



State of Ohio Environmental Protection Agency

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1PD0000820100712

MIAMI

PIQUA WWTP

MILLER, JOSEPH

2010/07/12

Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director



**Environmental
Protection Agency**

Ted Strickland, Governor
Lee Fisher, Lt. Governor
Chris Korfeski, Director

July 12, 2010

Mayor and Council
City of Piqua
201 West Water Street
Piqua, OH 45356

**RE: Compliance Evaluation Investigation (CEI)
City of Piqua Wastewater Treatment Plant
NPDES Permit 1PD00008*QD/OH0027049
Piqua, Miami County**

Mayor and Council:

On May 19, 2010, I conducted a Compliance Evaluation Investigation at the City of Piqua wastewater treatment works. This inspection was conducted to determine compliance with the NPDES discharge permit. Dave Davis, WWTP Superintendent, represented the City during this inspection. I also reviewed laboratory procedures with Tim Parker, Lab Technician, and the collection system with Todd Brandenburg, Underground Utilities Superintendent.

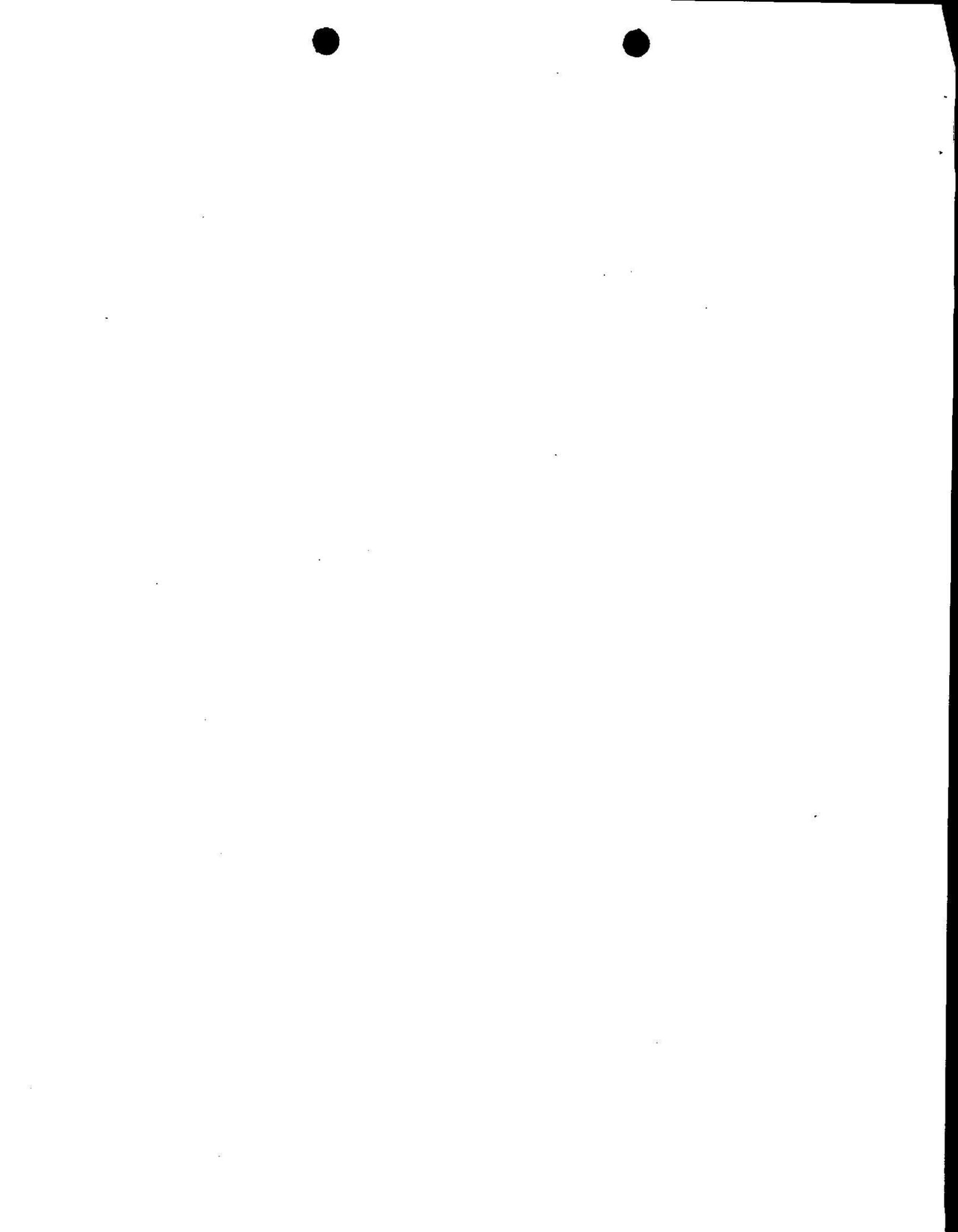
Overall, the facility was rated as "Satisfactory", with one item rated as "Marginal". Additional information is provided in the attached detailed inspection report.

No response to this inspection is required at this time. If you have any questions, I can be reached at (937) 285-6109 or by email at joe.miller@epa.state.oh.us.

Sincerely,

Joe Miller
Division of Surface Water

CC: Dave Davis, City of Piqua
Dave Burtner, City of Piqua
City of Piqua Health Department



City of Piqua WWTP Compliance Evaluation Inspection
May 19, 2010

OVERVIEW

The City of Piqua wastewater treatment works is designed to treat an average daily design flow (ADDF) of 4.5 MGD. Recent average daily flows are approaching the plant design flow: 4.11 MGD (2006), 4.11 MGD (2007), 4.34 MGD (2008), 3.46 MGD (2009), and 4.33 MGD (January to June 2010). When wastewater treatment facilities approach or surpass 80% of the ADDF, Ohio EPA highly encourages the development of plans for expansion of the facility to better handle these flows.

Discharge from the Piqua WWTP is to the Great Miami River (GMR) on the south side of the City of Piqua. Operators currently have the ability to either discharge from outfall 001 (below the former power plant low head dam) or outfall 005 (above the dam pool). Flow was historically discharged from outfall 005 with the intent to freshen and cool the dam pool. Due to deterioration of the effluent pipe to outfall 005, this line is likely to be eliminated in the near future. Final effluent will then be directed through outfall 001.

Ohio EPA's 2009 report, "Biological Assessment of the Great Miami River – Piqua Power Plant", documented impairment in the dam impounded section of the Great Miami River. This impairment is a result of a lack of flowing water and poor habitat due to the dam pool. The discharge of wastewater to the dam pool is not advisable given the already impaired condition of the river in this location. Further, the removal of the dam would likely result in the recovery of the river to full attainment status in this section.

The Piqua WWTP treatment train is: raw influent screw pumps, bar screening, grit removal, scum removal, preaeration, primary clarification (3), partitioned activated sludge aeration (4) w/ anoxic zones, final clarification (4), chlorine gas disinfection, sulfur dioxide dechlorination, post aeration, and outfall pumping. Solids handling is: anaerobic digestion, mechanical dewatering with a sludge press, and land application at agronomic rates (Burch Hydro). Mixed liquor suspended solids are maintained between 1200 to 1500 mg/l. Sludge retention time is estimated to be 8 days. The waste hydraulic tank sends about 2-3% of solids to the sludge digesters. During normal operation, 2 of the three primary clarifiers are online. The third primary clarifier is put online when flows exceed 5 MGD. The aeration units have six cells each. The first and sixth cells are anoxic while cells two through five are aerated. During summer low flow conditions, one of the four aeration tanks is taken out of service when possible. Aeration is provided by fine bubble diffusers.

Process control testing on the wastewater treatment components includes monitoring dissolved oxygen levels in aeration cells, monitoring nitrogen-ammonia levels, settleability, mixed liquor suspended solids, pH levels, sludge age, and occasional microscopic analysis.

Upstream samples are taken at the Main Street Bridge and downstream samples are taken at the Farrington Road Bridge.

Sanitary Sewer Overflows/ Collection System

Due to sanitary sewer overflows (SSOs) upstream of the headworks of the Piqua WWTP during storm events, the City of Piqua proposed to install equalization tankage as a first phase in the elimination of overflows. The recently completed Phase I included a gravity-in and gravity-out configuration 1 Million Gallon volume circular storage tank. This tank was installed on the 42" east interceptor. Since the completion of the equalization tank, Piqua has been able to store storm flows and prevent overflows during lower flow storm events. Storm events during March 2010 and June 2010, however, exceeded the available storage. Options being considered for the future phases of the SSO elimination include:

Option A – A pump station would be added to the new equalization tank to fill the upper portion of the tank to utilize the full 2.5 Million Gallon storage volume.

Option B – Another all-gravity storage tank similar to the one just completed. A total of 2 Million Gallons would then be available.

Option C – Installation of another tank and a new pump station to fill the upper halves of the two storage tanks to provide 5 Million Gallons of storage.

The Piqua WWTP NPDES includes a Schedule of Compliance that requires the submittal of a plan of action for elimination of sanitary sewer overflows. The plan is due to Ohio EPA by March 1, 2011.

Sanitary Sewer Overflows (June 2009 to June 2010):

July 11, 2009 – 1.04 MG

March 13-17, 2010 – 3.01 MG

June 15, 2010 – 0.646 MG

A 36" gate on the siphon under the Great Miami River was discovered to be restricting flows. The gate was recently removed. This gate may have contributed to sanitary sewer overflows unnecessarily.

A project is planned later this year to repair and line the 36" interceptor along the west side of the Great Miami River. A study of the section of sewer line showed a great deal of root penetration. It is possible that Piqua has been experiencing river intrusion in this line due to the location and condition of the pipe.

Sludge Handling

Primary and waste activated sludge is directed to two anaerobic digesters. The primary digester is heated and the secondary digester is unheated. Sewage sludge is sent to a 550,000 gallon holding tank prior to processing by a belt-press filter for land application. A 75,000 gallon tank is available for additional capacity. Burch Hydro is contracted for the operation of the belt filter press and land application of sewage sludge. Approved land application sites are located in various parts of Miami County.

Jacob Howdyshell, CO-DSW, conducted a review of the sludge program in February 2010. Areas in need of correction were outlined in his report, including: 90 day storage capacity without a contract for other disposal or storage, no records of certification statements, and a description of how pathogen and vector reduction requirements are being met. Since the inspection, Piqua has completed a contract with Stony Holly landfill, providing certification statements, and provided the necessary information regarding vector and pathogen reduction requirements.

Pathogen reduction requirements for land application are met through anaerobic digestion of the sewage sludge. Vector reduction requirements for land application are met through volatile solids reduction.

Currently the headworks do not provide 5/8" screening that will be expected of facilities that land apply sewage sludge. Headworks improvements are likely to be included in upcoming WWTP improvements.

Past levels of Cadmium in sludge have been reported as elevated and in some instances have necessitated the need to return field stockpiles of sludge to the WWTP. Reported influent levels of Cadmium, however, have not been high. Sludge is now being held three months and so far Cadmium levels have been under table limits.

The anaerobic sludge digester was foaming over at the time of inspection. The overflow was being diverted into a storm grate that returns to the head of the plant. This has been observed in the past by other inspectors as well and is apparently a long standing issue that occurs periodically. While the overflow does not appear to be leaving the site and does not appear to cause compliance issues, it does qualify as a housekeeping issue to be addressed.

Flow Metering

Currently effluent flow is being reported from the Sparling on-pipe magmeter located after the influent screw pumps but prior to the returned activated sludge (RAS) lines. Skimmings, plant drainage, and drainage to the sludge well all come in after the flow meter and before the RAS. Flow metering is used in the calculation of effluent mass loadings and for flow proportional sampling. Currently the flow being used for these purposes may not always be consistent with actual discharge flows. Obtaining an accurate measurement of the flow being discharged is an integral part of the NPDES program.

Effluent Violations

Two violations were reported for the period of June 2009 to June 2010, a Dissolved Oxygen and pH minimum both on July 28, 2009. These were apparently a result of laboratory error and will be resubmitted with the code "AE", or data not valid.

Downstream samples were reported as "AF" due to high stream flow in January 2010.

Laboratory Evaluation

Included in this inspection report is an evaluation of the laboratory using recently compiled lab criteria. Overall the laboratory was in very good condition and was rated as "Acceptable". The Lab Criteria Form provides a detailed description of this review.

ITEMS REQUIRING A RESPONSE

Currently a response is not required; however, continue to provide updates on upcoming improvements with regards to flow metering, sludge handling, collection system improvements/sanitary sewer overflow elimination, final discharge location, and wastewater treatment improvements. It would be reasonable to include analyses of needed improvements with the expected Sanitary Sewer Overflow Elimination Plan by March 2011.

As a final note, Ohio EPA would welcome the opportunity to partner with the City of Piqua and other interested parties in a project to remove the low head dam by the Piqua Power Plant. Low head dams represent hazards to public safety and are a detriment to local stream ecology. Please contact Hugh Trimble, DSW-SWDO, at 937-285-6444 if interested in pursuing dam removal.

Permit #: 1PD00008*QD
 NPDES #: OH0027049



State of Ohio Environmental Protection Agency
 Southwest District Office

NPDES Compliance Inspection Report

Section A: National Data System Coding					
Permit #	NPDES#	Month/Day/Year	Inspection Type	Inspector	Facility Type
<u>1PD00008*QD</u>	<u>OH0027049</u>	<u>5/19/2010</u>	<u>C</u>	<u>S</u>	<u>1</u>

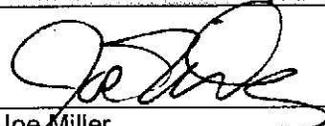
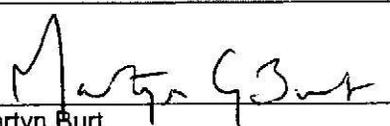
Section B: Facility Data		
Name and Location of Facility Inspected	Entry Time	Permit Effective Date
City of Piqua WWTP 121 Bridge Street Piqua, OH 45356	9:10 AM	12/1/2009
	Exit Time	Permit Expiration Date
	3:55 PM	1/31/2011
Name(s) and Title(s) of On-Site Representatives	Phone Number(s)	
Dave Davis, Wastewater Superintendent	937-778-2088	
Tim Parker, Laboratory Technician	937-778-2088	
Todd Brandenburg, Underground Utilities Supervisor	937-778-2088	
Name, Address and Title of Responsible Official	Phone Number	
Mayor and Council City of Piqua 201 West Water Street Piqua, OH 45356	937-778-2072	

Section C: Areas Evaluated During Inspection					
(S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated)					
S	Permit	M	Flow Measurement	S	Pretreatment
S	Records/Reports	S	Laboratory	S	Compliance Schedule
S	Operations & Maintenance	S	Effluent/Receiving Waters	S	Self-Monitoring Program
S	Facility Site Review	S	Sludge Storage/Disposal	S	Other
U	Collection System				

Section D: Summary of Findings (Attach additional sheets if necessary)

Flow measurement was rated as "Marginal" since actual effluent flow is not measured.

Collection System was rated as "Unsatisfactory" due to Sanitary Sewer Overflows.

Inspector	Reviewer
 Joe Miller Division of Surface Water Southwest District Office	 Martyn Burt Compliance & Enforcement Supervisor Division of Surface Water Southwest District Office
7/12/10 Date	7/12/10 Date

Sections E thru K: Complete on all inspections as appropriate
Y – Yes, N – No, N/A – Not Applicable, N/E – Not Evaluated

Section E: Permit Verification

Inspection observations verify the permit

- (a) Correct name and mailing address of permittee Y
- (b) Flows and loadings conform with NPDES permit..... Y
- (c) Treatment processes are as described in permit application... Y
- (d) All discharges are permitted..... Y
- (e) Number and location of discharge points are as described
in permit..... Y
- (f) Storm water discharges properly permitted..... Y

Comments/Status:

Final effluent discharge typically from outfall 005, upstream of dam, rather than outfall 001, located at the WWTP. Flow diverted to outfall 001 in June 2010.

Section F: Compliance

- (a) Any significant violations since the last inspection..... Y
- (b) Appropriate Non-compliance notification of violations..... Y
- (c) Permittee is taking actions to resolve violations..... Y
- (d) Permittee has a compliance schedule..... Y
- (e) Compliance schedule contained in...NPDES Permit Compliance Schedule
- (f) Permittee is in compliance with schedule..... Y
- (g) Has biomonitoring shown toxicity in discharge since last inspection Y

Comments/Status:

Report expected in March 2011 detailing a plan of action for sanitary sewer overflow elimination.

Annual reports detailing work completed on the sanitary sewer evaluation during the previous year have been submitted as required.

Section G: Operation & Maintenance

Treatment Works:

Treatment facility properly operated and maintained

(a) Standby power available.....generator or dual feed Y

i. What does the back-up power source operate.....

Entire facility and equalization mixing pumps

ii. How often is the generator tested under load.....

New generator tested once so far, will test 1/QTR, SCADA 1/WK

(b) Which components have an alarm system available for power or equipment failures.....

All equipment alarmed through SCADA (level alarms, etc.)
Alarms alert operator on staff

(c) All treatment units in service other than backup units..... Y

(d) What method is used for scheduling routine & preventative maintenance (calendar, software, etc.)..... Y

(e) Any major equipment breakdown since last inspection..... N

(f) Operation and maintenance manual provided and maintained..... Y

(g) Any plant bypasses since last inspection..... Y

(h) Any plant upsets since last inspection..... N

Comments/Status:

Operator 10 - Antero software used for scheduling maintenance
Rebuilding RAS pumps, bearing replacement/repacking
Moyno concentrated feed sludge pumps rebuilt week prior to inspection.
WWTP personnel maintain all equipment with the exception of diesel, screw pumps, and some electrical.

Section G: Operation & Maintenance con't

Record Keeping/Operator of Record:

- (a) Wastewater Treatment Works classification (OAC 3745-7)..... Y
- (b) Operator of Record holds unexpired license of class required by Permit..... Y
- (c) Copy of certificate of Operator of Record displayed on-site..... Y
- (d) Has the Operator of Record submitted an ORC Notification form.. Y
- (e) Minimum operator staffing requirements fulfilled (OAC 3745-7.... Y
- (f) If a Staffing Reduction plan has been approved, are the stipulations of the plan being met..... N/A
- (g) Operator of Record log book provided..... Y
- (h) Format of log book (e.g. computer log, hard bound book)

Hard bound book - one maintained by Dave Davis, one maintained in operator's room.
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- (i) Log book kept onsite (in an area protected from weather)..... Y
- (j) Log book contains the following:
 - I. Identification of treatment works..... Y
 - II. Date/times of arrival/departure for Operator of Record and any other operator required by OAC 3745-7..... Y
 - iii. Daily record of operator and maintenance activities (including preventative maintenance, repairs and request for repairs, process control test results, etc.)..... Y
 - iv. Laboratory results (unless documented on bench sheets)... Y
 - v. Identification of person making entries..... Y
- (k) Has the Operator of Record submitted written notifications to the permittee, Ohio EPA and, if applicable, any local environmental agencies when a collection system overflow, treatment plant bypass or effluent limit violation has occurred..... Y

Comments/Status:

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Section G: Operation & Maintenance con't

Collection System:

- (a) Are there pump stations in the collection system..... Y
 - i. How many publicly-owned pump stations equipped with permanent standby power or equivalent.....6
 - ii. How many pump stations have telemetered alarms.....0
 - iii. How many pump stations have operable alarms.....3

- (b) Any chronic collection system overflows since last inspection..... Y
- (c) Regulatory agency notified of all overflows..... Y
- (d) CSOs in the collection system....if so, what is the LCTP status..... N/A
- (e) How are CSOs monitored (chalk, block, level sensor, etc.)..... N/A
- (f) Portable pumps available for collection system maintenance..... Y
- (g) RDII Program established and active..... Y
- (h) Any WIB complaint received since last inspection..... Y
- (i) Is there a WIB response plan..... Y
- (j) Is any portion of the collection system at or near dry weather Capacity..... Y

Comments/Status:

Todd Brandenburg hired as Underground Utilities Superintendent in August 2009. Scott Cromes is the foreman and Shane Johnson is the Underground Utilities Supervisor.

One WIB so far in 2010

Study completed on ~ 1100' long section of 36 inch interceptor on west bank of GMR showed large amount of root penetration and condition problems. Plan to line the interceptor, completion by late 2010.

Section H: Sludge Management

- (a) Method of Sludge Disposal... Land Application
 Haul to Another NPDES Permittee
 Haul to a Mixed Solid Waste Landfill

*if one of the selected methods is land application, complete applicable charts.

Class A - Exception Quality Sewage Sludge (monitoring station 584)

Pathogen Reduction Alternative	84370 Vector Attraction Reduction Options							
	Option 1 -38% Volatile Solids Reduction	Option 2 -Anaerobic Bench Scale Analysis	Option 3 - Aerobic Bench Scale Analysis	Option 4 - Specific Oxygen Uptake Rate	Option 5 - Aerobic Time and Temperature	Option 6 - Alkali Addition	Option 7 - >75% Percent Solids without Unstabilized Solids	Option 8 - >75% Percent Solids with Unstabilized Solids
Alternative 1 - Time and Temperature Regime (84369)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - High pH and High Temperature (84369)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 3 - Other Processes (84369)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 4 - Unknown Processes (84369)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Composting (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Heat Drying (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Heat Treatment (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Thermophilic Aerobic Digestion (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Beta Ray Irradiation (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Gamma ray Irradiation (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Pasteurization (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 6 - Approved Equivalent Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Class B Sewage Sludge (monitoring station 581)

Pathogen Reduction Alternative	84370 Vector Attraction Reduction Options									
	Option 1 -38% Volatile Solids Reduction	Option 2 -Anaerobic Bench Scale Analysis	Option 3 - Aerobic Bench Scale Analysis	Option 4 - Specific Oxygen Uptake Rate	Option 5 - Aerobic Time and Temperature	Option 6 - Alkali Addition	Option 7 - >75% Percent Solids without Unstabilized	Option 8 - >75% Percent Solids with Unstabilized	Option 9 - Land Injection	Option 10 - Immediate Incorporation
Alternative 1 - Geometric Mean of Seven Fecal Samples (84369)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - Aerobic Digestion (46396)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - Air Drying (46396)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - Anaerobic Digestion (46396)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - Composting (46396)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - Lime Treatment (46396)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 3 - Approved Equivalent Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- (b) Has amount of sludge generated changed significantly since the last inspection..... Y
- (c) How much sludge storage is provided at the plant.....
- (d) Records kept in accordance with State and Federal law (5 years according to OAC 3745-40-06)..... Y
- (e) Any complaints received in last year regarding sludge..... Y
- (f) 5/8" screen at headworks for facilities that land apply sludge..... N
- (g) Are sludge application sites inspected to verify compliance with NPDES permit..... Y

Comments/Status:

Sludge press processing and land application contracted with Burch Hydro. Sludge sites located throughout Miami County. Headworks improvements planned during the next construction project. Recent sludge inspection conducted by Jacob Howdysshell described areas needing improvement.

Section I: Self-Monitoring Program

Flow Measurement:

- (a) Primary/Secondary flow measuring devices (e.g. weir with ultrasonic level sensor):
- (b) Flow meter calibrated annually Y
(Date of last calibration: 12/8/2009)
- (c) 24-hour recording instruments operated and maintained..... Y
- (d) Flow measurement equipment adequate to handle full range of flows..... Y
- (e) All discharged flow is measured..... N

Comments/Status:

Flow meter is located after screw pumps, but prior to RAS. Skimmings, plant drainage, drainage to sludge well all come in after flow meter and before RAS.

Section I: Self-Monitoring Program (con't)

Sampling:

- (a) Sampling location(s) are as specified by permit..... Y
- (b) Parameters and sampling frequency agree with permit..... Y
- (c) Permittee uses required sampling method..... Y
(see GLC page)
- (d) Monitoring records (i.e., flow, pH, DO) maintained for a minimum of three years including all original strip chart recordings (i.e, continuous monitoring instrumentation, calibration and maintenance records)..... Y

Comments/Status:

Section I: Self-Monitoring Program (con't)

Laboratory:

General

- (a) Does the Quality Assurance Manual contain written Standard Operating Procedures (SOP's) for all analysis performed onsite..... Y
- (b) Do SOP's include the following if applicable:
 - Title
 - Scope and Application
 - Summary
 - Sample Handling and Preservation
 - Interferences
 - Apparatus and Materials
 - Reagents
 - Procedure
 - Calculations
 - Quality Control
 - Maintenance
 - Corrective Action
 - Reference (Parent Method)

Note: Standard Methods 1020A establishes that "Quality assurance (QA) is the definitive program for laboratory operation that specifies the measure required to produce defensible data of known precision and accuracy. "Standard operating procedures are to be used in the laboratory in sufficient detail that a competent analyst unfamiliar with the method can conduct a reliable review and/or obtain acceptable results." SOPs should be developed for each analytical procedure.

- (c) EPA approved analytical testing procedures used (40 CFR 136.3).. Y
- (d) If alternate analytical procedures are used, proper approval has been obtained..... N/A
- (e) Analyses being performed more frequently than required by permit. N
- (f) If (e) is yes, are results in permittee's self-monitoring report..... N/A
- (g) Satisfactory calibration and maintenance of instruments/equipment. Y (see score from GLC page)
- (h) Commercial laboratory used..... Y
Parameters analyzed by commercial lab:

Lab name: Ginosko Laboratory

Discharge Monitoring Report Quality Assurance (DMRQA)

- (a) Participation in latest USEPA quality assurance performance sampling..... Y
Date:
- (b) Were any parameters "Unsatisfactory"..... N
- (c) Reasons for "Unsatisfactory" parameters.....

Comments/Status:

See attached General Lab Criteria Checklist

Section J: Effluent/Receiving Water Observations

Outfall # 005

Outfall Description: Prior to dam

Receiving Stream: Great Miami River

Receiving Stream Description:

Comments/Status:

Ability to discharge from 005 or 001 (downstream of dam)

Section K: Multimedia Observations

- (a) Are there indications of sloppy housekeeping or poor maintenance in work and storage areas or laboratories..... N
- (b) Do you notice staining or discoloration of soils, pavement or floors.. N
- (c) Do you notice distressed (unhealthy, discolored, dead) vegetation.. N
- (d) Do you see unidentified dark smoke or dust clouds coming from sources other than smokestacks..... N
- (e) Do you notice any unusual odors or strong chemical smells..... N
- (f) Do you see any open or unmarked drums, unsecured liquids, or damaged containment facilities..... N

If any of the above are observed, ask the following questions:

- (1) What is the cause of the condition?
- (2) Is the observed condition or source a waste product?
- (3) Where is the suspected contaminant normally disposed?
- (4) Is this disposal permitted?
- (5) How long has the condition existed and when did it begin?

General Lab Criteria

Criteria	Standard Methods Requirement	Acceptable?		Rating
Balance				A
• Standard Weights	• Either NIST Class s or ASTM/ANSI Class 1 weights ^{1,2}	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Calibration Frequency / Documentation	• Calibration verification required at least once each day the balance is used. ³	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Cleanliness, air movement, vibration	• Cleanliness of balance is a must and air movement and vibration needs to be kept to a minimum ¹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Other	• Service and recalibrate annually (manufacturer representative or comparable) ¹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Must be able to measure to 0.1 grams ⁴	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book maintained ²	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: *Calibration verified when testing over long periods of time.*
Balance calibrated 1/19/2010 by Alpha Liberty
Bench sheets used in lieu of log book for calibration

Criteria	Standard Methods Requirement	Acceptable?		Rating
Drying Oven (Suspended Solids)				A
• Temperature Recordkeeping	• Temperature recorded with each use ⁴	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book maintained ²	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Calibration Frequency / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2} . Correction factor posted on thermometer / equipment ¹	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
• Other	• Thermometer temperature in 0.5° C increments ⁵	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Acceptable temperature range is 103° – 105° F ⁴	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: *Correction factor to be posted*

● General Lab Criteria ●

Criteria	Standard Methods Requirement	Acceptable?		Rating
pH Meter				
• Calibration Frequency / Documentation	• Calibration verification required for testing over long period of time (e.g. 12 hrs.), or after a large number of samples (every 10 samples) ³	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	A
	• Logbook maintained ²	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Minimum of 2 point calibration	• Calibration per manufacturer specification and calibration buffers must bracket anticipated result ⁷	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Slope Documentation / Acceptability	• Slope acceptable range indicated on benchsheet ²	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Buffer Expiration Date	• Buffers must not be expired	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Other	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Teflon covered magnetic stirrer or equivalent for mixing ⁸	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: *Calibration done with 4, 7, and 10 buffers. When more than 10 samples taken, recalibration needed.*

Criteria	Standard Methods Requirement	Acceptable?		Rating
Dissolved Oxygen Meter				
• Calibration Method	• Air or known DO calibration method ¹⁰	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	A
	• Calibration per manufacturer specification ¹⁰	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Calibration Frequency / Documentation	• Logbook maintained ²	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Calibration verification required at least once each day the meter is used. ³	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
• Other	• Small to no bubble present under membrane (must be smaller than the lead in number 2 pencil) ¹¹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments:

General Lab Criteria

Criteria	Standard Methods Requirement		Rating
Incubator (CBOD/ E-Coli)	Acceptable?		
• Temperature Recordkeeping	• Temperature checked / recorded twice daily for each shelf in use ¹	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	A
	• Acceptable temperature range (CBOD) is 20° C ±1.0 ^{o12}	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	• Acceptable temperature range (E-Coli) is 35° C ±0.5 ^{o22}	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	• Logbook maintained ²	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	• Temperature correction information posted on incubator ¹	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
• E-Coli can use multiple tubes (five 20 ml or ten 10 ml), or mfg's multi-well tray	• E-coli Ultraviolet lamp (365 nm wave length, 6 W bulb) ²³	<input type="checkbox"/> Yes <input type="checkbox"/> No	
• Other	• Instrument manual available	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	• Temperature Log (thermometer reads to 0.5 Celsius). ¹	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Comments: *Not currently doing E-Coli testing.*
Thermometer should read to 0.5 Celsius increments.
Establish thermometers with record of temperature for each shelf.
Traceable thermometer available.

Criteria	Standard Methods Requirement		Rating
Refrigerator	Acceptable?		
• Temperature Recordkeeping	• Temperature Log (thermometer reads to 0.5 Celsius). ⁵	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	A
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
• Other	• Thermometer held in water bath. ¹	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	• Refrigerator temperature ≤6° Celsius. ¹³	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	• Do not store volatile solvents, food, or beverages. ¹⁴	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

General Lab Criteria

Criteria	Standard Methods Requirement	Acceptable?		Rating
Chlorine Meter				
• Calibration Frequency / Documentation	• pH / millivolt meter read to 0.1 mV ¹⁵	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	A
	• Calibration verification required for testing over long period of time (e.g. 12 hrs.), or after a large number of samples (every 10 samples) ³	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Calibration Method	• Calibration using three iodate solutions 0.2, 1.0, 5.0 milliliters or calibration per manufacturer specification ¹⁶	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
	• Standards used for calibration not expired	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Slope Documentation / Acceptability	• Calibration curve (acceptable slope)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Other	• Electrode free of deposits and foreign material	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book being maintained. ²	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Comments: <i>Calibration currently using 0.1 and 1.0 milliliters, checking manufacturer specifications.</i>				

Criteria	Standard Methods Requirement	Acceptable?		Rating
Ammonia Meter				
• Calibration Frequency / Documentation	• Calibration verification required for testing over long period of time (e.g. 12 hrs.), or after a large number of samples (every 10 samples) ³	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	A
	• Log book being maintained ²	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Slope acceptability	• Verify calibration slope is acceptable (per mfg. spec.).	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Calibration Method	• Standards used for calibration (3 ammonia solutions of 10 mg/l, 1 mg/l, and 0.1 mg/l) or per mfg. spec. ¹⁷	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
	• Standards used for calibration not expired	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Other	• Electrode free of deposits and foreign material	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Teflon covered magnetic stirrer or equivalent for mixing ¹⁸	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Comments: <i>Calibration being done with 0.2, 2.0, and 20 mg/l, checking manufacturer recommendation</i>				

General Lab Criteria

Criteria	Standard Methods Requirement		Rating
Sample Collection/Handling	Acceptable?		
• Sample Labeling	• Samples container labeled (description, date, time, preservative added, initialed). ¹⁹	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	A
• Chain of Custody	• Chain of custody (description, date, time, signature). ¹⁹	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
• Other	• Composite samples refrigerated during sample collection ¹⁴	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	• Equipment blanks utilized ¹⁴	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	• SOP for cleaning of sampling equipment	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	• Logbook being maintained ²	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Comments: *Using blanks for CBOD, will initiate blanks for other sampling.*

Criteria	Standard Methods Requirement		Rating
Desiccator	Acceptable?		
• General criteria	• Properly working seals.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	A
	• Desiccant fresh (blue color)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
• Documentation	• Log book being maintained ²	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Comments: *Using white dessicant (non-indicating)*

Criteria	Standard Methods Requirement		Rating
Bench sheets	Acceptable?		
• General criteria	• Date(s) ²	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	A
	• Analyst initials ²	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	• Blue or black ink pen ²	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	• Calibration information ²	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	• Equations, calculations, units for all measurements, notations, and results present ²	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	• Corrections, single line through, initialed and dated ²	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

General Lab Criteria

Criteria	Standard Methods Requirement	Acceptable?		Rating
Hot Water Bath (Fecal Coliform/E. Coli)				
• Temperature Recordkeeping	• Temperature Log (thermometer reads 0.2° C) ²¹	<input type="checkbox"/> Yes	<input type="checkbox"/> No	NR
	• Incubator temperature 44.5° C ± 0.2° ^{21/24}			
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book being maintained ²	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Water Level	• Thermometer total immersion or partial (line on thermometer to ID immersion depth) ^{1,5}	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: *Not currently doing fecal/E.Coli testing*

Criteria	Standard Methods Requirement	Acceptable?		Rating
Autoclaves/Steam Sterilizers				
• All apparatus utilized is adequately sterilized before use.	• Sterilizing temperature 121° C ²⁵	<input type="checkbox"/> Yes	<input type="checkbox"/> No	NR
	• 10 to 30 minutes time based on material being sterilized ²⁶	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Documentation	• Verify the autoclave temperature weekly by using a maximum registering thermometer (MRT) to confirm that 121°C has been reached as measured in the exhaust. ¹	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Date, contents, sterilization time and temperature, total time in autoclave, and analyst's initials should be recorded each time the autoclave is used ¹	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book being maintained ²	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Performance Checks	• Test monthly for efficacy using a biological such as commercially available <i>Geobacillus stearothermophilus</i> in spore strips, suspensions, or capsules ¹	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: *Not currently using an autoclave*

General Lab Criteria

Criteria	Standard Methods Requirement	Acceptable?		Rating
Final Effluent Temperature Monitoring				
• General Criteria	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	A
	• Thermometer reads in increments of at least 0.1° C ⁵	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book being maintained ²	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Comments: Did not verify increments on final effluent thermometer.				
Number of Criteria Rated:				
				Acceptable
				12
				Marginal
				0
				Unacceptable
				0
				Total Number of Areas Rated
				12
<p>Acceptable Ratings – No action required (recommend SOP's written or updated, perform DMRQA's for all onsite analysis, recommend voluntary lab analyst certification, written response not required).</p>				
<p>Marginal Ratings – Improvements required, written response required (recommend SOP's be written or updated, recommend they perform DMRQA's for all onsite analysis, recommend voluntary lab analyst certification, require deficiencies to be addressed in written response).</p>				
<p>Unsatisfactory Rating - Improvements required, written response required, NOV issued (recommend SOP's be written or updated, recommend they perform DMRQA's for all onsite analysis, recommend voluntary lab analyst certification, require deficiencies to be addressed in written response to NOV).</p>				
Consider recommending PAI Audit from DES when:		>60% of ratings are Marginal >45% of ratings are a combination of Marginal or Unacceptable >30% of ratings are Unacceptable		

Notation of Referenced Method

- | | |
|----------------------------|------------------------------|
| 1 Method 9020-B, Item 3 | 14 Method 1060A, Item 1 |
| 2 Method 1020-A, Item 1 | 15 Method 4500-CI I, Item 2 |
| 3 Method 1020-B, Item 10 | 16 Method 4500-CI I, Item 4 |
| 4 Method 2540-B, Item 2 | 17 Method 4500-NH3 D, Item 4 |
| 5 Method 2550-B, Item 1 | 18 Method 4500-NH3 D, Item 2 |
| 6 Method 1020-A, Item 1 | 19 Method 1060-B, Item 2 |
| 7 Method 4500-H B, Item 4 | 20 Method 1060-B, Item 1 |
| 8 Method 4500-H B, Item 2 | 21 Method 9222D, Item 1 |
| 9 Method 1020-B, Item 2 | 22 Method 9223 B, Item 2 |
| 10 Method 4500-O B, Item 3 | 23 Method 9223 B, Item 3 |
| 11 Method 4500-O G, Item 3 | 24 Method 1603, Item 2 |
| 12 Method 5210-B, Item 5 | 25 Method 9030-B, Item 3 |
| 13 CFR 136.3, Table II | 26 Method 9020 B, Table IV |

General Lab Criteria

Equipment Logbook Content - all maintenance performed on a piece of equipment should be documented in the logbook. This should include parts replacement and routine maintenance activities. Entries should include date, maintenance performed and initials of person making entry.

Preservation and Holding Times						
Parameter	Container	Min. Sample Size (mL)	Sample Type	Preservation	Maximum Storage Time	
					Recommended	Regulatory
BOD / CBOD	P, G	1000	G, C	Refrigerate $\leq 6^{\circ}\text{C}$	6h	48h
TSS	P, G	200	G, C	Refrigerate $\leq 6^{\circ}\text{C}$	7 d	7 d
pH	P, G	50	G	Analyze immediately	0.25h	0.25 h
NH ₃ -N	P, G	500	G, C	Analyze as soon as possible or add H ₂ SO ₄ to pH <2, Refrigerate $\leq 6^{\circ}\text{C}$	7 d	28 d
TRC	P, G	500	G	Analyze immediately	0.25h	0.25 h
DO (electrode)	G, BOD Bottle	300	G	Analyze immediately	0.25h	0.25 h
Temperature	P, G	--	G	Analyze immediately	0.25h	0.25 h
Metals, general	P, G	1000	G, C	For dissolved filter immediately and add HNO ₃ to pH <2	6 months	6 months
Purgeables by purge and trap	G (PTFE lined lid)	40 (X2)	G	HCl to pH<2, Refrigerate $\leq 6^{\circ}\text{C}$	7 d	14 d
Base/Neutrals and acids	G (solvent rinsed or baked)	1000	C, G	Refrigerate $\leq 6^{\circ}\text{C}$	7 d	7 days until extraction 40 days after extraction
Pesticides	G (PTFE lined lid)	1000	C	Refrigerate $\leq 6^{\circ}\text{C}$	7 d	7 days until extraction 40 days after extraction
Fecal Coliform / E-Coli	G, P (Sterilized)	100	G	Refrigerate $\leq 10^{\circ}\text{C}$ If chlorine present, add sodium thiosulfate tablet	6 hrs transport Start analysis within 2 hrs of receipt in lab.	
Oil and Grease	G	1000	G	HCl or H ₂ SO ₄ to pH <2, Refrigerate $\leq 6^{\circ}\text{C}$	28 d	28 d

Approved Standard Methods

CBOD / BOD 5 Day	Std Methods 5210-B
Ammonia, Selective Electrode Method	Std Methods 4500-NH ₃ D
Total Residual Chlorine, DPD Colorimetric Method	Std Methods 4500-Cl G
Total Suspended Solids, Dried at 103-105 °C	Std Methods 2540-D
Dissolved Oxygen, Membrane Electrode Method	Std Method 4500-O G
pH, Electrometric Method	Std Methods 4500-H+ B
Fecal Coliform, Membrane Filter Procedure	Std Methods 9222D
Escherichia Coli, Enzyme Substrate Test	Std Method 9223B
Escherichia Coli Membrane Filtration Procedure	EPA Method 1603
Oil and Grease	USEPA 1664A or Std Methods 5520B
Metals, general	USEPA 200, Std Methods 3111B or C, or 3120B
Volatiles (Purgeables by purge and trap)	USEPA 6210, Std Methods 624
Semi-Volatiles (Base/Neutrals and acids)	USEPA 6410, Std Methods 625
Pesticides	USEPA 6410 and 6630, Std Methods 608