



Environmental
Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

April 13, 2012

Dan Rogers, Village Administrator
Mt Gilead WWTP
72 W. High St
Mt. Gilead, OH 43338

Re: **Mt Gilead WWTP**
NPDES Permit 4PB00102/ OH0020362
Compliance Evaluation Inspection
Morrow County

Dear Mr. Rogers:

On April 4, 2012, a Compliance Evaluation Inspection was conducted at the Mt Gilead WWTP. Present for the inspection were Mell Felder and Steve McKirgan representing the Village and myself of the Ohio EPA, Central District Office, Division of Surface Water.

The purpose of the inspection was to evaluate compliance with the terms and conditions of your NPDES permit and to evaluate the operation and maintenance of the plant. The inspection raised several concerns in the following areas:

Effluent Flow Meter – Please provide a schedule for the rehabilitation or recalibration of the effluent flow monitoring system. (Note: This schedule was requested in the report following the 2009 inspections.) Reporting influent flow values at outfall 001 tends to overestimate the actual flow discharged since the influent magmeter recaptures return flows such as digester decant and flows from the grit removal system. Recounting these flows can be problematic for a facility in periodic non-compliance with loading limits.

Recordkeeping - Several eDMR submittal errors were discussed during the inspection which were subsequently resolved following resubmittal. Please review and improve the reporting and recordkeeping associated with the submittal of eDMR data. Additionally, improved documentation and recordkeeping in the laboratory is strongly recommended.

Dan Rogers, Village Administrator
Mt Gilead WWTP
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If you have any questions or comments concerning the enclosed inspection report,
please contact me at (614) 728-3848 or e-mail at mike.sapp@epa.ohio.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Sapp". The signature is fluid and cursive, with a long horizontal stroke at the end.

Michael Sapp
Compliance and Enforcement Unit
Division of Surface Water
Central District Office

ec: Mike Sapp

MS/rsm Mt. Gilead 2012

NPDES Compliance Inspection Report

SECTION A: NATIONAL DATA SYSTEM CODING				
Permit #	NPDES #	Inspection Type	Inspector	Facility Type
4PB00102	OH0020362	CEI	S	Public
Inspection Date	Entry Time	Exit Time	Notice of Violation	Significant Non-Compliance
4/4/2012	9:30 AM	12:30 PM	No	No

SECTION B: FACILITY DATA	
Name and Location of Facility Inspected	Permit Effective Date
Mt Gilead WWTP 3636 Loren Road Mt. Gilead, Ohio 43338	8/1/2008
	Permit Expiration Date
	7/31/2013
Name(s) and Title(s) of On-Site Representatives	Phone Numbers
Mell Felder – Operator of Record Steve McKirgan	(419) 946-3906
Name and Title of Responsible Official	Phone Number
Dan Rogers, Village Administrator	(419) 946-1931

SECTION C: AREAS EVALUATED DURING INSPECTION		
Key: S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated		
S	NPDES Compliance	
S	Operations & Maintenance	
S	Facility Site Review	
S	Collection System	
U	Flow Measurement	Inoperable effluent flow meter.
S	Receiving Waters	
M	Laboratory	Improvements recommended for recordkeeping and reporting.

Comments:

Signatures	
 4/10/12	 4/11/12
Mike Sapp, Inspector Compliance & Enforcement Division of Surface Water Central District Office	Erin Sherer, Reviewer Compliance & Enforcement Supervisor Division of Surface Water Central District Office

SECTION D: PERMIT VERIFICATION

- (a) Correct name and mailing address of permittee.....
- (b) Correct name and location of receiving waters..... Y*
- (c) Products and production rates conform with permit application Y
- (d) Flows and loadings conform with NPDES permit Y*
- (e) Treatment processes are as described in permit application..... Y
- (f) New treatment process added since last inspection..... Y*
- (g) Notification given to State of new, different or increased discharges Y
- (h) All discharges are permitted Y
- (i) Number and location of discharge points are as described in permit Y

Comments:

SECTION E: COMPLIANCE

- (a) Any significant violations since the last inspection Y*
- (b) Permittee is taking actions to resolve violations Y*
- (c) Permittee has a compliance schedule Y*
- (d) Permittee is meeting compliance schedule Y*

Comments:

SECTION F: OPERATION AND MAINTENANCE

- (a) Standby power available Y
If yes, what type? Diesel generator
- (b) Adequate alarm system available for power or equipment failures Y*
- (c) All treatment units in service other than backup units N*
- (d) Wastewater Treatment Works classification II
- (e) Operator of Record holds unexpired license of class required by Permit Y*
Class held: III
- (f) Copy of certificate of Operator of Record displayed on-site Y
- (g) Minimum operator staffing requirements fulfilled Y
- (h) Routine and preventative maintenance scheduled and performed Y
- (i) Any major equipment breakdown since last inspection N
- (j) Operation and maintenance manual provided and maintained Y
- (k) Any plant bypasses since last inspection Y*
- (l) Regulatory agency notified of bypasses Y
By MOR and/or Spill Hotline (1-800-282-9378)
- (m) Any hydraulic or organic overloads since last inspection Y*

Comments:

SECTION G: RECORD KEEPING

- a) Log book provided Y
- b) Format of log book (i.e. computer log, hard bound book)
hardbound book
- c) Log book(s) kept onsite in an area protected from weather..... Y
- d) 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 operation and maintenance activities (including
preventative maintenance, repairs and request for repairs) Y
 - iv) Laboratory results (unless documented on bench sheets) Y
 - v) Identification of person making log entries Y
- e) Has the Operator of Record submitted written notification to the permittee, Ohio
EPA and any applicable local environmental agencies when a collection system
overflow, treatment plant bypass or effluent limit violation has occurred?... Y

Comments:

SECTION H: COLLECTION SYSTEM

- a) Percent combined system:
- b) Any collection system overflows since last inspection Y*
CSO SSO X
- c) Regulatory agency notified of overflows Y
- d) CSO O&M plan provided and implemented.....
- e) CSOs monitored and reported in accordance with permit Y
- f) Portable pumps are used to relieve system..... N
- g) Lift station alarms provided and maintained NA*
- h) Lift stations equipped with permanent standby power or equivalent NA
- i) Is there an inflow/infiltration problem (separate sewer system), or were there
any major repairs to collection system since last inspection..... N
- j) Any complaints received since last inspection of basement flooding N
- k) Are any portions of the sewer system at or near capacity N
- l) Are operations changed during high-flow events?..... Y

Comments:

SECTION I: SLUDGE MANAGEMENT

- a) Sludge management plan (SMP) last audited by Ohio EPA:*
Audit Date:
- b) Sludge adequately disposed Y
Method: land application
- c) If sludge is incinerated, where is ash disposed of
- d) Is sludge disposal contracted
Name: McChesney
- e) Has amount of sludge generated changed significantly N
- f) Adequate sludge storage provided at plant Y*
- g) Records kept in accordance with State and Federal law Y
- h) Any complaints received last year regarding sludge N
- i) Is sludge adequately processed (digestion, pathogen control)..... Y

Comments:

SECTION J: SELF-MONITORING PROGRAM

- a) Primary flow measuring device operated and maintained N*
Type of device: Device location:
- b) Calibration frequency adequate..... Y*
Date of last calibration: August 2007 (influent meter)
- c) Secondary instruments operated and maintained Y
- d) Flow measurements equipment adequate to handle full range of flows Y
- e) Actual flow discharged is measured Y
- f) Flow measuring equipment inspection frequency: daily
- g) Sampling location(s) are as specified by permit Y*
- h) Parameters and sampling frequency agree with permit..... Y
- i) 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:

SECTION K: Laboratory

- a) EPA applicable analytical testing procedures used (40 CFR 136.3) Y*
- b) If alternate procedures are used, are they properly approved? N/A
- c) Analysis performed more frequency N/A
 If yes, are results recorded in permittee's report? N/A
- d) Commercial laboratory used:
 Name: Alloway
 Parameters analyzed: metals, phosphorus, oil & grease, nitrate + nitrite, .
 and cyanide
- e) Quality assurance manual provided and maintained Y
- f) Calibration and maintenance of instruments is satisfactory? Y*
- g) Results of last U.S. EPA quality assurance NA
 Date:

Comments:

SECTION L: EFFLUENT/RECEIVING WATER OBSERVATIONS

Outfall Number	Outfall sign in place	Oil Sheen	Grease	Turbidity	Foam	Solids	Color	Other
001	Yes	No	No	No	No	No	Clear	

Comments:

SECTION M: 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?

Comments:

ADDITIONAL INFORMATION

Mount Gilead Wastewater Treatment Plant 4PB00102 - OH0020362

General

The Mount Gilead WWTP has a design treatment capacity of 0.820 MGD with a discharge to Whetstone Creek. Wet stream processes include an influent pump station, influent screen, grit removal, orbal oxidation ditch, chemical feed system for phosphorus removal, three final clarifiers, splitter box, ultraviolet disinfection and post aeration. Solids handling facilities include two aerobic digesters (202,000 and 428,000 gallons) and a 428,000 gallon sludge holding tank. Solids are treated through aerobic digestion followed by land application.

Section E. - Permit Verification

- (b.) The plant discharges to an unnamed tributary approximately 150 yards upstream from Whetstone Creek. A sign identifying the discharge is installed at the confluence of Whetstone Creek.
- (d.) The average daily flow at Mount Gilead WWTP for the time period between November 2009 – February 2012 was 0.76 MGD. The peak daily flow during this period was 5.3 MGD which occurred on March 5, 2011. Both the daily average and peak daily flows have increased since the previous inspection.
- (f.) A chemical feed system for phosphorus was installed since the previous inspection. The plant changed the feed chemical from alum to polyaluminum chloride last summer.

Section F. - Compliance

- (a.) NPDES permit violations at the facility, since the previous inspection was conducted in November 2009, are illustrated in the attached table. The majority of these exceedances are for loading violations associated with high flow events.
- (b.) The operators have established operational procedures to maximize the retention of solids and provide treatment during high flow events. Additionally, Mt. Gilead is working on a number of repairs to both their sanitary and storm sewer collection systems.
- (d.) The current permit contains a compliance schedule which required compliance with final limits for phosphorus no later than August 1, 2011. The Village met this schedule as well as all of the interim milestones.

Section G. - Operation and Maintenance

- (b.) The upgraded facility is now equipped with a SCADA system which provides notification in the event of an alarm condition. The system does not currently provide remote control capabilities such as the shutdown of disks during a high flow condition. This capability would be useful when high flows occur outside of normal plant shift operations.
- (c.) At the time of the inspection all treatment units were functional with the exception of two of the three final clarifiers and the effluent flow meter. These units were off-line due to low flows, however: the weir elevations at the splitter box were set to place these units in service when the flows increase. The flow meter has not been functional since the upgrade due the calibration/hydraulics of the effluent weir.
- (d.) Mell Felder and Steve McKirgan staff the plant on a single shift 5 days/week. A 1-2 hour plant walkthrough is performed on weekends and holidays by village personnel.
- (e.) The latest permit renewal downgraded the plant to require a Class II license. Mell Felder currently holds a Class III license and Steve McKirgan holds a Class I.
- (m.) The plant experiences hydraulic overloads during storm events. As part of the plant upgrade two siphons across Whetstone Creek were eliminated in Spring 2007. The siphon box adjacent to Whetstone Creek across from the plant was a source of surcharges and overflows during storm events. Now that the siphons have been removed and the influent pump station was upgraded, the plant experiences higher flows now that all of the raw wastewater is being sent to the plant.

Section H. Collection System

- (b) Two SSOs were reported in December 2010. These events were attributed to blockages in the line possibly due to vandalism.
- (g.) All lift stations in the collection system serving the Mt. Gilead WWTP have been eliminated.
- (i.) The Village has an ongoing program to identify and eliminate sources of I/I within in the collection system. Since the previous inspection in November 2009, the Village has slip lined 2,525 feet of 8-inch sewer, replaced 6 manholes, rehabilitated 3 manholes and installed 4 new manholes. Storm sewer work in the southwest area of town near the hospital, along State Route 95, has helped to reduce I/I

Section I. - Sludge Management

- (a) A sludge inspection was performed by Jacob Howdysshell last fall.
- (b) The plant generates 75-100 dry tons/year and contracts the land application of liquid sludge (approximately 3% solids). Hauling is generally performed once a year in the Fall.
- (d) McChesney hauls and injects the sludge on approximately 893 approved acres.
- (f) The 2007 plant upgrade included the installation of a septage receiving facility which includes a 10,000 gallon septage receiving tank, an automatic invoicing system, keypad access, blower with fine bubble aeration, storage tanks with Rotomixers and chemical feed equipment. The plant is generating more sludge following the plant upgrade and the addition of septage receiving facilities.

Section J. - Self Monitoring Program

- (a.) Influent flows are measured with a magmeter. A v-notch weir and ultrasonic unit are installed in the effluent flow channel although it is not used due to problems with the hydraulics through the v-notch weir. Consequently, the influent flows are being reported for outfall 001 on the eDMRs.
- (b.) The influent magmeter was last calibrated in August 2007.
- (g.) Flow-weighted composite samplers are collected by both the influent and effluent samplers.

Section K- Laboratory

- (a.) Low-level mercury sampling is performed at the outfall.
- (f.) Duplicates samples are analyzed for ammonia analyses only. Multiple sample dilutions and occasional spikes are run for CBOD. Calibration was satisfactory for all instrumentation. Logs should be kept documenting that the proper temperature is maintained on the incubators. In addition, chemical reagents should be dated when they are received and opened.

SUMMARY OF FINDINGS AND COMMENTS
Mount Gilead Wastewater Treatment Plant
4PB00102*HD – OH0020362

1. At the time of the inspection, the following general observations were made with the operational practices at the plant:

- The plant maintains a mixed liquor suspended solids (MLSS) concentrations in the aeration system at 3000-3100 mg/l.
- Chlorine is added at three locations (septage receiving, return wet well and inner ring of ditch) for filament control.
- 30-minute settleability tests and spin tests are performed to assess solids inventories and dictate wasting rates.
- The old primary clarifier can be used as a gravity sludge thickener, if necessary.
- The UV bulbs are cleaned on a monthly basis.

The influent pump station is equipped with 3 influent pumps with a total pumping capacity of 3500 gpm.

- Polyaluminum chloride is fed just prior to the flow splitter box to the clarifiers
- In-house colorimetric phosphorus measurements are taken from the influent and effluent and used to adjust the alum feed rate (approximately ½ gallon/day).
- 8,000-10,000 gallons of sludge is wasted daily.
- Plant staff rebuilt the center drive units on the two older clarifiers this past winter.

2. The plant has modified the operational procedure for the treatment of storm flows since the last inspection. Operators monitor influent flows and place the plant in storm mode when two of the three influent pumps are run for a prolonged period (approximately 2000 gpm influent flow). All available clarifiers are first placed in service the all disks in the oxidation ditch are shut-off to attempt to retain as many solids in the ditch as possible. The gates between rings are closed off and the influent flow is directed to the outer ring with the RAS (modified contact stabilization mode of operation).

3. The plant receives approximately 30,000-40,000 gallons of septage/month from six different haulers (Tidy Tim is the primary hauler). Septage is first placed in a 10,000 gallon receiving tank, tested (pH, TSS, volatile solids) and freshened-up for 30-60 minutes before it is fed into the plant. Septage is generally transferred to the treatment system at night when the flows are down.
4. The oxidation ditch is equipped with three paddle aerators (disks) spaced across one inner and one outer ring of the ditch. The disks are rotated to prevent the deposition of solids in the tank. The outer ring provides two-thirds of the tank volume and the inner ring provides the remaining capacity. The plant operator is still experimenting with the on/off sequencing of disks to maximize operational efficiency.
5. **Please provide a schedule for the rehabilitation or recalibration of the effluent flow monitoring system.** (Note: This schedule was requested in the report following the 2009 inspections.) Reporting influent flow values at outfall 001 tends to overestimate the actual flow discharged since the influent magmeter recaptures return flows such as digester decant and flows from the grit removal system. Recounting these flows can be problematic for a facility in periodic non-compliance with loading limits.
6. Several eDMR submittal errors were discussed during the inspection which were subsequently resolved following resubmittal. Please review and improve the reporting and recordkeeping associated with the submittal of eDMR data. Additionally, improved documentation and recordkeeping in the laboratory is strongly recommended. Please find the enclosed Ohio EPA laboratory checklist to assist in these efforts.

Compliance Data for Mt Gilead WWTP between 11/1/2009 to 2/28/2012

Summary

Permit Effluent Limit Violations: 15
 Permit Effluent Code Violations: 0
 Permit Effluent Frequency Violations: 1
 Compliance Schedule Violations: 0

Limit Violations						
Reporting Period	Station	Parameter	Limit Type	Limit	Reported Value	Violation Date
May 2010	001	Nitrogen, Ammonia (NH3)	7D Conc	1.5	1.515	5/8/2010
May 2010	001	Nitrogen, Ammonia (NH3)	7D Qty	4.7	5.62129	5/8/2010
December 2010	001	Total Suspended Solids	30D Conc	12	16.625	12/1/2010
December 2010	001	Total Suspended Solids	7D Conc	18	49.5	12/1/2010
December 2010	001	Total Suspended Solids	7D Qty	55.9	100.775	12/1/2010
April 2011	001	CBOD 5 day	30D Qty	24.8	28.8833	4/1/2011
April 2011	001	CBOD 5 day	7D Qty	37.2	46.1921	4/15/2011
May 2011	001	Total Suspended Solids	7D Qty	55.9	81.7086	5/1/2011
May 2011	001	CBOD 5 day	30D Qty	24.8	37.6333	5/1/2011
May 2011	001	CBOD 5 day	7D Qty	37.2	84.7083	5/1/2011
October 2011	001	Nitrogen, Ammonia (NH3)	7D Qty	4.7	6.02672	10/15/2011
December 2011	001	CBOD 5 day	30D Qty	24.8	29.6285	12/1/2011
December 2011	001	Phosphorus, Total (P)	30D Qty	3.1	3.42484	12/1/2011
December 2011	001	Total Suspended Solids	7D Qty	55.9	69.9619	12/8/2011
December 2011	001	CBOD 5 day	7D Qty	37.2	40.3556	12/15/2011

Frequency Violations						
Reporting Period	Station	Parameter	Sample Frequency	Expected	Reported	Violation Date
June 2010	001	Total Suspended Solids	2/Week	2	1	06/08/2010

Mt Gilead WWTP SSO Events	Units	Date	Reported Value
Overflow Occurrence	No./Month	12/22/2010	1
Overflow Occurrence	No./Month	12/23/2010	1

Flow Data for Mt Gilead WWTP between 11/1/2009 and 2/28/2012

	Date	Flows (MGD)
Ten Highest Flows	3/5/2011	5.300
	12/5/2011	5.189
	2/28/2011	4.406
	5/3/2011	3.525
	1/26/2012	3.504
	3/9/2011	3.477
	4/4/2011	3.400
	10/19/2011	3.153
	4/25/2011	3.103
	Average Flow Rate	0.756

General Lab Criteria

Criteria	Standard Methods Requirement			
Balance		Ac ce pt abl e?	R a t i n g	
• Standard Weights	• Either NIST Class s or ASTM/ANSI Class 1 weights ^{1,2}	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
• Calibration Frequency / Documentation	• Calibration verification required at least once each day the balance is used. ³	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
• Cleanliness, air movement, vibration	• Cleanliness of balance is a must and air movement and vibration needs to be kept to a minimum ¹	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
• Other	• Service and recalibrate annually (manufacturer representative or comparable) ¹	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Must be able to measure to 0.1 grams ⁴	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Instrument manual available	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Log book maintained ⁶	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
Comments:				

Criteria	Standard Methods Requirement			
Drying Oven (Suspended Solids)		Ac ce pt abl e?	R a t i n g	
• Temperature Recordkeeping	• Temperature recorded with each use ⁴	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Log book maintained ⁶	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
• Calibration Frequency / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2} . Correction factor posted on thermometer / equipment ¹	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	

General Lab Criteria

	<ul style="list-style-type: none"> • Thermometer temperature in 0.1° C increments⁵ 	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o
• Other	<ul style="list-style-type: none"> • Acceptable temperature range is 103° – 105° F⁴ 	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o
	<ul style="list-style-type: none"> • Instrument manual available 	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o

Comments:

Criteria	Standard Methods Requirement		
pH Meter		Ac c e p t a b l e?	R a t i n g
• Calibration Frequency / Documentation	<ul style="list-style-type: none"> • 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 type="checkbox"/> Y e s	<input type="checkbox"/> N o
	<ul style="list-style-type: none"> • Logbook maintained⁹ 	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o
• Minimum of 2 point calibration	<ul style="list-style-type: none"> • Calibration per manufacturer specification and calibration buffers must bracket anticipated result⁷ 	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o
• Slope Documentation / Acceptability	<ul style="list-style-type: none"> • Slope acceptable range indicated on benchsheet² 	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o
• Buffer Expiration Date	<ul style="list-style-type: none"> • Buffers must not be expired 	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o
• Other	<ul style="list-style-type: none"> • Instrument manual available 	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o
	<ul style="list-style-type: none"> • Teflon covered magnetic stirrer or equivalent for mixing⁸ 	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o

Comments:

Criteria	Standard Methods Requirement		
Dissolved Oxygen Meter		Ac	a

General Lab Criteria

		c e p t a b l e? e?		t i n g
• Calibration Method	• Air or known DO calibration method ¹⁰	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Calibration per manufacturer specification ¹⁰	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
• Calibration Frequency / Documentation	• Logbook maintained ⁹	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Calibration verification required at least once each day the meter is used. ³	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
• Other	• Small to no bubble present under membrane (must be smaller than the lead in number 2 pencil) ¹¹	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Instrument manual available	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	

Comments:

Criteria	Standard Methods Requirement	A c c e p t a b l e? e?		R a t i n g
Incubator (CBOD/ E-Coli)				
• Temperature Recordkeeping	• Temperature checked / recorded twice daily for each shelf in use ¹	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Acceptable temperature range (CBOD) is 20° C ±1.0 ^{o12}	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Acceptable temperature range (E-Coli) is 35° C ±0.5 ^{o22}	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Logbook maintained ⁹	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
• Temperature Calibration /	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input type="checkbox"/>	<input type="checkbox"/>	

General Lab Criteria

Documentation		Y e s	N o
	<ul style="list-style-type: none"> • Temperature correction information posted on incubator¹ 	<input type="checkbox"/>	<input type="checkbox"/>
	<ul style="list-style-type: none"> • E-coli Ultraviolet lamp (365 nm wave length, 6 W bulb)²³ 	<input type="checkbox"/>	<input type="checkbox"/>
	<ul style="list-style-type: none"> • Instrument manual available 	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • Other 	<ul style="list-style-type: none"> • Temperature Log (thermometer reads to 0.1 Celsius).⁵ 	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Criteria	Standard Methods Requirement			
Refrigerator		Ac c e p t a b l e?	R a t i n g	
<ul style="list-style-type: none"> • Temperature Recordkeeping 	<ul style="list-style-type: none"> • Temperature Log (thermometer reads to 0.1 Celsius).⁵ 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> • Temperature Calibration / Documentation 	<ul style="list-style-type: none"> • Thermometer calibrated annually with NIST traceable thermometer^{1, 2} 	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> • Thermometer held in water bath.¹ 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> • Other 	<ul style="list-style-type: none"> • Refrigerator temperature $\leq 6^{\circ}$ Celsius.¹³ 	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> • Do not store volatile solvents, food, or beverages.¹⁴ 	<input type="checkbox"/>	<input type="checkbox"/>	
Comments:				

Criteria	Standard Methods Requirement			
Chlorine Meter		Ac c e	t	

General Lab Criteria

		pt abl e?		i n g
• Calibration Frequency / Documentation	• pH / millivolt meter read to 0.1 mV ¹⁵	<input type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	
• Calibration Method	• 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 type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	
• Calibration Method	• Calibration using three iodate solutions 0.2, 1.0, 5.0 milliliters or calibration per manufacturer specification ¹⁶	<input type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	
• Standards used for calibration not expired		<input type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	
• Slope Documentation / Acceptability	• Calibration curve (acceptable slope)	<input type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	
• Other	• Electrode free of deposits and foreign material	<input type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	
	• Log book being maintained. ⁹	<input type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	
	• Instrument manual available	<input type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	

Comments:

Criteria	Standard Methods Requirement			R a t i n g
Ammonia Meter				
		Ac ce pt abl e?		
• 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 type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	
• Slope acceptability	• Log book being maintained ⁹	<input type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	
	• Verify calibration slope is acceptable (per mfg. spec.).	<input type="checkbox"/>	<input type="checkbox"/>	
		Y e s	N o	

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		e s Y e s	o N o
• 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"/>	<input type="checkbox"/>
	• Standards used for calibration not expired	<input type="checkbox"/>	<input type="checkbox"/>
• Other	• Electrode free of deposits and foreign material	<input type="checkbox"/>	<input type="checkbox"/>
	• Teflon covered magnetic stirrer or equivalent for mixing ¹⁸	<input type="checkbox"/>	<input type="checkbox"/>
	• Instrument manual available	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Criteria	Standard Methods Requirement			
Sample Collection/Handling		Ac ce pt abl e?	R a t i n g	
• Sample Labeling	• Samples container labeled (description, date, time, preservative added, initialed). ¹⁹	<input type="checkbox"/>	<input type="checkbox"/>	
• Chain of Custody	• Chain of custody (description, date, time, signature). ¹⁹	<input type="checkbox"/>	<input type="checkbox"/>	
• Other	• Composite samples refrigerated during sample collection ¹⁴	<input type="checkbox"/>	<input type="checkbox"/>	
	• Equipment blanks utilized ¹⁴	<input type="checkbox"/>	<input type="checkbox"/>	
	• SOP for cleaning of sampling equipment	<input type="checkbox"/>	<input type="checkbox"/>	
	• Logbook being maintained ⁹	<input type="checkbox"/>	<input type="checkbox"/>	

General Lab Criteria

Comments:

Criteria	Standard Methods Requirement	Acceptable?	Rating
Desiccator			
• General criteria	• Properly working seals.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N <input type="checkbox"/> O
	• Desiccant fresh (blue color)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N <input type="checkbox"/> O
• Documentation	• Log book being maintained ⁹	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N <input type="checkbox"/> O

Comments:

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

General Lab Criteria

Comments:

Criteria	Standard Methods Requirement			
Hot Water Bath (Fecal Coliform/E. Coli)		Ac ce pt abl e?	R a t i n g	
• Temperature Recordkeeping	• Temperature Log (thermometer reads 0.2° C) ²¹	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Incubator temperature 44.5° C ± 0.2° <small>21/24</small>			
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• Log book being maintained ⁹	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
• Water Level	• Thermometer total immersion or partial (line on thermometer to ID immersion depth) ^{1,5}	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	

Comments:

Criteria	Standard Methods Requirement			
Autoclaves/Steam Sterilizers		Ac ce pt abl e?	R a t i n g	
• All apparatus utilized is adequately sterilized before use	• Sterilizing temperature 121° C ²⁵	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
	• 10 to 30 minutes time based on material being sterilized ²⁶	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	
• 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"/> Y e s	<input type="checkbox"/> N o	
	• Date, contents, sterilization time and temperature, total time in autoclave, and analyst's initials should be recorded each time the autoclave is	<input type="checkbox"/> Y e s	<input type="checkbox"/> N o	

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	used ¹	<input type="checkbox"/>	<input type="checkbox"/>
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	Y e s	N o
	• Log book being maintained ⁹	Y e s	N o
• Performance Checks	• Test monthly for efficacy using a biological such as commercially available <i>Geobacillus stearothermophilus</i> in spore strips, suspensions, or capsules ¹	Y e s	N o
Comments:			
<p style="text-align: center;">Number of Criteria Rated:</p>		A c c e p t a b l e	
		N o n a c c e p t a b l e	
		U n a c c e p t a b l e	
		T o t a l N u m b e r	

General Lab Criteria

	Number of Areas Rated
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).	
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).	
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).	
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 4 | 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-B, 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 |

General Lab Criteria

13 CFR 136.3, Table II

26 Method 9020 B, Table IV

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

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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