Department of Public Works

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

Tony Yarber
Mayor of the City of Jackson

May 30, 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
Wastewater Treatment Plant Operations and Maintenance Program

Dear Gentlemen:

Attached, please find the City of Jackson's Wastewater Treatment Plant Operations and Maintenance Program. This program was developed and submitted by the City of Jackson in accordance with EPA Consent Decree dated March 1, 2013. Paragraph 42 of the Consent Decree requires the City to submit to EPA for review and approval a wastewater treatment plant operations and maintenance program.

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,

Tony T. Yarber, Mayor
City of Jackson Mississippi

Cc: Les Herrington, P.E., Mississippi Department of Environmental Quality
Gus McCoy, Chief Administrative Officer, City of Jackson
Monica Joiner, City Attorney, City of Jackson
Charles Williams, PhD., P.E., Interim Director, Department of Public Works, City of Jackson
Mary Carter, Deputy Director of Public Works, City of Jackson
Terry Williamson, Legal Counsel, City of Jackson
Public Depository, Eudora Welty Public Library

The City of JACKSON

Wastewater Treatment Plant Operations and Maintenance Program



Department of Public Works
Wastewater Infrastructure Redevelopment Program

May 31, 2014

WAGGONER
WEI/AJA, LLC

City of Jackson
Wastewater Infrastructure Redevelopment Program

Wastewater Treatment Plant Operations and Maintenance Program

May 31, 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
Savanna Street Wastewater Treatment Plant
Comprehensive Performance Evaluation

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 Williams

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

5/28/14

Date

Wastewater Treatment Plant
Operations and Maintenance Program

Contents

List of Tables

Table

List of Figures

Figure

Appendix

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 treatment facilities. This report describes the ***Wastewater Treatment Plant Operations and Maintenance Program*** used by the City and its contract operator, United Water Services Mississippi, LLC (UWS-MS). The report fulfills the requirements set forth in Consent Decree § VI (D)-42.

1.1 Consent Decree Requirements

As stated in the Consent Decree, the Wastewater Treatment Plant (WWTP) Operations and Maintenance Program shall contain the following, at a minimum:

1. Equipment, Parts, and Material Inventory. The City shall inventory its WWTPs' operating equipment and materials and evaluate the impacts of the loss of use or failure of each major system component. The City shall develop an inventory control system which shall have the capability of tracking spare parts use and inventory, as well as generating inventory replenishment needs reports. The City's inventory control system shall also include the following elements:

    1) Prioritization of WWTP components as critical, semi-critical, or noncritical which shall allow the City to focus its maintenance capabilities and spare parts inventories on the WWTP components and potential failures that would have the greatest impact on treatment capacity, Prohibited Bypassing, and NPDES Permit compliance.

    2) Identification of critical spare parts and materials, and procedures to ensure that these parts and materials are stored and maintained in inventory at the WWTP.

    3) A list of where the remaining spare parts may be secured to enable the repair or replacement of such equipment in a minimum amount of time and to ensure proper operation of the WWTP.

    4) Tracking of spare parts use and inventory, as well as generating inventory replenishment needs reports.

2. Sludge Processing and Removal. Not inconsistent with the requirements of the MDEQ Agreed Order I, the maintenance program shall include sludge removal procedures, schedules, and standard practices for the WWTPs and from any storage lagoons, wet weather storage cells, equalization ponds, or any other wet weather storage facility that is, or is planned for use by, a WWTP.

3. Preventive Maintenance. The City shall develop and implement a preventive maintenance system for the WWTPs to ensure that preventive and corrective

maintenance is conducted and that equipment integral to proper operation and maintenance, treatment units, and tanks are maintained so as to achieve compliance with the NPDES permit. The preventive maintenance system shall include, at a minimum, the following:

1) Identification of equipment used in the treatment of wastewater liquids and biosolids.

2) Identification of the standard procedures to conduct preventive maintenance of such WWTP equipment.

3) Identification of the frequency and duration of preventive maintenance necessary to ensure that all WWTP equipment is maintained in such a way so as to achieve compliance with the NPDES permit.

4) Identification of the training and education required for maintenance personnel to perform the standard preventive maintenance procedures.

5) Procedures for recognition of indicators that corrective maintenance on WWTP equipment is necessary.

6) Procedures for the generation of work orders for preventive and corrective maintenance of WWTP equipment.

7) Procedures for the generation of purchase orders associated with preventive and corrective maintenance of WWTP equipment.

8) Examples of the types of reports and forms which will be used in implementing the preventive maintenance system.

9) A system for tracking preventive and corrective maintenance activities and histories including the generation of summary reports each month that identify major equipment failures occurring in the previous month and the end-of-month status of preventive and corrective maintenance work orders issued or outstanding in the previous month for equipment.

10) Procedures to ensure that failures of equipment and/or loss of power supply during abnormal and emergency conditions are corrected in a timely fashion so as to limit the downtime of the facility or component.

1.2 Report Organization

An overview of the City of Jackson wastewater treatment plants is given in Section 2, together with a general description of the United Water Services Mississippi, LLC operations and maintenance program. Section 3 describes the computerized maintenance management system software used by UWS-MS, and the associated equipment, parts, and materials tracking procedures. Section 4 describes new standard operating procedures developed for maintenance of the storm cells (equalization basins) at the Savanna Street WWTP to avoid excess sludge accumulation, and for maintaining proper sludge inventories within the main treatment plant unit processes. The WWTP Preventative Maintenance program is described in Section 5, including standard operating procedures and a summary of the qualifications and training requirements for O&M staff. Implementation of the program is discussed in Section 6.

2.0 Jackson Wastewater Treatment Plants

The City of Jackson operates three wastewater treatment plants (WWTPs). A brief description of each facility is provided below.

2.1 Savanna Street WWTP

The Savanna Street WWTP serves most of the population in the City together with flow from three satellite utility authorities. These contribute wastewater flow from western Rankin County, southern Madison County, and the Pearl River Valley Water Supply District (Barnett Reservoir area). The Savanna Street plant has a permitted capacity of 46 MGD summer and 60 MGD winter. Annual flows to the plant currently average about 45 MGD.

The Savanna Street WWTP is a conventional activated sludge facility without primary clarifiers. Flow is received through the 50-ft deep 96-in diameter West Bank interceptor. The West Rankin force main also discharges to the West Bank interceptor upstream of the influent pump station. Major unit processes are:

- Influent trash racks.
- Influent pump station.
- Headworks with two mechanically cleaned bar screens, two screenings compactors, two vortex grit removal units, two grit pumps, and two grit washing units.
- Bioselector basin to promote good sludge settling.
- Ten aeration basins with fine bubble tube diffusers, each 2.56 MG in volume.
- Aeration blower facility with four single stage blowers.
- Five 140-ft diameter secondary clarifiers.
- Two return sludge pump stations.
- Two waste activated sludge pumps.
- Chlorine storage and feeding equipment for disinfection.
- Chlorine contact channel.
- Sulfur dioxide storage and feeding equipment for dechlorination.
- Effluent pump station for use when river levels are high.
- Outfall to the Pearl River.
- Three excess flow equalization basins.
- Two aerobic digesters.
- Two gravity sludge thickeners.
- Thickened sludge holding tank.
- Three two meter width belt filter presses for sludge dewatering.

A schematic of the Savanna Street WWTP is shown in **Figure 2-1**. An aerial view of the plant is shown on **Figure 2-2**.

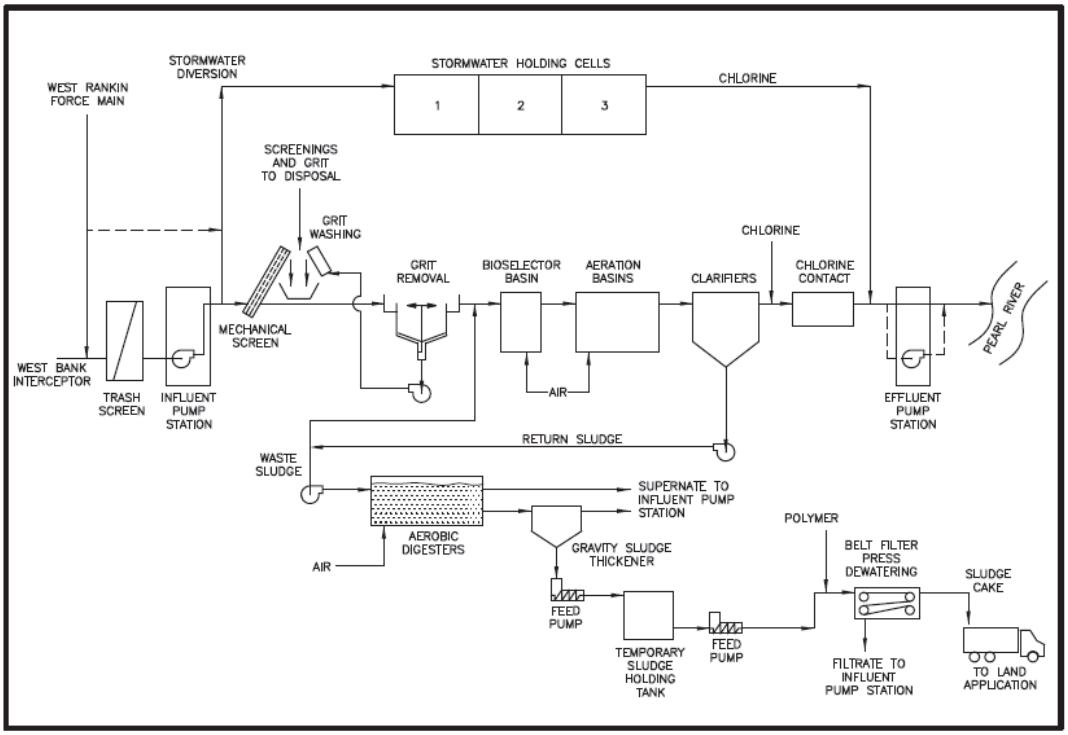


Figure 2-1
Savanna Street WWTP Schematic

Figure 2-2
Savanna Street WWTP Aerial View

2.2 Presidential Hills WWTP

The 0.75 MGD Presidential Hills WWTP was constructed as a conventional aerated lagoon system followed by effluent filtration and chlorine disinfection. A new sequencing batch reactor (SBR) treatment plant is nearing completion of construction and will startup in mid-2014. When the new plant is on-line the aerated lagoons will be used as flow equalization basins. The SBR was constructed in response to new, more stringent permit limits for nutrients. A process schematic of the new plant is shown on **Figure 2-3**.

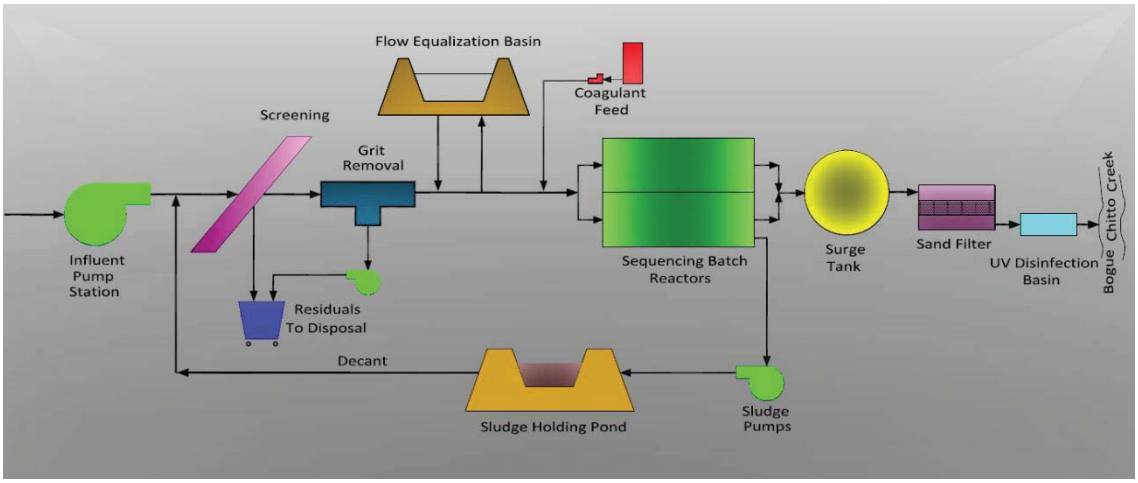


Figure 2-3
Presidential Hills WWTP Schematic

2.3 Trahon/Big Creek WWTP

The 4 MGD Trahon/Big Creek WWTP uses the oxidation ditch process. Principal unit processes are:

- Influent pump station
- Mechanical bar screens
- Aerated grit chamber with grease removal
- Two Carousel® oxidation ditches
- Two secondary clarifiers
- Chlorine contact basin
- Aerobic digestion

The plant does not have any on-site mechanical sludge thickening or dewatering capability. An aerial photo of the plant is shown on **Figure 2-4**.

Figure 2-4
Trahon/Big Creek WWTP

2.4 WWTP Contract Operations

The City of Jackson has contracted operation and maintenance of the wastewater treatment plants and all pump stations to United Water Services Mississippi LLC (UWS-MS). The company is a subsidiary of the global private O&M conglomerate, Suez Environnement. United Water has 2,350 employees in the U.S., operates 90 municipal systems, and is one of the largest private O&M companies. UWS-MS has 42 full time staff in Jackson to operate the City's wastewater treatment plants and pump stations.

3.0 Equipment, Parts and Material Inventory

A characteristic of a quality WWTP O&M program is a good system of managing the inventory of operating equipment, spare parts, and materials. A description of the inventory control system used by the City, through its professional contract operator UWS-MS, is described in this Section.

3.1 UWS-MS Operational Support Systems

United Water O&M staff employs several resources to manage inventories required in WWTP operations. These resources are briefly described below. **Table 3-1** defines some of the key elements and terminology used by UWS-MS in operating and maintaining the plants.

Oracle Enterprise Performance Management

UWS-MS uses an Oracle Enterprise Performance Management (EPS) system to provide integrated planning, analysis, accounting, and reporting tools to aid O&M staff in proper operation and management of their assigned facilities and systems. The Oracle EPS has computer modules that can assist with:

- Planning
- Budgeting
- Performance monitoring
- Progress tracking
- Communications management
- Scheduling and forecasting
- Cost management
- Reporting

The EPS is used in operation and management of all facilities assigned to UWS-MS, including the wastewater treatment plants.

eRPortal Asset and Maintenance Management System

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. The eRPortal software 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

Table 3-1

United Water Services Mississippi LLC

Savanna Street WWTP

OPERATIONS & MAINTENANCE GLOSSARY

ACRONYM / ABBREVIATION	DESCRIPTION
ACTION LOG	A document, which is an output from a meeting, that defines the action items that needs to be accomplished, who is responsible, and when it will be completed.
ASR	Area Status report. Weekly progress reports made by workstream leaders to the Project Manager
BACKLOG	The total open balance of a set of data. Sometimes refers to only the past due balance. i.e., The total # of work orders or labor hours, by craft, required to complete all outstanding work. May also be the total amount of unshipped orders, or outstanding PM's to be completed
CM	Corrective Maintenance
COUNTDOWN TO MILESTONES	Countdown to List of weekly scheduled activities, which are required Milestones
DAILY REVIEW MEETING	A review of the current days performance. Purpose is to review KPI's and develop action plans to improve performance
DMAIC	Design, Measure, Analyze, Improve, Control
DWOR	Daily/Weekly Operating Report- This departmental performance report is used to record the planned versus actual performance on a daily and weekly basis of the key performance indicators and is the source document used to generate improvement actions
EFFICIENCY	A measure of how the available resource is being used. Efficiency compares planned to actual hours for a job. (performance to a standard)
KPI	Key Performance Indicator - a means to measure the performance against a planned level of performance of an activity or process. Ex.-OEE, Backlog, Units Per Hour, % PM completed.
KPI TREE	The linking of Business imperatives throughout the organization. A KPI Tree cascades each of the desired outcomes to the lowest level for which a KPI can be managed.
MCRS	Management Control Reporting System is a closed-loop system, comprised of information, documents and meetings, which is used to deliver quantifiable business performance improvements
MILESTONES	Key deliverables of a project. Typically spaced in 8 week increments which defines the systems, tools, methods, and related improvements to be delivered by workstream
MWOR	Monthly, Weekly Operating Report. Key performance report used to assess current performance and implement Root Cause Corrective Actions. Reviewed during Management Review Meeting
NVA	Non Value Added - time which does not add value to a task and does not help us achieve our desired goal
PdM	Predictive Maintenance
PM	Preventive Maintenance - maintenance activity performed on a repetitive and scheduled calendar basis. PM is used to extend the life or maintain the effectiveness of an asset.
PROCESS MAPPING	Process mapping is a tool designed to map out systems and processes in order to clarify, train or improve business processes
WIP	Work in progress
WO	Work order. Vehicle used to assign work to an individual or a manufacturing order to replenish stock
WORK REQUEST	A work request is the first step in creating a work order. Once the work request is reviewed and approved it becomes a work order

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.

Operations Data Management

UWS-MS collects data from a variety of sources that is used to monitor and plan facility operations. These include instrumentation readouts delivered through SCADA, manually recorded data points collected by operators as part of daily operations, and analytical data generated by on-site and off-site laboratories. The operations data is managed locally using a custom designed Excel-based spreadsheet system.

3.2 Inventory Control

UWS-MS maintains a detailed inventory control system with the capability to track usage and determine replenishment needs. Complete inventories are kept of spare parts, materials, equipment, and some consumables. An example of the UWS-MS inventory master list is shown on **Table 3-2**.

Spare parts are managed using the eRPortal CMMS. **Figure 3-1** and **Figure 3-2** illustrate the inventoried parts, parts classification, and spare parts tracking reports maintained on eRPortal.

Separate records are kept of spare parts inventory quantity changes and maintenance activities performed, as shown on the Item Transaction Log Report (**Table 3-3**). Inventory change adjustments are tracked in more detail as shown on **Table 3-4.** Some of the inventory records kept are redundant and carry over from before eRPortal was implemented in 2011. Through these multiple inventory tracking methods, UWS-MS has a continuous accurate picture of the state of the current spare parts, materials, and equipment inventory. eRPortal is also used to generate automated item reordering requests when the quantity of the inventoried item falls below the "Must Have" quantity. An example of the item reordering screen from eRPortal is shown on **Figure 3-3**. A purchase order requisition is subsequently generated to replenish the item.

3.3 Vendor Services

UWS-MS maintains an up-to-date list of vendors and suppliers able to furnish all spare parts, materials, and equipment required by the plant. Complete records are kept on all vendors whose products and services are required to operate and maintain the plants. Having access to and good relations with a wide variety of outside vendors is an operational

necessity. Detailed vendor contact information is maintained on a master list as shown on **Table 3-5**. An excerpt from the Oracle Enterprise Performance Management system illustrating some of the vendor data recorded is shown on **Figure 3-4**. The UWS-MS vendor list is extensive, and as a result a wide variety of suppliers, repair service companies, and other businesses are available to provide any needed good or service required by the plants.

3.4 Management of Critical Spare Parts

A key concept in a strategic asset management program is the criticality of assets. Consequently, UWS-MS has a defined procedure for identification and tracking of critical plant components and equipment. The list of critical equipment is developed through analysis of probability and consequences of failure. This list is maintained and utilized by UWS-MS to effectively sustain the project assets.

Failure of critical equipment may result in a potential:

- Unsafe or hazardous work environment
- Environmental excursion or violation
- Contract compliance – Quality
- Contract compliance – Throughput
- Major cost impact
- Client community nuisance

Six different criticality ratings are used to prioritize WWTP components and potential failures that would have the greatest impact on treatment capability. These ratings are:

- CRITICAL/Emergency – Highest priority; break schedule for immediate repair
- CRITICAL/High Importance –Higher priority; break schedule for immediate repair
- CRITICAL/Significant – Higher priority; break schedule for immediate repair
- NONCRITICAL/Concern – Priority; begin repair work within 24 hours
- NONCRITICAL/Minor Impact – Lower priority; schedule to repair within a week
- NONCRITICAL/No impact – Lowest priority; schedule repair in next weekly commitment meeting

Each critical item is assigned an Importance Ranking and a Priority Ranking as shown on **Table 3-6**. For each critical component, the importance ranking is determined by considering potential impacts to safety, environment, quality, wastewater throughput, operations costs, and degree of nuisance. An excerpt from the critical equipment list for the Trahon-Big Creek WWTP showing the priority and ranking for each is given on **Table 3-7**. The status of critical equipment requiring maintenance action is tracked daily. An example of the Daily Critical Equipment Status Report is shown on **Table 3-8**. This report is used to insure that critical spare parts and materials are stored and maintained in inventory at the WWTP.

In summary, UWS-MS maintains a capable and efficient inventory management system. No changes appear to be required to the current inventory tracking system for equipment, materials, or critical spare parts.

Table 3-2
Jackson Wastewater Treatment Plants
Master Spare Parts and Equipment List

6/5/2013

Inventory Master List

Page 1 of 13

ItemNumber	Description	Product Class	Inv Class	Item Type	ListPrice	LastCost	AvgCost	On Hand	Last Cost Value	Avg Cost Value	Act
000003	UW 105 Oil Change	MISC	A	N	$39.76 EA	$39.7600 EA	$39.7600 EA	1.00	39.76	39.76	Y
000004	M&O Door Install	MISC	A	N	$5,344.65 EA	$5344.6500 EA	$5344.6500 EA	1.00	5344.65	5344.65	Y
BELT0002	54 inch drive belt for the effluent blowers	BELT	A	I	$0.00 EA	$7.2500 EA	$7.1843 EA	23.00	166.75	165.24	Y
BELT0003	Cedar Creek Netzsch Pumps	BELT	A	I	$27.50 EA	$27.5000 EA	$25.0000 EA	2.00	55.00	50.00	Y
BELT0003R	Cedar Creek Netzsch Pumps Re-Manufactured	BELT	A	I	$27.50 EA	$27.5000 EA	$25.0000 EA	0.00	0.00	0.00	Y
BELT0004	ICPS second Floor Vent Fan	BELT	A	I	$0.00 EA	$4.1500 EA	$4.1500 EA	4.00	16.60	16.60	Y
BELT0022	Bottom Belt 2.2x16.3	BELT	A	I	$1,890.00 EA	$1890.0000 EA	$1890.0000 EA	0.00	0.00	0.00	Y
BELT0023	Top Belt 2.0x15.7	BELT	A	I	$1,823.00 EA	$1823.0000 EA	$1823.0000 EA	1.00	1823.00	1823.00	Y
MISC	Misc. item	MISC	A	N	$0.00 EA	$0.0000 EA	$0.0000 EA	0.00	0.00	0.00	Y
PARTS0001	01-0849-72913 - ALLIS CHAL,MERS O RING	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	2.00	2.00	2.00	Y
PARTS0002	04050 - BEARINGS	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	4.00	4.00	4.00	Y
PARTS0003	0470568 - 1X.5 BUSHINGS	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	49.00	49.00	49.00	Y
PARTS0004	09078 - TIMKEN BEARINGS	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	4.00	4.00	4.00	Y
PARTS0005	09195 - BEARING	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	4.00	4.00	4.00	Y
PARTS0006	1 1/2" BALL VALVE - 1 1?2" PVC BALL VALVE	BLVLV	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	11.00	11.00	11.00	Y
PARTS0007	1" BALL VALVE - 1" PVC BALL VALVE	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	1.00	1.00	1.00	Y
PARTS0008	1/2" BALL VALVE - 1?2" PVC BALL VALVE	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	19.00	19.00	19.00	Y
PARTS0009	10653 - OIL SEAL	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	1.00	1.00	1.00	Y
PARTS0010	13092-1 - PM KIT	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	10.00	10.00	10.00	Y
PARTS0011	13159-1 - PM KIT	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	10.00	10.00	10.00	Y
PARTS0012	13671 - OIL SEAL	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	6.00	6.00	6.00	Y
PARTS0013	148151 - RETAINER	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	25.00	25.00	25.00	Y
PARTS0014	1-8427179 - EMERGENCY GENERATOR STRAINER	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	2.00	2.00	2.00	Y
PARTS0015	2 WAY VALVE - RAW SEWAGE FLOWMATCHER 2 WAY VALVE	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	2.00	2.00	2.00	Y
PARTS0016	20554 - OIL SEAL	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	1.00	1.00	1.00	Y
PARTS0017	20V3 - EMERGNECY GENERATOR BELT DRIVE	PARTS	A	I	$0.00 EA	$1.0000 EA	$1.0000 EA	1.00	1.00	1.00	Y

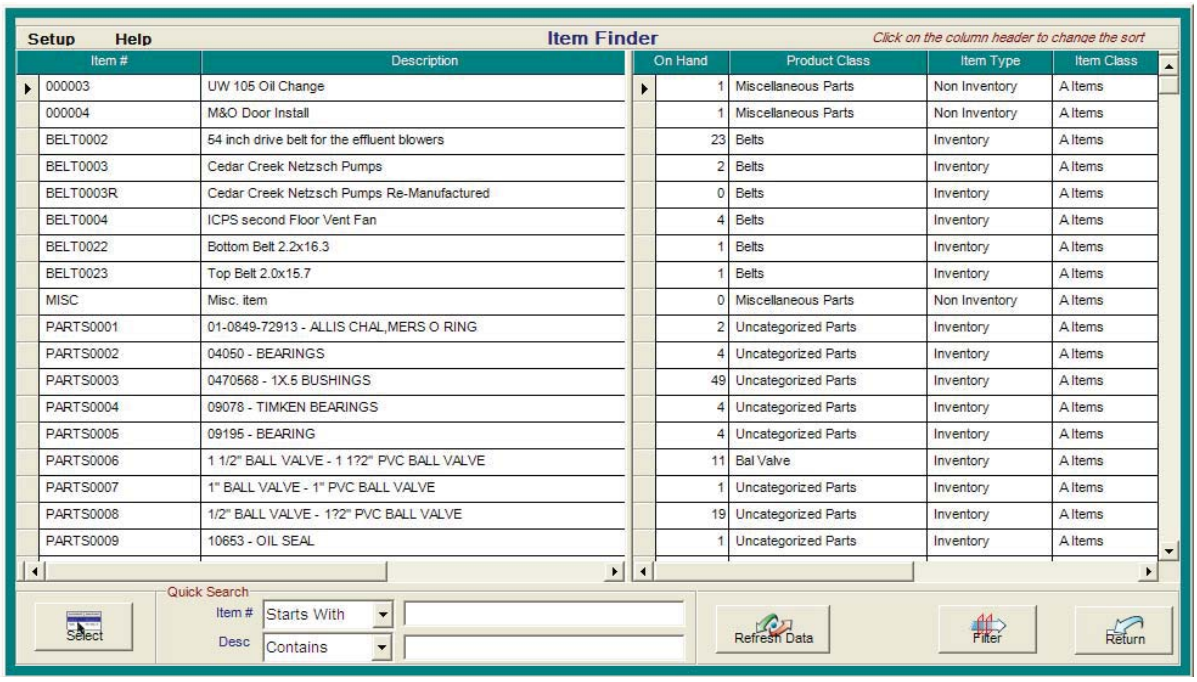


Figure 3-1
eRPortal CMMS Spare Parts Tracking

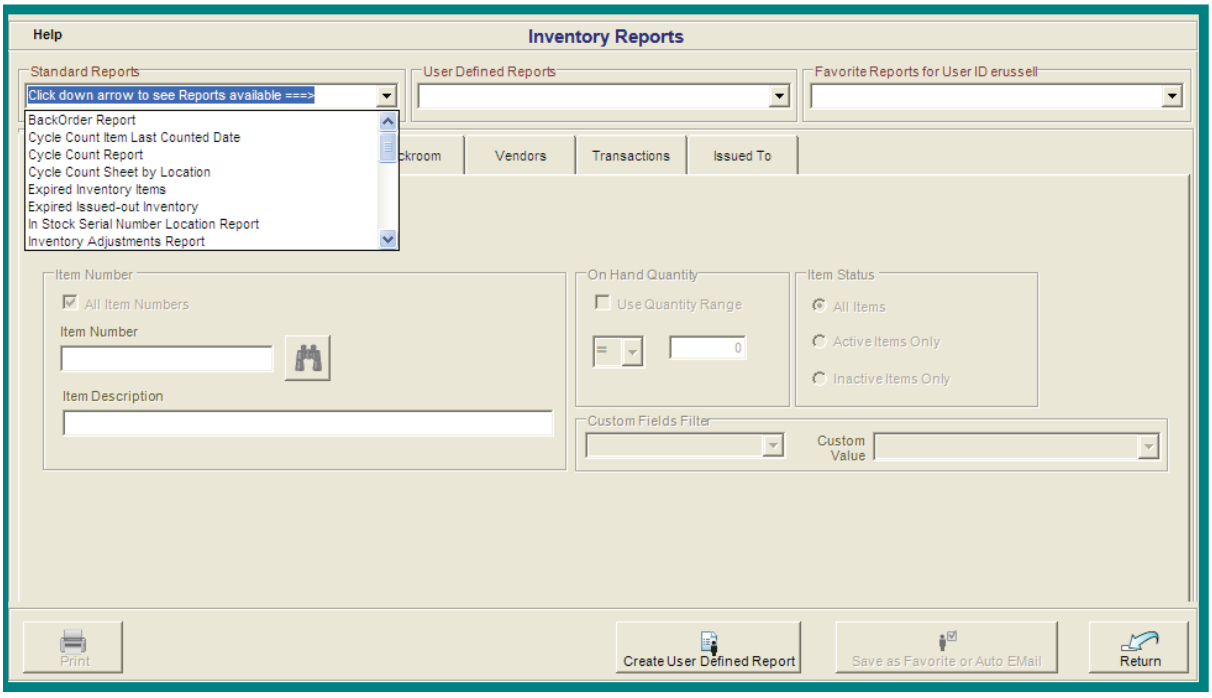


Figure 3-2
eRPortal CMMS Inventory Reports

Table 3-3

United Water Services Mississippi LLC
Savanna Street WWTP

Item Transaction Log Report

Report Filters: Active Items Only

Item Number	Date/Time	User ID	Order #	Description	Qty	On Hand
000003 UW 105 Oil Change						
	2/1/2013 4:14:52 PM	erussell		Create New Item		0.00
	2/1/2013 4:14:52 PM			Add Location Maint	1.00	1.00
	2/1/2013 4:14:53 PM	erussell		Item Restock Change	0.00	
	2/1/2013 4:17:36 PM		200309-1-1	New Issue Line	-1.00	1.00
000004 M&O Door Install						
	2/4/2013 2:26:36 PM	erussell		Create New Item		0.00
	2/4/2013 2:26:37 PM			Add Location Maint	1.00	1.00
	2/4/2013 2:26:37 PM	erussell		Item Restock Change	0.00	
	2/4/2013 2:28:47 PM		200310-1-1	New Issue Line	-1.00	1.00
BELT0022 Bottom Belt 2.2x16.3						
	2/1/2013 3:53:57 PM	erussell		Create New Item		0.00
	2/1/2013 3:53:58 PM			Add Location Maint	1.00	1.00
	2/1/2013 3:53:58 PM	erussell		Item Restock Change	0.00	
	2/1/2013 4:05:56 PM		200308-1-1	New Issue Line	-1.00	0.00
BELT0023 Top Belt 2.0x15.7						
	2/1/2013 3:55:53 PM	erussell		Create New Item		0.00
	2/1/2013 3:55:53 PM			Add Location Maint	1.00	1.00
	2/1/2013 3:55:54 PM	erussell		Item Restock Change	0.00	
PARTS0006 1 1/2" BALL VALVE - 1 1?2" PVC B						
	11/2/2012 9:24:04 AM	system		Change Product Class	0.00	11.00
PARTS1002 Vacuum Truck Cylinder Repair						
	11/29/2012 2:04:45 PM	erussell		Create New Item		0.00
	11/29/2012 2:04:45 PM			Add Location Maint.	1.00	1.00
	11/29/2012 2:04:45 PM	erussell		Item Restock Change	0.00	
	11/29/2012 2:05:01 PM	erussell		Change	0.00	1.00
	11/29/2012 2:06:33 PM		200301-1-1	New Issue Line	-1.00	0.00
PARTS1003 Incline Conveyor Roller Repair						
	12/4/2012 10:38:48 AM	erussell		Create New Item		0.00
	12/4/2012 10:38:49 AM			Add Location Maint.	1.00	1.00
	12/4/2012 10:38:49 AM	erussell		Item Restock Change	0.00	
	12/4/2012 10:54:42 AM		200302-1-1	New Issue Line	-1.00	0.00
PARTS1004 Incline drive roller repair						
	12/4/2012 11:01:43 AM	erussell		Create New Item		0.00

Table 3-4
United Water Services Mississippi LLC
Savanna Street WWTP
Inventory Adjustment Report

Cost Adjustment

ItemNumber / Description	Date	OldQty	New Qty	UM	Change(+)	Change(-)	OldCost	NewCost	UM	
AF0007	7/8/10	9.00	9.00	EA	0.5900		1.5000	0.00	EA	8.19
AF0010	7/8/10	0.00	0.00	EA	3.5600		4.9500	0.00	EA	0.00
BELT0002	9/7/11	14.00	14.00	EA	6.7100		7.2500	0.00	EA	7.56
54 inch drive belt for the effluent blowers										
BELT0003	9/7/11	4.00	4.00	EA	25.0000		27.5000	0.00	EA	10.00
Cedar Creek Netzsch Pumps										
BELT0004	9/9/11	0.00	0.00	EA	3.8000		4.1500	0.00	EA	0.00
ICPS second Floor Vent Fan										
BELT0007	3/26/09	0.00	0.00	EA	5.8000		58.0000	0.00	EA	0.00
BELT0007	3/26/09	0.00	0.00	EA	5.8000		58.0000	0.00	EA	0.00
BELT0016	4/28/10	0.00	0.00	EA	4.3600		3.7500	0.00	EA	0.00
BELT0034	8/20/08	0.00	0.00	EA	48.0000		49.0000	0.00	EA	0.00
BELT0042	8/20/08	0.00	0.00	EA	7.0000		7.5000	0.00	EA	0.00
BOLT0002	10/22/09	86.00	86.00	EA	0.0000		1.5000	0.00	EA	129.00
BOLT0003	7/8/10	0.00	0.00	EA	0.0000		14.5000	0.00	EA	0.00
BOLT0004	1/21/10	0.00	0.00	EA	0.0000		1.0000	0.00	EA	0.00
BOLT0010	10/2/08	0.00	0.00	EA	0.0000		0.5000	0.00	EA	0.00
BRNG0003	10/1/08	0.00	0.00	EA	0.0000		4.5900	0.00	EA	0.00

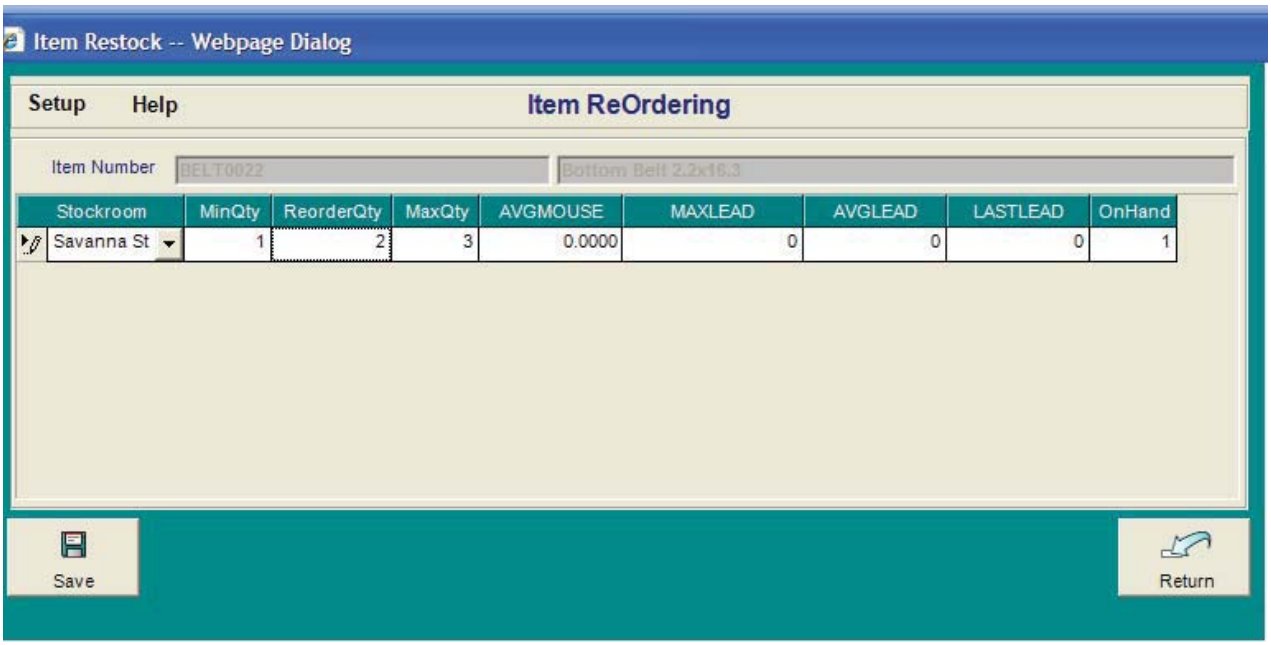


Figure 3-3
eRPortal Inventory Item Reordering Screen

Table 3-5
United Water Services Mississippi LLC
Savanna Street WWTP
Vendor Master List

Updated: 6/7/2013

Name/Alias	ID	Contact	Address	Phone/Fax/EMail	Status
AAA Cooper	AAACOOPE	Clayton	124 Interstate Drive Richland	601-936-9600	Active
Aamco Transmission	AAMCOTRA	Kelty	943 South State Street Jackso	601-948-7343	Active
Ace Bolt & Screw	ACEBOLTS	Mike	PO Box 22533 Jackson, MS 3922	601-355-3448	Active
Acme Products	ACME	Doug Ansuini	59 Interstate Drive Suite 30 West Springfield, MA 01089	413-739-7390 413-739-0299 dansuini@appliedst.com	Active
Advance Auto Parts	ADVANCEA	Robert	3318 Terry Road Jackson, MS 3	601-373-5185	Active
Agri Dyne	AGRIDYNE	Harvey	PO Box 458 Bolton, MS 39041	601-866-2233	Active
Air Contractors	AIRCONTR	Donna	PO Box 6843 Jackson, MS 39282	601-373-9296	Active
Applied Industrial Technologie	AIT	Dave Brody	2029 Wyandotte PO Box 412756 KCMO, MO 64141	421-0407 283-3287	Active
Allis Chalmers	ALLISCHA		Jackson, MS	601-922-8725	Active
American Carbon Industries	AMERICAN		PO Box 11236 Birmingham, Al 3	205-251-4000 205-252-6300	Active
Applewhite Equipment & Supply	APPLEWHI	Lloyd	Highway 49 South Florence, MS	601-845-1964	Active
Applied Industrial	APPLIEDI	Jeff	531 Highway 49 South Richland	601-939-1417	Active
Aqua Aerobics Systems	AQUAAERO		6306 N. Alpine Road Rockford,	815-654-2501	Active
Arender Plumbing Supplies	ARENDERP	Fred	2025 Highway 80 West Jackson,	601-355-2243	Active
Argus Analytical,	ARGUSANA		PO Box 13842 Jackson, MS 3923	601-957-2676	Active
Ashbrook Corp.	ASHBROOK	Brian	11600 East Hardy Houston, TX	800-362-9041	Active
Atlas Door Corp.	ATLASDOO		116 Truman Drive Eddison, NJ	201-572-5700	Active
Authorized Appliances	AUTHORIZ	Tina	943 South Gallatin Street Jac	601-354-5367	Active
Automated Power	AUTOMATE	Kelly	4364 Mangum Drive Pearl, MS 3	601-936-4900	Active
AutoZone	AUTOZONE		3256 Terry Road Jackson, Ms	601-371-1033	Active
Backflow Controls	BACKFLOW	Roger	Potts Camp, MS	662-3339007	Active
Barnhart	BARNHART	Drake	246 North Pearson Road Jackso	601-664-3005	Active
Belt Warehouse	BELTWARE	Larry	1631 Westhaven Boulevard Jack	601-922-2700	Active
Big 10 Tires	BIG10TIR	Inside Sales	1027 Terry Road Jackson, MS 3	601-352-6546	Active
Big Joe Mfg.Co.	BIGJOEMF				Active
Blaine's Trailer	BLAINEST	Inside Sales	1271 New Highway 49 South Ric	601-939-1935	Active
Blain Sand & Gravel	BLAINSAN			601-892-1741	Active

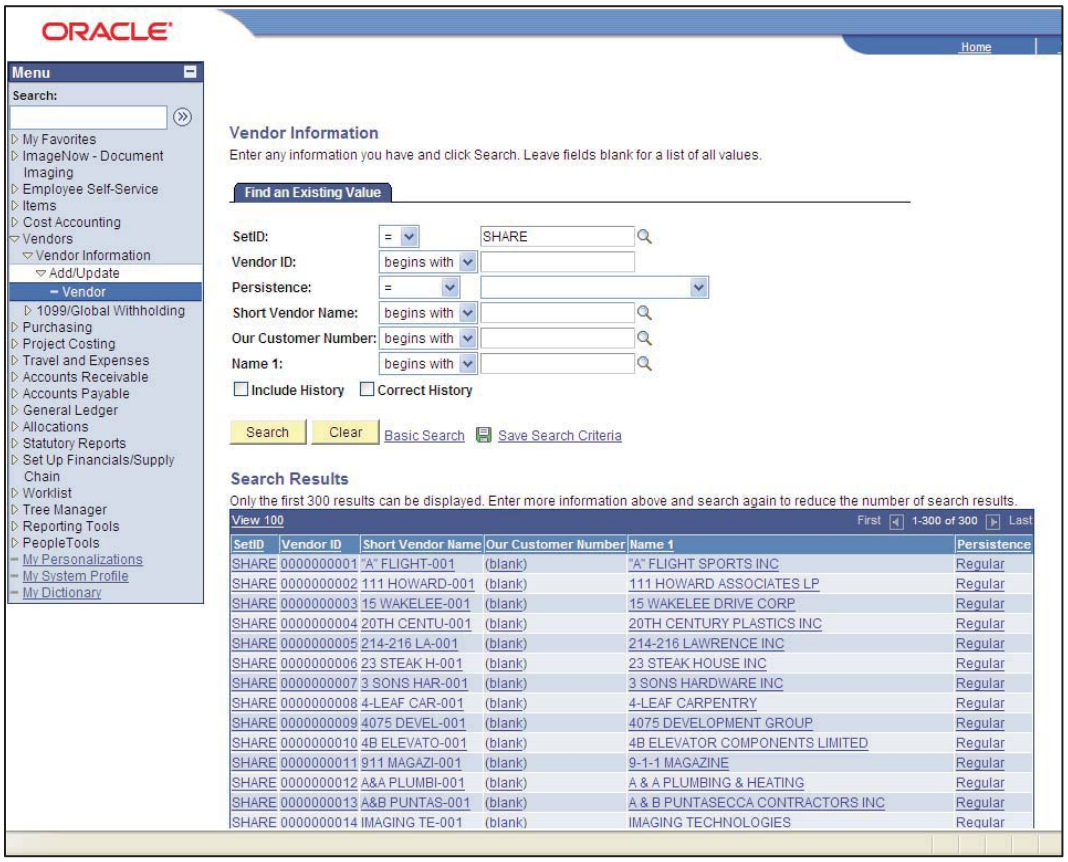


Figure 3-4
Oracle Enterprise Management System
Vendor Data

Table 3-6

United Water Services Mississippi LLC

CRITICAL EQUIPMENT IDENTIFICATION CRITERIA

Safety, Environmental and Operations Risk Matrix

QUESTION TO ANSWER FOR RANKING CRITERIA : ***Failure of equipment may result in potential _____***

SAFETY	ENVIRONMENTAL	CONTRACT COMPLIANCE -Operations & Maintenance			
		Quality	Throughput	Operating Costs	Nuisance
5 = Fatality	**5 = Severe Environmental damage that impacts off-sight**	**5 = Effluent Quality cause the entire process to be shutdown**	**5 = Shutdown entire operational process**	**5 = O&M cost impact of >$25k**	**5 = Nuisance causing litigation**
4 = Disabling Injury	**4 = Severe Environmental damage that impacts on-sight**	**4 = Effluent Quality does not meet Contractual requirements**	**4 = Unable to meet rated capacity throughput contractual requirements**	**4 = O&M cost impact of >$10k to <$25k**	**4 = Nuisance causing media complaints**
3 = OSHA Reportable	**3 = Environmental Regulatory Violation or Excursion**	**3 = Effluent Quality does not meet Clients expectations**	**3 = Unable to process wet weather WWTP flow(s) and maintain normal sludge inventory level**	**3 = O&M cost impact of >$5k to < $10k**	**3 = Nuisance causing compliants from local community groups**
2 = Minor Injury - reportable to Hotline	2 = Minor environmental - reportable to Hotline	2 = Effluent Quality affecting operational process	2 = Unable to meet rated capacity requiring diversion	2 = O&M cost impact of >$1k to <$5k	2 = Nuisance causing inidividual public compliants
1 = Near Miss Reportable	1 = Minor environmental non-reportable impact	1 = Miinor mpact to process Quality	1 = Minor impact affecting operational process	1 = Minor O&M cost impact <$1k	1 = Minor on-property nuisance
0 = No Injury	0 = No environmental Impact	0 = No impact to Effluent Quality	0 = No impact to process to maximum capacity	0 = No O&M cost impact	0 = No nuisance impact

CRITERIA	RANKING	PRIORITY	PRIORITY COMMENTS
CRITICAL - Emergency	5	A	highest priority - break schedule for immediate repair
CRITICAL - High Importance	4	A	higher priority - break schedule for immediate repair
CRITICAL - Significant	3	A	higher priority - break schedule for immediate repair
NONCRITICAL - Concern	2	B	priority - begin repair within 24 hours
NONCRITICAL - Minor Impact	1	B	lower priority - schedule repair within a week
NONCRITICAL - No Impact	0	C	lowest priority - schedule repair in next weekly commitment meeting

Table 3-7

United Water Services Mississippi LLC
Trahon-Big Creek WWTP

Critical Equipment Rating

Equipment#	Description	Type	Priority	SAFETY	ENVIRONMENT	QUALITY	THROUGHPUT	OPS COSTS	NUISANCE	RANK
T-ADMIN BUILDING	STRUCTURE	BUILDING	C	0						0
T-AERATOR 1	NORTH WEST AERATOR	AERATOR	A				3			3
T-AERATOR 1 CONTROLS	NORTH WEST AERATOR CONTROLS	ELECTRICAL	A				3			3
T-AERATOR 1 MOTOR	NORTH WEST AERATOR MOTOR	MOTOR	A				3			3
T-AERATOR 2	NORTH EAST AERATOR	AERATOR	A				3			3
T-AERATOR 2 CONTROLS	NORTH EAST AERATOR CONTROLS	ELECTRICAL	A				3			3
T-AERATOR 2 MOTOR	NORTH EAST AERATOR MOTOR	MOTOR	A				3			3
T-AERATOR 3	SOUTH WEST AERATOR	AERATOR	A				3			3
T-AERATOR 3 CONTROLS	SOUTH WEST AERATOR CONTROLS	ELECTRICAL	A				3			3
T-AERATOR 3 MOTOR	SOUTH WEST AERATOR MOTOR	MOTOR	A				3			3
T-AERATOR 4	SOUTH EAST AERATOR	AERATOR	A				3			3
T-AERATOR 4 CONTROLS	SOUTH EAST AERATOR CONTROLS	ELECTRICAL	A				3			3
T-AERATOR 4 MOTOR	SOUTH EAST AERATOR MOTOR	MOTOR	A				3			3
T-ALARM SYSTEM	CL2/ SO2 ALARM SYSTEM	ALARMS	B	2						2
T-AUTO SAMPLER EFF	EFFLUENT AUTO SAMPLER	SAMPLER	B					2		2
T-AUTO SAMPLER INF	INFLUENT AUTO SAMPLER	SAMPLER	B					2		2
T-BACKFLOW PREVENTER	PLANT BACKFLOW PREVENTERS	BACKFLOW	A		5					5
T-BAR SCREEN 1	EAST BAR SCREEN	BAR SCREEN	A					4		4
T-BAR SCREEN 1 CONTROL	EAST BAR SCREEN CONTROL	ELECTRICAL	A					4		4
T-BAR SCREEN 1 MOTOR	EAST BAR SCREEN MOTOR	MOTOR	A					4		4
T-BAR SCREEN 2	WEST BAR SCREEN	BAR SCREEN	A					4		4
T-BAR SCREEN 2 CONTROL	WEST BAR SCREEN CONTROL	ELECTRICAL	A					4		4
T-BAR SCREEN 2 MOTOR	WEST BAR SCREEN MOTOR	MOTOR	A					4		4
T-BAR SCREEN BLOWER	BAR SCREEN VENTILATION	BLOWER	A					4		4
T-BAR SCREEN CONVEYOR	BAR SCREEN CONVEYOR	CONVEYOR	A					4		4
T-BAR SCREEN VAVLES	BAR SCREEN VALVES	VALVES	A					4		4
T-BLOWER 10 HP 1	10 HP BLOWER	BLOWER	B					2		2
T-BLOWER 10 HP 1 CONTROL	10 HP BLOWER CONTROLS	ELECTRICAL	B					2		2
T-BLOWER 10 HP 1 PIPING	10 HP BLOWER PIPING/ VALVES	PIPING	B					2		2
T-BLOWER 10 HP 2	10 HP BLOWER	BLOWER	B					2		2
T-BLOWER 10 HP 2 CONTROL	10 HP BLOWER CONTROLS	ELECTRICAL	B					2		2
T-BLOWER 10 HP 2 PIPING	10 HP BLOWER PIPING/ VALVES	PIPING	B					2		2
T-BLOWER 50 HP 1	50 HP BLOWER	BLOWER	A				3			3
T-BLOWER 50 HP 1 CONTROL	50 HP BLOWER CONTROLS	ELECTRICAL	A				3			3
T-BLOWER 50 HP 1 MOTOR	50 HP BLOWER MOTOR	MOTOR	A				3			3
T-BLOWER 50 HP 1 PIPING	50 HP BLOWER PIPING/ VALVES	PIPING	A				3			3
T-BLOWER 50 HP 2	50 HP BLOWER	BLOWER	A				3			3
T-BLOWER 50 HP 2 CONTROL	50 HP BLOWER CONTROLS	ELECTRICAL	A				3			3
T-BLOWER 50 HP 2 MOTOR	50 HP BLOWER MOTOR	MOTOR	A				3			3
T-BLOWER 50 HP 2 PIPING	50 HP BLOWER PIPING/ VALVES	PIPING	A				3			3
T-BOOSTER PUMP 1	BOOSTER PUMP #1	PUMP	A		5					5
T-BOOSTER PUMP 2	BOOSTER PUMP #2	PUMP	A		5					5
T-BOOSTER PUMP 3	BOOSTER PUMP #3	PUMP	A		5					5
T-BOOSTER PUMP PIPING	PIPING/ VALVES	PIPING	A		5					5
T-CL2 PIPING	CL2 PIPING/ VALVES	PIPING	A		5					5
T-CL2 REGULATOR	CL2 FEED REGULATOR	REGULATOR	A		5					5
T-CL2 SCALES	CHLORINE CYLINDER SCALES	SCALES	A		5					5
T-CL2/ SO2 BUILDING	STRUCTURE	BUILDING	B	2						2
T-CLARIFIER 1	CLARIFIER #1	CLARIFIER	A			3				3
T-CLARIFIER 1 RAKE	LOWER RAKE	RAKE	A			3				3
T-CLARIFIER 1 RAKE GEARBOX	RAKE GEARBOX	GEARBOX	A			3				3
T-CLARIFIER 1 RAKE MOTOR	RAKE DRIVE MOTOR	MOTOR	A			3				3
T-CLARIFIER 1 SKIM GEARBOX	SKIMMER ARM GEARBOX	GEARBOX	A			3				3
T-CLARIFIER 1 SKIM MOTOR	SKIMMER ARM MOTOR	MOTOR	A			3				3
T-CLARIFIER 1 SKIMMER	SKIMMER ARM	SKIMMER	A			3				3
T-CLARIFIER 2	CLARIFIER #2	CLARIFIER	A			3				3
T-CLARIFIER 2 RAKE	LOWER RAKE	RAKE	A			3				3
T-CLARIFIER 2 RAKE GEARBOX	RAKE GEARBOX	GEARBOX	A			3				3
T-CLARIFIER 2 RAKE MOTOR	RAKE DRIVE MOTOR	MOTOR	A			3				3
T-CLARIFIER 2 SKIM GEARBOX	SKIMMER ARM GEARBOX	GEARBOX	A			3				3
T-CLARIFIER 2 SKIM MOTOR	SKIMMER ARM MOTOR	MOTOR	A			3				3
T-CLARIFIER 2 SKIMMER	SKIMMER ARM	SKIMMER	A			3				3
T-COMPUTERS	COMPUTERS	COMPUTER	C					0		0
T-CONTACT CHAMBER	STRUCTURE/ VALVES/ PIPING	TANK	A		3					3
T-DEGRITTER 1	CYCLONE DEGRITTER	CONVEYOR	B				2			2
T-DEGRITTER 2	CYCLONE DEGRITTER	CONVEYOR	B				2			2
T-DEGRITTER AUGER 1	CYCLONE DEGRITTER AUGER	AUGER	B				2			2
T-DEGRITTER AUGER 2	CYCLONE DEGRITTER AUGER	AUGER	C							0
T-DEGRITTER BUILDING	STRUCTURE	BUILDING	A	2			2			4
T-DEGRITTER CONVEYOR	CYCLONE DEGRITTER CONVEYOR	CONVEYOR	B				2			2
T-EMERGENCY LIGHTING	ALL BUILDINGS	SAFETY	A	3						3
T-FIRE EXTINGUISHER	PLANT FIRE EXTINGUISHERS	FIRE EXTINGUIS	A	3						3
T-FLOW METER EFFLUENT	EFFLUENT FLOW METERS	FLOW METER	A		3					3

Table 3-8
United Water Services Mississippi LLC
Savanna Street WWTP
DAILY CRITICAL EQUIPMENT STATUS

Date 5/2/2014

Equipment	Total	Must have	Available	O/S Date	Days O/S	Comments
Cell 3 Recovery Pump	1	1	1			
Cell 5 Recovery Pump	1	1	1			
West Rankin Gates	2	2	2			
Trash Bar Racks	4	4	4			
Raw Sewage Pumps	4	4	2	2/13/2013	443	Parts on order for #3 Pump / #4 out for Quotes/Repairs
Influent Flow Meter	1	1	1			
Emergency Generators	3	2	2			#3 is deadlined
Mobile Generator	1	1	1			
Gate Drill for Manual Operation	1	1	1			
Generator for Gate Drill	1	1	1			
SCADA Computer	1	1	1			
Influent Sampler	1	1	1			
Mecahnical Bar Screens	2	1	1	4/10/2013	387	Parts ordered for the South Screen
Grit Removal System	2	2	2			
Anoxic Tanks	2	2	2			
Aeration Tanks	10	10	10			
Aerobic Digesters	2	2	2			
Digester Thickeners	2	2	2			
Aeration Blowers	4	2	3			#1 down for 7 years/Repaired gearbox Install started 1-13-13
Clarifiers	5	5	5			
Calrifiers 1-4 RAS Pumps	4	3	2	6/7/2013	329	POR for New #4 5/16/13
Clarifier 5 RAS pumps	2	1	2			
Chlorine Leak Alarms	1	1	1			
Chlorine Regulators	32	16	16			
Chlorine Feeders	2	2	2			
Chlorine Gas Mixer	1	1	0			Parts arrived 2/18/13 Waiting for Shutdown/ Injection System in use
Plant Water Pumps	3	2	2			
Plant Water Filter	2	2	2			
Turbine Effluent Pumps	2	1	1			
Effluent Screw Pumps	4	4	4			
SO2 leak alarms	1	1	1			
SO2 Regulators	8	8	8			
SO2 Feeders	2	2	2			
SO2 gas mixers	2	2	2			
Effluent Flow Meter	1	1	1			
Effluent Sampler	1	1	1			
Diversion Flow Meter	1	1	1			
Waste Sludge Pumps	2	1	2			
Waste Sludge Pumps Flow Meters	2	1	2			
Thickened Sludge Pumps	2	2	2			
Thickened Sludge Pumps Flow Meters	2	2	2			
Sludge Mixing Tank	1	1	1			
Sludge Mixing Tank Mixer	1	1	1			
Sludge Feed Pumps	3	3	3			
Sludge Grinders	2	2	2			
BFP Polymer Feed Systems	3	3	3			
Plant Water Booster Pumps	1	1	1			
Belt Filter Presses	3	3	3			
Dewatering BFB -Centrifuge Rented	2	2	2			
Sludge Conveyors	3	3	3			
Sludge Loader	1	1	1			
Duplex Lift Stations	2	2	2			
Quadraplex Lift Stations	4	3	4			
Critical Equipment Availability	83%					

4.0 Solids Management

United Water has in place procedures for storage, handling, and processing of sludge from the three wastewater treatment plants. The solids management procedures, schedules, and standard practices are described in this section.

4.1 Sludge Sources

Each of the WWTPs produces sludge that must be properly managed. The sludge streams consist of:

- Presidential Hills WWTP – A new 0.75 MGD mechanical treatment plant using the sequencing batch reactor process is starting up in mid-2014. Waste activated sludge generated by the SBR will be conveyed to the Savanna WWTP for processing.

- Trahon/Big Creek WWTP – The existing 4 MGD oxidation ditch plant produces waste activated sludge which is trucked in liquid form to the Savanna WWTP for processing. Current flows to the plant average about 2 MGD. About 6,500-gal, or one truck load, of WAS is hauled to the Savanna plant daily.

- Savanna WWTP – Sludge is generated at the Savanna plant from two main sources:

    1. Waste activated sludge – Currently averaging about 900,000 gal/day of 1.4% secondary sludge for an average plant flow of about 45 MGD. This plant does not have primary clarifiers.

    2. Storm cell storage – Any excess wet weather flow diverted to the storm cell flow equalization basins for temporary storage contains some solids. Over time these solids will accumulate in the storm cells and will require removal. A project to remove sludge from the Savanna WWTP storm cells was completed in April 2014.

As noted above, all wastewater sludge generated in the City of Jackson and contributing satellite communities is centrally handled at the Savanna WWTP.

4.2 Waste Activated Sludge

The Savanna WWTP is a conventional activated sludge plant without primary clarifiers. A portion of the waste activated sludge must be removed from the process daily. The WAS is sent to aerobic digesters to allow some solids reduction through destruction of a portion of the volatile solids. In the digesters, the sludge is further thickened by intermittent cycles of settling and decanting of supernatant. From the digesters, the sludge flows to two gravity sludge thickeners to provide additional solids concentration. Thickened WAS is then pumped to a sludge holding tank. Feed pumps transfer the thickened sludge to belt filter presses and a centrifuge where polymer is added and the sludge is dewatered. After

dewatering, the sludge is hauled to various disposal sites, spread on agricultural land, and then incorporated in the subsoil. A copy of the current Savanna Street WWTP Sludge Management Plan prepared by UWS-MS is provided in **Appendix A**. A schematic of the sludge processing operation is shown on **Figure 4-1**.

Currently, the plant owns three 2-meter width belt presses and leases one additional belt press and a centrifuge. As described in the *Savanna Street Wastewater Treatment Plant Comprehensive Performance Evaluation Report* (May 31, 2014), the original belt presses are at the end of their useful life and require replacement. A major upgrade to the plant's dewatering capability will be performed as part of other plant improvement needs described in the CPE report.

Currently, the dewatering equipment is operated seven days/week, often 24 hours/day. There are three dedicated dewatering operators responsible for operating and maintaining the equipment. These operators are assisted by the shift operators after hours and as needed. Management is provided by a full-time Dewatering/Land Application Supervisor. Dewatered sludge hauling and land application services are provided by a private contractor.

UWS-MS has developed Standard Operating Procedures (SOPs) for the dewatering operation. The Belt Press Dewatering SOP and the Centrifuge Dewatering SOP are provided in **Appendix B**.

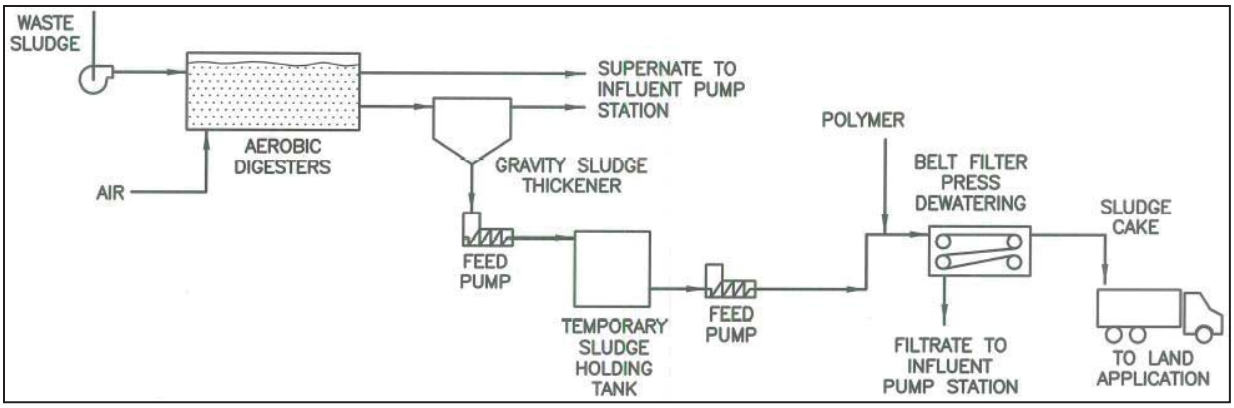


Figure 4-1
Savanna Street WWTP Solids Handling Schematic

4.3 Storm Cell Sludge

During periods of high wastewater flows, excessive flow beyond the main plant treatment capacity is diverted to the storm cell flow equalization basins. These three cells have a combined storage capacity of 171 MG. A 100 MGD storm water pump in the influent pump station is used to divert the flow. Additionally, a second diversion point to the storm cells can be used for flows from the Rankin County force main. After peak flows recede, a return line from Cell 3 is used to return stored flow to the West Bank Interceptor for treatment by the plant. Arrangement of the three storm cells is shown on **Figure 4-1**.

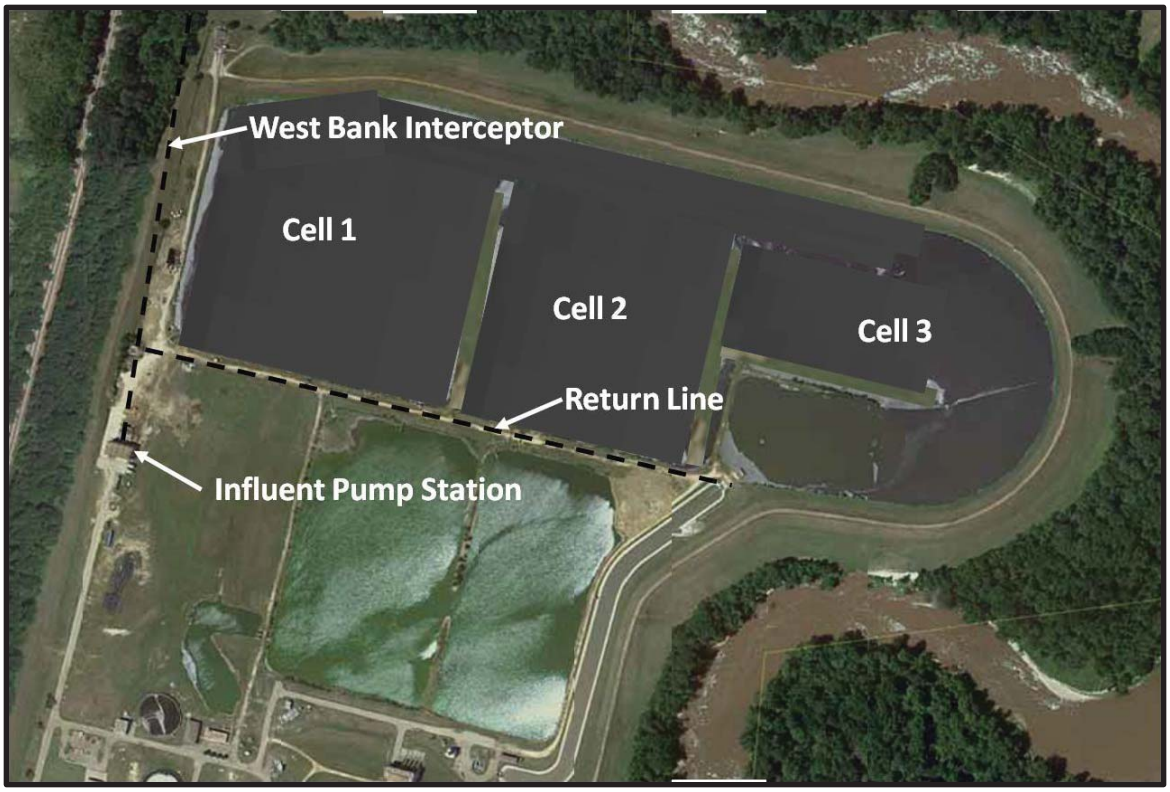


Figure 4-2
Savanna Street WWTP Storm Cells

UWS-MS has developed a new SOP for management of wet weather flows and the storm cell diversion process. The Savanna Street WWTP Wet Weather Operating Plan is included in **Appendix B**.

A project to remove accumulated sludge from the storm cells was completed in April 2014. Following successive diversions of future excess wet weather flows, sludge will again slowly accumulate in the storm cells over time. In the future, sludge levels will be monitored and measured on an annual basis. Accumulated sludge will be removed from the storm cells as needed, estimated at approximately every 5 years. Sludge removed from the storm cells will

be disposed of off-site by land application or landfilling, depending on the sludge characteristics.

5.0 Preventative Maintenance Program

United Water has an active a Preventative Maintenance Program in force for the wastewater treatment plants and pump stations operated and maintained for the City of Jackson. The purpose of the PM program is to provide proactive preventative and predictive maintenance to minimize required corrective maintenance. The UWS-MS Preventative Maintenance Program is described in this section.

5.1 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. 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.

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.

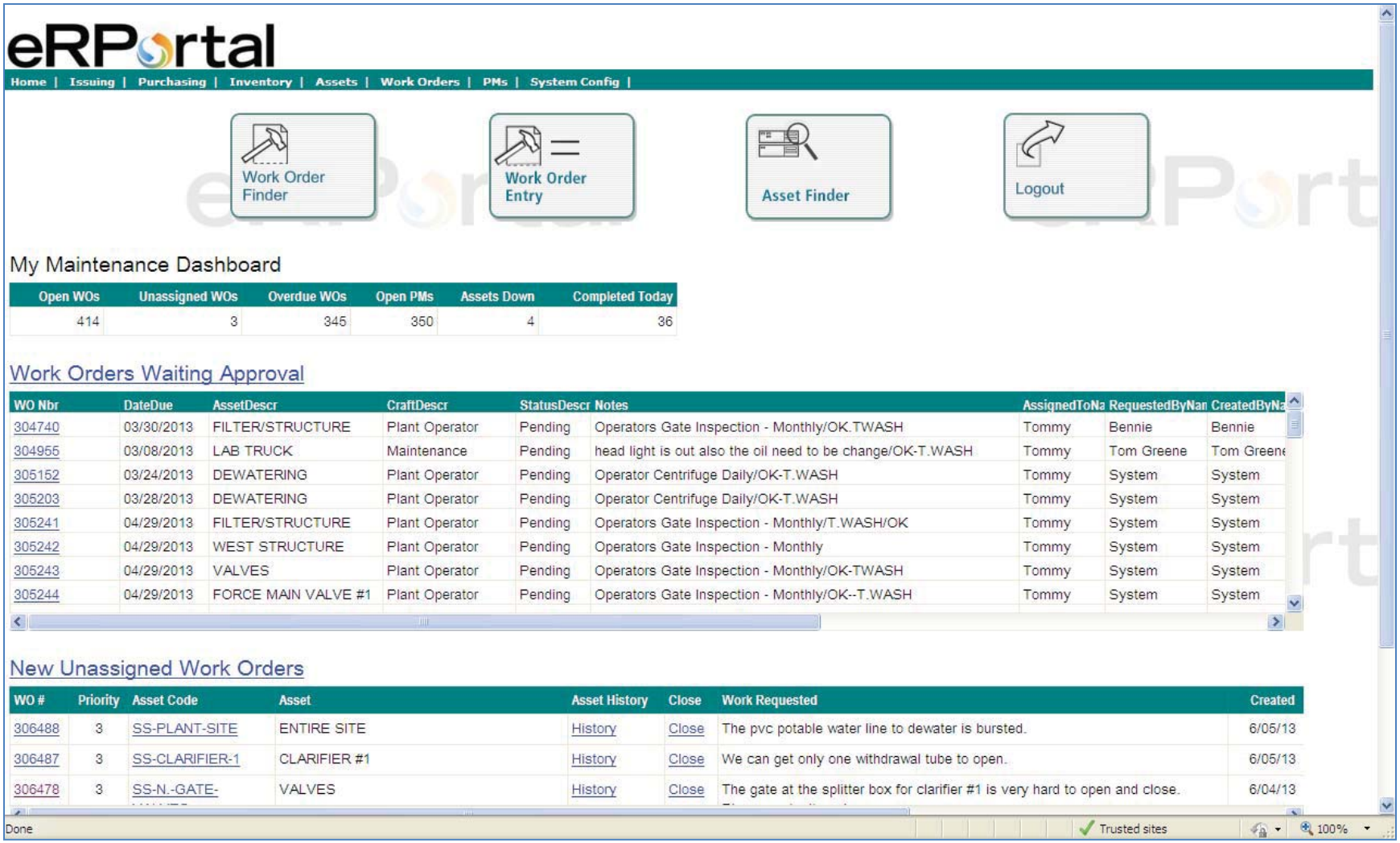
The following sections provide documentation how the UWS-MS maintenance staff and the eRPortal CMMS facilitate completion of required PM activities. A screenshot of the eRPortal CMMS home screen is shown on **Figure 5-1**.

5.2 O&M Staffing and Resource Commitments

O&M Staff Organization

UWS-MS has a single maintenance department responsible for maintaining the City's three wastewater treatment plants and all of the pump stations. An organization chart for the UWS-MS O&M staff is shown on **Figure 5-2**.

Figure 5-1
Jackson eRPortal Computerized Maintenance Management System



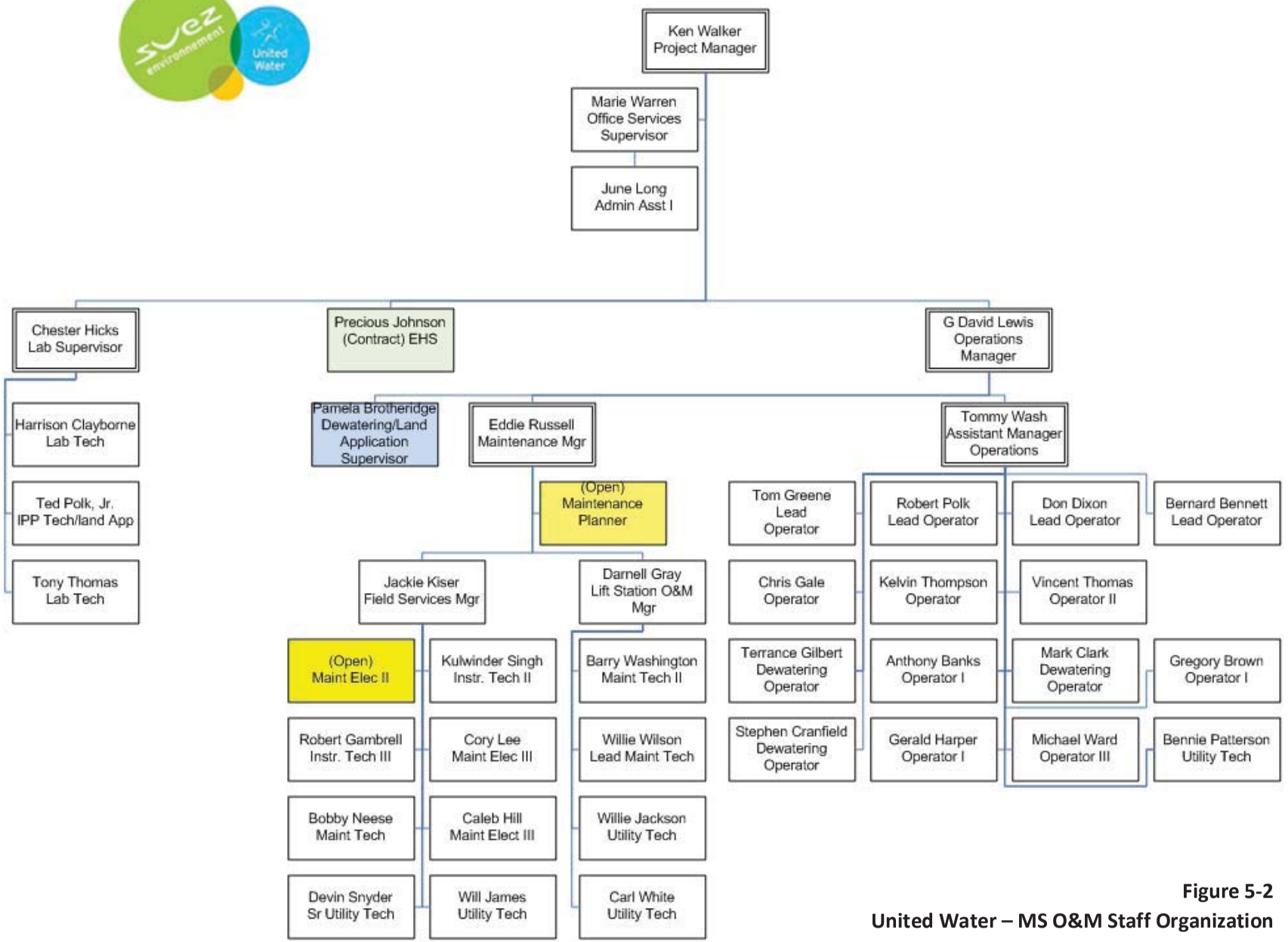


Figure 5-2
United Water – MS O&M Staff Organization

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 facilities and 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 5-3** and **Figure 5-4**.

Figure 5-3
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. Perform preventative and corrective maintenance of industrial plant equipment as assigned. 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 5-4
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 familiarity with preventive and predictive maintenance management programs.
WORKING HOURS:	Full time and site specific

Operations Staff Qualifications

The United Water Operations Department has 34 full time positions assigned to operations and maintenance of the WWTPs and pump stations. An example UWS-MS O&M technician job description is shown on **Figure 5-5**.

Figure 5-5
UWS-MS Job Description – O&M Technician

United Water
Job Description

POSITION:	Operations & Maintenance (O&M) Technician III	**DATE:**	April 2013
DEPARTMENT:	UWSI Jackson MS Wastewater Facility	**APPROVAL:**	
LOCATION:	Jackson MS		
REPORTS TO:	Department Manager		
Job Code:	**Department:**	**Position No:**	**FLSA Status:**

Summary:
Performs, with minimal supervision, a variety of operational and maintenance tasks relevant to the safe and reliable operations of water and/or wastewater treatment facilities ensuring operation in compliance with state and federal regulations.

Dimensions / Supervisory Responsibilities:
Team Leader for 3-5 team members with responsibility for planning and directing work assignments, under the supervision of the Department Manager or the Operations Manager.

Education/Equivalent:
- High School Diploma or equivalent is required, Associate's Degree in a related environmental or technical field is preferred. Experience may be substituted for formal education.
- Mid level certification required to operate, service, maintain, and/or repair industrial equipment as found in treatment processes and/or at the facility being operated and in compliance with state environmental regulations.
- Valid driver's license in state of residence is required and must meet risk management guidelines.
- May require CDL and the ability to learn and perform tasks as outlined on C&D chart.

Work Experience Needed:
- Minimum of 4 to 7 years experience in water and/or wastewater treatment industry while holding certification.

Figure 5-5 (continued)

Special Skills/Abilities Needed:

- Familiarity and adherence to all environmental and safety compliance regulations.
- Proficient knowledge of MicroSoft Office including Excel, Word, and Outlook.
- Able to work independently and prioritize work activities.
- Able to read and understand blueprints (mechanical, structural and electrical.)
- Knowledge of both power and control circuits and able to read electrical wiring and ladder schematics.
- Ability to understand and execute written and/or verbal work orders and assignments.
- Ability to perform math and algebra calculations with the use of a calculator.
- Ability to adjust chemical feeds and processing equipment to maintain compliance.
- Knowledge of and ability to perform standard laboratory sampling testing and maintain collection records.
- Familiarity with or ability to learn and utilize computerized maintenance management system.

Nature & Scope-Principal Areas of Responsibilities:

Performs, with minimal supervision:

- Actions are controlled by the Plan of Operation and SOPs. Work is reviewed on a spot check basis by a supervisor/manager who is generally available.
- A variety of operational and maintenance tasks relevant to maintain safe and reliable operations of water and/or wastewater treatment facilities and/or collection storm water systems ensuring operational compliance with state and federal regulations.
- Basic knowledge or normal and abnormal process and equipment conditions and capable of taking appropriate, safe actions or reporting conditions to supervisor/manager.
- Update and modify SOPs for review and approval of supervisor/manager prior to implementation.
- Routine cleaning and general housekeeping duties in work and plant reas as needed, including but not limited to sweeping, dusting, mopping, painting, cleaning of weirs, belt presses and other process equipment and areas.
- Performs preventive, predictive and corrective maintenance following LOTO procedures and installs, inspects and repairs process equipment.
- Lubricates, adjusts and maintains shop, field and plant equipment, including inspection, cleaning, repairing and troubleshooting of pumps, motors, valves, compressors, pipelines, wet wells and various other process equipment.
- Trains and/or assists in the training of new or less experienced team members.
- Must comply with and may monitor the team and/or facility for compliance with safety and environmental regulations.
- Other duties as needed and assigned.

O&M Staff Training

All UWS-MS O&M staff receives 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 operations staff training requirements is shown on **Figure 5-6**. An example of maintenance staff training requirements is shown on **Figure 5-7**.

Figure 5-6
Operations Staff Training Requirements

Operations Staff Training Requirements

Employee Name:
Employee Number:

All potential operator's must be trained in these areas and demonstrate at an acceptable level all aspects of the position

Assessment Question	Date Completed	Site Specific	Approved Instructors	Instructor Signature
Calibrate all meters that will be required to be utilized through the course of the shift		No	Lead Operator / SOP	
Collect samples and perform various tests such as pH, D.O., CL2 residual, MLSS and MLVSS; analyze results and make process control changes based on these lab results and instruction from their immediate supervisor		Yes	Lead Operator / SOP	
Documents readings, test results, equipment adjustments and enter data into a computer data base for record maintenance and to produce periodic and special reports		No	Supervisor	
Monitors and observes treatment process for offensive matter; inspects equipment and monitors operating conditions, meters, and gauges to determine load requirements and detect problems		Yes	Supervisor	
Cleans various tanks, chambers, and basins		No	Lead Operator / SOP	
Transfers various chemicals from one container to the other. Makes chemical feed adjustments as necessary		No	Supervisor	
Changes chlorine and sulfur dioxide cylinders and checks for leaks. Also adjusts feed rate as required		Yes	Lead Operator / SOP	
Handling in using machines, tools, equipment or work aids involving moderate latitude for judgment regarding attainment of a standard or in selecting appropriate items such as pumps, mixers, blowers, or laboratory equipment		No	Supervisor	
High School Diploma or GED		No	Dept of Ed	
Safety practices, procedures and equipment used		No	Lead Operator / SOP	
The operation of motor vehicles and equipment with specialized controls under all types of weather conditions to include tapping machine, whacker packer, pump, air compressor, hand tools, cleaning equipment, painting equipment, lawn equipment, and jackhammer		No	Supervisor	
Understand and follow oral and written instructions		No	Supervisor	
Lift objects weighing over 100 pounds from floor to waist level		No	Supervisor	
Climb and work off a ladder or scaffold and climb into vehicles having high ground clearance		Yes	Supervisor	
Walk up to 5 miles per 8 hour shift		Yes	Supervisor	
Ascend and descend up to 1,000 steps in an 8 hour shift		Yes	Supervisor	
Carry a 50 pound tool box up a flight of stairs		Yes	Supervisor	
Able to work in constricted places		Yes	Supervisor	
Flexibility to reach, stoop, and bend to accomplish job tasks		Yes	Supervisor	
Prepare routine records and logs		Yes	Lead Operator / SOP	
Perform mathematical computations		No	Supervisor	
Work emergency duty during non-scheduled work hours		No	Manager	
Work overtime, work any day, including all State and Federal recognized holidays		No	Supervisor	
Distinguish between different shades of color		No	Supervisor	

Figure 5-7
Maintenance Staff Training Requirements

Employee: _____ **Employee No.:** _____

Signature: _____ **Supervisor Sign:** _____ **Date:** _____

S or E	Training Topic	Assessment Question	Training Frequenc	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

5.3 WWTP PM Program

This section describes the preventative maintenance programs for treatment plant systems and equipment. The PM program consists of periodic inspection of all equipment containing electrical, mechanical, and physical components.

Guidance to Managers and Field Personnel

UWS-MS provides appropriate guidance to managers and field personnel for scheduling and performing preventative maintenance activities on wastewater treatment plant equipment. 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.
- Identification of critical equipment required to maintain treatment operations.
- 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 documentation to update the eRPortal CMMS used to track PM history.

Preventative Maintenance Practices

Preventative Maintenance is performed on all plant equipment where it is identified as being required, either critical or non-critical. Procedures for identification and tracking of critical equipment were described in Section 3. UWS-MS maintains a library of equipment O&M Manuals furnished by the various manufacturers of the equipment. The manufacturer's O&M instructions are followed in scheduling and performing maintenance tasks, including preventative maintenance. Maintenance staff are instructed in the skills, tools, and procedures necessary to perform the preventative maintenance activities. The training also covers procedures for recognizing various indicators that the equipment is experiencing other problems, and that corrective maintenance is required.

Preventative Maintenance Scheduling

Preventative maintenance activities are scheduled in the eRPortal CMMS as defined by the UWS-MS Maintenance Manager and Maintenance Planner. An example PM schedule is shown on **Figure 5-8**.

Preventative Maintenance Work Orders

All maintenance work orders are generated and tracked using the eRPortal CMMS. A screen shot of the eRPortal maintenance home screen is shown on **Figure 5-9**. Instructions to staff on how to create and close a work order are listed on **Table 5-1**.

Figure 5-8
Example PM Schedule

Preventative Maintenance Summary by Asset

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

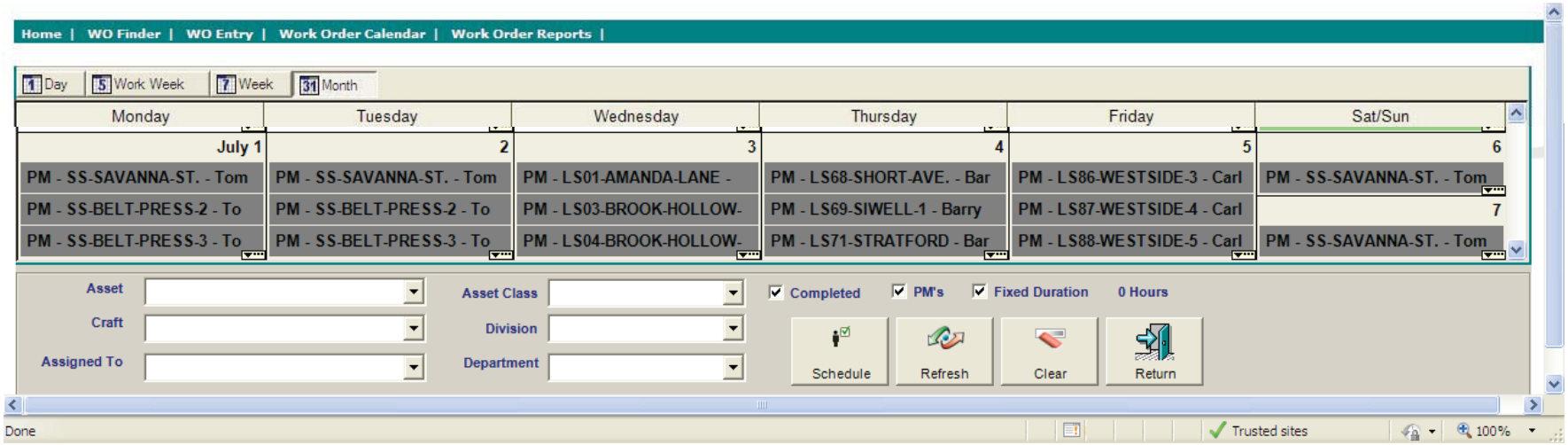


Figure 5-9
Jackson eRPortal Computerized Maintenance Management System
Work Order Generation and Tracking

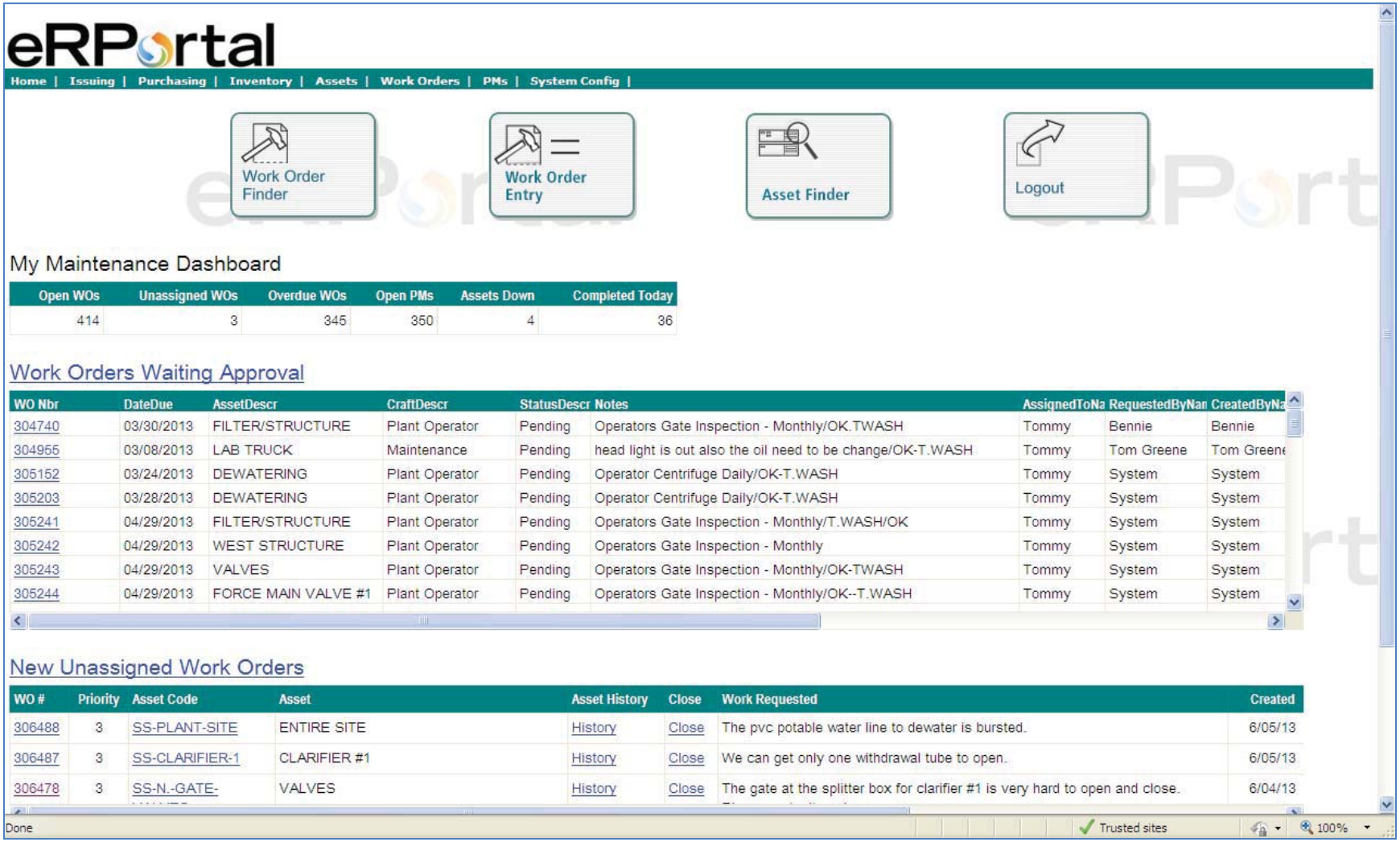


Table 5-1
UWS-MS Work Order Procedures

Creating a Corrective Work Order	
Step	***Instruction***
1	To enter new work order click on Work Order Entry tab.
2	Click on binocular tab to find equipment (Asset Code).
3	When asset finder displays than click the Org. Tree button to display project name (United Water Jackson).
4	Click on the + button to show the different locations.
5	Click on the + button for the location asset is located and all equipment will be displayed.
6	Highlight the equipment the work order is being generated for.
7	Click the Select button and this will populate the Asset Code on the Work Order.
8	Give details for the work being requested. Do not leave blank.
9	Click the Save button and the Work Order is created.
10	Managers will assign Work Order to a technician. Assigned corrective work orders will appear under "My Assigned Work Orders" along with any pen PM's.
Closing a Work Order	
Step	***Instruction***
1	Click on the WO# to open.
2	Use drop down arrow to pick failure code. *For Corrective Work Orders Only*
3	Click + button to add time and notes. Repeat for everyone that worked assisted on job.
4	Click on box and employee menu will appear to change name. *Performed By will auto populate with Assigned To employee*
5	Auto populates day created, change to day work was performed.
6	Add time worked on task by each employee.
7	Auto populates to Troubleshoot and Repair.
8	Click box, procedure notes box will appear.
9	Explain what was done to repair problem.
10	Click the close button to save notes. Repeat for each employee. *Other employee's notes can be written as Assisted*
11	Click the Save button if the Work Order is not complete.
12	Click the Complete button if Work Order is finished and Confirm box will appear.
13	Click the Yes button to close out Work Order.
14	Work Order shows Appending Approval; click the Return button to main page (Home).

5.4 Predictive Maintenance

In addition to normal PM, UWS-MS also proactively performs certain Predictive Maintenance activities. Predictive Maintenance is a process used to identify degree of wear and useful life remaining of equipment components and parts that otherwise show no outward sign of failure. An example is the annual thermographic inspection of control panels and motors as shown on **Figure 5-10**. Thermographic inspection involves infrared scanning of electrical control panels and motors, as well as other components such as equipment bearings, to detect heat buildup. If a hot spot is identified and determined to be excessive, more detailed investigation will be performed and required corrective maintenance will be scheduled.

5.5 Corrective Maintenance

A good preventative maintenance program will minimize equipment malfunctions that result in the need for unscheduled repairs, referred to as corrective maintenance[1]. While UWS-MS has aggressive Preventative Maintenance and Predictive Maintenance programs in place, corrective maintenance actions are periodically required to perform needed repairs on equipment and systems. Procedures used by the City of Jackson to perform corrective maintenance, when it is needed, are described below.

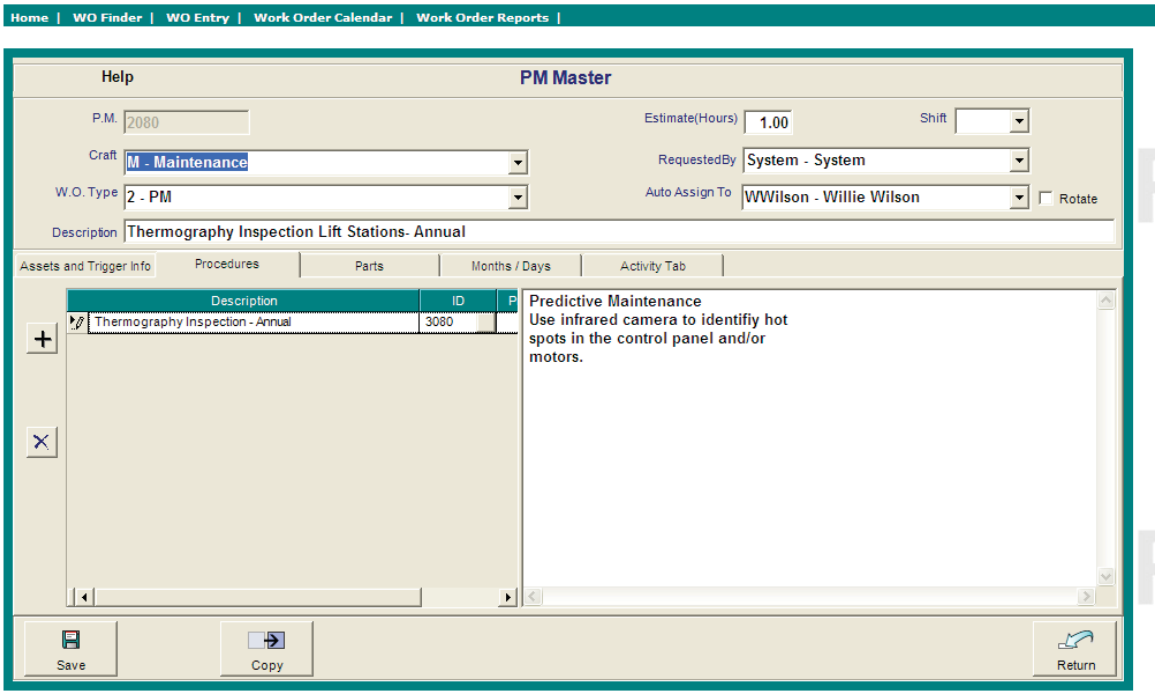
Repair or Replace Decision

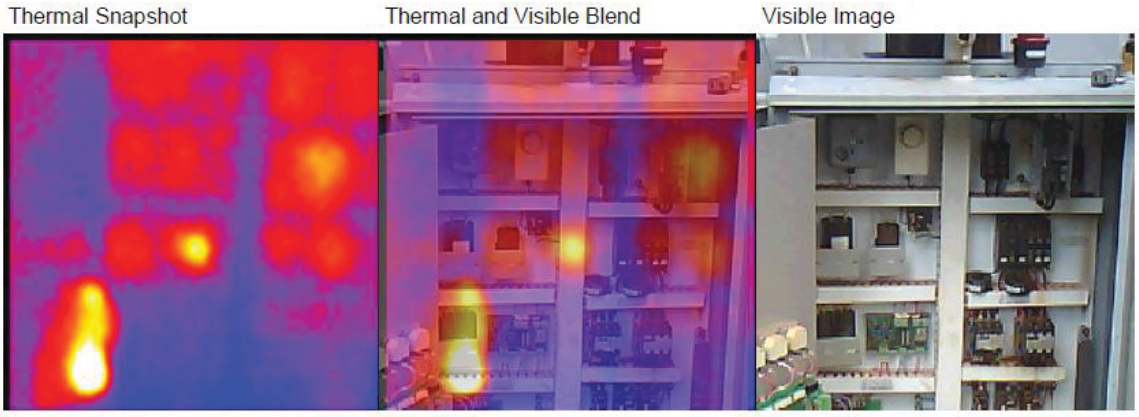
For each major item of equipment requiring repair, a decision is first made whether to perform the repair or replace the item with new equipment. UWS-MS has developed a standard procedure that is used in evaluating whether to repair or replace the equipment. The UWS-MS decision criteria used are:

- 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 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.

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

Figure 5-10
Predictive Maintenance Example
Thermographic Inspection of Electrical Components



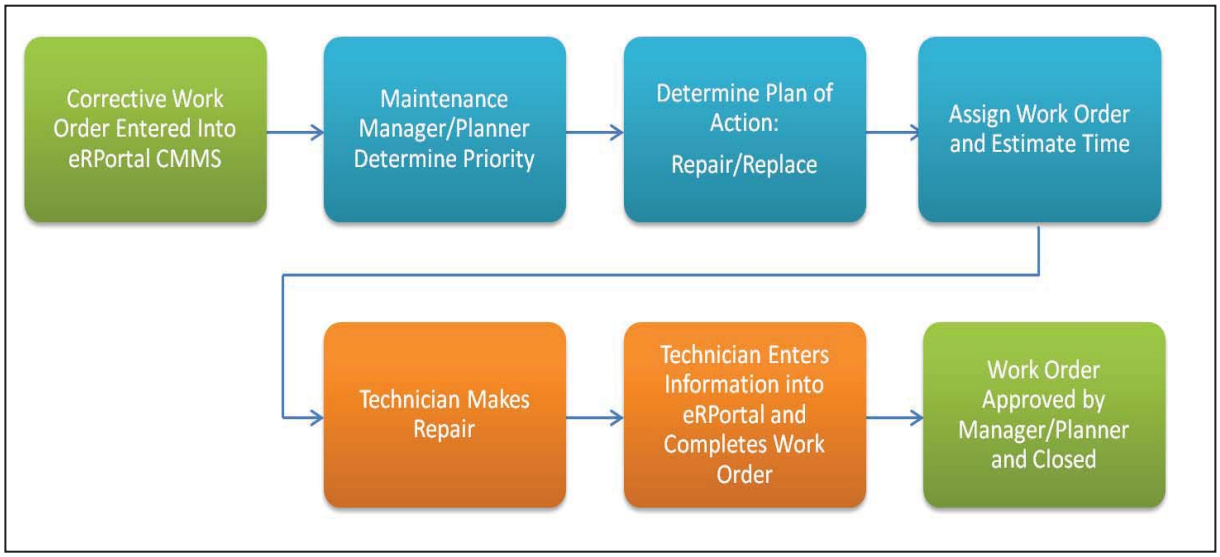


Control Panel Thermography Inspection Results

Work Order Procedures

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 5-11**. Scheduling and tracking of Corrective Maintenance Work Orders is performed through the UWS-MS eRPortal CMMS as described above.

Figure 5-11
Corrective Maintenance Work Flow



For all Work Orders, whether they be preventative, predictive, or corrective, Purchase Orders to UWS-MS registered vendors for outside repair services required, parts not in inventory, or other outside purchases needed to complete the corrective maintenance actions are generated using eRPortal CMMS as described in Section 3.

Maintenance Tracking System

Wastewater treatment plant equipment inspection and maintenance activities are documented using the eRPortal CMMS work order system as described in Section 3. The CMMS is used for maintenance tracking and record keeping. As equipment maintenance activities are completed by the O&M crews, the results are entered into eRPortal and a work order completion log is generated. Statistics are also kept on work order history. Work order completion status reports are generated by the O&M staff using the UWS-MS eRPortal CMMS as needed. The reports can be easily produced using any date range required, such as prior year, year-to-date, monthly, or any other parameters, depending on the purpose of the report. Maintenance reports are generated as directed by the Plant Manager, Maintenance Manager, or other O&M staff member as requested or necessary. An example of the Work Order Statistics report is shown on **Table 5-2**.

Table 5-2
United Water Services Mississippi LLC
Savanna Street WWTP

6/5/2013	Work Order Statistics by Work Order Type						Page 1 of 1
Date Completed from 1/1/2013 - 6/5/2013							
Work Order Type	**Backlog - Begin**	**Issued WOs**	**Subtotal**	**Closed: Completed**	**Closed: Failed to Complete**	**Open**	**Completion Percentage**
Corrective	35	541	576	503	0	62	87%
PM	1	1,920	1921	1,528	0	349	80%
Predictive Maint.	0	2	2	0	0	2	0%
Project	0	2	2	2	0	0	100%
Safety	2	10	12	11	0	1	92%

Work Order Type	0-30	31-60	Over	Total
Corrective	33	6	19	58
PM	266	56	27	349
Predictive Maint.	2	0	0	2
Safety	1	0	0	1

Work Order Statistics by Craft						
Craft	**Backlog - Begin**	**Issued WOs**	**Subtotal**	**Closed: Completed**	**Closed: Failed to Complete**	**Open**
E	0	3	3	1	0	2
L	0	1	1	1	0	0
M	38	1,764	1802	1,513	0	261
O	0	707	707	529	0	151

Craft	0-30	31-60	Over	Total
E	0	2	0	2
M	175	41	41	257
O	127	19	5	151

5.6 Emergency Maintenance

Procedures are in place by UWS-MS to ensure that failures of equipment or loss of power during emergency situations are corrected in a timely fashion. These procedures were developed to limit the downtime of the equipment or facility during the abnormal conditions. Examples are the Wastewater Treatment Plant Power Failure SOP and the Control Panel Damage SOP included in **Appendix B**.

5.7 Operation and Maintenance Program Summary

The City of Jackson currently has in place a sophisticated maintenance program for its wastewater treatment plants implemented by its professional 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. Including the WWTP O&M standard operating procedures described in this report, the current City of Jackson WWTP O&M program is compliant with the requirements listed in the Consent Decree. Consequently, no further implementation measures or additional changes to the current program appear to be necessary.

Appendix A

Savanna Street WWTP Sludge Management Plan

City of Jackson, Mississippi
Sludge Management Plan

Introduction

The City of Jackson Savanna Street WWTP is a 46.0 MGD activated sludge plant with storm water holding lagoons. The plant stabilizes waste activated sludge by means of aerobic digestion. The digestion process produces thickened, liquid, stabilized organic bio-solids at a concentration of about 2% and dewatered of about 20%. The bio-solids meet the requirements established by Mississippi Department of Environmental Quality (MDEQ) and the US EPA for Land Application.

Sludge from the City's Trahon/Big Creek WWTP and Presidential Hills WWTP is hauled to the Savanna Street plant for processing. The Trahon/Big Creek WWTP is a 4.5 MGD oxidation ditch activated sludge plant. The wasted sludge from this facility is thickened in an aerobic digester prior to hauling. The Presidential Hills WWTP is a 0.75 MGD aerated lagoon activated sludge plant. It is being replaced by a sequencing batch reactor activated sludge plant that will start up in mid-2014. Sludge from the new plant will be conveyed to the Savanna Street plant.

The sludge de-watering operation utilizes the following basins and equipment to achieve Class B sludge: gravity thickener, two aerobic digesters, 3-2 meter belt filter presses (avg. 70 gals/min sludge feed rate), 1 centrifuge (avg. 250 gals/min sludge feed rate), and 1-2.2 meter belt filter press (avg. 450 gals/min sludge feed rate). Liquid polymer is used on all de-watering machines to achieve coagulation.

The selected method of sludge disposal is by surface land application at agronomic rates. All application sites are permitted for sludge application and all but one are privately owned by local farmers. The Management Plan is found below. This will include loading rates based on expected sludge quality and quantity, the crop selected by the land owner and limiting constituent for application. The anticipated limiting constituent is nitrogen. The plan will also include the application method, harvest requirements, monitoring, pollutant tracking and monitoring. When land application is not possible due to wet weather conditions, etc., de-watered sludge will be disposed of at the local landfill currently being operated by BFI.

The management plan is in compliance with the State and Federal reporting guidelines pertinent to 40 CFR 503 regulations, as well as on the findings of specific investigations, historical operational data and input from various United Water associates experienced in the land application of bio-solids. The management plan is applicable of bio-solids and those that are to be permitted in the future.

Management Plan

The dewatered sludge outlined in this program shall follow these buffer zone requirements:

	Property Line	Waters of the State	Wells, Public/Private	Exterior Roadways	Dwellings
De-watered	200 ft.	200 ft.	500/250ft.	200 ft.	300 ft.

All soil pH levels will be monitored and adjusted accordingly by applying Lime
Dewatered application of bio-solids will be applied to slopes of 6 to 12%.
Bio-solids will be applied according to agronomic loading rates for each crop it is applied upon.
Bio-solids will not be applied to flooded, frozen, or snow covered ground.
Bio-solids will not be applied to land that adversely affect threatened or endangered species.
No annual pollutant loading rate shall be exceeded.
Signs will be posted that restrict access to the application sites.
Bio-solids will not be stockpiled at the site unless in an enclosed tank or building for a period not to exceed 30 days.
No grazing shall be allowed on the site for 30 days after bio-solids application.
Public access to the site shall be restricted for 30 days when there is low potential for public exposure and one year when there is high potential for public exposure.

Application Sites

This program currently includes 12 sites. They are labeled as follows:

Byram Landfill	Permitted for 560 acres
Kainz Property	Permitted for 137.3 acres
Varnado Property	Permitted for 34.7 acres
Mason Property	Permitted for 75.1 acres
Murphy Davis Property	Permitted for 298.8 acres
Holmes Property	Permitted for 261.8 acres
Fisher Property (Site #1)	Permitted for 150 acres
Fisher Property (Site #2)	Permitted for 109 acres
Berry Property	Permitted for 223.8 acres
Darden Property (Site #1)	Permitted for 624 acres
Darden Property (Site #2)	Permitted for 32 acres
Sullivan Property	Permitted for 208.4 acres

Sludge Quality

The main constituents of concern are nitrogen (including ammonia, total kjeldahl nitrogen, nitrates, and nitrites). Values for nitrogen were obtained from the previous years. Below are the sludge metal results annualized for the 2012 calendar year. All of the laboratory results below can be found on the laboratory's letterhead and the specific analytical method (also contained in annual 40 CFR 503 Report)

Dewatered Sludge

Metals	Ceiling Limits mg/kg	2012 Results
Arsenic	75	9.65
Cadmium	85	1.1
Chromium	3000	18.4
Copper	4300	186
Lead	840	17.4
Mercury	57	0.4
Molybdenum	75	9.7
Nickel	420	18.1
Selenium	100	15.1
Zinc	7500	290.8

Sludge Loading Rates

Nutrient Uptake Rate for Crops
lbs. / acre – year
(table 4-11, EPA Process Design Manual – Land Treatment of Municipal Wastewater)

	Nitrogen	Phosphorus	Potassium
Forage crops:			
Coastal Bermuda grass	356 – 600	31 – 40	201
Ryegrass	178 – 250	54 – 76	241 – 290
Tall fescue	134 - 290	27	268
Field crops:			
Corn	156 – 178	18 - 27	98
Cotton	67 – 98	13	36
Soybeans*	222	9 – 18	27 – 49
Wheat	143	13	18 - 40

* Legumes will also take nitrogen from the atmosphere.

Land application will be based on the EPA schedule 40 503 regulations that state the agronomic loading rate of plant available nitrogen for the selected crop will be met. The table below, current permitted fields, are planted in Coastal Bermuda grass. Bermuda grass has an uptake rate of 300 to 600 lbs. of plant available nitrogen per acre per year. The average total nitrogen is 7.8 percent of the organic sludge. We have selected 400 lbs. per acre as our maximum loading rate. Crop harvest will remove the nitrogen from the fields. Nitrogen will be mineralized over a 10 year period as regulated by the bio-solids requirements found in 391-3-6-.17. Ultimately, 56% of the total kjeldahl nitrogen is plant available over the 10 year period. The nitrates, nitrites, and ammonia are immediately plant available in the first year. The only part that would not be plant available would be lost through de-nitrification and volatilization.

The following table lists the percentage of mineralization:

Mineralization Table for bio-solids

Year 1	30%
Year 2	15%
Year 3	8%
Year 4	4%
Year 5	3%
Year 6	3%
Year 7	3%
Year 8	3%
Year 9	3%
Year 10	3%

We will use HACH WIMS and MS Excel to track and mineralize the nitrogen and all other constituents applied, including dry tons per acre. The programs are set up to track nitrogen for any crop that is planted and the corresponding nitrogen needs for that crop. They will also track all priority pollutants and forecasts the longevity of the sites.

Land Application Operations

The bio-solid application system has as its primary objective provision of adequate treatment of the WWTP sludge through the crop/soil system. A secondary goal is to maximize agricultural production. Operations are developed that remain consistent with these objectives.

An essential element of land application is a manager that can direct and oversee day to day operations. This person will schedule applications that will coincide with the harvest schedule of the land owner, and track the applications.

Site records will be kept at the wastewater treatment plant for the duration of the application and the 10 years beyond. Monitoring records will be kept of the sludge results, soil sample results and crop analyses as well as harvest records. Operational records that will be kept in the HACH WIMS computer program include:

- Dates of application
- Fields applied upon
- Volume of sludge applied
- Corresponding nitrogen and metal loadings
- Cumulative nitrogen (Excel) and metal loadings
- Annual dry tons applied per acre
- All sludge and soil lab analyses
- Lime applications in lbs./acre

Results for all monitoring and application activities will be submitted in the Annual Sludge Report submitted to EPA by January 31 of each year to contain pollutant concentrations, required certification statements, pathogen and vector attraction reduction requirement documentations, annual bio-solids application rate, site locations, acreages, and quantity applied to each site. In addition, the Annual Sludge Report will be submitted to the EPA by February 19 of each year.

The bio-solids will be slung via a tractor and pull behind ag-slinger soon after each hay crop is harvested. The 30 day waiting period before the next harvest will be honored by the land owner. The schedule for application will be decided through communication between the landowner and land application manager.

Sludge will not be applied during periods of rain. The privately owned Little Dixie Landfill operated by BFI will be used at that time by dewatering the bio-solids and disposing of them in the landfill. The soil will be sampled at least annually and more as necessary to bring the soil pH to the desired level.

PSRP

PSRP will be met by following Alternative 1 in the schedule 40 CFR 503 regulations.

This will be 6 fecal coliform samples using the geometric mean less than 2 million CFU per gram of bio-solids on a dry weight basis.

Vector Attraction Reduction

VSR will be met by following Option 10 in the schedule 40 CFR 503 regulations by the following method.

Bio-solids will be incorporated into the soil within 6 hours of application to or placement on the land. Incorporation will be accomplished by plowing or some other means of mixing the bio-solids into the soil.

Bio-solids Application

Bio-solids will be loaded at the sludge loading station as a dewatered material at approximately 20% into the semi-dump trailer. The bio-solids will then be transported to the site where it will be surface spread and slung via a tractor and pull behind ag-slinger.

The primary choice of bio-solid land application will be conducted utilizing a tractor and ag-slinger. The first step in this process will be to de-water the bio-solids from an estimated 2% solids from the solids holding tank to an estimated 20% solids utilizing belt filter presses and centrifuge located at the wastewater facility. The bio-solids will be loaded into a semi truck and trailer utilizing a front end loader and conveyor belt system extending from the belt filter presses. When the trailer has been filled with de-watered sludge, estimated to be between 18 and 20 tons, the trailer will be hauled to the pre-determined application site for that particular day. We will then dump the sludge on the designated dump site. A frond end loader will pick up the sludge from the dump site and empty its bucket into the ag-slinger. The tractor will then proceed into the field and after reaching the field start site, the tractor operator will engage the ag-slinger as to begin spreading the sludge in the crop row direction. The ag-slinger will spread the sludge on both sides of the machine approximately 60 feet outward. After the crop has been completely land applied to, or the daily allotted volume of sludge has been utilized and the only remnants of product to remain in the dump site is small pieces and insignificant volumes to begin another spread cycle, the dump area will be thoroughly cleaned by the front end loader and utilization of hand tools such as rakes and shovels if necessary.

The tractor, ag-spreader, and dump site will be cleaned on a daily basis. At no time will equipment show visible signs of sludge or recent activities of spreading. When it becomes necessary to move the equipment from one application site to another, not only will the before mentioned equipment be thoroughly cleaned, but all transport equipment will be inspected and cleaned as well.

During periods of adverse weather conditions, or times that would not be advantageous to the land owners for land application, all bio-solids will be de-watered as previously explained and the sludge will be transported and disposed of in the Little Dixie Landfill.

All sludge disposed of via land application will be tracked and monitored for quality pertaining to the applicable current state and federal regulations as well as land applied volume measured in tonnage. As well, all sludge disposed of via land fill will be tracked and monitored for quality pertaining to the applicable current state and federal regulations as well as land filled volume measured in tonnage.

Sludge Monitoring Plan

Nutrients and Metals

The nutrient and metals analyses will be performed on an every other month basis in accordance with the annual dry tons. Representative samples will be collected to demonstrate compliance.

Vector Attraction Reduction

VSR will be met by following Option 10 in the schedule 40 CFR 503 regulations by the following method.

Bio-solids will be incorporated into the soil within 6 hours of application to or placement on the land. Incorporation will be accomplished by plowing or some other means of mixing the bio-solids into the soil.

Pathogen Reduction

PSRP will be met by following Alternative 1 in the schedule 40 CFR 503 regulations. This will be 6 fecal coliform samples using the geometric mean less than 2 million CFU per gram of bio-solids on a dry weight basis. Enough samples will be analyzed to truly represent pathogen reduction.

Appendix B

Wastewater Treatment Plant
Standard Operating Procedures

1. **Belt Filter Press**
2. **Dewatering Centrifuge**
3. **Wet Weather Operating Plan**
4. **Plant Power Failure**
5. **Control Panel Damage**

BELT FILTER PRESS # 1
STANDARD OPERATING PROCEDURE
JACKSON, MS - SAVANNA STREET WWTP

Original Release Date: 28 April 2011
Revision Date: 28 April 2011
Authorization: _____
Reference Document(s): _____

Purpose:

The purpose of the Belt Filter Press (BFP) is to remove water from the treated sludge to reduce hauling costs and produce sludge with the highest possible total solids concentration.

General Description:

The dewatering operation consists of three (3) – 2.2 meter Ashbrook-Simon-Hartley belt filter presses and one (1) portable press. Polymer is supplied to the presses with one Polymaster unit and two Polyblend units. Filtrate from the presses is returned to the head works of the treatment plant and cake is transferred to the holding area by means of conveyer belts for eventual land application.

Safety:

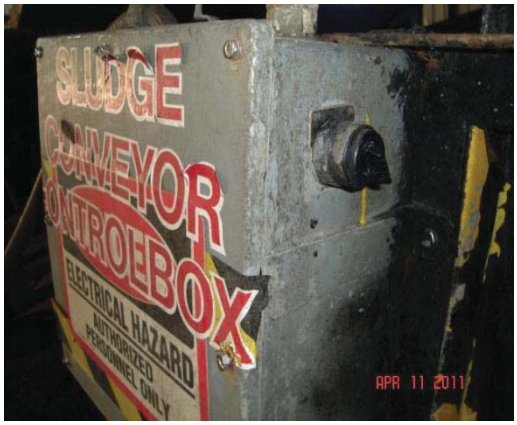
1. Always wear proper personnel protective equipment including safety glasses, safety toed shoes and clothing.

Table 1 - Associated Equipment

Equipment	Equipment Number
Polymer units	CF 11601
Conveyor belts	CR 11601, 02
Loader	N/A
Frac Tank	TK 11601
Sludge Pumps	PP11601

Startup	
Action	Location/Picture
☐ **OPEN** Frac tank discharge valve.	 Photo 1 – Frac tank discharge valve for sludge pump # 1 & 2
☐ **OPEN** sludge pump # 1 suction valve.	 Photo 2 – Sludge pump # 1 suction valve
☐ **OPEN** sludge pump # 1 discharge valve.	 Photo 3 – Sludge pump # 1 discharge valve
☐ **INSURE** isolation valve is **CLOSED**.	 Photo 4 – Sludge pump # 1 isolation valve

Startup	
Action	Location/Picture
☐ **CHECK** belts for debris. ☐ **CHECK** belt alignment. ☐ **INSURE** ploughs are in the **DOWN** position.	 Photo 5 – Ploughs
☐ **INSURE** tension valve is in the retract position.	 Photo 6 – Tension/retract switch
☐ **CHECK** hydraulic oil level.	 Photo 7 – Hydraulic oil sight gauge
☐ **OPEN** the two (2) inch wash water supply valve located beside each press.	 Photo 8 – Wash water supply valve

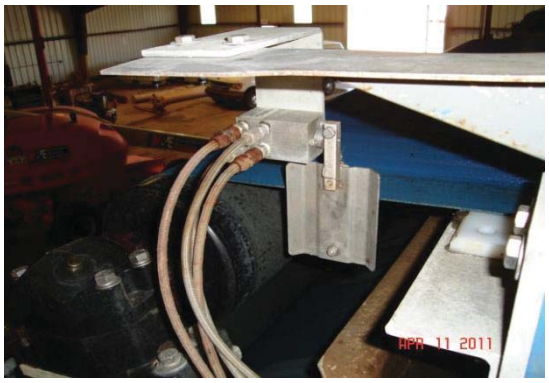
Startup	
Action	Location/Picture
☐ **TURN** the belt tension/retract valve to the tension position.	 Photo 9 – Tension position
☐ **TURN** main breaker at the Sludge Conveyor Control Box to the **ON** position to activate the cross conveyor. ☐ **TURN** conveyor switch to the Hand position.	 Photo 10 – Sludge conveyor control box
☐ **TURN ON** discharge conveyor by placing the switch in the **ON** position.	 Photo 11 – Discharge conveyor switch Photo 12

Startup	
Action	Location/Picture
At the Control panel: ☐ **INSURE** power is to the BFP control panel # 1 by checking that the control power switch is in the **ON** position. ☐ **PRESS** the green start button for the primary power on the BFP control panel. The green light should illuminate. ☐ **PRESS** the green start button for the following equipment in the sequence listed below. The green light should illuminate for each item. • Hydraulic pump • Booster pump • Belt tension	 Photo 12 – BFP # 1 control panel
☐ **INSURE** hydraulic tension circuit pressure is 300 to 400psi.	 Photo 13 – Hydraulic pressure gage
At the Control panel: ☐ **PRESS** the green start button for the following equipment in the sequence listed below. The green light should illuminate for each item (See Photo 12). • Belt drive • Sludge grinder • Polymer system • Sludge pump	

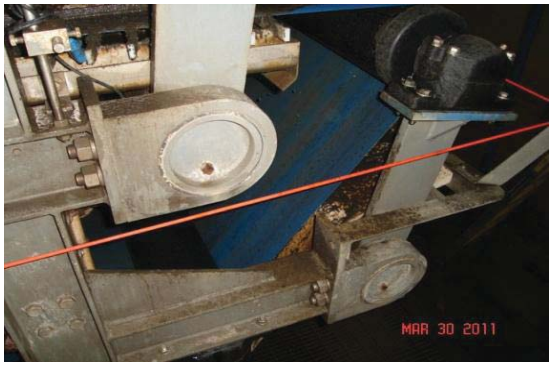
Startup	
Action	Location/Picture
At the Polymer Unit: ☐ **OPEN** quarter turn water supply valve. ☐ **TURN** the toggle switch **ON** to energize the potable water solenoid. ☐ **TURN** toggle switch to energize polymer mixing chamber.	 Photo 14 – Quarter water supply valves  Photo 15 - Potable water toggle  Photo 16 – Polymer mixing chamber toggle

Startup	
Action	Location/Picture
☐ **ADJUST** quarter turn water valve to deliver 20 psi to mixer.	 Photo 17 - Quarter turn water valves
☐ **TURN** toggle switch on LMI pump to internal position.	 Photo 18 - LMI toggle switch
<u>At the Variable Frequency Drive (VFD):</u> ☐ **PRESS** the start button for BFP # 1.The press should be fully operational.	 Photo 19 - VFD # 1 Start button

Normal Operation	
Action	Location/Picture
☐ **CHECK** press sludge feed area to **INSURE** full belt width distribution and coagulation. ☐ **CHECK** sludge feed area for evidence of small bubble white foam indicating excessive polymer feed.	 Photo 20 – Sludge feed area
☐ **CHECK** for proper furrow of sludge through ploughs.	 Photo 21 – Sludge furrows
☐ **CHECK** perforated roller section for full width sludge distribution. ☐ **CHECK** drain sections for sludge buildup: hose down if necessary.	 Photo 22– Perforated roller
☐ **OPEN** and **CLOSE** flushing valve on upper spray boxes as required to clean belts.	 Photo 23 – Upper spray box flushing valve

Normal Operation	
Action	Location/Picture
☐ **OPEN** and **CLOSE** flushing valve on lower spray boxes as required to clean belts. ☐ **CLEAN** belts with bleach, vinegar, and water at least twice per shift.	 Photo 24 – Lower spray box flushing valve
☐ **CHECK** all pressure gauges to **INSURE** normal operating ranges. ☐ **OPTIMIZE** belt speed, sludge and polymer feed to maximize sludge flow and minimize polymer use. ☐ **INSURE** tracking paddles are in correct position and belt is not drifting. ☐ **CHECK** Frac tank for sludge condition and volume.	 Photo 25 – Tracking paddle

Shutdown	
Action	Location/Picture
At the VFD: ☐ **PRESS** red stop button to **TURN OFF** the sludge pump. At the Polymer units: ☐ **TURN OFF** toggle switches on polymer mixer and LMI pump (See photo 16 & 18). At the Control panel: ☐ **PRESS** the Red stop buttons sequentially for the following equipment: • Sludge pump • Polymer system • Sludge grinder ☐ **ALLOW** presses to discharge all sludge on belts. ☐ **RUN** presses for fifteen (15) minutes to allow complete cleaning of belts. ☐ **PRESS** the red Stop buttons sequentially for the following equipment: • Belt drive • Belt tension • Booster pump • Hydraulic pump ☐ **TURN** the tension/retract valve to retract (See photo 6). ☐ **CLOSE** the two inch water supply valve (See photo 8). ☐ **TURN OFF** the control power switch at the control panel. ☐ **DISENGAGE** the main breaker at the control panel. If All Presses are shut down: ☐ **TURN OFF** main breaker at the sludge conveyor control box to deactivate cross conveyor. ☐ **TURN OFF** toggle switch for the discharge conveyor.	 Photo 26 – Control panel  Photo 27 – Control panel red stop buttons

Emergency Shutdown	
Action	Location/Picture
☐ **PULL** the red emergency stop cable surrounding each press.	 Photo 28 – Press emergency stop cable
☐ **PRESS** the red emergency stop button each BFP control panel.	 Photo 29 – Control panel emergency stop button
☐ **PULL** the red emergency stop cable below the cross conveyor for complete shutdown of all presses and associated equipment.	 Photo 30 – Cross conveyor emergency stop cable

Sludge Dewatering
Centrifuge CP41 Standard Operating Procedure
JACKSON, MS - SAVANNA STREET WWTP

Original Release Date: June 4, 2013
Revision Date: _____
Authorization: _____
Reference Document(s): _____

Purpose:

The purpose of this document is to provide basic Centrifuge CP41 Rental start / stop operations for Dewatering Personnel.

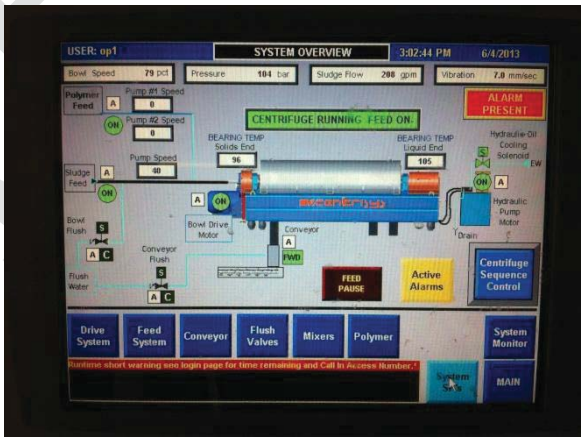
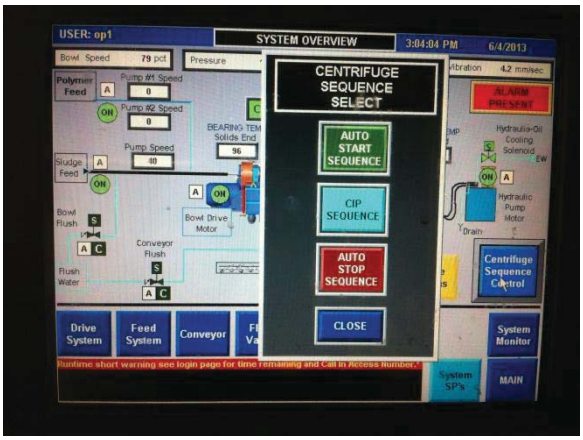
General Description:

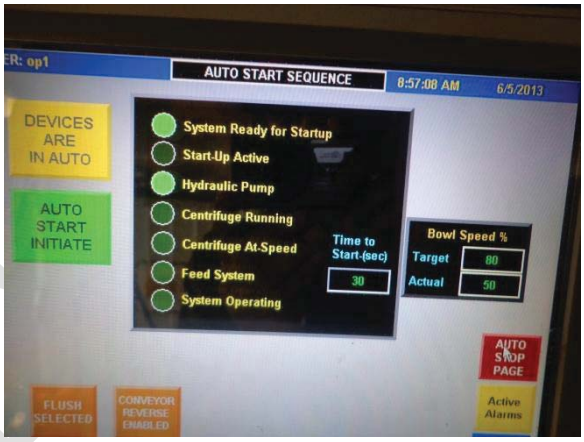
Safety:

1. Always wear proper personnel protective equipment including hard hat, safety glasses, safety / steel toe shoes and clothing.

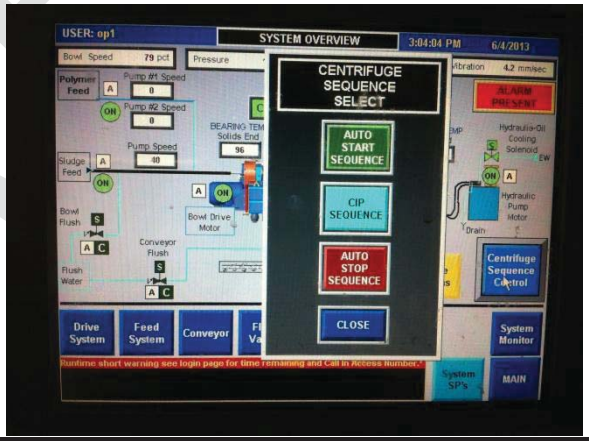
Table 1 - Associated Equipment

Equipment	Location	Equipment No./Asset No.
Centrifuge	Dewatering Building	CP41 Rental

Startup	
Action	Location/Picture
☐ On the MAIN SCREEN touch the **System Overview** icon in lower right hand corner of the control panel screen.	
☐On the SYSTEM OVERVIEW screen touch the **Centrifuge Sequence Control** icon.	
☐ From the CENTRIFUGE SEQUENCE SELECT menu, select **Auto Start Sequence** icon.	

Startup	
Action	Location/Picture
☐ On the AUTO STOP SEQUENCE screen touch the **Auto Start Initiate** icon and the **System Ready for Startup, Startup Active and Hydraulic Pump** lights will illuminate and turn green for the first segment of system startup. ☐ The **Centrifuge Running, Centrifuge At-Speed, Feed System and System Operating** lights will automatically illuminate and turn green for final system startup. ☐ Once all six lights are green and illuminated, the Centrifuge will automatically start.	

Normal Operation	
Action	Location/Picture
☐ Centrifuge is in full operation.	

Shutdown	
Action	Location/Picture
☐ On the SYSTEM OVERVIEW screen touch the **Centrifuge Sequence Control** icon ☐ From the CENTRIFUGE SEQUENCE SELECT menu, select **Auto Stop Sequence**	 

Emergency Shutdown	
Action	Location/Picture
☐ On the Panel depress red **Emergency Stop** button to stop all operations and systems.	

Jackson MS Savanna Street Wastewater Treatment Facility
Standard Operating Procedure

Treatment Works Bypass Minimization and Wet Weather Operating Plan

Release Date: May 2014

Authorization: _David Lewis_

Table of Contents

INTRODUCTION

Overall plant operating strategy is to process all flow received up to the permitted limits or capacity limits of the unit processes. However, equipment failures, collection system Inflow and Infiltration (I&I) or extreme operating conditions may limit the ability to process all flows coming to the treatment plant. These guidelines and instructions support minimizing the occurrence of treatment works bypass events and mitigating impacts should bypass be unavoidable. A discussion of the causes and guidelines for reducing overflows of raw sewage are presented in the Standard Operating Procedure (SOP).

A bypass of any part of the treatment system is a significant incident and should be managed in accordance with United Water (UW) policy. A bypass may be elevated to major incident designation if the discharge occurs during dry weather or is of a magnitude great enough to cause upstream manhole surcharge and is also in direct violation of the existing EPA Consent Decree. Specific notification responsibilities will be addressed in a later section.

DISCLAIMER:

This document was prepared in expectation of the storm cell lagoons being completely empty of water and free of excess solids content, as well as, all referenced raw influent pumps, and all other plant process equipment and basins, being in proper operating condition and available for utilization. At the time of this document inception, May 2014, the referenced storm cells have been dredged and cleaned to a yet to be determined level, and only two 30 mgd raw influent pumps are operational and available for use.

PROCESS OBJECTIVE

In keeping with BEST practices, and to lessen potential adverse effects to the environment and human health, the preference is to treat combined flows during wet weather events to at least some degree of treatment. Ideally, full treatment up to the wastewater plants permitted capacity should be accomplished prior to diverting and storing water in the storm cells and bypass channel. This allows for, at a minimum, dis-infection of bypassed water compared with no treatment when overflows are experienced in the collection system.

- Pump all influent flows entering the facility to proper treatment according to the normal sequence of unit processes
- Gradual increases in flow to avoid solids washout from the sedimentation basins
- Maximize treatment to all flows entering the facility
- Closely monitor, control and limit flows bypassed around treatment units or overflow due to facility capacity limits
- Avoid damage to upstream private and public property
- Avoid facility damage
- Limit possible environmental and health impacts from bypass events
- Investigate and evaluate all bypass incidents to ascertain causes and to identify improvements that will help reduce the frequency and duration of future recurrences

PROCESS PERFORMANCE GOALS

- Protect treatment plant from flooding which would impair long term operations
- Reducing flow bottle necks
- Limit solids washout from the secondary clarifiers which would impair treatment plant long term operations
- Temporarily alter operational conditions to maximize flow through available equipment
- Maintain positive control of the influent pumping process
- Maximize combined storm water treatment during wet weather events by:
  1. Capturing the maximum amount of combined storm flow in the storm cell lagoons
  2. Bypassing combined storm flow when lagoons are full and collection system flows remain high
  3. Providing disinfection to bypasses combined storm flow (This alternative is a better practice than allowing untreated discharges from manholes and lift stations in the collection system)
  4. Recovering stored storm water flow to the treatment plant as plant capacity limits allow and emptying the stored combined water as soon as practical from the storm cell lagoons and bypass channel
  5. Maintain all storm cell lagoons at an empty level to provide maximum available capacity for the next wet weather event

PROCESS PERFORMANCE INDICATORS

- Plants (raw sewage) bypass condition
- Flooding of plant areas
- Associated equipment shutdown or failure to start when needed
- Sewer system surcharge

PLANT BYPASS LOCATIONS

The Savanna Street wastewater treatment facility has the ability to divert wet weather flows into storm holding ponds. When those ponds reach their capacity, excess flow is then disinfected and discharged with the plant effluent into the receiving stream (Pearl River).

- A manual bar screen allows for flows exceeding the hydraulic capacity of the Headwork's Bar Screens to be diverted
- A bypass exists to allow flow to be diverted around the grit removal system
- A bypass exists around the current UV disinfection system. That bypass is currently used at all times and effluent disinfection is by chlorine

TREATMENT LEVEL PRIORITY

All flows entering the facility should receive treatment according to the normal sequence of unit processes. Equipment failures or extreme operational conditions, however, may limit the ability to handle all flows. Should it become necessary to bypass portions of the treatment facilities, there exists a definite order of preference for point of discharge in the treatment process where flows should be discharged. Treatment level priorities are presented as follows in descending order of preference with the most preferred at the top of the list and the least preferred at the bottom of the list.

- Diversion of flow through the manual bar screen when the level of the headwork's structure approaches overflow
- Bypass of the Grit System when headwork's levels approach overflow
- Diversion of influent raw sewage into the storm lagoons when flows exceed one of the following criteria:
    - Calculated Solids Flux analysis maximum treatable flow is exceeded
    - Influent structure is near overflow
    - All available pumping equipment is online
- Influent is diverted first by opening the West Rankin Gate #2 and Closing West Rankin Gate #1
- Additional Influent flow is diverted to the storm lagoon using the 100 MGD pump or by opening the 54 inch sluice gate between the 30 MGD pumps and the 100 MGD pump

PROCEDURES FOR BYPASS AVOIDANCE/MINIMIZATION

Under normal operating conditions, all flow will be accepted into the plant and processed routinely without problem. However, under conditions of high flows, wet weather events, failure of influent screens or limited pumping capacity, plant operators will implement procedural methods that will reduce the risk that a bypass will be necessary. Accordingly, an operational strategy for reducing the likelihood for a bypass involves the following:

- Reducing flow bottle necks
- Temporarily altering operational conditions to maximize flow through available equipment
- Making adjustments to plant flow conditions in gradual increments to lessen the impact on influent pump operation

Preparation for wet weather operational conditions should be started early because flows can quickly increase with little time for reaction. This is particularly true during periods of intense rain or after periods of prolonged rain when the ground has become saturated and there is increased potential for inflow, infiltration and surface runoff into the collection system sewers. Flows can increase dramatically even at non-peak periods. Wet weather preparation should include the following:

- Anticipate quick need to place the screening equipment on **Hand** in the event of a rapid flow increase
- Placing Grit removal equipment on **Hand**
- When weather forecasts indicate a strong potential for rains, high flow conditions should be anticipated
- Defer if possible non-essential maintenance that would require disabling the standby equipment to an alternate time or schedule the work to be started and completed during the plant low flow period
- When inclement weather is forecast, ensure that all emergency generators are operational
- Increase frequency of operator rounds to check for obstructions and proper function of all process equipment

The following table illustrates the operating status of most major equipment during normal (non-wet weather) flow periods:

NORMAL OPERATING MODES	
North Influent Gate #1	• Normally Open 100%
North Influent Gate #2	• Normally Closed.
Caney Creek Gate	• Normally Open
West Rankin Force Main Gate 1	• Normally Open – Allows flow from North Rankin to flow to the influent wet well.
West Rankin Force Main Gate 2	• Normally Closed – Allows flow from West Rankin to be diverted to the storm water lagoon and allows flow from the storm water lagoon to flow back into the influent wet well.
Raw Sewage Pumps	• 2 to 3-30 MGD pumps in service depending on flow conditions • 100 MGD pump on standby

NORMAL OPERATING MODES	
Storm Flow Gate to the Storm Holding Ponds	• Normally Closed
54" Bypass Gate	• Normally closed
Headwork's Bar Screens	• 2 Screens in service in Auto • Operated off of Timers and/or differential level • Influent and Effluent Gates 100 % open • Influent Gate to Bypass Screen open
Headwork's Structure	• Both Screen channel effluent gates open
Grit Removal	• Both Grit Systems on line in Auto.
Anoxic Zone	• Both Anoxic Zones in service with influent and effluent gates 100% open. DO controlled at between 0.2 and 0.5 mg/L.
Aeration Tanks	• All Aeration Tanks in service
Clarifiers	• Influent Gates for online Clarifiers set to equalize flows to each clarifier. Adjustments are made to balance sludge blanket levels. • RAS pumps in Manual with RAS flow set to Minimum as calculated by solids flux analysis (Due to lack of flow measuring devices on the RAS system, the pumps are normally run 100%) • WAS pumps in Manual set to waste as calculated to maintain target MCRT

NORMAL OPERATING MODES	
UV Disinfection	• UV system is out of service with no plans to repair or return to service
Chlorine Disinfection / De-chlorination	• Plant Effluent is disinfected using Rotometer #1 and the "Water Champ" injector located in the clarifier effluent structure. • Chlorine dose is adjusted to achieve a FREE CHLORINE residual at the process control location of 1.0 mg/L. • A TOTAL CHLORINE residual is taken daily at the final after de-chlorination for permit compliance • Storm water bypass flow is disinfected using Rotometer #2 and the inductor in the chlorine feed room. • Storm water bypass disinfection chlorine is adjusted to achieve a FREE chlorine residual of 1.5 mg/L at the process control sample point. • Plant effluent is de-chlorinated using a Sulfonator in the head of the effluent flow channel • Storm water bypass flow is de-chlorinated using a sulfonator in the head of the diversion flow meter channel

Influent Pumping System Raw Sewage Wet Well

1. The Wet Well levels must be closely monitored and additional raw sewage pumps placed on line to maintain the wet well level at safe operating depths if the wet well level indicators do not respond to rising wet wells. Additional pumps

should be placed on line as early as possible to prevent flow surging and washout of solids in the secondary clarifiers. A fast rising level will require fast response for additional pumping capacity to prevent overflows and flow surges through the process. During normal dry weather operating days the desired wetwell level is maintained at between 10 and 15 feet. When wet weather has been forecasted the wet well level is controlled at 10 feet. Prior to predicted rainfall, the polymer feed system located at the secondary clarifier splitter box is placed into service in order to inject polymer into the RAS system and assist in settling of solids and ultimately allow for additional flow to clarifiers. As the wet well level increases additional 30 MGD pumps are placed online until one of the following conditions are met:

- Calculated Solids Flux analysis maximum treatable flow is exceeded
- Headwork's structure is near overflow
- All available pumping equipment is online

2. When one or more of the above criteria has been met and wet well levels continue to rise and reaches a level of 21feet:
    - Discontinue any Storm Lagoon recovery pumps or flows from the diversion channel gates
    - Open The West Rankin gate #2 and close West Rankin Gate #1 to allow diversion of the West Rankin flow to the storm water lagoons

3. If wet well levels continue to rise and flow to the treatment plant has not been maximized:
    - Continue placing 30 MGD pumps online until all three are online at 100% pumping speed
    - Discontinue Dewatering process and sludge wasting to minimize in-plant recycle flows and their impact on the diversion flow. NOTE: Verify with the Operations Manager before discontinuing Dewater and Waste Flows
    - Discontinue accepting water from leachate and septic tank haulers into the treatment plant
    - Discontinue leachate pumping from the storm cell bag storage areas
    - Begin Opening the 54 inch gate to allow diversion of some of the influent flow to the storm lagoon while still maintaining maximum flow to the treatment plant as defined by the criteria above

4. If all available 30 MGD pumps are in service at 100% speed and the flow to the treatment plant has been maximized and the wet well level continues to rise above 23 feet, close the 54 inch gate and use the 100 MGD pump at minimum speed to allow diversion of flow into the storm lagoons and control the wet well level below 23 feet

5. Once all available pumping equipment is online with maximum flow to the treatment plant and all available diversion flow to the storm lagoons, restrict the north gate #1 to 5% to allow for storage in the collections system and to keep the influent wet well below 23 feet. If the wetwell continues to rise, the north gate #1 should be further restricted in 1% increments until the gate is 100% completely shut. NOTE: Shutting the north gate #1 completely is the final and last option. However, wetwell levels above 25 feet create a dire circumstance due to danger of flooding the dry pit and catastrophic failure of motors and controls and should be avoided at all costs.

Location	Task	Steps
Influent Pumping Station	1. Monitor wet well levels and flows	a. Monitor wet well level and try to maintain control at 10 feet during wet weather. b. Add additional pumps as required to maintain the wet well level until one or more of the following criteria are met: ○ Calculated Solids Flux analysis maximum treatable flow is exceeded ○ Influent structure is near overflow ○ All available pumping

Location	Task	Steps
		equipment is online.
Headwork's	2. When flows near or exceeds 60 MGD notify Operations Manager and place influent screens and Grit removal systems in Hand operation	a. Place the Auto/Hand Switches to Hand

6. Secondary Clarifiers

The Secondary Clarifiers ability to process high wet weather flows is largely dependent on the aeration systems ability to produce a sludge that readily separates and settles rapidly. A model (Solids Flux Analysis) for the Secondary Clarifiers at the Jackson Mississippi Savanna Street Wastewater Treatment Facility has been developed in order to predict the flow at which the Secondary Clarifiers will begin to become overloaded and allow washout solids to be carried through the effluent. Prior to any storm event, check the Daily Exception Report's Solids Flux analysis sheet for an indication as to how much flow the Secondary Clarifiers will be able to properly accommodate.

7. Chlorination / De-Chlorination

Place Chlorination / De-chlorination equipment online for the diversion flow once the storm lagoons reach full capacity and flow begins to exit the storm lagoons and enter the diversion channel. Notify the Lab Supervisor that a diversion is taking place and follow instructions for collecting the required additional NPDES samples.

Consult any recent Process Control Orders and/or Operating orders for Total and Free Chlorine Residual control set points.

8. Post Bypass Event

After the bypass event has ceased to exist, the following steps should be initiated:

- Chemical feeds to the bypass channel should be discontinued
- The plant valve work pertaining to process control should be returned to normal operating status in reverse order of the aforementioned steps
- The North Gate #1 re-opened to 100%
- The screenings and grit systems should be returned to "auto" control
- Finally, when wetwell levels are back within normal operating range, diverted water remaining in the bypass channel and storm lagoons should immediately be recovered to the facility for proper treatment. This task can be performed by either utilizing a mechanical recovery pump or by engaging the electronic gate valves located in the bypass channel invert and allowing for gravity return to the influent wetwell
- Resume De-watering process and sludge wasting recycle flows
- Resume accepting water from leachate and septic haulers and vendors
- Resume leachate pumping from storm cell bag storage areas

Bypass Preparedness

Plant operations and maintenance personnel must be immediately available, continuously aware of plant operational conditions, and ready to implement response actions which have been thought out, planned for and practiced in advance. Should a situation arise where plant bypassing is unavoidable, close control over plant flows and pumping will be necessary to minimize the volume of water diverted. **Always** visually verify an alarm indicating a high level condition. Finally, system monitoring instrumentation must be on a program of routine regular calibration to assure the validity of indicated values and to enhance personnel confidence.

A. O&M Tech Presence:

Plant process equipment is equipped with sensors that monitor critical process conditions. These sensors are set to trigger various alarms to alert plant personnel of adverse conditions so that corrective actions can be taken. It is still necessary, however, that plant personnel perform routine inspections of support equipment and systems as a verifying check on correct performance of field instruments. In addition, routine observation by plant personnel helps to identify deteriorating trends in performance so that corrective actions can be implemented prior to the development of an alarm condition that could require immediate and dramatic action to resolve.

- Maintain continuous personnel presence in the pumping area or at the SCADA monitor screen to provide for immediate emergency response.
- Close monitoring of the return rate and clarifier performance will provide indications of process integrity as secondary flows increase.

B. Preparedness Documentation:

- Operating conditions are observed every two hours and recorded on the plant log
- The O&M Tech will inspect the plant systems and record status in the plant log book
- Report equipment deficiencies to the Maintenance Supervisor and/or Maintenance Manager and note in the log book. Have work requests immediately entered for items requiring other than minor maintenance

C. Routine Instrument Calibration:

- Critical instrumentation must be checked regularly and placed on a formal calibration program. This is to assure accurate representation of field conditions which cannot be easily or directly observed by plant personnel (currently calibrated at a minimum of annually)

Notification Responsibilities

According to NPDES permit requirements, verbal notification to MSDEQ must be made within 24 hours of events in which flows are bypassed around treatment processes. Also, during the Consent Decree period, the Consent Decree manager should be immediately notified of the condition. In addition, follow up written notification to the MSDEQ within 5 days is also required. Further, notifications are also required to provide for clear internal communication with UW and The City of Jackson MS. The plant Shift Operator is responsible for initiating preliminary verbal notifications and making follow up calls to confirm and revise information as outlined in the UW guidelines.

A. Wet Weather Incident Report:

During high flow events, the O&M Tech will make additional notes as to hourly flows, rainfall amounts and action items taken during a high flow event. Additionally, items that would require this guideline to be modified in order to improve the plants ability to process high flows should be noted

B. Contact Lists:

Immediate contact of the Plant Operations Manager as indicated in this UW Notification Policy whenever it becomes apparent that a Wet Weather incident that may cause an increase in plant flows above 60 MGD. Please see the emergency contact list for contact numbers. The following list is provided for reference:

- Project Manager / Operations Manager – when flows reach 60 MGD
- Operations Supervisor so that the UW 800 line and MSDEQ contacts can be made

C. Bypass Incident Investigation and Report (Intelex)

Each time a plant high flow or bypass event occurs a complete investigation shall be conducted and a written report prepared. The Shift O&M Tech Lead and Plant Operations Supervisor will conduct an initial investigation and prepare the preliminary report. For Wet Weather Reports, a report should be filed whenever there is a high flow event where a diversion into the storm lagoons has occurred and resulted in a treatment bypass

The Plant Operations Supervisor will conduct a final investigation if necessary for further refinement. The initial report shall be submitted to the Project Manager within 24 hours of an occurrence.

It is essential that the Shift O&M Tech Lead and Operations Supervisor conduct a timely initial investigation of the events leading to and surrounding high flow or bypass events. The investigation is conducted to determine exactly what happened and what actions can be taken in the future to prevent or minimize the impact of future wet weather flows. The investigation therefore provides the basis for a learning opportunity to improve the performance of plant facilities and effectiveness of staff teamwork. Essentials of the investigation are as follows:

- Obtain statements from all O&M Techs on duty and/or from operator log book notes
- Statements to include descriptions of significant events and their sequence
- Conduct a debriefing, with involved staff to clarify events and resolve any discrepancies

Information determined during the course of the investigation is to be reported in a formal report. The report provides the Project Manager and Operations Manager with vital information for assessing equipment reliability and priority of support by maintenance, training and engineering groups.

The report is to include the following:

- Summary
- Description of the event
- Significance with respect to NPDES permit compliance

- Statement of findings
- Conclusions as to what happened and why
- Identification of extenuating or contributing factors
- Recommendations of how to prevent future occurrences
- Copies of all supporting charts, records and logs
- Listing of personnel on duty and assigned posts
- Ultimately, was the event non-avoidable

Operating records, logs and the SCADA monitor system provide an important source of information when conducting investigations to identify causes of operational and mechanical problems. Accordingly, to provide more complete data and records on plant high flow, overflow events, or bypass events, a complete investigation should be conducted and report filed as a standard procedure whenever there is such an event. The investigation would include compilation of all relevant documentation and interviews with involved parties, preferable immediately following the incident. Important documents consist of log book entries, data logs, charts for plant flows and levels, and written statements. The formal report should contain an incident description identifying occurrences, conditions and sequence of events; identification of actual or probable causes and contributing circumstances; statements of findings; conclusions; recommendations of how to prevent recurrence and specific mitigating actions with responsible parties identified.

WWTP POWER FAILURE SOP
STANDARD OPERATING PROCEDURE
JACKSON, MS - SAVANNA STREET WWTP

Original Release Date: _8-23-11_____
Revision Date: _3/9/2012_
Authorization: _Darnell Gray_/ Eddy Russell_____
Reference Document(s): _N/A_____

Purpose: For personnel to be familiar with procedures taken in case of temporary power loss at lift station facilities.

General Description: This procedure covers actions to be taken in the event of a temporary power failure.

Safety:

1. Always wear proper personnel protective equipment including safety glasses, safety toed shoes and clothing.
2. Assess the situation to make certain that area is safe to enter.
3. Avoid all electrical power lines that may be down. Contact Power Company and/or supervisor for further instructions if needed.
4. *** Task can only be completed by an Electrician.**

Table 1 - Associated Equipment

Equipment	Location	Equipment No./Asset No.
ALL	Savanna St., Trahon, Presidential Hills.	

Power Failure SOP	
Action	Location/Picture
1. Notify immediate supervisor of power failure. **2.** Make contact with on-call personnel. **3.** Ensure emergency generator is operating correctly **4.** Survey site to determine if it's safe to enter. **5.** Test equipment to determine if it is an internal or Power Company problem. **6.** Gather equipment required to make repairs. **7.** Monitor all work being performed at site. **8.** Ensure it is safe to reenergize equipment. **9.** Test run all equipment and monitor before leaving site. **10.** After repairs have been made, re-secure all equipment used in making repairs for transport. (Portable pumps, power generator, etc.) **11.** Re-secure locks on control panels, wet well covers, doors, and fencing. **12.** Notify and/or report any SSO to the proper personnel within 24 hours.	

SEVERE CONTROL PANEL DAMAGE SOP
STANDARD OPERATING PROCEDURE
JACKSON, MS - SAVANNA STREET WWTP

Original Release Date: _8-22-11_____
Revision Date: __3/9/2012__
Authorization: _Darnell Gray / Eddy Russell_____
Reference Document(s): _N/A_____

Purpose: This procedure is intended to provide personnel with actions taken when an accident causes damage to station(s) near streets or right-of ways.

General Description: There are several stations close to streets and intersections that will have the potential of being damaged and/or destroyed in the event of a traffic accident. This procedure will cover the necessary repairs that may be required in the event a traffic accident damages station.

Safety:

1. Always wear proper personnel protective equipment including safety glasses, safety toed shoes and clothing.
2. Assess the situation to be certain station can be entered safely.
3. Stay clear of all power lines and if needed, call Power Company to shut down power.
4. *** Task can only be completed by an Electrician.**

Table 1 - Associated Equipment

Equipment	Location	Equipment No./Asset No.
Control panels	All Lift Stations	

Emergency Shutdown	
Action	Location/Picture
1. Upon arrival, assess the situation to make certain that area is safe to enter. **2.** Notify immediate supervisor of findings. **3.** Notify Power Company if lines are damaged. **4.** If panel can be removed, have Power Company to disconnect service. **5.** If station has a bypass valve in valve box, set up portable pump to bypass station during repairs. **6.** If station is not equipped with a valve box or bypass system, contact local vendor to assist in controlling overflow from station. **7.** Contact the appropriate personnel to assist in making repairs and removal/replacement or remounting of control panel. **8.** After all necessary repairs and/or replacement have been completed; notify Power Company to restore power to station. **9.** Monitor station for at least one cycle of pumping before leaving station. **10.** Re-secure all doors, panels, wet well lids, and fencing. **11.** Transport all portable pumps, hoses, fuel, and etc. back to staging area. **12.** Notify the appropriate personnel of SSO within 24 hours per SOP for SSO's. **13.** Notify the City of property damage and photograph area for records.	

EPA Comments on Wastewater Treatment Plant Operations and Maintenance Program

City of Jackson Response to EPA Comments

Wastewater Treatment Plant Operations and Maintenance Program EPA Approval Letter

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

AUG 11 2014

CERTIFIED MAIL 7010 1060 0002 1705 3917
RETURN RECEIPT REQUESTED

City of Jackson
Attn.: The Honorable Tony T. Yarber
Mayor, City Hall
219 South President Street
Jackson, Mississippi 39205

Re: Wastewater Treatment Plant Operations and Maintenance Program
City of Jackson, Mississippi Consent Decree
Case No.: 3:12-cv-790 TSL-JMR

Dear Mayor Yarber:

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) Wastewater Treatment Plant (WWTP) Operations and Maintenance (O&M) Program dated May 30, 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.

WWTP O&M Program Comments

1. Section 4.3 Storm Cell Sludge (page 27): This description states that there is a return line from Storm Cell #3 to the West Bank Interceptor that can be used to return flows stored in the storm cells to the WWTP for treatment. Is this a new (or rehabilitated) return line, as EPA was under the impression it was not possible to return flows to the WWTP? There also appears to be a typo, as the correct Figure referenced in this first paragraph is Figure 4-2 (not Figure 4-1).

2. Section 5.1 UWS-MS Preventative Maintenance (PM) Program (pg. 30): In the 4th bullet, it is stated that "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." Does the City or UWS-MS actually use the interface to trigger run time based PM work orders? Also, does the City or UWS-MS actually generate condition-based and/or predictive-based work orders via sensors (if so, please list what equipment has sensors and what type sensor it is)?

3. There appears to be a few typos in the WWTP O&M Program submittal as well. One is in Appendix A on page A-5 (1st sentence below the bullet items), where the City used the acronym "EPD" when it meant to use "EPA." Another is found in Appendix B on page 4 of 15 (4th bullet) where the City uses "…West Ranking Gate #1" (should be West Rankin Gate #1). Finally, in the first sentence under "Operations Staff Qualifications" (pg. 34), it is assumed the City meant to state "The United Water **Operations** [not Maintenance] Department has 34…"

4. As noted in the Savanna Street WWTP CPE, the City has not inspected, much less maintained or cleaned, the aeration basin diffusers since their installation in 1996, which are currently 1.5 times their normal design life. The CPE further states that WEF MOP 11 suggests annual inspection/cleaning. Please provide a schedule for the inspection and maintenance/cleaning of these diffusers.

5. Paragraph 42.(e)(ii) requires the City to develop and implement standard procedures to conduct preventive maintenance of WWTP equipment. The WWTP O&M Program continually states that United Water conducts preventive maintenance and tracks that in the EPortal computer system, but it appears that not all equipment is on a preventive maintenance schedule (e.g. the aeration basin diffusers mentioned above). Please provide a list and schedule of preventive maintenance for all major unit processes.

6. The WWTP O&M Program includes Standard Operating Procedures (SOPs) for only two pieces of equipment (the sludge belt filter presses and the sludge dewatering centrifuge) and SOPs for three different events (Wet Weather Operating Plan; WWTP Power Failure and Pump Station Control Panel Damage from traffic accidents). The WWTP O&M Plan should include SOPs for operation of all major unit processes.

7. The Savanna Street WWTP Bypass Minimization and Wet Weather Operating Plan in Appendix B states that during wet weather events where the influent pump station wet well continues to rise but flows to the WWTP have not been maximized that staff should "Discontinue Dewatering process and sludge wasting to minimize in-plant recycle flows and their impact on the diversion flow" after notifying the Operations Manager (pg. 8 of 15; 2nd bullet under heading number 3). This seems illogical as ceasing sludge wasting will increase the need for in-plant recycle flows (less wasting equals more recycle). Please explain what is meant here.

8. Please provide a schedule for reviewing and updating the WWTP O&M Program (e.g. the City will review and update, as necessary, the WWTP O&M Program on an annual basis).

The EPA will approve the WWTP O&M Program pending a timely and complete response to the above comments. Pursuant to Section V, Paragraph 13 of the Consent Decree, 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

Ms. Keisha Powell
City of Jackson

Department of Public Works

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

December 30, 2014

By Mail and Email
Chief, Clean Water Enforcement Branch
Water Protection Division
U.S Environmental Protection Agency, Region 4
ATTN: Brad Ammons
61 Forsyth Street, S.W.
Atlanta, GA 30303
Ammons.Brad@epa.gov

RE: City of Jackson, Mississippi Consent Decree
Certifications for Responses to Comments on CMOM Program Deliverables

Dear Mr. Ammons:

This letter will serve as my certification under paragraph 16 of the Consent Decree for the City of Jackson's responses to EPA comments on the following Consent Decree deliverables:

- Gravity Line Preventive Maintenance Program (letter dated 9/12/2014);
- WWTP Operations and Maintenance Program (letter dated 9/12/2014);
- Comprehensive Performance Evaluation (letter dated 9/28/2014).

I certify under penalty of law that this document and the three (3) letters listed above 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.

Please contact me if you have any questions.

Sincerely,

Kishia L. Powell
Director, Department of Public Works

cc: Tony Yarber, Mayor
Monica Joiner, City Attorney
Terry Williamson, Consent Decree Manager
Karl Fingerhood, U.S. Department of Justice
Les Herrington, P.E., Mississippi Department of Environmental Quality

Department of Public Works

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

September 12, 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: Wastewater Treatment Plant Operations and 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 August 11, 2014 providing review comments for the subject document. A response to each review comment is provided below.

1. Section 4.3, Storm Cell Sludge (pg 27): The storm cells do have the capability to return wastewater to the plant. A new 24-in return line was constructed as part of the Storm Cell Rehabilitation project completed in April 2014. The line is used to return storm cell contents to the influent pump station.

2. Section 5.1 UWS-MS Preventative Maintenance (PM) Program (pg 30): The City's contract operator, United Water Services Mississippi LLC (UWS-MS), does not currently generate condition-based or predictive- based work orders via sensors since the plant is not equipped with full SCADA. At present staff can monitor equipment status only, so all PM is run time-based. The requirements for installing a full SCADA system in the plant will be addressed as part of the forthcoming Savanna WWTP Composite Correction Program.

3. Typographical Remarks: The typographical and editorial clarifications listed by the reviewer are acknowledged.

4. Aeration Diffuser Maintenance: The statement in the CPE Report that the City has not inspected the aeration basin diffusers since their installation is not entirely correct; when obvious diffuser problems have been observed from the surface, the basins have been pumped down and defective diffuser sleeves replaced. However, no regular PM plan for the diffusers has been followed. To address this need, a new Aeration Basin Inspection SOP was developed by UWS-MS and has since been implemented (attached). Basins 3 and 4 (out of a total of 10) have been drained and the inspection is underway. Based on the results of the inspection, any repairs or

diffuser maintenance will be performed as required. After Basins 3 and 4 are returned to service, remaining basin pairs will be drained for inspection and maintenance. Some of the basins cannot currently be drained because of leaking gates and isolation valves. Funds will be included in the FY15 budget to repair the gates and valves so the Aeration Basin PM activities can continue. After all basins have been drained and the diffusers repaired, the City anticipates draining and inspecting each basin on a two-year cycle.

5. Preventive Maintenance of WWTP Equipment: UWS-MS does have standard procedures for preventative maintenance of all WWTP equipment. This includes 385 items of equipment and 43 separate PM SOPs for maintaining WWTP equipment, including the recently developed Aeration Basin PM procedure described above. The complete WWTP equipment PM and SOP lists are attached.

6. WWTP Standard Operating Procedures: UWS-MS has developed Standard Operating Procedures for all major unit processes. Including the examples provided in the WWTP O&M Program, a total of 50 SOPs have been issued. A list of the WWTP Standard Operating Procedures is attached.

7. Wet Weather Operating Plan: The Wet Weather Operating Plan is correct as described. During periods of high flows, the drain system in the dewatering building becomes surcharged due to backup caused by high water level in the influent pump station. Dewatering activities must be curtailed to prevent building flooding. Additionally, sludge wasting must be reduced during wet weather events due to a lack of adequate sludge storage capacity, and plant RAS rates are significantly increased to maintain treatment performance. These wet weather sludge handling limitations will be addressed in the CCP.

8. WWTP O&M Program Updating: The City will meet with its Contract Operator annually to review the O&M Program and perform any necessary updates or revisions. United Water has implemented an annual activity in the eRPortal CMMS to trigger this review task. The initial WWTP O&M Program review is currently due on May 30, 2015.

We are proceeding with implementation of the Wastewater Treatment Plant Operations and Maintenance Program in accordance with the report submitted. If you have any additional questions or require more information please let us know.

Sincerely,

Kishia Powell, P.E.
Director, Department of Public Works

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

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

Attachments:

1. Aeration Basin Inspection SOP
2. WWTP Equipment Preventative Maintenance List
3. List of Preventative Maintenance SOPs
4. List of WWTP Standard Operating Procedures

Aeration Basin Inspection
Work Order Worksheet

W.O. # 316504

Status: Assigned PM #: 5054
Due Date: 09/30/2014 Date Loaded: 08/21/2014 Date Started: 08/21/2014 Date Completed:
Requested By: Eddy Russell Created By: System Administrator
Assigned To: Ernie Williamson
W.O. Type: PM
Craft: Plant Operator
Estimate: 24.00 Priority : 3

Asset Information

Division : PL - Plants Asset ID : 10846
Department : SS - Savanna St. Supervisor :
Asset Code : SS-AERATION-BASIN-1 - WEST STRUCTURE
Location : SAVANNA ST. Equip ID : SS-AERATION BASIN 1

Notes: Aeration Basin Inspection - Annual

Procedure	Time
Aeration Basin Inspection - Annual	

Notes:
1. Close inlet valves to selected aeration basins.
2. Lock Out/Tag Out gate valves and/or valve controllers.
3. Open drain valve and leave open until ready to refill basins.
4. Utilize fire hoses to wash off all diffusers.
5. After wash down is completed contact maintenance.
6. Maintenance to inspect diffusers, structure for cracks, and gate valves supports.
7. Maintenance to generate corrective work orders if defects are found and make necessary repairs before basin is returned to service.

Item	Description	Qty Needed	Qty Issued

United Water Services Mississippi, LLC
WWTP Equipment Preventative Maintenance List

No.	PM #	AssetCode	PM Procedure Name	DateDue	IntervalType
1	2075	PH-ALARM-SYSTEM	Gas Detector Inspection - Monthly	9/27/2014	Months
2	2022	PH-ALARM-SYSTEM	Alarm System Inspection - Monthly	9/27/2014	Months
3	2076	PH-AUTO-SAMPLER	Auto Sampler Inspection - Quarterly	9/4/2014	Months
4	5013	PH-BLOWER-1	Blower Inspection Monthly (P. Hills)	9/27/2014	Months
5	5013	PH-BLOWER-2	Blower Inspection Monthly (P. Hills)	9/27/2014	Months
6	5013	PH-BLOWER-3	Blower Inspection Monthly (P. Hills)	9/27/2014	Months
7	5013	PH-BLOWER-4	Blower Inspection Monthly (P. Hills)	9/27/2014	Months
8	5013	PH-BLOWER-5	Blower Inspection Monthly (P. Hills)	9/27/2014	Months
9	5013	PH-BLOWER-6	Blower Inspection Monthly (P. Hills)	9/27/2014	Months
10	5013	PH-BLOWER-7	Blower Inspection Monthly (P. Hills)	9/27/2014	Months
11	5013	PH-BLOWER-8	Blower Inspection Monthly (P. Hills)	9/27/2014	Months
12	2084	PH-CL2-PIPING	CL2/SO2 Piping Inspection - Annual	4/28/2015	Years
13	5024	PH-CL2-REGULATOR	Vacuum Regulator Inspection - Annual	7/31/2015	Years
14	5053	PH-DECAN-GERBX-1	Floating Decanter, Annual Inspection	9/30/2015	Years
15	5053	PH-DECAN-GERBX-2	Floating Decanter, Annual Inspection	9/30/2015	Years
16	5052	PH-DECANTER-1	Floating Decanter, Semi-Annual	2/26/2015	Months
17	5051	PH-DECANTER-1	Floating Decanter-Monthly	9/26/2014	Months
18	5052	PH-DECANTER-2	Floating Decanter, Semi-Annual	2/26/2015	Months
19	5051	PH-DECANTER-2	Floating Decanter-Monthly	9/26/2014	Months
20	5020	PH-FIRE-EXTINGUISHERS	Fire Extinguisher Inspection - Annual	12/27/2014	Years
21	5018	PH-FIRE-EXTINGUISHERS	Fire Extinguisher Inspection - Monthly	9/27/2014	Months
22	2079	PH-GENERATOR-OLD	Generator Inspection - Annual	9/28/2014	Years
23	2052	PH-GENERATOR-OLD	Generator Inspection - Semi-Annual	12/27/2014	Months
24	5039	PH-PLANT-SITE	SPCC Plant Inspection	9/27/2014	Months
25	2072	PH-SAFETY-SHOWER	Eyewash/Safety Shower Inspection - Monthly	9/27/2014	Months
26	2021	PH-SAND-FILTER	Operators Gate Inspection - Monthly	9/27/2014	Months
27	2084	PH-SO2-PIPING	CL2/SO2 Piping Inspection - Annual	4/28/2015	Years
28	5024	PH-SO2-REGULATOR	Vacuum Regulator Inspection - Annual	7/31/2015	Years
29	5050	SS-ADMIN-BUILDING	Daily Plant Watering	8/22/2014	Days
30	5023	SS-ADMIN-BUILDING	Operator Garage Wash Down	8/30/2014	Weeks
31	5042	SS-AED-1	AED Kit Inspection - Quarterly	11/28/2014	Months
32	5042	SS-AED-2	AED Kit Inspection - Quarterly	11/28/2014	Months
33	5042	SS-AED-3	AED Kit Inspection - Quarterly	11/28/2014	Months
34	5054	SS-AERATION-BASIN-1	Aeration Basin Inspection - Annual	9/30/2015	Years
35	2021	SS-AERATION-BASIN-1	Operators Gate Inspection - Monthly	9/27/2014	Months
36	5054	SS-AERATION-BASIN-2	Aeration Basin Inspection - Annual	9/30/2015	Years
37	2022	SS-ALARM-SYSTEM	Alarm System Inspection - Monthly	9/27/2014	Months
38	5032	SS-ANOX-1	Operators Anox Inspection - Weekly	8/29/2014	Weeks
39	5032	SS-ANOX-2	Operators Anox Inspection - Weekly	8/29/2014	Weeks
40	2076	SS-AUTO-SAMPLER-EFF	Auto Sampler Inspection - Quarterly	11/21/2014	Months
41	2076	SS-AUTO-SAMPLER-INF	Auto Sampler Inspection - Quarterly	10/18/2014	Months
42	2076	SS-AUTO-SAMPLER-IPP	Auto Sampler Inspection - Quarterly	10/18/2014	Months
43	5045	SS-BACKFLOW-PREVENTER	Backflow Preventer Inspection - Annual	1/31/2015	Years
44	2024	SS-BAR-SCREEN-NORTH-1	Bar Screen Inspection - Monthly	9/25/2014	Months
45	2024	SS-BAR-SCREEN-SOUTH-2	Bar Screen Inspection - Monthly	9/25/2014	Months
46	2023	SS-BAR-SCRN-HOIST-1	Bar Screen Hoist Inspection - Monthly	9/25/2014	Months
47	2023	SS-BAR-SCRN-HOIST-1	Bar Screen Hoist Inspection - Monthly	9/25/2014	Months
48	2016	SS-BAR-SCRN-HOIST-1	Bar Screen Hoist 3rd Party Inspection - Annual	7/25/2015	Years
49	2008	SS-BAR-SCRN-HOIST-1	Crane Inspection - Annual	5/29/2015	Years
50	2023	SS-BAR-SCRN-HOIST-2	Bar Screen Hoist Inspection - Monthly	9/25/2014	Months
51	2016	SS-BAR-SCRN-HOIST-2	Bar Screen Hoist 3rd Party Inspection - Annual	7/25/2015	Years
52	2008	SS-BAR-SCRN-HOIST-2	Crane Inspection - Annual	5/29/2015	Years
53	2023	SS-BAR-SCRN-HOIST-3	Bar Screen Hoist Inspection - Monthly	9/25/2014	Months
54	2016	SS-BAR-SCRN-HOIST-3	Bar Screen Hoist 3rd Party Inspection - Annual	7/25/2015	Years
55	2008	SS-BAR-SCRN-HOIST-3	Crane Inspection - Annual	5/29/2015	Years
56	2016	SS-BAR-SCRN-HOIST-4	Bar Screen Hoist 3rd Party Inspection - Annual	7/25/2015	Years
57	2008	SS-BAR-SCRN-HOIST-4	Crane Inspection - Annual	5/29/2015	Years
58	2095	SS-BELT-PRESS-1	Operators Belt Press Inspection - Bi-Weekly	9/6/2014	Weeks
59	2093	SS-BELT-PRESS-1	Operators Belt Press Inspection - Weekly	8/30/2014	Weeks
60	2092	SS-BELT-PRESS-1	Operators Belt Press Inspection - Daily	8/22/2014	Days
61	2095	SS-BELT-PRESS-2	Operators Belt Press Inspection - Bi-Weekly	9/6/2014	Weeks
62	2093	SS-BELT-PRESS-2	Operators Belt Press Inspection - Weekly	8/30/2014	Weeks
63	2092	SS-BELT-PRESS-2	Operators Belt Press Inspection - Daily	8/22/2014	Days
64	2095	SS-BELT-PRESS-3	Operators Belt Press Inspection - Bi-Weekly	9/6/2014	Weeks
65	2093	SS-BELT-PRESS-3	Operators Belt Press Inspection - Weekly	8/30/2014	Weeks
66	2092	SS-BELT-PRESS-3	Operators Belt Press Inspection - Daily	8/22/2014	Days
67	2095	SS-BELT-PRESS-4	Operators Belt Press Inspection - Bi-Weekly	9/6/2014	Weeks
68	2093	SS-BELT-PRESS-4	Operators Belt Press Inspection - Weekly	8/30/2014	Weeks
69	2092	SS-BELT-PRESS-4	Operators Belt Press Inspection - Daily	8/22/2014	Days
70	2066	SS-BLOWER-1-MOTOR	Brush Maintenance - Quarterly	11/27/2014	Months
71	5026	SS-BLOWER-2	Blower Inspection - Monthly	9/25/2014	Months
72	2053	SS-BLOWER-2	Blower High Speed Unit Inspection - Semi-Annual	1/28/2015	Months
73	2004	SS-BLOWER-2	Blower Inspection - Annual	2/28/2015	Years
74	2080	SS-BLOWER-2-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
75	2066	SS-BLOWER-2-MOTOR	Brush Maintenance - Quarterly	11/27/2014	Months
76	5026	SS-BLOWER-3	Blower Inspection - Monthly	9/25/2014	Months

United Water Services Mississippi, LLC
WWTP Equipment Preventative Maintenance List

No.	PM #	AssetCode	PM Procedure Name	DateDue	IntervalType
77	2053	SS-BLOWER-3	Blower High Speed Unit Inspection - Semi-Annual	1/28/2015	Months
78	2004	SS-BLOWER-3	Blower Inspection - Annual	2/28/2015	Years
79	2080	SS-BLOWER-3-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
80	2066	SS-BLOWER-3-MOTOR	Brush Maintenance - Quarterly	11/27/2014	Months
81	5026	SS-BLOWER-4	Blower Inspection - Monthly	9/25/2014	Months
82	2053	SS-BLOWER-4	Blower High Speed Unit Inspection - Semi-Annual	1/28/2015	Months
83	2004	SS-BLOWER-4	Blower Inspection - Annual	2/28/2015	Years
84	2080	SS-BLOWER-4-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
85	2066	SS-BLOWER-4-MOTOR	Brush Maintenance - Quarterly	11/27/2014	Months
86	5026	SS-BLOWER-DEWATER-1	Blower Inspection - Monthly	9/25/2014	Months
87	5026	SS-BLOWER-DEWATER-2	Blower Inspection - Monthly	9/25/2014	Months
88	5035	SS-CENTRIFUGE	Operators Centrifuge Weekly Greasing	8/29/2014	Weeks
89	5011	SS-CENTRIFUGE	Operators Centrifuge Daily	6/5/2014	Days
90	2036	SS-CL2-CYLINDER-BUILDING	Ventilation Inspection - Monthly	9/28/2014	Months
91	2084	SS-CL2-PIPING	CL2/SO2 Piping Inspection - Annual	4/28/2015	Years
92	2088	SS-CL2-PUMP	Chemical Injection Pumps - Semi-Annual	12/28/2014	Months
93	5024	SS-CL2-REGULATOR	Vacuum Regulator Inspection - Annual	8/31/2015	Years
94	2046	SS-CL2-REGULATOR	Operators CL2/SO2 Feed System Inspection - Quarterly	9/27/2014	Months
95	2075	SS-CL2-SO2-ALARM	Gas Detector Inspection - Monthly	9/27/2014	Months
96	2036	SS-CL2-WATER-SUPPLY-BUILDING	Ventilation Inspection - Monthly	9/28/2014	Months
97	5015	SS-CLARIFIER-1	Operators Clarifier Inspection - Weekly	9/3/2014	Weeks
98	2060	SS-CLARIFIER-1	Clarifier Inpsection - Semi-Annual	10/28/2014	Months
99	2026	SS-CLARIFIER-1	Clarifier Inspection - Monthly	9/25/2014	Months
100	2003	SS-CLARIFIER-1	Clarifier Inspection - Annual	3/27/2015	Years
101	2010	SS-CLARIFIER-1-RAKE	Rake Drive Motor Inspection - Annual	1/28/2015	Years
102	5015	SS-CLARIFIER-2	Operators Clarifier Inspection - Weekly	9/3/2014	Weeks
103	2060	SS-CLARIFIER-2	Clarifier Inpsection - Semi-Annual	10/28/2014	Months
104	2026	SS-CLARIFIER-2	Clarifier Inspection - Monthly	9/25/2014	Months
105	2003	SS-CLARIFIER-2	Clarifier Inspection - Annual	3/27/2015	Years
106	2010	SS-CLARIFIER-2-RAKE	Rake Drive Motor Inspection - Annual	1/28/2015	Years
107	5015	SS-CLARIFIER-3	Operators Clarifier Inspection - Weekly	9/3/2014	Weeks
108	2060	SS-CLARIFIER-3	Clarifier Inpsection - Semi-Annual	10/28/2014	Months
109	2026	SS-CLARIFIER-3	Clarifier Inspection - Monthly	9/25/2014	Months
110	2003	SS-CLARIFIER-3	Clarifier Inspection - Annual	3/27/2015	Years
111	2010	SS-CLARIFIER-3-RAKE	Rake Drive Motor Inspection - Annual	1/28/2015	Years
112	5015	SS-CLARIFIER-4	Operators Clarifier Inspection - Weekly	9/3/2014	Weeks
113	2060	SS-CLARIFIER-4	Clarifier Inpsection - Semi-Annual	10/28/2014	Months
114	2026	SS-CLARIFIER-4	Clarifier Inspection - Monthly	9/25/2014	Months
115	2003	SS-CLARIFIER-4	Clarifier Inspection - Annual	3/27/2015	Years
116	2010	SS-CLARIFIER-4-MOTOR	Rake Drive Motor Inspection - Annual	1/28/2015	Years
117	5015	SS-CLARIFIER-5	Operators Clarifier Inspection - Weekly	9/3/2014	Weeks
118	2060	SS-CLARIFIER-5	Clarifier Inpsection - Semi-Annual	10/28/2014	Months
119	2026	SS-CLARIFIER-5	Clarifier Inspection - Monthly	9/25/2014	Months
120	2003	SS-CLARIFIER-5	Clarifier Inspection - Annual	3/27/2015	Years
121	2010	SS-CLARIFIER-5-MOTOR	Rake Drive Motor Inspection - Annual	1/28/2015	Years
122	2090	SS-DEWATERING-BUILDING	Operators Dewatering Netting Inspection - Monthly	9/27/2014	Months
123	5034	SS-DIGESTER-1	Operators Digester Inspection -Weekly	8/29/2014	Weeks
124	5034	SS-DIGESTER-2	Operators Digester Inspection -Weekly	8/29/2014	Weeks
125	5046	SS-ELECT-MANHOLE-1	Electrical Manhole Inspection - Monthly	9/28/2014	Months
126	5046	SS-ELECT-MANHOLE-2	Electrical Manhole Inspection - Monthly	9/28/2014	Months
127	5046	SS-ELECT-MANHOLE-3	Electrical Manhole Inspection - Monthly	9/28/2014	Months
128	5046	SS-ELECT-MANHOLE-4	Electrical Manhole Inspection - Monthly	9/28/2014	Months
129	5046	SS-ELECT-MANHOLE-5	Electrical Manhole Inspection - Monthly	9/28/2014	Months
130	5046	SS-ELECT-MANHOLE-6	Electrical Manhole Inspection - Monthly	9/28/2014	Months
131	5046	SS-ELECT-MANHOLE-7	Electrical Manhole Inspection - Monthly	9/28/2014	Months
132	5008	SS-ESCAPE PACKS	10 Escape Pack Inspection - Monthly	9/28/2014	Months
133	5020	SS-FIRE-EXTINGUISHER	Fire Extinguisher Inspection - Annual	12/27/2014	Years
134	5018	SS-FIRE-EXTINGUISHER	Fire Extinguisher Inspection - Monthly	9/27/2014	Months
135	2029	SS-FLOW-METER-DIVERSION	Flow Meter Inspection - Monthly	8/18/2014	Months
136	2029	SS-FLOW-METER-EFFLUENT	Flow Meter Inspection - Monthly	8/18/2014	Months
137	2029	SS-FLOW-METER-INFLUENT	Flow Meter Inspection - Monthly	8/18/2014	Months
138	2074	SS-FRAC-TANK	Operators Frac Tank Inspection - Monthly	9/26/2014	Months
139	5036	SS-FUEL TANK 1	Fuel Tank Inspection - Quarterly	9/27/2014	Months
140	5036	SS-FUEL TANK 2	Fuel Tank Inspection - Quarterly	9/27/2014	Months
141	5036	SS-FUEL TANK 3	Fuel Tank Inspection - Quarterly	9/27/2014	Months
142	2085	SS-GAS-DETECTOR-MAINT.	Gas Detector Inspection - Quarterly	9/27/2014	Months
143	2022	SS-GAS-DETECTOR-MAINT.	Alarm System Inspection - Monthly	9/27/2014	Months
144	2085	SS-GAS-DETECTOR-OPS.	Gas Detector Inspection - Quarterly	9/27/2014	Months
145	2022	SS-GAS-DETECTOR-OPS.	Alarm System Inspection - Monthly	9/27/2014	Months
146	2079	SS-GENERATOR-1	Generator Inspection - Annual	9/28/2014	Years
147	2065	SS-GENERATOR-1	Generator Inspection - Monthly	9/27/2014	Months
148	2079	SS-GENERATOR-2	Generator Inspection - Annual	9/28/2014	Years
149	2065	SS-GENERATOR-2	Generator Inspection - Monthly	9/27/2014	Months
150	2079	SS-GENERATOR-4	Generator Inspection - Annual	9/28/2014	Years
151	2065	SS-GENERATOR-4	Generator Inspection - Monthly	9/27/2014	Months
152	2031	SS-GRIT-1	Grit System Inspection - Monthly	9/27/2014	Months

United Water Services Mississippi, LLC
WWTP Equipment Preventative Maintenance List

No.	PM #	AssetCode	PM Procedure Name	DateDue	IntervalType
153	2006	SS-GRIT-1	Grit Pump Inspection - Annual	6/28/2015	Years
154	2080	SS-GRIT-1-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
155	2031	SS-GRIT-2	Grit System Inspection - Monthly	9/27/2014	Months
156	2006	SS-GRIT-2	Grit Pump Inspection - Annual	6/28/2015	Years
157	2080	SS-GRIT-2-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
158	5038	SS-GRIT-STRUCTURE-OLD	Storage Area Containment Inspection - Monthly	9/28/2014	Months
159	5037	SS-GRIT-STRUCTURE-OLD	Storage Area Inspection - Monthly	9/28/2014	Months
160	5022	SS-GRIT-STRUCTURE-OLD	NON-HAZARDOUS WASTE REMOVAL	5/30/2015	Years
161	2027	SS-HOIST-CHLORINE	Crane Inspection - Monthly	9/27/2014	Months
162	2008	SS-HOIST-CHLORINE	Crane Inspection - Annual	5/29/2015	Years
163	2027	SS-HOIST-MAINT.	Crane Inspection - Monthly	9/27/2014	Months
164	2008	SS-HOIST-MAINT.	Crane Inspection - Annual	5/29/2015	Years
165	2027	SS-HOIST-RAS	Crane Inspection - Monthly	9/27/2014	Months
166	2008	SS-HOIST-RAS	Crane Inspection - Annual	5/29/2015	Years
167	2027	SS-HOIST-RSPS	Crane Inspection - Monthly	9/27/2014	Months
168	2008	SS-HOIST-RSPS	Crane Inspection - Annual	5/29/2015	Years
169	2027	SS-HOIST-SO2	Crane Inspection - Monthly	9/27/2014	Months
170	2008	SS-HOIST-SO2	Crane Inspection - Annual	5/29/2015	Years
171	5041	SS-LADDERS	Ladder Inspection - Monthly	9/25/2014	Months
172	2080	SS-MCC-DEWATERING	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
173	2080	SS-MCC-NEW-EFFLUENT	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
174	2080	SS-MCC-NEW-RAS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
175	2080	SS-MCC-OLD-RAS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
176	2080	SS-MCC-RSPS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
177	2021	SS-N.-GATE-VALVES	Operators Gate Inspection - Monthly	9/27/2014	Months
178	5017	SS-PARSHALL-FLUME-1	Operators Effluent Channel Cleaning - Weekly	8/30/2014	Weeks
179	5017	SS-PARSHALL-FLUME-2	Operators Effluent Channel Cleaning - Weekly	8/30/2014	Weeks
180	5039	SS-PLANT-SITE	SPCC Plant Inspection	9/27/2014	Months
181	5016	SS-PLANT-SITE	Operators Equipment Inspection - Daily	8/21/2014	Days
182	2082	SS-PORTABLE-PUMP-1	Portable Pump - Semi-Annual	10/28/2014	Months
183	2081	SS-PORTABLE-PUMP-1	Portable Pump - Monthly	9/27/2014	Months
184	2082	SS-PORTABLE-PUMP-2	Portable Pump - Semi-Annual	10/28/2014	Months
185	2081	SS-PORTABLE-PUMP-2	Portable Pump - Monthly	9/27/2014	Months
186	5044	SS-PROPELLER-PUMP-1	Operators Propeller Pump Exercise - Monthly	9/27/2014	Months
187	2054	SS-PROPELLER-PUMP-1	Propeller Pump Motor - Semi-Annual	1/27/2015	Months
188	2028	SS-PROPELLER-PUMP-1	Propeller Pump Inspection - Monthly	9/27/2014	Months
189	5044	SS-PROPELLER-PUMP-2	Operators Propeller Pump Exercise - Monthly	9/27/2014	Months
190	2054	SS-PROPELLER-PUMP-2	Propeller Pump Motor - Semi-Annual	1/27/2015	Months
191	2028	SS-PROPELLER-PUMP-2	Propeller Pump Inspection - Monthly	9/27/2014	Months
192	2048	SS-RAS-1	Return Sludge Pump Inspection- Semi Annual	2/28/2015	Months
193	2034	SS-RAS-1	Return Sludge Pump Inspection - Monthly	9/25/2014	Months
194	2080	SS-RAS-1-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
195	2048	SS-RAS-2	Return Sludge Pump Inspection- Semi Annual	2/28/2015	Months
196	2034	SS-RAS-2	Return Sludge Pump Inspection - Monthly	9/25/2014	Months
197	2080	SS-RAS-2-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
198	2048	SS-RAS-3	Return Sludge Pump Inspection- Semi Annual	2/28/2015	Months
199	2034	SS-RAS-3	Return Sludge Pump Inspection - Monthly	9/25/2014	Months
200	2080	SS-RAS-3-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
201	2048	SS-RAS-4	Return Sludge Pump Inspection- Semi Annual	2/28/2015	Months
202	2034	SS-RAS-4	Return Sludge Pump Inspection - Monthly	9/25/2014	Months
203	2080	SS-RAS-4-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
204	2048	SS-RAS-5	Return Sludge Pump Inspection- Semi Annual	2/28/2015	Months
205	2034	SS-RAS-5	Return Sludge Pump Inspection - Monthly	9/25/2014	Months
206	2080	SS-RAS-5-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
207	2048	SS-RAS-6	Return Sludge Pump Inspection- Semi Annual	2/28/2015	Months
208	2034	SS-RAS-6	Return Sludge Pump Inspection - Monthly	9/25/2014	Months
209	2080	SS-RAS-6-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
210	2096	SS-RAS-BUILDING-OLD	A/C UNIT CLEANING	9/27/2014	Months
211	2059	SS-RAW-1	Raw Sewage Pump Inspection - Semi-Annual	10/28/2014	Months
212	2045	SS-RAW-1	Raw Sewage Pump Motor Inspection - Quarterly	9/27/2014	Months
213	2039	SS-RAW-1	Raw Sewage Pump Inspection - Monthly	9/27/2014	Months
214	2013	SS-RAW-1	Raw Sewage Pump Inspection - Annual	9/28/2014	Years
215	2080	SS-RAW-1-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
216	2070	SS-RAW-1-CONTROLS	Robicon Board Battery Replacement - Annual	6/30/2015	Years
217	2057	SS-RAW-1-ROTO-VALVE	RAW Sewage Roto Valve - Semi-Annual	10/28/2014	Months
218	2059	SS-RAW-2	Raw Sewage Pump Inspection - Semi-Annual	10/28/2014	Months
219	2045	SS-RAW-2	Raw Sewage Pump Motor Inspection - Quarterly	9/27/2014	Months
220	2039	SS-RAW-2	Raw Sewage Pump Inspection - Monthly	9/27/2014	Months
221	2013	SS-RAW-2	Raw Sewage Pump Inspection - Annual	9/28/2014	Years
222	2080	SS-RAW-2-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
223	2070	SS-RAW-2-CONTROLS	Robicon Board Battery Replacement - Annual	6/30/2015	Years
224	2057	SS-RAW-2-ROTO-VALVE	RAW Sewage Roto Valve - Semi-Annual	10/28/2014	Months
225	2059	SS-RAW-3	Raw Sewage Pump Inspection - Semi-Annual	10/28/2014	Months
226	2045	SS-RAW-3	Raw Sewage Pump Motor Inspection - Quarterly	9/27/2014	Months
227	2039	SS-RAW-3	Raw Sewage Pump Inspection - Monthly	9/27/2014	Months
228	2013	SS-RAW-3	Raw Sewage Pump Inspection - Annual	9/28/2014	Years

United Water Services Mississippi, LLC
WWTP Equipment Preventative Maintenance List

No.	PM #	AssetCode	PM Procedure Name	DateDue	IntervalType
229	2080	SS-RAW-3-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
230	2070	SS-RAW-3-CONTROLS	Robicon Board Battery Replacement - Annual	6/30/2015	Years
231	2057	SS-RAW-3-ROTO-VALVE	RAW Sewage Roto Valve - Semi-Annual	10/28/2014	Months
232	2059	SS-RAW-4	Raw Sewage Pump Inspection - Semi-Annual	10/28/2014	Months
233	2045	SS-RAW-4	Raw Sewage Pump Motor Inspection - Quarterly	9/27/2014	Months
234	2039	SS-RAW-4	Raw Sewage Pump Inspection - Monthly	9/27/2014	Months
235	2013	SS-RAW-4	Raw Sewage Pump Inspection - Annual	9/28/2014	Years
236	2080	SS-RAW-4-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
237	2070	SS-RAW-4-CONTROLS	Robicon Board Battery Replacement - Annual	6/30/2015	Years
238	2066	SS-RAW-4-MOTOR	Brush Maintenance - Quarterly	11/27/2014	Months
239	2057	SS-RAW-4-ROTO-VALVE	RAW Sewage Roto Valve - Semi-Annual	10/28/2014	Months
240	2044	SS-RAW-FLOWMATCHER	Flowmatcher Inpsection - Quarterly	10/27/2014	Months
241	2037	SS-RAW-FLOWMATCHER	Flowmatcher Inspection- Monthly	9/12/2014	Months
242	2096	SS-RSPS-AC	A/C UNIT CLEANING	9/27/2014	Months
243	2072	SS-SAFETY-SHOWER	Eyewash/Safety Shower Inspection - Monthly	9/27/2014	Months
244	5025	SS-SAVANNA-ST.	Program Review - Annual	5/30/2015	Years
245	5014	SS-SCALE	Quarterly Scale Calibration	7/23/2014	Months
246	2058	SS-SCREW-PUMP-1	Screw Pump Inspection - Semi-Annual	2/28/2015	Months
247	2041	SS-SCREW-PUMP-1	Screw Pump Inspection - Monthly	9/27/2014	Months
248	2040	SS-SCREW-PUMP-1	Operators Screw Pump Exercise - Monthly	6/19/2014	Months
249	2058	SS-SCREW-PUMP-2	Screw Pump Inspection - Semi-Annual	2/28/2015	Months
250	2041	SS-SCREW-PUMP-2	Screw Pump Inspection - Monthly	9/27/2014	Months
251	2040	SS-SCREW-PUMP-2	Operators Screw Pump Exercise - Monthly	9/19/2014	Months
252	2058	SS-SCREW-PUMP-3	Screw Pump Inspection - Semi-Annual	2/28/2015	Months
253	2041	SS-SCREW-PUMP-3	Screw Pump Inspection - Monthly	9/27/2014	Months
254	2040	SS-SCREW-PUMP-3	Operators Screw Pump Exercise - Monthly	9/19/2014	Months
255	2058	SS-SCREW-PUMP-4	Screw Pump Inspection - Semi-Annual	2/28/2015	Months
256	2041	SS-SCREW-PUMP-4	Screw Pump Inspection - Monthly	9/27/2014	Months
257	2040	SS-SCREW-PUMP-4	Operators Screw Pump Exercise - Monthly	9/19/2014	Months
258	2011	SS-SCUM-PUMP-1	RAS Scum Pumps Inspection - Annual	8/27/2015	Years
259	2011	SS-SCUM-PUMP-2	RAS Scum Pumps Inspection - Annual	8/27/2015	Years
260	2011	SS-SCUM-PUMP-3	RAS Scum Pumps Inspection - Annual	8/27/2015	Years
261	2068	SS-SO2-BUILDING	Operators CL2/SO2 Building Inspection - Monthly	9/27/2014	Months
262	2036	SS-SO2-BUILDING	Ventilation Inspection - Monthly	9/28/2014	Months
263	2084	SS-SO2-PIPING	CL2/SO2 Piping Inspection - Annual	4/28/2015	Years
264	5024	SS-SO2-REGULATORS	Vacuum Regulator Inspection - Annual	8/31/2015	Years
265	2046	SS-SO2-REGULATORS	Operators CL2/SO2 Feed System Inspection - Quarterly	9/27/2014	Months
266	2088	SS-SULFANATOR-1	Chemical Injection Pumps - Semi-Annual	12/28/2014	Months
267	2088	SS-SULFANATOR-2	Chemical Injection Pumps - Semi-Annual	12/28/2014	Months
268	5033	SS-THICKENER-1	Operators Thickner Inspection - Weekly	8/29/2014	Weeks
269	2042	SS-THICKENER-1	Thickener Inspection - Monthly	9/27/2014	Months
270	5033	SS-THICKENER-2	Operators Thickner Inspection - Weekly	8/29/2014	Weeks
271	2042	SS-THICKENER-2	Thickener Inspection - Monthly	9/27/2014	Months
272	5040	SS-TRANSFORMERS	Transformer Inspection - Quarterly	10/25/2014	Months
273	5009	SS-TURBIDITY-METER	Turbidity Meter Cleaning - Quarterly	9/27/2014	Months
274	5048	SS-WAS-PUMP-1	Waste/Digester Pump Inspection- Monthly	9/11/2014	Months
275	5048	SS-WAS-PUMP-2	Waste/Digester Pump Inspection- Monthly	9/11/2014	Months
276	5048	SS-WAS-PUMP-3	Waste/Digester Pump Inspection- Monthly	9/11/2014	Months
277	5048	SS-WAS-PUMP-4	Waste/Digester Pump Inspection- Monthly	9/11/2014	Months
278	2043	SS-WATER-PUMP-1	Water Supply Pump Inspection - Monthly	9/27/2014	Months
279	2043	SS-WATER-PUMP-2	Water Supply Pump Inspection - Monthly	9/27/2014	Months
280	2043	SS-WATER-PUMP-3	Water Supply Pump Inspection - Monthly	9/27/2014	Months
281	2043	SS-WATER-PUMP-4	Water Supply Pump Inspection - Monthly	9/27/2014	Months
282	2091	SS-WATER-STRAINER-1	Operators CL2 Injector Y Strainer Inspection - Monthly	9/27/2014	Months
283	2046	SS-WATER-STRAINER-1-MOTOR	Operators CL2/SO2 Feed System Inspection - Quarterly	9/27/2014	Months
284	2091	SS-WATER-STRAINER-2	Operators CL2 Injector Y Strainer Inspection - Monthly	9/27/2014	Months
285	2046	SS-WATER-STRAINER-2	Operators CL2/SO2 Feed System Inspection - Quarterly	9/27/2014	Months
286	2029	SS-WEST RANKIN-FLOWMETER	Flow Meter Inspection - Monthly	8/18/2014	Months
287	2021	SS-WEST-RANKIN-1	Operators Gate Inspection - Monthly	9/27/2014	Months
288	2021	SS-WEST-RANKIN-2	Operators Gate Inspection - Monthly	9/27/2014	Months
289	5042	T-AED-1	AED Kit Inspection - Quarterly	11/28/2014	Months
290	2055	T-AERATOR-1	Aerators (Trahon) Inspection - Semi-Annual	12/21/2014	Months
291	2032	T-AERATOR-1	Areator - Monthly	9/27/2014	Months
292	2005	T-AERATOR-1	Aerator Inspection - Annual	6/27/2015	Years
293	2080	T-AERATOR-1-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
294	2055	T-AERATOR-2	Aerators (Trahon) Inspection - Semi-Annual	12/21/2014	Months
295	2032	T-AERATOR-2	Areator - Monthly	9/27/2014	Months
296	2005	T-AERATOR-2	Aerator Inspection - Annual	6/27/2015	Years
297	2080	T-AERATOR-2-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
298	2055	T-AERATOR-3	Aerators (Trahon) Inspection - Semi-Annual	12/21/2014	Months
299	2032	T-AERATOR-3	Areator - Monthly	9/27/2014	Months
300	2005	T-AERATOR-3	Aerator Inspection - Annual	6/27/2015	Years
301	2080	T-AERATOR-3-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
302	2055	T-AERATOR-4	Aerators (Trahon) Inspection - Semi-Annual	12/21/2014	Months
303	2032	T-AERATOR-4	Areator - Monthly	9/27/2014	Months
304	2005	T-AERATOR-4	Aerator Inspection - Annual	6/27/2015	Years

United Water Services Mississippi, LLC
WWTP Equipment Preventative Maintenance List

No.	PM #	AssetCode	PM Procedure Name	DateDue	IntervalType
305	2080	T-AERATOR-4-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
306	2075	T-ALARM-SYSTEM	Gas Detector Inspection - Monthly	9/27/2014	Months
307	2022	T-ALARM-SYSTEM	Alarm System Inspection - Monthly	9/27/2014	Months
308	2076	T-AUTO-SAMPLER-EFF	Auto Sampler Inspection - Quarterly	11/21/2014	Months
309	2076	T-AUTO-SAMPLER-INF	Auto Sampler Inspection - Quarterly	11/21/2014	Months
310	5045	T-BACKFLOW-PREVENTER	Backflow Preventer Inspection - Annual	1/31/2015	Years
311	2035	T-BAR-SCREEN-CONVEYOR	Screening Conveyor (Trahon) - Monthly	9/27/2014	Months
312	2021	T-BAR-SCREEN-VAVLES	Operators Gate Inspection - Monthly	9/27/2014	Months
313	5028	T-BLOWER-10-HP-1	Blower Inspection - Monthly Trahon	9/22/2014	Months
314	2007	T-BLOWER-10-HP-1	Blower Inspection (Trahon) - Annual	2/28/2015	Years
315	5028	T-BLOWER-10-HP-2	Blower Inspection - Monthly Trahon	9/22/2014	Months
316	2007	T-BLOWER-10-HP-2	Blower Inspection (Trahon) - Annual	2/28/2015	Years
317	5028	T-BLOWER-50-HP-1	Blower Inspection - Monthly Trahon	9/22/2014	Months
318	2007	T-BLOWER-50-HP-1	Blower Inspection (Trahon) - Annual	2/28/2015	Years
319	5028	T-BLOWER-50-HP-2	Blower Inspection - Monthly Trahon	9/22/2014	Months
320	2007	T-BLOWER-50-HP-2	Blower Inspection (Trahon) - Annual	2/28/2015	Years
321	2051	T-BOOSTER-PUMP-1	Booster Pump (Trahon) - Semi-Annual	1/28/2015	Months
322	2051	T-BOOSTER-PUMP-2	Booster Pump (Trahon) - Semi-Annual	1/28/2015	Months
323	2051	T-BOOSTER-PUMP-3	Booster Pump (Trahon) - Semi-Annual	1/28/2015	Months
324	2084	T-CL2-PIPING	CL2/SO2 Piping Inspection - Annual	4/28/2015	Years
325	5024	T-CL2-REGULATOR	Vacuum Regulator Inspection - Annual	9/30/2014	Years
326	2056	T-CL2-REGULATOR	Operators CL2/SO2 Unit (Trahon) - Semi-Annual	10/28/2014	Months
327	2046	T-CL2-REGULATOR	Operators CL2/SO2 Feed System Inspection - Quarterly	9/27/2014	Months
328	2068	T-CL2-SO2-BUILDING	Operators CL2/SO2 Building Inspection - Monthly	9/27/2014	Months
329	2036	T-CL2-SO2-BUILDING	Ventilation Inspection - Monthly	9/28/2014	Months
330	5015	T-CLARIFIER-1	Operators Clarifier Inspection - Weekly	9/3/2014	Weeks
331	2060	T-CLARIFIER-1	Clarifier Inpsection - Semi-Annual	10/28/2014	Months
332	2026	T-CLARIFIER-1	Clarifier Inspection - Monthly	9/25/2014	Months
333	2003	T-CLARIFIER-1	Clarifier Inspection - Annual	3/27/2015	Years
334	5015	T-CLARIFIER-2	Operators Clarifier Inspection - Weekly	9/3/2014	Weeks
335	2060	T-CLARIFIER-2	Clarifier Inpsection - Semi-Annual	10/28/2014	Months
336	2026	T-CLARIFIER-2	Clarifier Inspection - Monthly	9/25/2014	Months
337	2003	T-CLARIFIER-2	Clarifier Inspection - Annual	3/27/2015	Years
338	5021	T-CONTACT-BASIN-1	Operators Contact Basin Cleaning - Weekly	8/30/2014	Weeks
339	5021	T-CONTACT-BASIN-2	Operators Contact Basin Cleaning - Weekly	8/30/2014	Weeks
340	5017	T-CONTACT-CHAMBER	Operators Effluent Channel Cleaning - Weekly	8/30/2014	Weeks
341	2017	T-DEGRITTER-1	Cyclone Hydrogritter Inspection - Annual	7/30/2015	Years
342	2017	T-DEGRITTER-2	Cyclone Hydrogritter Inspection - Annual	7/30/2015	Years
343	2038	T-DEGRITTER-CONVEYOR	Sludge Conveyor - Monthly	9/27/2014	Months
344	2019	T-DEGRITTER-CONVEYOR	Sludge Conveyor Inspection - Semi-Annual	1/27/2015	Months
345	2067	T-EMERGENCY-LIGHTING	Emergency Lights	9/27/2014	Months
346	5020	T-FIRE-EXTINGUISHER	Fire Extinguisher Inspection - Annual	12/27/2014	Years
347	5018	T-FIRE-EXTINGUISHER	Fire Extinguisher Inspection - Monthly	9/27/2014	Months
348	2029	T-FLOW-METER-EFFLUENT	Flow Meter Inspection - Monthly	8/18/2014	Months
349	2079	T-GENERATOR-1	Generator Inspection - Annual	9/28/2014	Years
350	2065	T-GENERATOR-1	Generator Inspection - Monthly	9/27/2014	Months
351	2079	T-GENERATOR-2	Generator Inspection - Annual	9/28/2014	Years
352	2065	T-GENERATOR-2	Generator Inspection - Monthly	9/27/2014	Months
353	2080	T-GENERATOR-CONTROLS-1	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
354	2027	T-HOIST-1	Crane Inspection - Monthly	9/27/2014	Months
355	2008	T-HOIST-1	Crane Inspection - Annual	5/29/2015	Years
356	2027	T-HOIST-2	Crane Inspection - Monthly	9/27/2014	Months
357	2008	T-HOIST-2	Crane Inspection - Annual	5/29/2015	Years
358	2027	T-HOIST-3	Crane Inspection - Monthly	9/27/2014	Months
359	2008	T-HOIST-3	Crane Inspection - Annual	5/29/2015	Years
360	2080	T-MCC-ADMIN-BUILDING	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
361	2080	T-MCC-INFLUENT	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
362	2080	T-MCC-RAS-WAS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
363	2033	T-MIXER-1	Mixer Inspection - Monthly	9/25/2014	Months
364	2080	T-MIXER-1-CONTORLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
365	2033	T-MIXER-2	Mixer Inspection - Monthly	9/25/2014	Months
366	2080	T-MIXER-2-CONTORLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
367	5017	T-PARSHALL-FLUME	Operators Effluent Channel Cleaning - Weekly	8/30/2014	Weeks
368	5010	T-PH METER	PH Meter - Quarterly	9/27/2014	Months
369	5039	T-PLANT-SITE	SPCC Plant Inspection	9/27/2014	Months
370	2080	T-RAS-1-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
371	2080	T-RAS-2-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
372	2080	T-RAS-3-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
373	2080	T-RAS-4-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years
374	2072	T-SAFETY-SHOWER	Eyewash/Safety Shower Inspection - Monthly	9/27/2014	Months
375	2084	T-SO2-PIPING	CL2/SO2 Piping Inspection - Annual	4/28/2015	Years
376	5024	T-SO2-REGULATOR	Vacuum Regulator Inspection - Annual	9/30/2014	Years
377	2056	T-SO2-REGULATOR	Operators CL2/SO2 Unit (Trahon) - Semi-Annual	10/28/2014	Months
378	2046	T-SO2-REGULATOR	Operators CL2/SO2 Feed System Inspection - Quarterly	9/27/2014	Months
379	2025	T-TRAVELING-BRIDGE-1	Traveling Bridge Inspection - Monthly	9/27/2014	Months
380	2009	T-TRAVELING-BRIDGE-1	Traveling Bridge Pump Inspection - Annual	6/27/2015	Years

United Water Services Mississippi, LLC
WWTP Equipment Preventative Maintenance List

No.	PM #	AssetCode	PM Procedure Name	DateDue	IntervalType
381	**2002**	**T-TRAVELING-BRIDGE-1**	Traveling Bridge Inspection - Annual	6/27/2015	Years
382	**2025**	**T-TRAVELING-BRIDGE-2**	Traveling Bridge Inspection - Monthly	9/27/2014	Months
383	**2009**	**T-TRAVELING-BRIDGE-2**	Traveling Bridge Pump Inspection - Annual	6/27/2015	Years
384	**2002**	**T-TRAVELING-BRIDGE-2**	Traveling Bridge Inspection - Annual	6/27/2015	Years
385	2080	T-WAS-1-CONTROLS	Thermography Inspection Lift Stations- Annual	6/27/2015	Years

United Water Services Mississippi, LLC
Maintenance Standard Operating Procedures

No.	SOP	No.	SOP
1	Access Request SOP	23	Motor Installation & Removal SOP
2	Air Relief Valve RAS Pump SOP	24	New Control Panel Installation SOP
3	Alternate Entry	25	Pcard SOP
4	Belt-Auger Conveyor SOP	26	Plant Power Failure SOP
5	CL2-SO2 Equipment Repair-Replace SOP	27	Potable Water Emergency Shutdown SOP
6	Confined Space	28	Pump Station Emergency Operations SOP
7	Control Panel Repair-Maintenancae SOP	29	Purchase-Receive SOP
8	EAP 11-2010	30	RAS Pumps/Raw Pumps SOP
9	Electrical Safety	31	Refueling SOP
10	Emergency Generator SOP	32	Repair-Replace Criteria SOP
11	Emergency Generator Log	33	Replacement of Guiderail, Brackets and Cable SOP
12	eRPortal WO Entry-Close SOP	34	Replacement of Lift Station Rails and Floats SOP
13	Gearbox Installation & Removal SOP	35	Savanna Street Wet Weather SOP
14	Generator Testing SOP	36	Screw Pump Lower Bearing SOP
15	Guide Rail Pumps SOP	37	Sewer Overflow Response Plan
16	Hot Work	38	Spill Estimation
17	Inventory-Tool Request SOP	39	SSO Response SOP
18	Lift Station Control Panel Damage SOP	40	Submersible Flange Mounted Pumps SOP
19	Lift Station Inspection SOP	41	Switchgear SOP
20	Lift Station Power Failure SOP	42	Used Oil, Hazardous & Universal Wastes SOP
21	LOTO SOP	43	Westside #5 Generator Test Run SOP
22	LS Rain Day Event		

United Water Services Mississippi, LLC
Standard Operating Procedures

No.	SOP	No.	SOP
1	Aeration Basin SOP	26	New Supplier Policy
2	Aerobic Digestion SOP	27	Polymer SOP
3	Air Relief Valve SOP	28	Portable Press SOP
4	Anoxic Tank SOP	29	Presidential Hills SOP1
5	Belt Filter Press #1	30	Presidential Hills SOP2
6	Belt Filter Press #2	31	Purchase-Receive SOP
7	Belt Filter Press #3	32	RAS SOP
8	Belt-Auger Conveyor SOP	33	Raw Sewage Hydraulic Submersible SOP
9	Blower SOP	34	Refueling SOP
10	Chlorination SOP1	35	Replacement of Guide Rails, Brackets & Cable
11	Chlorination SOP2	36	Residuals Risk Assessment
12	Chlorinator SOP	37	Sampling SOP
13	Coarse Bar Screen SOP	38	Screw Pump Lower Bearing SOP
14	Dechlorination SOP	39	Secondary Clarifier SOP1
15	Digested Sludge Pumping SOP	40	Secondary Clarifier SOP2
16	Effluent Pump SOP	41	Sludge Thickening SOP
17	Grit Removal System SOP	42	SOP Thickener Polymer Calculations
18	Influent Fine Screen SOP	43	SSO Response Plan
19	Influent Pump SOP	44	SSO Response SOP
20	Inspection Check List	45	Stormwater Pump SOP
21	IPP Industry Inspections SOP	46	Sulfur Dioxide SOP1
22	IPP Industry Sampling SOP	47	Sulfur Dioxide SOP2
23	Lift Station Control Panel Damage SOP	48	Used Oil, Hazardous & Universal Waste SOP
24	Lift Station Temporary Power Failure SOP	49	WAS SOP
25	LS-088 Generator Test Run SOP	50	Waste Pump Transfer to Frac Tank SOP

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

TW

APR 21 2015

CERTIFIED MAIL 7010 1060 0002 1703 8440
RETURN RECEIPT REQUESTED

City of Jackson
Attn.: Ms. Kishia L. Powell
Director, Department of Public Works
200 South President Street
P.O. Box 17
Jackson, Mississippi 39205-0017

Re: Approval of the Gravity Line Preventive Maintenance Program,
WWTP Operations and Maintenance Program and the Comprehensive Performance Evaluation
City of Jackson, Mississippi Consent Decree
Case No.: 3:12-cv-790 TSL-JMR

Dear Ms. Powell:

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 Gravity Line Preventive Maintenance Program (GLPMP) (response dated 9/12/2014); (2) the WWTP Operations and Maintenance Program (WWTP O&MP) (response dated 9/12/2014) and (3) the Comprehensive Performance Evaluation (CPE) for the Savanna Street WWTP (response dated 9/28/2014) as well as the certification for these 3 responses dated 12/30/2014, for the City of Jackson (Jackson). The EPA hereby approves the revised GLPMP, the revised WWTP O&MP and the revised CPE for the Savanna Street WWTP.

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

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

Sincerely,

Maurice L. Horsey, IV, Chief
Municipal & Industrial Enforcement Section
NPDES Permitting & Enforcement Branch

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

Mr. Terry Williamson
City of Jackson