MUD CREEK WPCP

OPERATION AND MAINTENANCE STANDARD OPERATING PROCEURES (SOPS)

PLANT O/M INFORMATION:

Treatment Process

Wastewater is treated through a series of mechanical and biological processes to assist nature with the removal of pollutants introduced by humans during the use of water. The Mud Creek WPCP is designed to process domestic, commercial, and light industrial wastewater to meet Georgia EPD's, (Environmental Protection Division) NPDES (National Pollutant Discharge Elimination System) requirements, and effluent quality limitations have been written into the plant's NPDES discharge permit. When properly operated, the effluent discharged by the Mud Creek WPCP conforms to the water quality standards established in the NPDES permit.

The most recent expansion in 2012 included building a new treatment process and upgrading existing structures to a modified Ludzack-Ettinger Process (MLE). Innovative technologies, including high-efficiency turbo blowers, high-level ultraviolet disinfection, fine bubble diffusion system and supervisory control and data acquisition (SCADA) system were incorporated to improve the efficiency of plant operations and maintenance and to meet the new permit effluent limits.

Major process systems listed below in order of flow through the treatment plant:

- Treatment Plant Influent Pumping Station (IPS)
- Plant Headworks
- Activated Sludge Process
- Tertiary Filtration System
- Reaeration System
- Ultra-violet (UV) Disinfection
- Outfall
- Chemical Storage and Feed system
- Solids Handling Systems

Treatment Plant Utilities

- Plant Potable Water system
- Plant Reuse Water

Treatment Plant Operation and Maintenance (O/M)

The operation of the WW treatment plant is 24/7, with three eight-hour shifts. Operational/process control of plant is directed by the Plant Superintendent and Asst. Supt.
Superintendent and Asst. Supt. are Class 1 State of Georgia Wastewater Treatment System Operators.
All WW treatment plant operators are Class 3 or higher certified State of Georgia Wastewater Treatment System Operators.

All equipment maintenance at the facility performed by Central Maintenance Division personnel using a Computer Management Maintenance System (CMMS) based program. Scheduled maintenance performed as per equipment manufacturer’s recommendations. Central Maintenance Superintendent and Asst. Supt. manages division.

Mud Creek WPCP STANDARD OPERATING PROCEDURE (SOP): PLANT OPERATIONS/EQUIPMENT INSPECTION ROUNDS

Issue Date: 4/2011 Revision: 2 Review Frequency: Annual

1.0 PURPOSE

The purpose of this SOP is to ensure that plant operation/equipment inspections are conducted consistently and thoroughly. It also helps to ensure that the equipment is maintained properly, which can help to prevent breakdowns and other issues that could lead to downtime or disruptions in the treatment process.

2.0 SCOPE:

Treatment plant operators perform the following plant operation/equipment inspections and actions in accordance with the schedules below and are to sign off on the Daily Operators' Inspections Signoff Sheet. **(See Attachments A. MUD CREEK WPCP OPERATORS' DAILY SIGNOFF SHEET and Attachment B. TREATMENT PROCESS/EQUIPMENT INSPECTION AREAS).**

A-Shift (7 am-3 pm)	7:15 am	10:00 am	1:30 pm
B-Shift (3 pm-11 pm)	3:15 pm	6:00 pm	9:30 pm
C-Shift (11 pm -7am)	11:15 pm	2:00 am	5:30 am

NOTE: Treatment plant operators on duty are to inform oncoming operators of operations during shift, any issues, special circumstances, or tasks that need to be performed.

3.0 PROCEDURES:

LOCATIONS/EQUIPMENT & ACTIONS FOR DAILY INSPECTION:

Powerhouse #1: Walk through; check temps.; electrical panels/controls.

Influent Pump Station (IPS): Inspect pump station, if any notable differences (color, odor, etc.) of the raw sewage noticed, record in operations log on computer, check level gauge, inspect lower level of pump station, inspect raw sewage pumps that are on for proper operation: check for abnormal temperatures, any vibrations or noise, inspect pump packing for proper leakage.
***Note:** B and C-Shifts are not to go down to lower level in pump station on their shifts, inspections of pumps made from above by observing through grates.

Aerobic Digestor/Blowers: Check level; Check blowers for abnormal temps, vibrations, or noise; check belt press pump area; check DO levels on meter.

Sludge Belt Press Area: Check area for any issues, leaks, etc.
*When running belt presses, operator running operation responsible for operation/maintenance of belt presses.

Powerhouse #3: Walk through; check temps.; electrical panels/controls.

West Train Neuros Blowers: Check HMI screens; Check for temps, any noise or vibration.

Headworks Area (upper/ground levels): Inspect bar screens for proper operation; check bar screen motors for abnormal temps, vibrations, or noise; check inline pH meter check vortex grit basin for proper flow; check grit basin motor for temp., vibrations, or noise; if any noticeable colors/dyes of raw sewage or odors detected, record in computer logbook.

Powerhouse #2: Walk through; check temps.; electrical /panels/controls.

East Train Aeration Basins #5 & #6: Check for proper flow into anoxic basins/aeration basins; check for proper air flow and mixing; check DO meter readings; record any noticeable color or odor of the mixed liquor (foam), record in logbook.

East Train Internal Recycle Pumps: Check pumps for temps, noise, or vibrations.

East Train Neuros Blowers: Check for high temps, any noise or vibration, Check HMI screens.

East Train Clarifiers Splitter Box: Check level and for even flow over weirs to each secondary clarifier.

East Train Secondary Clarifiers #5, #6: Check for proper flow from splitter box; check for proper activated sludge settling, if any solids or pin floc rising and going over weirs record in log book; check drive motors for abnormal temps, noise or vibration; check operation of scum arm and boxes.

East Train Secondary Clarifiers Scum Pump Station: Check sump for proper levels and pump operation.

East Train RAS Pump Station: Check pumps/motors for abnormal temps, noise, or vibrations; check packing for proper leakage; check flow meter for proper flows; check WAS valve for proper operation and flow when wasting sludge to digestor.

Alum Pumping Station: Check for any leaks in piping or storage tank; check pumps/motors for abnormal temps, noise or vibrations.

Potable Water System: Check storage tank, piping, valves for any leaks; check well pump motor for abnormal temps, noise or vibrations.

West Train Aeration Basins #1, #2, #3, #4: Check for proper flow into basins; check for proper air flow and mixing; check DO meter readings; record any noticeable color or odor of the mixed liquor (foam), record in logbook.

West Train Secondary Clarifiers #1, #2, #3, #4: Check for proper flow from splitter box; check for proper activated sludge settling, if any solids or pin floc rising and going over weirs record in log book; check drive motors for abnormal temps, noise, or vibration; check operation of scum arm and boxes.

West Train RAS Pump Station: Check pumps/motors for abnormal temps, noise, or vibrations; check packing for proper leakage; check flow meter for proper flows; check WAS valve for proper operation and flow when wasting sludge to digestor.

Potable Water System Pressure Tank/Hypochlorite Feed Pump: Check tank and piping for any leaks; check pressure gauge; Check hypo feed pump for proper operation.

Disk Filters #1, #2, #3, #4, #5: Check HMI screens; Check flow/level in filters; check for proper operation; check valves and piping for leaks.

Re-Aeration Basin/Blowers: When in operation: Check level and mixing in basin; Check blower for abnormal temps, noise or vibrations.

UV Disinfection System/Basin: Check UV control panel for any alarms; Check flow and level in basins.

Reuse Water Pump Station: Check pumps/motors for abnormal temps, noise, or vibrations; Check pump packing for proper leakage; check control panel for proper operation.

Reuse Water Hypochlorite Feed System: Check level in tank; check pumps for proper operation; check pumps/piping for leaks.

Emergency Deisel Generator: Check generator area for any issues; check fuel level.

Main Electrical/Switchgear Room: Check for any issues in room; check panels for proper voltage; ensure electrical feed/switchgear in proper mode of operation.

Mechanical Room: Check room for any issues.

Plant Grounds: Ensure main gate is closed after hours; ensure back gate closed after hours; ensure security fence in good condition.

Composite Samplers (Influent/Effluent): Check operation & inside temperatures of samplers every two (2) hours and record in log on computer.

NPDES PERMIT SAMPLING AND PROCESS SAMPLING

All sampling is performed in accordance with Mud Creek WPCP NPDES Permit and Mud Creek WPCP Sampling Plan. (See Attachment C. Mud Creek Sampling record sheet.)

4.0 EMERGENCY CALLOUT

1. If an issue (alarms, power outage, equipment failure, or other concerns) arises at treatment plant during normal hours (night, weekends, or holidays) operator to contact Plant Superintendent, Assistant Superintendent and or Plant Maintenance Supervisor.
2. Plant Superintendent, Asst. Superintendent or Maintenance Supervisor will come to plant and assess emergency/issue and take necessary actions. **(See Mud Creek WPCP Emergency Response Plan.)**

5.0 CORRECTIVE ACTIONS

EQUIPMENT MAINTENANCE/REPAIR:

The Central Maintenance Division provides specialized scheduled maintenance and repairs at WW treatment plants, WW lift station, and associated mechanical and electrical equipment as well as control systems for optimal operations. Continual preventive and predictive maintenance achieved through the use of a Computer Maintenance Management System (CMMS) which ensures proper operation and early detection of any problems. With the CMMS database of information, Central Maintenance is able to consistently perform preventive and predictive maintenance on schedule to maximize reliability and meet all regulatory requirements and expectations.
Central Maintenance Division Maintenance Supervisor and Maintenance Tech assigned to treatment plant responsible for performing any required or requested equipment maintenance. If needed, other maintenance personnel assist.

If emergency situation, refer to Mud Creek ERP Section 3.2 Incident-Specific Response Procedures.

If not an emergency repair situation, the following corrective actions are to be followed if equipment is found during daily inspections not to be functioning properly.

- Corrective maintenance work requests are normally generated by the person who discovers the problem, but they can be input by others if necessary.
- The maintenance scheduler reviews the work request and generates it as a work order to the applicable work center.

UNKNOWN CONTAMINANT IN WASTESTREAM INTO PLANT:

If during rounds operator sees, smells, or online instrumentation detects anything that is not normal for waste stream entering plant, the following procedures are followed:

- Inform Plant Superintendent and/or Assist. Supt. of issue, if after hours, follow the Emergency Callout procedure. Refer to **Mud Creek ERP, Section 3.2 Incident-Specific Response Procedures: Emergency Event: WW-4 WASTEWATER CONTAMINATION.**
- Record Date/Time and pertinent information in operators' logbook.

Attachment A.

MUD CREEK WPCP OPERATORS' DAILY INSPECTIONS SIGNOFF SHEET									
Month:			**Year:**		***Operators sign with initials in appropriate box**				
	MONITORING / INSPECTION TIMES								
DAY	**7:15am**	**10:00am**	**1:30pm**	**3:15pm**	**6:00pm**	**9:30pm**	**11:15pm**	**2:00am**	**5:30am**
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Attachment B.

LOCATIONS AND EQUIPMENT FOR INSPECTION ROUNDS

Powerhouse #1
Influent Pumping Station (IPS)
Aerobic Digestor (Solids Inventory Tank)/Blowers
Belt Presses Area
Powerhouse #3
West Train Neuros Blowers
Headworks Area (upper/ground levels)
Powerhouse #2
East Train Aeration Basins #5, #6
East Train Internal Recycle Pumps
East Train Neuros Blowers
East Train Clarifiers Splitter Box
East Train Secondary Clarifiers #5, #6
East Train Secondary Clarifiers Scum Pumping Area
East Train RAS Pumping Area
Alum Pumping System
Potable Water System (Storage tank, Well Pump)
West Train Aeration Basins #1, #2, #3, #4
West Train Secondary Clarifiers #1, #2, #3, #4
West Train RAS Pumping Area
Potable Water Pressure Tank/Hypo Pump
Disk Filters (Cloth/Steel) #1, #2, #3, #4, #5
Reaeration Basin/Blowers
UV Disinfection System Area
Reuse Water Pumping Station/Pumps
Effluent Hypochlorite Pumping System/Tank
Main Electrical Room - Control Building
Mechanical Room - Control Building
Operations Building
Plant Grounds (Gates/Fences)
Refrigerated 24 hr-Composite Samplers (Influent/Effluent)

Attachment C.

WASTEWATER SAMPLING RECORD (Compliance and Process Monitoring)

Mud Creek WPCP - NPDES PERMIT # GA0020222 **Ph: (229) 333-1855**

Sample ID	24-hr COMPOSITE											GRAB			
	Start Date	Start Time (hrs)	Sample Vol. (mls.)	Sampler Temp. ≤ 6°C.	Operator's Name	End Date	End Time (hrs)	Sampler Temp. ≤ 6°C.	Time placed in Sample FRIG. (hrs)	Sample FRIG. Temp. ≤ 6°C.	Operator's Name	Date	Time (hrs)	Time placed in Sample FRIG. (hrs)	Operator's Name