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October 31, 2018

Mr. Miles Johnson  
Enforcement Analyst  
Arkansas Department of Environmental Quality  
5301 Northshore Drive  
North Little Rock, AR 72118-5317

RE: City of Walnut Ridge  
LIS 17-040, AFIN 38-00040, Permit No. AR0046566  
Interim Operations Plan & Flow Metering Plan

Dear Mr. Johnson:

As requested at our meeting August 29, 2018, attached is the interim operations plan for your review and approval.

Further, the City is under negotiations with a flow metering firm to place flow meters in each subbasin. Meter placement is scheduled to be by the end of this month for a minimum 60-day monitoring schedule. A copy of the flow metering report will be provided to you upon completion.

Should you have any questions regarding this correspondence plan please don't hesitate to contact me at 501.664.1552 or 501.993.2922.

Sincerely,  
Crist Engineers, Inc.

Craig A. Johnson, P.E.  
Associate

Enclosures: Interim Operations Plan

Cc: Jon Kopp, City Water Works



## **INTERIM OPERATIONS PLAN**

**LIS 17-040, AFIN 38-00040, NPDES PERMIT No.: AR0046566**

DATE: OCTOBER 31, 2018

### PREPARED FOR:

Walnut Ridge City Water Works  
216 S.W. 4<sup>th</sup> Street  
Walnut Ridge, Arkansas 72476  
[www.cityofwalnutridge.com](http://www.cityofwalnutridge.com)

### PREPARED BY:



Crist Engineers, Inc.  
205 Executive Court  
Little Rock, Arkansas 72205

Crist Project No.: 1635

# INTERIM OPERATIONS PLAN

## WALNUT RIDGE WASTEWATER TREATMENT PLANT

NPDES NO. AR 00456566

### I. INTRODUCTION

The Walnut Ridge Wastewater Treatment Plant (WWTP) will start construction of major Wastewater Treatment Plant Improvements Project scheduled to be underway no later than first quarter of 2020. The Plant upgrades will include the decommissioning of the existing secondary treatment BIOLAC Activated Sludge Process and associated Final Clarifiers. The WWTP is projected to be operational no later than third quarter of 2021.

In the interim period of design and construction of the improvements, optimization of the existing WWTP is planned by adapting operational enhancements that are contained in this Interim Operations Plan.

### II. EXISTING PROCESSES/EQUIPMENT PERFORMANCE CHALLENGES

#### A. Wet Weather Conditions

The wastewater total flow will vary from an average daily flow of 400,000 gpd range during normal conditions, up to the 3.5 to 4.0 mgd range during a wet weather event -- generally rainfall measuring two inches or more within a 24-hour period. During these wet weather events, the existing final clarifiers become hydraulically overloaded, reducing biomass in the aeration basin, exacerbating the ability to treat effectively and reliably.

Modifications to the current operational settings in the use of the Sludge Storage Basin are planned that will improve plant performance during wet weather events.

#### B. Revisions of Sludge Storage Basin Operations During Wet Weather

The Sludge Storage Basin has a limited capacity of approximately 1,100,000 gallons. It is recommended that this Storage Basin be kept pumped down to a level of five feet (50% of the basin capacity). In

preparation for the wet weather event the operator should waste the sludge blanket in the clarifiers to the Sludge Storage Basin in an effort to minimize biomass discharging through the clarifier. In addition, the operator can return biomass to the aeration basin to increase food source concluding the wet weather event, should condition merit.

### III. PLANT DAILY DOCUMENTATION OF ACTIVITIES

A log sheet has been developed for better documentation of the activities that take place. By using a daily log sheet, the operator will have a reminder of those processes and equipment that need to be monitored along with plant performance onsite testing. Several tests should be completed in the BIOLAC System as noted in Section IV, i.e. the storage basin levels, effluent readings, checking the bar screen for potential fouling, etc.

#### A. Testing Quality Control/Quality Assurance (QC/QA)

Laboratory area needs to be kept clean in order to not affect in-plant testing. Also, daily inspections of the sampling influent tube used in sampling plant effluent need to be replaced if the tube interior starts fouling.

#### B. Gates and Valves

Gates and valves need to be checked to determine if systems are being fed and discharging as expected, cleaning of weirs at least weekly, checking the airlift RAS pumps daily to determine if operating properly, etc.

#### C. NPDES Violations Reporting

The Plant NPDES Permit has very specific requirements for when and how to report any violations.

#### D. Other Conditions

1. The operator of this wastewater treatment facility shall be licensed as Class III by the State of Arkansas in accordance with APCEC Regulation No. 3.
2. All associated devices are installed, calibrated, and maintained to insure the accuracy of the measurements and are consistent with the accepted capability of that type of device. The calibration and maintenance shall be performed as part of the permittee's contract laboratory Quality Control/Quality Assurance program.

3. Sanitary Sewer Overflow (SSO) Reporting Requirements: All SSOs are prohibited.
4. Proper Operation and Maintenance.
5. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also include adequate laboratory controls and appropriate quality assurance procedures.
6. Duty to Mitigate.
7. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment or the water receiving the discharge.
8. Twenty-four Hour Report
  - a. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain the following information: 1) A description of the noncompliance and its cause; 2) The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and 3) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
  - b. The following shall be included as information which must be reported within 24 hours: 1) Any unanticipated bypass which exceeds any effluent limitation in the permit; 2) Any upset which exceeds any effluent limitation in the permit; and 3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part I of the permit to be reported within 24 hours to the Enforcement Section of the Water Division of the ADEQ.
  - c. The Director may waive the written report on a case-by-case basis.

#### IV. BIOLAC AERATION BASIN ACTIVATED SLUDGE PROCESS

The BIOLAC System should be evaluated and monitored daily for pH, D.O., and settling rate. Equipment operational status should be reviewed and documented.

- A. The BIOLAC O&M Manual refers to a minimum aeration of 2,217 scfm at design flows shown in the following Table.

Table No. 1  
BIOLAC Design Basis (contained in BIOLAC Operations Manual)

| <u>BOD, mg/L</u> | <u>TSS, mg/L</u> | <u>NH3N, mg/L</u> | <u>TKN, mg/L</u> | <u>Flow, mgd</u> | <u>Aeration, SCFM</u> |
|------------------|------------------|-------------------|------------------|------------------|-----------------------|
| 200              | 200              | 25                | 40               | 1.19             | 2,217                 |

Average flow conditions have a flow rate of 0.3 to 0.4 mgd. It should be noted that the plant influent strength averages 250 to 300 mg/L. These higher BOD values would increase the influent air demands and proper mixing must be maintained at all loading conditions. The two conditions (organic and inorganic loadings and mixing requirement) result in aeration needs of at least 1,800 scfm under low loading condition. To achieve 1,800 scfm, two of the three multistage blowers need to be in service at all times. Dissolved Oxygen in the basin should be targeted at 2.0 mg/L.

- B. BIOLAC System pH Control

In order to maintain complete nitrification, the BIOLAC System should maintain a pH in the 7.4 to 8.0 range. If the pH is maintained in the 6.9 to 7.2 range, effective nitrification will be comprised. Every effort should be made to maintain complete mixing throughout the basin by ensuring diffuser operation and function. As needed, caustic soda should be added to the aeration system on a daily basis to maintain optimum pH.

- C. BIOLAC System Final Clarifiers

All three of the existing final clarifiers need to be operational at all times. Effectiveness of the scum removal system, sludge blank level, and pumping effectiveness should be verified each day. Weirs should be cleaned and free of all deleterious material and growth.

## V. DISINFECTION SYSTEM

The disinfection basin should be measured for solids deposition at least monthly to determine if any solids are settling in the contact basin. Solids deposition should be cleaned, removed, and disposed.

## VII. PLAN IMPLEMENTATION

- A. The most critical areas needing improvements in operations relate to the BIOLAC Activated Sludge System (aeration basin and final clarifier).

- B. Documentation of daily observations and modifications to plant operation need to be constantly reviewed. As an example, the storage basin return pump should be kept in good condition, including removal of debris in the area of the effluent pump floating platform.
- C. Finally, advance planning for all the new plant construction that will negatively affect the current plant operation need to be resolved and placed into a written operation plan for use by the City plant staff.

ATTACHMENT A

WALNUT RIDGE WASTEWATER TREATMENT PLANT  
DAILY LOG SHEET

Date: \_\_\_\_\_ Operator: \_\_\_\_\_

1. Flow meter readings taken?
2. Flow totalized for effluent 8:00 AM to 8 AM?
3. Bar Screen: Operational? Yes or No
4. Amount of screening removed? \_\_\_\_\_ ft.
5. BIOLAC System:
  - a) West influent line in service? Yes or No. If "No" explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  - b) East influent line in service? Yes or No. If "No" explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  - c) pH \_\_\_\_\_ Time measured: \_\_\_\_\_
  - d) Aeration blowers in operation? One or Two?
  - e) D.O. in BIOLAC Aeration Basin? Yes or No D.O. \_\_\_\_\_ mg/L
  - f) Sludge Blanket in Clarifiers? \_\_\_\_\_
  - g) All three sludge return air lift pumps working? Yes or No. If "No" explain:  
\_\_\_\_\_  
\_\_\_\_\_
  - h) Clarifiers effluent weirs clean with effluent flowing over all weir lengths?  
\_\_\_\_\_
  - i) Conditions on the wet weather storage basins. \_\_\_\_\_  
Depth of water? \_\_\_\_\_  
Transferring water back into BIOLAC System? Yes or No



Any equipment out of service? Yes or No. If "Yes" explain: \_\_\_\_\_

\_\_\_\_\_

Anticipated return to service? \_\_\_\_\_

6. Inspection of plant. Name the systems checked, description, smell, activity completed.

\_\_\_\_\_

\_\_\_\_\_

7. Any unusual conditions in plant? Yes or No. If yes describe below.

\_\_\_\_\_

\_\_\_\_\_

Person completing daily log sheet:

\_\_\_\_\_