KANSAS

DEPARTMENT OF HEALTH
AND ENVIRONMENT

Division of Environment

Kathleen Sebelius, Governor
Roderick L. Bremby, Secretary

www.kdheks.gov

January 16, 2008

Mr. David Corliss, City Manager
City of Lawrence
P.O. Box 708
Lawrence, KS 66044

Re: Lawrence Wastewater Treatment Plant
Kansas Permit #M-KS31-IO01

Dear Mr. Corliss:

I appreciate the courtesy extended to me by Judy Regnier and staff during the January 10th inspection. This letter and the attached form supplement and confirm the findings of the inspection. The facility was found to be well operated and maintained.

Monitoring records for December 2006 through October 2007 were reviewed. The facility was found to be in compliance with permit effluent limitations.

The city's staff has been sampling for phosphorous throughout the collection system and in the treatment plant. The information gained will be critical in addressing nutrient removal requirements.

Please contact me if you have questions or comments regarding this report.

Sincerely,

Helen L. Holm

Helen L. Holm, P.E.
District Engineer

Cc: Dave Wagner, Utilities Superintendent
Judy Regnier, Wastewater Treatment Manager
BOW – Mike Tate
NEDO Files – Lawrence 2.0

ACTIVATED SLUDGE

Kansas Department of Health and Environment
Bureau of Environmental Field Services

Kansas Water Pollution Control Facility Inspection Report

I. General Information

Inspection Date: 1/10/2008 **Inspection Time**: 1 P.M.

KDHE Representative: Helen Holm

Facility Name: City of Lawrence

Telephone No. 785/832-7837 **Facsimile No.** 785/832-7837

Facility Mailing Address: P.O. Box, Lawrence, KS 66044

E-mail Address: jregnier@ci.lawrence.ks.us

Permit No. M-KS31-IO01 **WWTF Class**: Major **Design Capacity**: 12.5 MGD; 25 MGD Peak hydraulic flow; 40 MGD in Actiflo

Last Inspection Date: 12/15/2006 **Current Population**: 82,000

II. Contacts / Responsible Staff / Certified Operators

Name	Present	Title / Certification Level	Telephone No.
Judy Regnier	Yes	Wastewater Treatment Manager / Class IV	785/832-7837
Ron Goolsby	Yes	/ Class IV	
Jay Lovett	Yes	Operator/Not Certified	
Shari Stamer	Yes	Water Quality Manager/ Not Certified	785/832-7817
Corena Carpenter	Yes	Water Quality Technician/ Small Systems	785/832-7844

a. **Does the level of staff certification comply with K.A.R. 28-16-36?** ☒**Yes** ☐**No**

b. **Are there additional contacts with this facility?** ☐**Yes, See Comments** ☒**No**

c. **Comments:** _____

III. Facility Description

a. **Briefly describe the operation and condition of the facility**: The facility was found to be well operated and maintained.

Revision No. 01
Revision Date: April 19, 2007

b. **Is the facility description in the permit accurate?** ☒Yes ☐No

IV. Facility Information

a. **Describe any changes, additions or improvements to the facility since the last inspection.** No changes.

V. Operation and Maintenance

a. **Is flow measurement present?** ☒Yes ☐No ☐N/A

b. **Is flow measurement device operable?** ☒Yes ☐No ☐N/A

c. **How is influent being measured? (Parshall flume, weir, timers, etc.)** Mag meter

d. **How is effluent being measured? (Parshall flume, weir, timers, etc.)** Mag meter

e. **What is the last date of calibration of the flow meter(s)?** Flow meters are on an annual preventive maintenance schedule. Also, meters are checked at least monthly by the operators.

f. **Describe (attach diagram if available) location of meter sites, e.g., after screening, grit chamber, UV disinfection etc...**Level control on septage receiving station; influent meter in vault; meters on influent to each aeration basin; meter on Actiflo extraneous flow treatment system; meter on discharge from extraneous flow basin; WAS; RAS; belt filter press.

g. **Flow Measurement**:

Average Daily Flow: 9.1 **MGD** **Time Period**: currently

Maximum Daily Flow: 16.1 **MGD** **Date Recorded**: 12/10 & 12/11/2007

Minimum Daily Flow: 7.5 **MGD** **Date Recorded**: _____

h. **Does the facility have adequate hydraulic capacity?** ☒Yes ☐No ☐N/A

i. **Are all units in service (except backup)?** ☒Yes ☐No ☐N/A

j. **Are operation and maintenance manuals available?** ☒Yes ☐No ☐N/A

k. **Comments**: Actiflo system isused for treating high flows from runoff. The system is regularly tested to ensure all the equipment works.

VI. Influent / Effluent

a. **Has there been or are there any anticipated significant changes in the influent quality and / or quantity?** ☒Yes ☐No ☐N/A

b. **Describe the effluent and its effect on the receiving stream**. No negative effects were observed.

c. **Identify or discuss any high strength or problem user of the collection system.** None. The city tracks industrial users through their pretreatment system.

d. **Comments:** Strength of the influent has increased over the last 5 years. Currently, the typical COD of raw influent is 450 mg/l (250 mg/l BOD). Wastewater from primary clarifiers has a typical COD of 180 to 200 mg/l. Five years ago, the typical primary COD was 180 mg/l.

VII. Sampling

a. **Identify the location where the permittee actually samples the influent and effluent for permit compliance monitoring. Include multiple points if applicable.** After grit removal, from Actiflow when operating, wastewater treatment plant effluent, and combined effluent when Actiflo is operating.

b. **Are sample location(s) adequate?**	☒ Yes	☐ No	☐ N/A
c. **Do the plant personnel perform their own permit compliance monitoring testing?**	☒ Yes	☐ No	☐ N/A
d. **If no, who collects and analyzes samples and for what parameters?** See attached list for certifications the city's lab currently has. The city also contracts with Pace Analytical.			
e. **Is each laboratory certified for these parameters?**	☒ Yes	☐ No	☐ N/A
f. **Are the sample collection methods adequate?**	☒ Yes	☐ No	☐ N/A
g. **Does the laboratory data indicate that the permittee is in compliance with the KWPC Permit effluent limitations since the last inspection?**	☒ Yes	☐ No	☐ N/A
h. **Was a sample collected for analysis during the inspection?**	☐ Yes	☒ No	☐ N/A

i. **Comments:**

VIII. Reporting and Recordkeeping

a. **Is a copy of the KWPC Permit available?**	☒ Yes	☐ No	
b. **Have all Discharge Monitoring Reports been submitted to KDHE on time?**	☒ Yes	☐ No	☐ N/A
c. **Are Discharge Monitoring Reports available?**	☒ Yes	☐ No	☐ N/A
d. **Are the Discharge Monitoring Reports maintained for three (3) years?**	☒ Yes	☐ No	
e. **Are records of laboratory instrumentation maintenance maintained for three (3) years?**	☒ Yes	☐ No	☐ N/A
f. **Are records of laboratory instrumentation calibration maintained for three (3) years?**	☒ Yes	☐ No	☐ N/A
g. **Are laboratory records maintained for three (3) years?**	☒ Yes	☐ No	☐ N/A
h. **Are all appropriate records and data maintained and available?**	☒ Yes	☐ No	
i. **Are there other permit violations since the previous inspection, i.e. failure to meet the schedule of compliance?**	☐ Yes	☒ No	☐ N/A

j. **Comments:** _____

IX. Bypass History

a. **Since the last inspection how many bypasses have been reported at the following locations:**

Treatment Facilities: 0 **Lift Stations:** 2 **Collection System:** 26

b. **Were all bypasses reported properly?** ☒Yes ☐No ☐N/A

c. **Comments:** The city includes basement backups in its bypass reporting. The majority of the collection system bypasses were basement backups.

X. Backup Power and Emergency Procedures

a. **Are backup power supplies or secondary power sources available for the treatment facility?** ☒Yes ☐No ☐N/A

b. **Are backup power supplies or secondary power sources available for the lift stations?** ☒Yes ☐No ☐N/A

c. **Describe the frequency of exercise and maintenance of backup power sources.** On PM schedule

d. **Are maintenance records for backup power supplies available?** ☒Yes ☐No ☐N/A

e. **Are there emergency procedures in the event of a power failure, equipment break down, etc…?** ☒Yes ☐No ☐N/A

f. **Comments:** _____

XI. Activated Sludge Operation and Maintenance

a. **Number of aeration basins in use.** 4

b. **Describe the type of treatment process being used at the time of the inspection, *e.g. extended aeration, complete mix, contact stabilization, conventional activated sludge, etc…*** Complete mix

c. **Is the influent / splitter structure properly distributing influent?** ☐Yes ☐No ☐N/A

d. **Is the aeration equipment operational?** ☒Yes ☐No ☐N/A

e. **Is air evenly distributed across basins?** ☒Yes ☐No ☐N/A

f. **Does plant staff measure the dissolved oxygen?** ☒Yes ☐No ☐N/A

g. **Describe where the DO is measured.** aeration basins and effluent

h. **Is the DO maintained at 1 – 2 mg/L?** ☒Yes ☐No ☐N/A

i.	**Is the mixed liquor a dark-color?**	☐Yes	☒No	☐N/A
j.	**Is there dark-colored foam on the surface?**	☐Yes	☒No	☐N/A
k.	**Is there white, billowy foam?**	☐Yes	☒No	☐N/A
l.	**Is process control sampling and analysis conducted?**	☒Yes	☐No	☐N/A
m.	**Are records of process control sampling and analysis maintained?**	☒Yes	☐No	☐N/A
n.	**Are adequate quantities of sludge routinely wasted?**	☒Yes	☐No	☐N/A

o. **Quantity of sludge wasted?** Average of 34,000 to 35,000 gpd primary and 7,000 to 8,000 pounds per day of WAS.

p.	**Are sludge storage and disposal methods adequate?**	☒Yes	☐No	☐N/A

q. **Describe frequency and method of sludge sampling.** Prior to land application. Land application is typically done in the spring and fall.

r.	**Does test data confirm compliance with pathogen reduction and vector attraction reduction standards?**	☒Yes	☐No	☐N/A

s. **What methods are used to meet pathogen reduction and vector attraction reduction requirement of 40 CFR Part 503 regulations?** Fecal coliform bacteria concentrations and VSS reduction.

t.	**Does an operational strategy exist for the facility?**	☒Yes	☐No	☐N/A
u.	**Is the operational strategy followed?**	☒Yes	☐No	☐N/A

v. **MLSS concentration (mg//L)** 1000 mg/l (day of the inspection); 1200 to 1400 mg/l average

w. **F:M ratio (lbs BOD / lbs MLVSS / day)** _____

x. **Sludge Age (Days)** 11 to 12 days; 20 days in digesters

y. **Comments:** Treatment plant has been more lightly loaded due to many students being out of town.

XII. Clarifier Operation and Maintenance

a. **Number of clarifiers in use?** 2 **Primary** 3 **Secondary**

b.	**Is there excessive gas bubbles / floating sludge?**	**Primary**	☐Yes	☒No	☐N/A
		Secondary	☐Yes	☒No	☐N/A
c.	**Are the weirs painted and maintained?**	**Primary**	☒Yes	☐No	☐N/A
		Secondary	☒Yes	☐No	☐N/A
d.	**Are the weirs free of sludge and biological growth?**	**Primary**	☒Yes	☐No	☐N/A
		Secondary	☐Yes	☒No	☐N/A
e.	**Does the effluent over the weirs appear clear?**	**Primary**	☒Yes	☐No	☐N/A
		Secondary	☒Yes	☐No	☐N/A

f. Is the flow over the weirs uniform?	Primary	☒Yes	☐No	☐N/A
	Secondary	☒Yes	☐No	☐N/A
g. Is sufficient sludge wasted to maintain the system's equilibrium?	Primary	☒Yes	☐No	☐N/A
	Secondary	☒Yes	☐No	☐N/A
h. Are surface skimmers operational?	Primary	☒Yes	☐No	☐N/A
	Secondary	☒Yes	☐No	☐N/A
i. Is the sludge blanket level appropriate?	Primary	☒Yes	☐No	☐N/A
	Secondary	☒Yes	☐No	☐N/A
j. Is there pin floc sludge?	Primary	☐Yes	☒No	☐N/A
	Secondary	☒Yes	☐No	☐N/A
k. What is the appearance of the sludge blanket?	Primary	☐Granular	☐Homogeneous	
		☐Bulking	☐Sponge-like	
		☒Not evaluated	☐N/A	
	Secondary	☐Granular	☐Homogeneous	
		☐Bulking	☐Sponge-like	
		☒Not evaluated	☐N/A	
l. Are the waste sludge pumps operational?	Primary	☒Yes	☐No	☐N/A
	Secondary	☒Yes	☐No	☐N/A
m. Are the return sludge pumps operational?	Primary	☒Yes	☐No	☐N/A
	Secondary	☒Yes	☐No	☐N/A

n. Comments: _____

XIII. Sludge Management

a. Number of primary digester(s) available / in operation — Aerobic: _____ / _____ Anaerobic: 2 / 2

b. Number of secondary digester(s) available / in operation — Aerobic: _____ / _____ Anaerobic: _____ / _____

c. Other stabilization process: DAF and a sludge mixing tank. All the sludge, both primary & secondary, is digested.

d. Can the supernatant be withdrawn from multiple points?	☒ Yes	☐ No
e. Is sludge removed on a regular basis?	☒ Yes	☐ No
f. Is digested sludge storage utilized?	☐ Yes	☒ No
g. Is the sludge dewatered?	☒ Yes	☐ No

h. If yes, how is the sludge being dewatered?

☒Belt press
☐Bagging Equipment
☐Filter Bed
☐Other: _____

i. **Does the facility have a routine maintenance program for the sludge digestion equipment?** ☒ Yes ☐ No

j. **What is the ultimate disposition of the sludge?**
☒ Land Application
☐ Compost
☐ Landfill
☐ Processed by another POTW
☐ Other: _____

k. **Do facility records indicate that the ultimate disposition of the sludge is in compliance with the 40 CFR, Part 503 Sludge Regulations?** ☒ Yes ☐ No

l. **Comments:** _____

XIV. Anaerobic Digestion

a. **Is the digestion process maintained in the temperature range of 85 to 96°F?** ☐ Yes ☐ No

b. **If no, explain:** Digester 1- 100 to 101 F. Digester 2 - 95 - 96 F.

c. **What is the typical sludge retention time in days?** 20 to 30 days

d. **What is the Volatile Acid / Alkalinity ratio relationship?** Volatile Acids approximately 40 mg/l. Alkalinity greater than 5000 mg/l.

e. **Has a digester ever become upset or sour since the last inspection?** ☐ Yes ☒ No

f. **Comments:** _____

XV. Aerobic Digestion

a. **What is the minimum number of days the sludge is retained in the digester(s) and at what temperature?**
☐ 40 days at 20°C (68 °F)
☐ 60 days at 15 °C (59 °F)
☐ Other: _____

b. **Comments:** _____

XVI. Chlorine Disinfection

a. **What is the type of Chlorine being used?**
☐ Chlorine Gas: ☐ 100 lbs cylinder ☐ 150 lbs cylinder ☐ 2,000 lbs cylinder
☒ Sodium Hypochlorite
☐ HTH

b. Does the chlorine contact basin(s) provide a minimum of 30 minutes of detention time at average daily flow or 15 minutes at the maximum hourly flow? ☒ Yes ☐ No

c. Does the facility maintain chlorine residual records? ☒ Yes ☐ No

d. Does the facility address safety issues associated with the use of chlorine, i.e., the use of SCBA's, forced air ventilation, cylinder restraints, etc...? ☒ Yes ☐ No

e. How does the facility measure chlorine residual? ☒ DPD ☒ Amperometric titration

f. What chemical is used for dechlorination? ☐ None ☐ Sodium pyrosulphite ☒ Sodium bisulfite ☐ Sodium thiosulfate ☐ Sodium sulphite ☐ Sulpher dioxide ☐ Other: _____

g. Comments: _____

XVII. Lift Station Operation and Maintenance

a. Total number of lift stations. 37 b. Number of lift stations inspected: 1

c. Are all pumps operational?	☒Yes	☐No	☐N/A
d. Are pump running time registers operational?	☐Yes	☐No	☐N/A
e. Describe lift station inspection and maintenance schedule(s). Lift stations are inspected at least weekly.			
f. Are maintenance and pumping volume records maintained?	☒Yes	☐No	☐N/A
g. Is forced-air ventilation provided?	☐Yes	☐No	☐N/A
h. Is there excessive leakage from pumps or piping?	☐Yes	☐No	☐N/A
i. Is there excessive grease build-up in the wet well?	☐Yes	☐No	☐N/A
j. Are operators familiar with confined space entry requirements?	☒Yes	☐No	☐N/A
k. Describe alarm and monitoring systems. Lift stations are monitored through the SCADA system.			
l. Do any lift stations have a history of bypasses or other mechanical problems?	☐Yes	☒No	☐N/A
m. Does the facility have any security measures in place?	☒Yes	☐No	☐N/A

n. Comments: The capacity of the Kentucky Street pump station has been significantly increased.

VIII. Collection System

a. **Describe the operation and condition of the collection system.** The city has an ongoing program for limiting I and I. There are I and I issues in some parts of town.

b. **Is there a significant inflow or infiltration problem?** ☐Yes ☐No ☐N/A

c. **If yes, describe what steps are being taken to control / correct the problem?** _____

d. **Describe the sewer maintenance and repair activities since the last inspection, i.e. including the use of outside contractors.** The city has contracted with an outside company to test flows and determine areas of high I and I. Lines are checked by TV. The city also has lined problem lines.

e. **Comments:** _____

XX. Comments and Recommendations

a. **Are follow up actions needed?** ☐Yes ☒No

b. **Issues and Deficiencies:** The City Commission is deciding the construction start date for the city's second wastewater treatment facility. City staff is collecting and analyzing samples from the distribution system and the plant influent and effluent for phosphorous.

c. **Recommendations:** _____

d. **Comments:** _____

Report Prepared and Submitted By: Helen Holm

Title: District Engineer

Date: January 16, 2008

Signature: Helen L. Holm

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
ENVIRONMENTAL LABORATORY ACCREDITATION
CLEAN WATER ACT PROGRAM - NON-POTABLE WATER MATRIX

This certificate supersedes all previous certificates

Lawrence Municipal Laboratory
720 West 3rd Street
Lawrence, KS 66044-0708

Certificate Number: E-60665
Effective Date: 05/01/2007
Expiration Date: 04/30/2008
Reciprocity:

The laboratory listed above is hereby approved for environmental laboratory accreditation in accordance with K.S.A. 65-1, 109a for the following:

**DEMANDS
BOD {SM 5210B}
cBOD {SM 5210B}
COD {HACH 8000}
Oxygen, Dissolved {SM 4500-O G}

**INORGANIC
Chlorine - total {SM 4500-Cl D}

**MICROBIOLOGY
E. Coli {Colilert System}
Fecal Coliforms {SM 9222D (MF)}

**MINERALS
Hardness {SM 2340C}

**MISCELLANEOUS
Hydrogen Ion (pH) {SM 4500-H+ B}
Specific Conductance {SM 2510B}
Temperature {SM 2550B}

**NUTRIENTS
Ammonia {SM (18th) 4500-NH3 C}
K Nitrogen {SM 4500-NH3 G}
Phosphorus {SM 4500-P E}

**RESIDUES
Residue, Non Filterable (TSS) {SM 2540D}

End of Parameter List

ACCREDITING AUTHORITY nelap

NELAP-Recognized