and site specific

Maintenance Staff Training

All UWS-MS maintenance staff receive initial (upon hire) and periodic refresher training on a variety of activities, knowledge, and skills required for them to perform their jobs successfully and safely. An excerpt of the UWS-MS maintenance training requirements list for maintenance technicians is shown on **Figure 2-6**.

City of Jackson
Pump Station Preventative Maintenance Programs



Figure 2-6
Maintenance Staff Training Requirements

Employee: _____

Employee No.: _____

Signature: _____

Supervisor Sign: _____

Date: _____

S or E	Training Topic	Assessment Question	Training Frequency	Approved Instructors
H&S	Aerial Lift Operations Training	Will you be required to use a company/client owned or rented aerial lift? Aerial lifts are vehicle-mounted devices, telescoping or articulating, or both, which are used to position personnel (extendible boom platforms), aerial ladders, articulating boom platforms, and vertical towers	3 yrs	Outside Vendor/Supervisor
H&S	Basic Rigging	Does your Work Require any type of Rigging? This training is intended for employees who perform basic rigging activities, such as using chain-falls, mechanical or electric hoists. Employees working with heavy lifts will require additional training.	3 yrs	Outside Vendor/Supervisor/Pure Safety
H&S	Confined Space – Authorized Entrant, Attendant / Supervisor	Will you be performing duties for Authorized Entrant, Attendant, or Supervisor for permit-space entries? Note: Hands-on site training, including a mock permit space entry with non-entry rescuer and review of all related PPE and equipment is required.	1 yr	Outside Vendor/ Supervisor, Pure Safety for class room part
H&S	Confined Space –Rescue	Will you be assigned as a designated rescuer for permit-required confined spaces? Required for entry rescue personnel only.	1 yr	Outside Vendor
H&S	Electrical Hazards / NFPA 70 E	Will you be required to work on energized electrical circuits (above 50 volts)? This training is required for any employee who is authorized to perform work (above 50 volts) on energized electrical circuits or equipment. Follows Best Management Practices in the NFPA -70E Standard.	3 yrs	Outside Vendor, Pure Safety for theoretical part.
H&S	Excavation Safety - Competent Person	Will you be designated a "Competent Person" for excavation? A "Competent Person" as defined by OSHA is the one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate	5 Yrs	Outside Vendor, Pure Safety for theoretical part only.
EHS	Facility-Specific EH&S Orientation	Are you a new/re- hire by UNITED WATER ENVIRONMENTAL SERVICES assigned to a project? If yes, this training is required. This training includes face-to-face review of new employee safety orientation packet (including incident reporting, review of Environmental Charter, site specific EH&S plans and emergency response plan.	One Time	Supervisor, H&S Manager
H&S	Fall Protection Safety - Competent Person	Will you be designated a "Competent Person" for fall protection systems? "Competent Person", as defined by OSHA, is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate	5 Yrs	Outside Vendor, Pure Safety for theoretical part only.
H&S	Hand & Power Tools	Does your work require the use of powered hand tools? This training is required for employees who routinely use powered tools such as drills, grinders, saws, etc.	3 yrs	Supervisor / Pure Safety
H&S	Hazard Communication	Will you be working with or near Hazardous Chemicals? Mandatory for all employee who have a potential of exposure to Hazardous chemicals and/or work at a facility where hazardous chemicals are used/stored. Note: Training includes a documented review of the site-specific hazardous chemical inventory, locations of MSDS books and where chemicals are used/stored and overview of MSDS for chemicals routinely used.	1 yr	Supervisor / Pure Safety
H&S	Heavy Equipment-Specific Training	Will you be required to operate any piece of heavy equipment (skid-steer, Bobcat, earth-moving equipment, crane trucks, street sweepers, backhoes/frontend loaders)?	3 Yrs	Supervisor / Outside Vendor
H&S	Hot Work Safety	Will you be required to perform Hot Work (welding, brazing, soldering, torch-cutting, grinding operations) using any of the following methods? Oxygen/Fuel-Gas Cutting, Arc Welding, Resistance Welding; required for any employee authorized to use welding, cutting, or brazing equipment on a jobsite.	3 yrs	Supervisor/ H&S Manager / Outside Vendor
H&S	Lockout/Tagout – "Affected" Employee Training	Will you be working with or around any machines or equipment that may need to be locked or tagged out? This training is required for all employees who may operate equipment on which servicing or maintenance can be performed under lockout/tagout OR if they can be in an area where such servicing or maintenance may be performed.	1 yr	Supervisor / H&S Manager / Pure Safety
H&S	Lockout/Tagout – "Authorized" Employee Training	Will you be required to Lock or Tag out equipment as an authorized person? This training is required when an employee is authorized to lock/tagout equipment on which (s)/he or other people may work or come in contact with.	1 yr	Supervisor / H&S Manager / Pure Safety (for class room part)
H&S	OSHA 10-Hr Construction Safety –Construction Safety Training Systems (Canada)	Will you be required to work on construction related tasks as part of your routine duties (e.g. excavation/ trenching/scaffolding/ work at elevation etc.? Required by any employee who self-performs, or supervises, construction-related tasks as part of the routine job assignments. Examples include trench & excavation safety, materials handling, fall protection & prevention, work with scaffolding, heavy equipment operations etc. Also may be required by certain states for employees who are working on a construction site	One time	Outside Vendor / Pure Safety
H&S	Overhead Crane/Hoist Training	Will you be required to operate and/or maintain an overhead crane or hoist? This training is required by any employee whose work involves the use and operation of an overhead crane or hoist, either truck-mounted or fixed-facility.	2 yrs	Supervisor / Outside vendor
H&S	Personal Protective Equipment	Will you be required to use various types of Personal Protective Equipment in performing your assigned tasks?	2 yrs	Supervisor / H&S Manager / Pure Safety (PPE 10 parts)
H&S	Powered Industrial Truck (including Forklift) Training	Will you be required to operate a Powered Industrial Truck (forklift, powered pallet jack, utility cart)? A Powered Industrial Truck is power-propelled truck used to carry, push, pull, lift, stack or tier materials e.g. forklifts, pallet trucks, rider trucks, fork trucks, or lift trucks. Does not apply to earth moving equipment. Any training completed thru PureSafety must be supplemented with a field demonstration of skills (road test with the equipment to be operated) and documented.	3 Yrs	Outside Vendor / H&S Manager / Pure Safety (for classroom part only)
Env.	Used Oil/ Waste Oil	Will you be handling & Managing Used/Waste Oil?	1 yr	Supervisor / Env Manager

2.5 Summary

In summary, the City of Jackson has in place a sophisticated maintenance program for wastewater pump stations implemented by its contract operator, UWS-MS. A state of the art computerized maintenance management system, eRPortal, is used to schedule maintenance activities, generate work orders, and track maintenance completed. UWS-MS has a fully qualified and trained staff assigned to perform maintenance functions. Specific preventative maintenance procedures used for pump station electrical, mechanical, and physical systems are described in the following section.

3.0 Pump Station PM Programs

This section describes the preventative maintenance programs for pump station systems and equipment. The PM program consists of periodic inspections of all pump stations that include electrical, mechanical, and physical components.

3.1 Guidance to Managers and Field Personnel

UWS-MS provides appropriate guidance to managers and field personnel for scheduling and performing preventative maintenance activities on the wastewater pump stations. This guidance includes detailed PM tracking using the eRPortal CMMS to insure that all scheduled PM activities are routinely completed. The guidance consists of:

- Identification of all systems and equipment where PM is required.
- Itemization of required PM tasks for each item of equipment.
- Instruction in equipment, tools, and materials required to complete PM work.
- Training necessary to complete PM activities.
- Instruction on completing documentation required to update the eRPortal CMMS used to track PM history.

3.2 Pump Station Monitoring

All of the City's pump stations are equipped with limited SCADA monitoring capabilities. O&M personnel are alerted when any wet well high water level alarm that may lead to a sanitary sewer overflow (SSO) is activated. When this condition occurs, a text alert is transmitted to designated O&M staff who will respond to the alarm.

3.3 Pump Station Inspections

UWS-MS performs three levels of inspections on all pump stations. These are weekly inspections, monthly inspections, and a more in depth annual inspection. Each inspection covers the electrical, mechanical, and physical facilities and equipment at each station. Scheduled Preventative Maintenance activities are performed as part of the routine inspections. The crew also completes required operational tasks as described in the ***Pump Station Operations Program*** report. Generally, Tuesdays and Thursdays are reserved for PM on the following if needed:

- Gate valves
- Check valves
- Guide rail systems
- Pump piping

Weekly Inspections

Each pump station is visited by an O&M technician at least weekly as part of a standard inspection route. The purpose of these routine visits is to confirm that the equipment is operating properly and to complete scheduled maintenance Work Orders including PM. Any additional maintenance needs are also noted which may lead to initiation of a new Work Order for corrective maintenance. The routine inspection and maintenance activities include the following:

- Visually inspect the station for vandalism or damage.
- Clean up any trash or debris found on the site.
- Record pump run time hours for each pump.
- Record kilowatt-hour meter reading for the pump station.
- Run each pump by hand (manual control) to ensure pumps/motors are operating properly.
- Inspect wet well to determine need for cleaning.
- Test panel lights and change as needed to ensure proper operation.
- Complete any scheduled PM Work Orders.
- Place pump controls back in auto position prior to leaving station.
- Lock up station, including exterior power panels if required, prior to leaving.

Additional routine inspection and maintenance activities may be identified for individual pump stations based on the observations and experience of the O&M staff.


Monthly Inspections

Once per month a more detailed inspection is performed on each pump station. The monthly inspection includes:

- Test alarm system (panel light and high water SSO alarm)
- Inspect and exercise check valves
- Inspect and exercise isolation valves
- Blow out lines on bubbler system
- Inspect wet well for excessive grease build up and loose guide rails
- Clean floats as needed
- Test pumps for proper operation
- Check controls for proper operation (starters, overloads, alternating relay, phase monitor)
- Clean station grounds

O&M staff prepares a monthly report that lists all operation and maintenance activities that were performed on each pump station for the entire month. These reports are submitted to the Maintenance Manager who reviews each report, confirms that necessary maintenance is being addressed, and makes any necessary adjustments to the procedures. An example pump station monthly report is shown on **Figure 3-1**.

Figure 3-1
Pump Station Monthly Report

<p>Darnell Gray Lift Station O&M Manager</p> <p>UNITED WATER 3810 I-55 South Jackson, MS 39212 TEL: 601-896-6365 FAX: 601-371-2453 Darnell.Gray@unitedwater.com</p>	
<p>TO:</p> <p>FROM:</p> <p>DATE:</p> <p>SUBJECT : LIFT STATION MONTHLY REPORT FOR MAY 2013</p>	
<p>MEMO</p>	
<p><u>5/1/13</u></p> <ul style="list-style-type: none">• LS-84 (Westside # 1) – Removed temporary pump and reinstalled the newly repaired # 2 pump. Placed pump back in service. (.5 hrs.)• LS-88 (Westside # 5) – Made routine equipment inspection. An SSO was occurring at time of inspection and all available pumps were in service. Overflow started at 4:00 p.m. and ended at 9:30 p.m.• LS- 87 (Westside # 4) – Made routine equipment inspection. Found that the # 1 pump had a loose connection on the overload relay. Tightened connection and left unit in service. (.5 hrs.)• LS- 42 (McRaven # 1) – Removed both pumps from well, removed debris from impellers and reinstalled in well. (1.5 hrs.)• LS- 31 (Lakeshore C) – Made routine equipment inspection. (.5 hrs.)• LS- 30 (Lakeshore B) – Made routine equipment inspection. (.5 hrs.)• LS- 13 (Country Club) – Made routine equipment inspection. (.5 hrs.)• LS- 20 (Flag Chapel # 1) – Made routine equipment inspection. (.5 hrs.)• LS- 84 (Westside # 1) – Revisited station to make certain pumps are functioning properly. (.5 hrs.)• LS- 88 (Westside # 5) – Revisited station to monitor well level. (1 hr.)• LS-20 (Country Club) – Revisited station to make certain pumps were still functioning properly due to rainy day event.• LS- 84 (Westside # 1) - Revisited station due to rainy day event. (.5 hrs.)• LS- 42 (McRaven # 1) – Revisited station due to rainy day event. (.5 hrs.)• LS- 24 (Forest Hills # 2) – Made routine equipment inspection. (.5 hrs.)• LS- 18 (Eltonwoods) – Made routine equipment inspection. Found that both pumps had tripped due to a problem at power transformers on pole. Contacted power company (Entergy) concerning problem and pumped well down. (2 hrs.) <p><u>5/2/13</u></p> <p>LS- 18 (Eltonwoods) – Made routine equipment inspection. Found that both pumps had tripped again. Reset pumps and drew well down. Also discovered that power company hadn't corrected problem with transformers. Recontacted power company to set up a meeting to show them where the problem is. (2.5 hrs.) Met with power company rep. and identified to them the problem. Power company rep. then made the repairs to transformer banks. (2.5 hrs)</p>	

Annual Inspection

Annual inspection and maintenance activities are also performed for each pump station. Additional activities associated with annual inspection and maintenance visits include the following:

- Pump out and clean the wet well to remove debris and grease build up.
- Lock out/tag out power source.
- Pull pump and ensure shaft will spin freely by hand. Inspect pumps and impellers to assure they are free of debris and in good operating condition.
- Check for water intrusion (pull float sensor drain plug to remove trapped water).
- Assess operating set points (on/off) for pumps and reset as necessary to improve system performance.
- Inspect electrical motor control equipment to identify any potential issues, such as poor connections and worn parts. This inspection shall include appropriate scheduled panel maintenance.
- Inspect, service, and calibrate instrumentation, such as SCADA instrumentation, level sensors, alarms, and run time meters to ensure reliable reporting of station operations.
- Perform thermographic scan of control panels, motors, and bearings with infrared camera.

Recordkeeping

All maintenance procedure are recorded on the pump station maintenance report form and turned into the maintenance supervisor for review. The supervisor will have the maintenance information entered into the eRPortal CMMS.

Safety

All safety rules and regulations must be followed when performing pump station maintenance. Development of a Safe Work Plan is required for major jobs. Use of lock out tag out procedures is required and confined space entry guidelines must always be followed. A review of the safety procedures is performed by the maintenance supervisor with all employees on a scheduled time frame.

3.4 Meter Calibration Schedule

The only meters installed in the City of Jackson wastewater pump stations are the run time meters on the pumps and the electric power meter installed by the electric utility. The run time meters are checked once per year as part of the annual inspection. None of the wastewater pump stations have flow meters except for the influent pump stations at the wastewater treatment plants. Calibration of these meters is addressed in a separate O&M report for the plants. Pump station flows are measured when needed using a drawdown test.

3.5 PM Scheduling

Preventative maintenance activities are scheduled in the eRPortal CMMS as defined by the UWS-MS Maintenance Manager and Maintenance Planner. An example pump station inspection schedule is shown on **Figure 3-2**.

An example Work Order for the monthly PM inspection that is performed on each pump station is shown on **Figure 3-3**. Upon completion of the inspection, a corrective maintenance work order is issued if a repair is needed.

Figure 3-2
Pump Station PM Schedule

<u>Preventative Maintenance Summary by Asset</u>						
Report Filters: DivisionID = LS						
PM#	Frequency	Est Hours DueDat	Craft	WOType	PMNotes	
Asset: LS01-AMANDA-LANE - LIFT STATION			Department: LS01 - Amanda Lane			
2069	365 Days	2.00	12/28/2013	M - Maintenance	2 - PM	Lift Station Pump Inspection - Annual
2086	30 Days	0.20	07/03/2013	M - Maintenance	2 - PM	Lift Station Inspection (South) - Monthly
Asset Total:		2.20				
Asset: LS01-CNTR-PANEL - CONTROL PANEL			Department: LS01 - Amanda Lane			
2080	365 Days	1.00	02/01/2014	M - Maintenance	2 - PM	Thermography Inspection Lift Stations- Annual
Asset Total:		1.00				

eRPortal CMMS PM Scheduler

Home | WO Finder | WO Entry | Work Order Calendar | Work Order Reports |

1 Day | 5 Work Week | 7 Week | 31 Month

Monday	Tuesday	Wednesday	Thursday	Friday	Sat/Sun
July 1	2	3	4	5	6
PM - SS-SAVANNA-ST. - Tom	PM - SS-SAVANNA-ST. - Tom	PM - LS01-AMANDA-LANE -	PM - LS68-SHORT-AVE. - Bar	PM - LS86-WESTSIDE-3 - Carl	PM - SS-SAVANNA-ST. - Tom
PM - SS-BELT-PRESS-2 - To	PM - SS-BELT-PRESS-2 - To	PM - LS03-BROOK-HOLLOW-	PM - LS69-SIWELL-1 - Barry	PM - LS87-WESTSIDE-4 - Carl	7
PM - SS-BELT-PRESS-3 - To	PM - SS-BELT-PRESS-3 - To	PM - LS04-BROOK-HOLLOW-	PM - LS71-STRATFORD - Bar	PM - LS88-WESTSIDE-5 - Carl	PM - SS-SAVANNA-ST. - Tom

Asset
Craft
Assigned To

Asset Class
Division
Department

☒ Completed
☒ PM's
☒ Fixed Duration
0 Hours

Done

Trusted sites 100%

Figure 3-3
Pump Station Inspection Work Order

Work Order Worksheet											
W.O. # 306346											
<div style="display: flex; justify-content: space-between;"> <div> <p>Status: Assigned</p> <p>Due Date: 06/03/2013</p> <p>Requested By: Eddy Russell</p> <p>Assigned To: Barry Washington</p> <p>W.O. Type: PM</p> <p>Craft: Maintenance</p> <p>Estimate: 0.20</p> </div> <div> <p>Date Loaded: 06/02/2013</p> <p>Created By: System Administrator</p> </div> <div> <p>PM #: 2086</p> <p>Date Started: 06/02/2013</p> </div> <div> <p>Date Completed:</p> <p>Priority : 3</p> </div> </div>											
Asset Information											
<p>Division : LS - Lift Stations</p> <p>Department : LS01 - Amanda Lane</p> <p>Asset Code : LS01-AMANDA-LANE - LIFT STATION</p> <p>Location : AMANDA LANE</p>		<p>Asset ID : 10001</p> <p>Supervisor :</p> <p>Equip ID : LS01- AMANDA LANE</p>									
<p>Notes: Lift Station Inspection (South) - Monthly</p>											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%; text-align: left; padding: 5px;">Procedure</th> <th style="width: 40%; text-align: left; padding: 5px;">Time</th> </tr> </thead> <tbody> <tr> <td colspan="2" style="padding: 5px;"> <p>Lift Station Inspection (South) - Monthly</p> </td> </tr> <tr> <td colspan="2" style="padding: 5px;"> <p>Notes:</p> <ol style="list-style-type: none"> 1. Test Alarm System (Panel Light, SSO Monitor) 2. Exercise & Inspect Check Valves 3. Exercise & Inspect Isolation Valves 4. Blow lines out on bubbler systems 5. Inspect wet well for excessive grease build-up, loose guide rails. 6. Clean floats as needed. 7. Check pumps for proper operation 8. Check controls for proper operation (starters, overloads, alternating relay, phase monitor) 9. Clean station grounds </td> </tr> </tbody> </table>				Procedure	Time	<p>Lift Station Inspection (South) - Monthly</p>		<p>Notes:</p> <ol style="list-style-type: none"> 1. Test Alarm System (Panel Light, SSO Monitor) 2. Exercise & Inspect Check Valves 3. Exercise & Inspect Isolation Valves 4. Blow lines out on bubbler systems 5. Inspect wet well for excessive grease build-up, loose guide rails. 6. Clean floats as needed. 7. Check pumps for proper operation 8. Check controls for proper operation (starters, overloads, alternating relay, phase monitor) 9. Clean station grounds 			
Procedure	Time										
<p>Lift Station Inspection (South) - Monthly</p>											
<p>Notes:</p> <ol style="list-style-type: none"> 1. Test Alarm System (Panel Light, SSO Monitor) 2. Exercise & Inspect Check Valves 3. Exercise & Inspect Isolation Valves 4. Blow lines out on bubbler systems 5. Inspect wet well for excessive grease build-up, loose guide rails. 6. Clean floats as needed. 7. Check pumps for proper operation 8. Check controls for proper operation (starters, overloads, alternating relay, phase monitor) 9. Clean station grounds 											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%; text-align: left; padding: 5px;">Item</th> <th style="width: 55%; text-align: left; padding: 5px;">Description</th> <th style="width: 15%; text-align: left; padding: 5px;">Qty Needed</th> <th style="width: 15%; text-align: left; padding: 5px;">Qty Issued</th> </tr> </thead> <tbody> <tr> <td style="height: 40px;"></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Item	Description	Qty Needed	Qty Issued				
Item	Description	Qty Needed	Qty Issued								

3.6 Predictive Maintenance

In addition to normal PM, UWS-MS also performs certain predictive maintenance activities. An example is the annual thermographic inspection of the lift stations as shown on **Figure 3-4**. Thermographic inspection involves infrared scanning of electrical control panels and motors (as well as other components such as pump bearings) to detect heat buildup. If a hot spot is identified and determined to be excessive, required corrective maintenance will be scheduled.

Figure 3-4
Pump Station Predictive Maintenance
Thermographic Inspection of Electrical Components

Home | WO Finder | WO Entry | Work Order Calendar | Work Order Reports |

Help

PM Master

P.M. 2080

Estimate(Hours) 1.00

Shift

Craft M - Maintenance

RequestedBy System - System

W.O. Type 2 - PM

Auto Assign To WWilson - Willie Wilson

☐ Rotate

Description Thermography Inspection Lift Stations- Annual

Assets and Trigger Info

Procedures

Parts

Months / Days

Activity Tab

+

×

Description	ID	P
Thermography Inspection - Annual	3080	

Predictive Maintenance

Use infrared camera to identify hot spots in the control panel and/or motors.

Save

Copy

Return



Control Panel Thermography Inspection Results

3.7 Electrical PM Activities

UWS-MS has implemented both preventative maintenance and predictive maintenance procedures for pump station electrical systems and equipment. Electrical preventative maintenance is performed as a normal part of the scheduled pump station inspections. In general, electrical preventive maintenance performed by the UWS-MS O&M staff includes the following:

- Inspection of electrical service.
- Control panel inspection, cleaning and testing.
- Motor Inspection to check connections, vibration, temperature and lubrication.
- General electrical system inspection at each station.

The electrical PM schedule is listed on **Table 3-1**.

Table 3-1
Pump Station Electrical Maintenance Schedule

Equipment	Activity	Activity Type	Required Frequency
Lighting	Check operation	GI	W
	Clean	PM	A
	Relamp	PM	A
Control Panels	Check operation	GI	W
	Inspect motor starters	PM	M
	Inspect overloads	PM	M
	Inspect alternating relay	PM	M
	Inspect phase monitor	PM	M
Motors	Check condition	GI	A
	Inspect electrical connections	GI	A
	Check current & voltage by phase	GI	A
	Check alternating pump operation	GI	M
Gauges/Meters	Check operation	GI	W
	Recalibrate	PM	A
Level Control - Floats	Clean floats	PM	M
	Test level alarm	PM	M
	Check SSO alarm	PM	M

GI = General Inspection
PM = Preventative Maintenance
W = Weekly
M = Monthly
A = Annually

3.8 Mechanical PM Activities

Preventive Maintenance of mechanical systems and equipment is also performed as part of the normal pump station inspection activities. Mechanical PM instructions are developed based on equipment manufacturer O&M recommendations and procedures, any specialized requirements of individual pump stations, and knowledge of the UWS-MS O&M staff. Pump station mechanical PM includes the following (where applicable):

- Pulling and inspecting submersible pumps
- Pump drive maintenance and coupling alignment
- Pump testing
- Valve exercising and maintenance
- Air compressor maintenance

Table 3-2 lists scheduled mechanical maintenance activities.

Table 3-2
Pump Station Mechanical Maintenance Schedule

Equipment	Activity	Activity Type	Required Frequency
Air Compressor	Check operation	GI	W
	Clean inlet filter	GI	W
	Drain condensate	GI	M
	Check oil level	GI	M
	Clean exterior	GI	A
	Check belt tension	GI	M
	Operate safety valve	GI	M
	Tighten bolts	GI	M
	Change oil	PM	M
	Inspect compressor valves	PM	M
	Lubricate motor bearings	PM	M
Level Control - Bubblers	Check operation	GI	W
	Clean out airline	GI	W
	Replace airline	PM	A
Couplings	Check operation	GI	W
	Lubricate	PM	M
Pumps - Submersible	Pull and inspect	PM	A
Pumps - Dry Pit	Check operation	GI	W
	Check packing/seals	GI	W
	Lubricate bearings	GI	M
	Inspect belt/sheaves	GI	M
	Check for vibration	PM	M

Valves - Air Relief	Inspect and clean	GI	M
Valves - Check	Lift arm to check operation	GI	M
Valves - Isolation	Exercise	PM	M
	Inspect packing seals	PM	A

GI = General Inspection

PM = Preventative Maintenance

W = Weekly

M = Monthly

A = Annually

3.9 Physical PM Activities

This PM component addresses maintenance requirements for physical facilities, consisting of piping, vaults, covers, buildings, other structures, and site improvements. The physical maintenance activities are listed on **Table 3-3**.

Table 3-3
Pump Station Physical Maintenance Schedule

Item	Activity	Activity Type	Required Frequency
Building	Check locks	GI	M
	Check lights	GI	M
	Check doors	GI	M
	Perform housekeeping	GI	M
	Perform grounds maintenance	GI	M
	Inspect walls, roofs, and slabs	GI	A
	Check paint condition	GI	A
	Inspect windows	GI	A
	Inspect fencing	GI	A
Wet Well	Inspect covers and locking device	GI	W
	Check for cracks or settling	PM	A

GI = General Inspection

PM = Preventative Maintenance

W = Weekly

M = Monthly

A = Annually

During any of the periodic pump station inspections where preventative maintenance is performed, any repairs required to electrical, mechanical, or physical facilities will be noted. A corrective maintenance work order will then be issued as described in the following section.

4.0 Pump Station Corrective Maintenance

A good preventative maintenance program will minimize equipment malfunctions that result in the need for unscheduled repairs, referred to as corrective maintenance¹. In general, maintenance costs as well as environmental damage are reduced with a good PM program, as described in Section 3. Procedures used by the City of Jackson to perform corrective maintenance, when it is required, are described in this section.

4.1 Pump Station Evaluations

Pump Station Condition Assessment

Repairs needed at the City's 98 pump station have been identified, and those pump stations requiring repairs have been placed into a repair program. Repair needs were determined as part of a Lift Station Condition Assessment Report prepared by UWS-MS in December 2013. This list of needs was then prioritized and a schedule for completing the repairs was developed. As part of the repair program, funding needed to complete the repairs is included in the O&M budget submitted annually by UWS-MS.

Repair or Replace Decision

For each major item of equipment requiring repair, a decision is first made whether to perform the repair or replace the item with new equipment. UWS-MS has developed a standard procedure that is used in evaluating whether to repair or replace the equipment. The UWS-MS decision criteria used are:

- Utilize eRPortal CMMS to review equipment maintenance history.
- Consider age, number of failures, maintenance labor hours expended, and past costs associated with equipment repairs.
- Consider availability and lead time for replacement parts.
- If size is less than 5 HP, the pump and motor should be replaced.
- If above guidelines suggest that repair may be a good option then request quotes for repair as well as replacement.
- If repair cost is more than 50% of the replacement cost, estimate the years of useful life for the repair and replace options. Determine the annual cost for each option using the available quotes and select the lowest annual cost option.
- If repair cost is less than 50% of the replacement cost, proceed with repair.

4.2 Pump Station Repair Needs

Based on the pump station condition assessment, it was determined that some level of repair was required at 42 of the 98 pump stations. UWS-MS staff has completed repairs to 33 of the stations as summarized on **Table 4-1**.

¹ 'Reactive maintenance' is the term used in the Consent Decree.

Table 4-1
Pump Station Repairs Completed

PS No.	Name	Repairs Completed
4	Brookhollow #3	Repaired pump base & guide rails; replaced control panel; reinstalled Pump #2
5	Brookhollow #4	Installed alarm indicator light fixture
6A	Brookwood Estates	Replaced pump guide rails and lifting chain
6B	Brookwood Place	Replaced security fencing
7	Cedar Hills #1	Station totally renovated and converted to submersible pumps
8	Cedar Hills #3	Reinstalled Pump #1 suction piping
9	Chasewood	Replaced pump guide rails and lifting chain
13	Duranville	Replaced pump guide rails and lifting chain
15A	I-55 Frontage Road	Repaired pump guide rails; purchased spare pump
17	Flag Chapel #1	Replaced wet well components
19	Forest Avenue	Replaced control panel and service pole
20	Forest Hills #1	Pump station replaced
23	Greenwing	Rehabilitated entire station
28	Lakeshore D	Replaced pump guide rails
31	Marshall	Reinstall Pump #2, replace pump guide rails, lifting chain, and control panel
33	Mayfair #3	Installed new control panel
35	McCluer #2	Rehabilitated entire station
36	McCluer #3	Replaced guide rails, lifting chain, and control panel
39	McRaven #1	Installed new control panel
46	North Colony	Installed new control panel
50	Pattan	Replaced control panel and service pole
51	Plantation Court	Replaced wet well components
55	River Thames #2	Installed new control panel
56	Robinson Road	Installed new control panel
57	Scottsdale #1	Purchased spare pump
59	Sheffield	Installed new control panel
64	Siwell Road #1	Replaced pump bases, guide rails, and control panel
76	Westside #1	Installed new control panel
78	Westside #3	Installed new control panel, replaced security fencing, purchased spare pump
79	Westside #4	Installed spare pump, repaired guide rails, replaced control panel
80	Westside #5	Purchased 2 replacement pumps, repaired guide rails and influent gates
84	Whitehall	Replaced guide rails and lifting chain
93	Presidential Hills	Replaced motor on Pump #1

Remaining pump station repair needs are listed on **Table 4-2** together with the proposed date that the repairs will be completed.

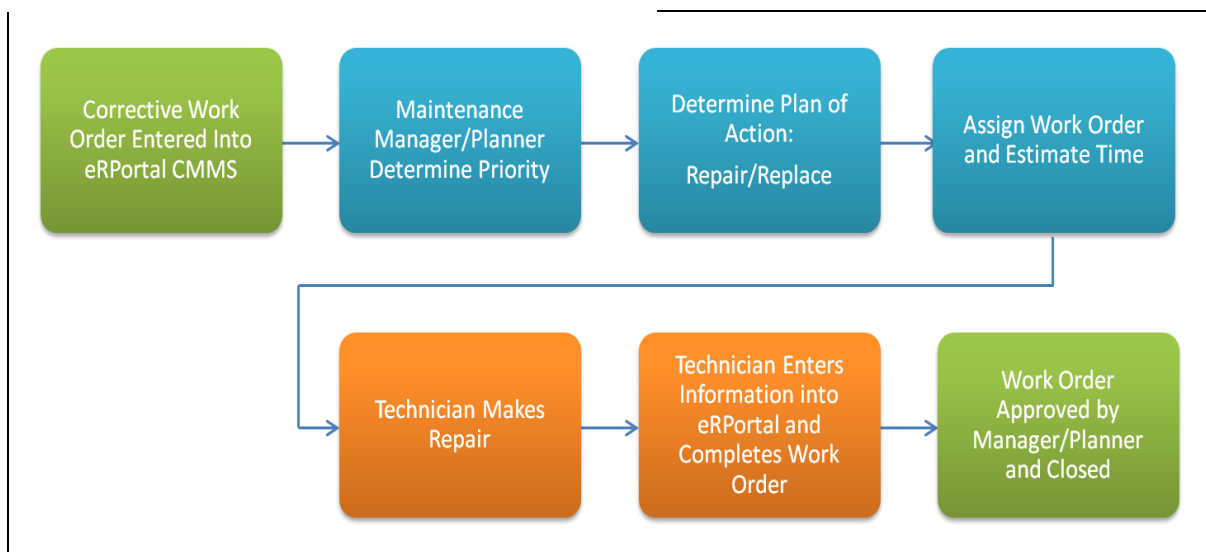
Table 4-2
Pump Station Repairs Required

PS No.	Name	Repairs Required	Proposed Completion Date
5	Brookhollow #4	Replace control panel	10/1/14
6A	Brookwood Estates	Replace control panel	10/1/14
6B	Brookwood Place	Replace control panel	10/1/14
19	Forest Avenue	Replace wet well components	10/1/14
26	Lakeshore B	Replace pump guide rails	10/1/14
27	Lakeshore C	Replace pump guide rails	10/1/14
82	Westside #7	Replace control panel	10/1/14
75	Western Hills	Rehabilitate entire station	10/1/15
86	Windsor Forest #1	Rehabilitate entire station	10/1/15

4.3 Corrective Maintenance Work Order Procedure

When corrective maintenance needs are identified, a Work Order is entered into the eRPortal CMMS by the O&M staff. Execution of the Work Order then follows the procedure outlined on **Figure 4-1**.

Figure 4-1
Corrective Maintenance Work Flow



4.4 Pump Station Maintenance Documentation

Maintenance Tracking System

Pump station inspection and maintenance activities are documented using the eRPortal CMMS work order system as described in Section 2. The CMMS provides standard forms for maintenance tracking and record keeping. All work orders are labeled as either preventative, predictive, or corrective. As pump station inspection and maintenance activities are completed by the O&M crews and results entered into eRPortal, a work order completion log is generated. Additionally, a monthly lift station report is prepared by the lead pump station maintenance technician and submitted to the Maintenance Manager. The manager reviews the reports, confirms that any needed maintenance activities are being addressed, and makes any necessary adjustments. The Maintenance Manager is responsible for tracking required maintenance or repair activities until the associated work is successfully completed.

Through querying eRPortal, maintenance staff also track performance measures.

Performance Measures

The following Performance Measures are used by the City of Jackson/United Water to measure the performance and success of the pump station preventative maintenance programs:

- Number of pump station SSOs.
- Number of pump station unscheduled maintenance activities.

The principal performance measure used to gauge success of the pump station maintenance program is the number of SSOs that occur at pump stations. All pump stations generate an alarm when high water occurs in the wet well and maintenance staff is dispatched immediately to address the problem. If an SSO occurs at the pump station, an SSO report form is filled out and the SSO is reported to the Mississippi Department of Environmental Quality as required. It is a primary goal of the O&M staff to prevent pump station SSOs by following the robust Preventative Maintenance program described in this report. SSOs are tracked and reported as shown on **Figure 4-2** and **Figure 4-3**.

A secondary performance measure is the number of unscheduled corrective maintenance activities required due to equipment malfunctions or other reasons. While some corrective maintenance cannot be avoided, it is the goal of the maintenance staff to maintain the equipment in a good operating state by following the PM programs and minimize required corrective maintenance.

Figure 4-2
Pump Station SSO Volumes

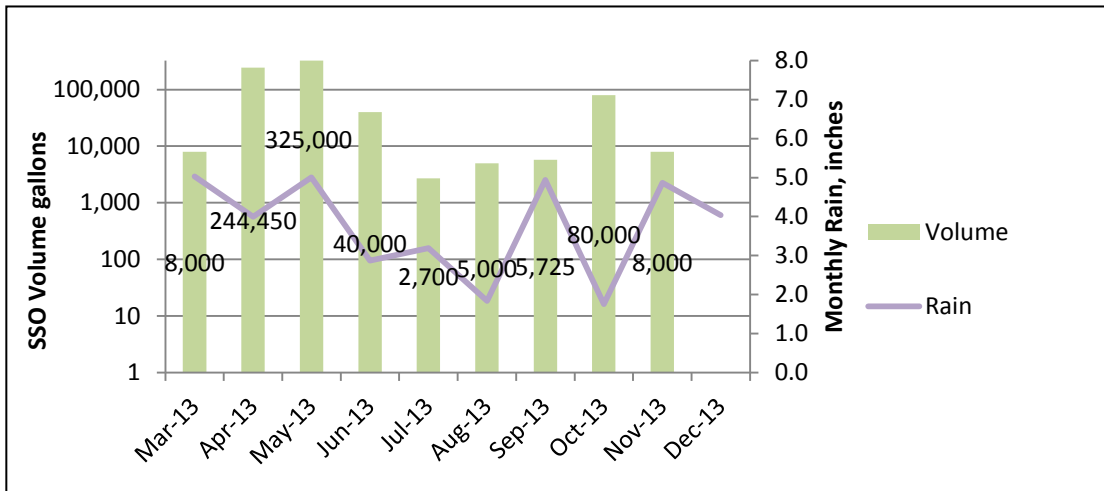
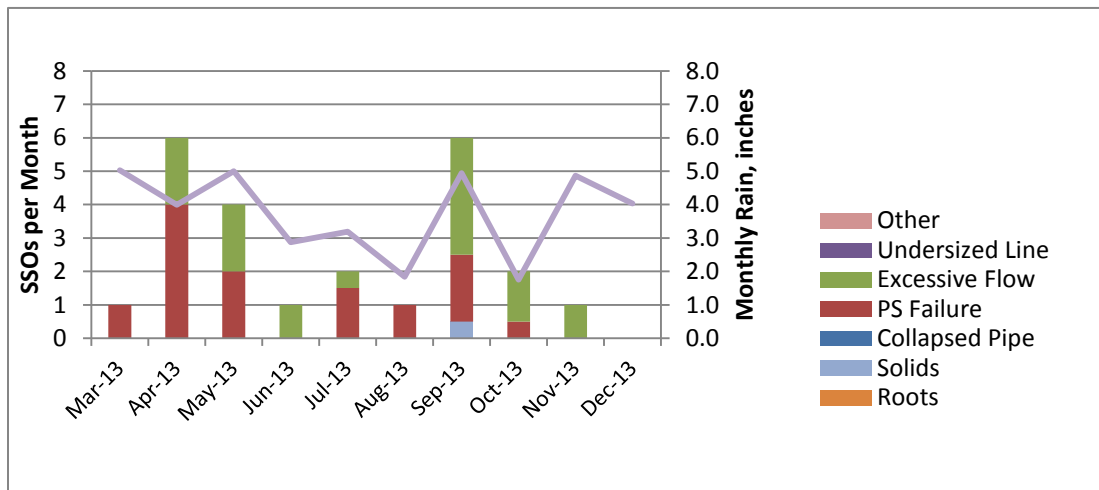


Figure 4-3
Pump Station SSO Events by Cause



**EPA Comments on Preventative
Maintenance Plan**

City of Jackson Response to EPA Comments

EPA PM Plan Approval Letter



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

APR 25 2014

CERTIFIED MAIL 7012 1010 0002 0759 6823
RETURN RECEIPT REQUESTED

RECEIVED

APR 30 2014

OFFICE OF THE CITY ATTORNEY

City of Jackson
Attn.: The Honorable Charles Tillman
Acting Mayor, City Hall
219 South President Street
Jackson, Mississippi 39205

Re: Pump Station Preventative Maintenance Program
City of Jackson, Mississippi Consent Decree
Case No.: 3:12-cv-790 TSL-JMR

Dear Mayor Tillman:

The U.S. Environmental Protection Agency Region 4 has consulted with the Mississippi Department of Environmental Quality (MDEQ) upon reviewing the City of Jackson's (the City) Pump Station Preventative Maintenance Program dated March 7, 2014, pursuant to Section V. of the subject Consent Decree above. The EPA and the MDEQ have identified the following questions and issues needing additional clarification.

Pump Station Preventative Maintenance Program Comments

1. Section 2.3 (4th bullet; page 2-7): This bullet states that "the CMMS and SCADA interface can allow run-time based Preventative Maintenance work order triggers." Does the City/United Water actually use this interface (if so, please be more definitive)? In addition, the same bullet states that "the SCADA interface can generate condition and/or predictive based work orders based on sensors (vibration, temperature or pressure) or equipment usage being monitored." How many pump stations have these sensors (by sensor type) and how many pump stations have equipment usage monitors on SCADA?
2. Section 3.3 (Weekly Inspections; page 3-2): It is stated that "Additional routine inspection and maintenance activities may be identified for individual pump stations based on the observations and experience of the O&M staff." Are these additional daily/weekly activities outlined on individual pump station inspection forms? If so, please provide an example.
3. Section 3.8 (Mechanical PM Activities; page 3-10): It is stated that "Mechanical PM instructions are developed based on equipment manufacturer O&M recommendations and procedures, any specialized requirements of individual pump stations, and knowledge of the UWS-MS O&M staff." Are the additional mechanical PM instructions or requirements for a specific pump station loaded into CMMS or is there a separate O&M checklist for that specific pump station (or, in the alternative, a specific Standard Operating Procedure for that pump station)? If so, please provide an example.

4. Table 4-2 (page 4-3): Please ensure that updates on the progress of implementing the required repairs are included in the Semi-Annual Reports.

The EPA will approve the Pump Station Preventative Maintenance Program pending a timely and complete response to the above comments. Please respond in writing within 30 days of receipt of this letter. If you should have any questions regarding the above comments, please contact Mr. Brad Ammons at (404) 562-9769 or via email at ammons.brad@epa.gov.

Sincerely,



Maurice L. Horsey, IV, Chief
Municipal & Industrial Enforcement Section
Clean Water Enforcement Branch

cc: Mr. Les Herrington, P.E.
Mississippi Department of Environmental Quality

→ Mr. Terry Williamson
City of Jackson

Mr. Willie Bell
City of Jackson

Department of Public Works



200 South President Street
Post Office Box 17
Jackson, Mississippi 39205-0017

May 27, 2014

Mr. Maurice L. Horsey, IV, Chief
Municipal & Industrial Enforcement Section
Clean Water Enforcement Branch
Region IV, U.S. Environmental Protection Agency
61 Forsyth Street
Atlanta, GA 30303-8960

Re: Pump Station Preventative Maintenance Program Comments
City of Jackson, Mississippi Consent Decree
Case No.: 3:12-ev-790 TSL-JMR

Dear Mr. Horsey:

We are in receipt of your letter of April 22, 2014 providing review comments for the subject document. A response to each review comment is provided below.

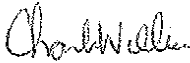
1. Section 2.3 (4th bullet: page 2-7) – While the eRPortal Computerized Maintenance Management System can generate PM Work Orders based on run times, this feature is not currently being utilized by United Water. At this time PM is performed on a calendar schedule. Also, while the eRPortal CMMS can generate work orders based on sensor readings, this feature is not currently being used. No pump station sensors are currently connected to SCADA other than high water alarms. Future upgrades or improvements in pump station SCADA capabilities may be implemented if warranted by the pump station condition evaluations that will be performed as described in the *Sewershed Evaluation Plan*.
2. Section 3.3 (Weekly inspections, page 3-2) – While some pump stations may be inspected more often than weekly, these additional visits are not specifically outlined on the inspection form. Stations requiring more frequent inspections vary over time and generally relate to short-term operational problems being experienced. A few of the stations, such as Westside #5, are more prone to overflows and thus are routinely checked more often than weekly. However, this enhanced pump station inspection procedure is informal in nature. The inspection and inspection results are recorded in the daily log of the visiting operator.
3. Section 3.8 (Mechanical PM Activities, page 3-10) – Additional PM instructions for certain individual pump station are not formally documented. These requirements tend to be rather minor in nature and are communicated to O&M staff through their normal on-the-job training regimen.

Mr. Maurice L. Horsey, IV, Chief
May 27, 2012
Page 2

4. Table 4.2 (page 4-3) – Progress on completing required pump station repairs will be included in the Semi-Annual Reports, as requested.

We have implemented the Pump Station Preventative Maintenance Program in accordance with the report submitted. If you have any additional questions or require more information please let us know.

Sincerely,



Charles Williams, Ph.D., P.E.
Interim Director
Department of Public Works

Enclosure

cc: Mr. Les Herrington, P.E.
Mississippi Department of Environmental Quality

Mr. Terry Williamson, Legal Counsel
City of Jackson Department of Public Works



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

ATLANTA FEDERAL CENTER

61 FORSYTH STREET

ATLANTA, GEORGIA 30303-8960

JUN 17 2014

CERTIFIED MAIL 7012 1010 0002 0759 6090

RETURN RECEIPT REQUESTED

City of Jackson

Attn.: The Honorable Charles Tillman

Acting Mayor, City Hall

219 South President Street

Jackson, Mississippi 39205

Re: Approval of the West Bank Interceptor Work Plan; the Sewershed Prioritization Work Plan; the Sewershed Evaluation Plan; the Pump Station Operations Program and the Pump Station Preventative Maintenance Program

City of Jackson, Mississippi Consent Decree

Case No.: 3:12-cv-790 TSL-JMR

Dear Mayor Tillman:

On behalf of the U.S. Environmental Protection Agency Region 4 and the Mississippi Department of Environmental Quality, the EPA has reviewed the responses to comments on the following submittals: (1) the West Bank Interceptor (WBI) Work Plan; (2) the Sewershed Prioritization Work Plan; (3) the Sewershed Evaluation Plan (SEP); (4) the Pump Station Operations Program (PSOP) and (5) the Pump Station Preventative Maintenance Program (PSPMP) for the City of Jackson (Jackson) all dated May 27, 2014. The EPA hereby approves the revised WBI Work Plan, the revised Sewershed Prioritization Work Plan, the revised SEP, the revised PSOP and the revised PSPMP.

Jackson shall place all documents related to the above submittals in the Public Document Repository. In addition, Jackson shall implement the above revised Work Plans, Plans and Programs in accordance with each revised submittal. Finally, Jackson shall certify the status of the implementation of each Work Plan, Plan or Program, including its completion, in the Semi-Annual Report or Annual Report pursuant to Section IX of the subject Consent Decree.

RECEIVED

JUN 19 2014

OFFICE OF THE CITY ATTORNEY

Please contact Mr. Brad Ammons at (404) 562-9769 or via email at ammons.brad@epa.gov, if you have any questions.

Sincerely,

A handwritten signature in dark ink, appearing to read "Maurice L. Horsey, IV". The signature is fluid and cursive, with the last name "Horsey" being particularly prominent.

Maurice L. Horsey, IV, Chief
Municipal & Industrial Enforcement Section
Clean Water Enforcement Branch

cc: Mr. Les Herrington, P.E.
Mississippi Department of Environmental Quality

Mr. Terry Williamson
City of Jackson

Mr. Charles Williams, Ph.D., P.E.
City of Jackson