Ohio EPA
40 years and moving forward
John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

June 21, 2013

Mr. Jeremy Germann
Village of Georgetown
301 South Main Street
Georgetown, OH 45121

RE: VILLAGE OF GEORGETOWN WWTW/COMPLIANCE EVALUATION INSPECTION NPDES PERMIT NO. OH0021300/OHIO EPA PERMIT NO. 1PB00101*ID

Dear Mr. Germann:

On June 12, 2013, I conducted an NPDES compliance evaluation inspection at the village of Georgetown Wastewater Treatment Works (WWTW). Mr. Derek Copas (Operator of Record) represented the Village during the inspection process. The purpose of the inspection was to observe the progress of the WWTW construction and to determine compliance with the terms and conditions of the NPDES permit.

The village of Georgetown WWTW is designed to treat and discharge an average daily flow of 0.8 million gallons/day. A review of the Village's discharge monitoring reports from January 2012-May 2013 show an average daily flow of 0.81 MGD with a maximum daily flows of 2.9 MGD (December 7, 2012), 3.2 MGD (January 26, 2012) and 3.5 MGD (December 10, 2012). During this same time frame, the Village's equalization basin bypassed secondary treatment 40 hours (between 4 separate days). A summary of the effluent violations for this period of time is shown below:

EFFLUENT LIMIT VIOLATIONS
(Period of Review: April 2010 – May 2011)

7D = Weekly30D = Monthly 1D = Daily
Conc. = Concentration (mg/l or cts/100ml) Qty. = Quantity (Kg/Day)

Reporting Period	Parameter	Limit Type	Limit	Reported Value
January 2012	Total Suspended Solids	7D Qty	78.8	82.5300
May 2012	Nitrogen, Ammonia NH3	7D Conc	7.0	7.73
June 2012	Total Suspended Solids	30D Conc	12.0	16.5
June 2012	Total Suspended Solids	7D Conc	18.0	26.

Reporting Period	Parameter	Limit Type	Limit	Reported Value
June 2012	CBOD 5 day	30D Conc	10.0	11.7
June 2012	CBOD 5 day	7D Conc	15.0	17.1
June 2012	Total Suspended Solids	7D Conc	18.0	19.
June 2012	Nitrogen, Ammonia NH3	7D Conc	7.0	7.825
August 2012	Total Suspended Solids	30D Conc	12.0	13.75
August 2012	E. coli	30D Conc	126	196.201
August 2012	E. coli	7D Conc	284	816.394
August 2012	Total Suspended Solids	7D Conc	18.0	27.
August 2012	E. coli	7D Conc	284	591.819
September 2012	Total Suspended Solids	7D Qty	54.6	65.2458
September 2012	pH	1D Conc	6.5	6.2
October 2012	Total Suspended Solids	30D Conc	12.0	27.125
October 2012	Total Suspended Solids	7D Conc	18.0	19.
October 2012	Total Suspended Solids	30D Qty	36.4	45.1020
October 2012	CBOD 5 day	30D Conc	10.0	12.2
October 2012	Total Suspended Solids	7D Conc	18.0	37.5
October 2012	Total Suspended Solids	7D Qty	54.6	55.9195
October 2012	CBOD 5 day	7D Conc	15.0	17.25
October 2012	Total Suspended Solids	7D Conc	18.0	45.
October 2012	Total Suspended Solids	7D Qty	54.6	81.5705
October 2012	CBOD 5 day	7D Conc	15.0	15.2
October 2012	E. coli	7D Conc	284	473.487
December 2012	Total Suspended Solids	30D Qty	51.5	54.3947
December 2012	Total Suspended Solids	7D Qty	78.8	98.6125
December 2012	CBOD 5 day	30D Qty	45.5	56.4385
April 2013	Total Suspended Solids	30D Qty	51.5	70.5585
April 2013	Total Suspended Solids	7D Conc	26.0	39.5
April 2013	Total Suspended Solids	7D Qty	78.8	230.773
May 2013	Nitrogen, Ammonia NH3	7D Conc	7.0	8.32

*Mr. Copas (Operator of Record) submitted self-notification reports for all the violation months shown above.

According to Part I, C. "Schedule of Compliance", the Village is required to eliminate sanitary sewer overflows and secondary bypassing at the WWTW and achieve compliance with final effluent limits as soon as possible but no later September 1, 2014." Jones & Henry Engineers prepared a "No Feasible Alternatives Analysis" in 2008 (as required by the previous NPDES permit) to evaluate alternatives toward eliminating the secondary treatment bypass. The plan identified three major projects to achieve the requirements of the compliance schedule: the Possum Run pump station upgrade (750,000-gallon detention basin), Town Run pump station upgrade (2 million-gallon basin), and WWTW upgrade. (The permit to install report issued by Ohio EPA's Division of Environmental & Financial Assistance for the WWTW upgrade has been attached to this report for reference).

At this point, the Possum Run pump station project is operationally complete and construction on the Town Run pump station project and the WWTW upgrade project began in May of 2013 (two months ahead of the compliance schedule).

Mr. Copas does not believe the construction sequencing will affect compliance with the current NPDES limits. The conversion of the existing aeration basin (step-feed) into an aerobic digester and improvements to the existing secondary clarifier (will be used for polishing clarifiers) will not initiate until the new SBR units are completed. Replacing the UV disinfection system will occur during the non-recreation season.

Once the WWTW upgrade is completed, the permitted average daily design flow of the facility will be 1.1 MGD with a peak hourly flow of 6.0 MGD.

Rumpke Leachate

Leachate generated from the Rumpke Waste, Inc., mixed solid waste landfill (located on Beyers Road) is currently discharged to the village of Georgetown's sewers via pump station. Because of the aforementioned wet weather problems in the Village's sewage collection system and WWTW, Ohio EPA has historically prohibited discharge of leachate into the Village's sewers when the equalization basin at the WWTW is bypassing secondary treatment.

Rumpke leachate testing results indicate high concentration levels of BOD_5 and COD (relative to residential-strength wastewater). The Village has reported in a past NPDES self-notification reports that Rumpke leachate has contributed to problems that caused effluent violations at the WWTW. **At no time should leachate pollutant loading interfere with the treatment processes in a way that causes or contributes to a NPDES violation. Similarly, if the Georgetown WWTW treatment capacity is reduced due to equipment failure or the loss of biological colonies due to wet weather flows, arrangements should be made for Rumpke to haul leachate to another WWTW or store the leachate until the WWTW has returned to full treatment capacity.** The operator of record at the Georgetown WWTW, Mr. Copas, will coordinate with Rumpke landfill staff on days in which no leachate will be accepted. Mr. Copas should also track the days in which Georgetown cannot accept the leachate and the reasoning for the decision.

More coordination will be needed during construction of the Georgetown WWTW improvements due to reduced wet weather holding capacity, as one of the EQ basins will be converted to three SBR units.

It is worth mentioning that Rumpke will be constructing a pre-treatment system, which will reduce the leachate to residential strength wastewater. It is anticipated that construction of this treatment system will be completed in August of 2014 (approximately the same time as the Georgetown WWTW upgrade).

Quality Assurance & Standard Operating Procedures

During the inspection process, Mr. Copas provided a standard operating procedure (SOP) for the $CBOD_5$ testing conducted at the WWTW laboratory. Ohio EPA recommends the village provide a section in the SOP that describes how sampler and incubator temperatures will be recorded. Temperatures for the both the $CBOD_5$ incubator, influent and effluent automatic composite samplers should be recorded daily when the unit is in use. Even if temperatures are already recorded, this process should be memorialized within the SOP.

Outfall Sign

Part II, Item N., of the NPDES permit states the following:

Not later than 4 months from the effective date of this permit, the permittee shall post a permanent marker on the stream bank at each outfall that is regulated under this NPDES permit where a marker does not currently exist. This includes final outfalls, bypasses, and combined sewer overflows. The marker shall consist at a minimum of the name of the establishment to which the permit was issued, the Ohio EPA permit number, and the outfall number and a contact telephone number. The information shall be printed in letters not less than two inches in height. The marker shall be a minimum of 2 feet by 2 feet and shall be a minimum of 3 feet above ground level. The sign shall not be obstructed such that persons in boats or persons swimming on the river or someone fishing or walking along the shore cannot read the sign. Vegetation shall be periodically removed to keep the sign visible. If the outfall is normally submerged the sign shall indicate that. If the outfall is a combined sewer outfall, the sign shall indicate that untreated human sewage may be discharged from the outfall during wet weather and that harmful bacteria may be present in the water. When an existing marker is replaced or reset, the new marker shall comply with the requirements of this section.

There was no outfall sign located at the discharge location at the time of the inspection. Mr. Copas stated that a sign, which is compliant with the NPDES permit conditions, will be placed at the discharge location by no later than July 12, 2013.

Automatic Composite Sampler

The thermometer in the refrigerator for the effluent composite sampler had a reading of 12°C. The village plans to replace this sampler with WWTW upgrade project. If the refrigeration unit in the automatic sampler is no longer capable of maintaining an acceptable holding temperature, WWTW staff must begin collecting manual composite effluent samples (held at an appropriate temperature $\leq$6°C). Manual composite sampling consists of at least three grab samples proportionate in volume to the sewage flow rate at the time of sampling and collected at intervals of at least 30 minutes, but not more than 2 hours, during the period that the plant is staffed on each day for sampling.

Such samples shall be collected at such times and locations, and in such fashion, as to be representative of the facility's overall performance.
This practice shall continue until the automatic sampler is replaced. All samples taken when the temperature was greater than 6°C, shall be coded "AE" (Analytical data not valid) on the discharge monitoring reports.

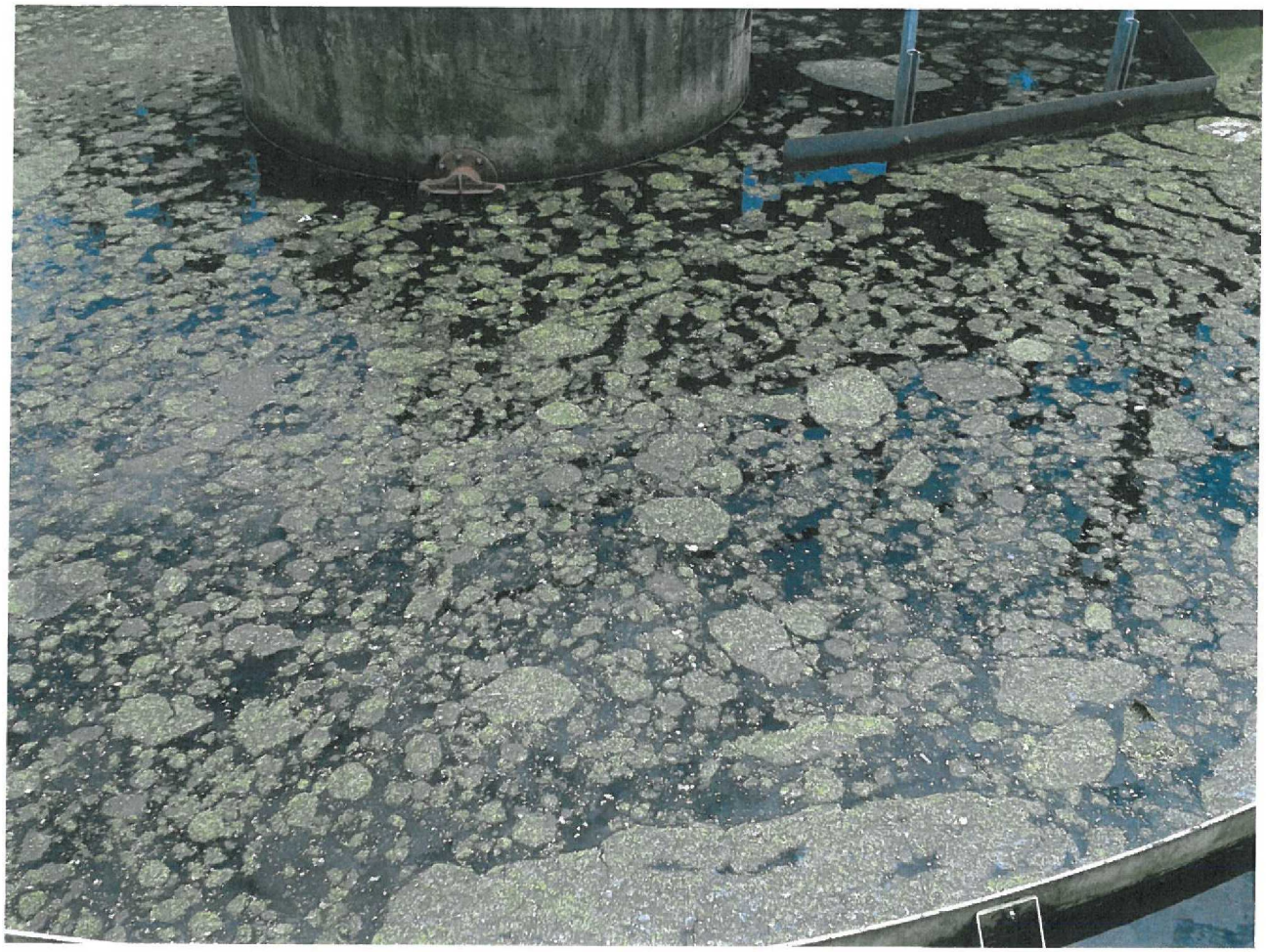
All holding temperatures should be documented in order to demonstrate compliance with 40 CFR 136.

Items Noted During the Inspection

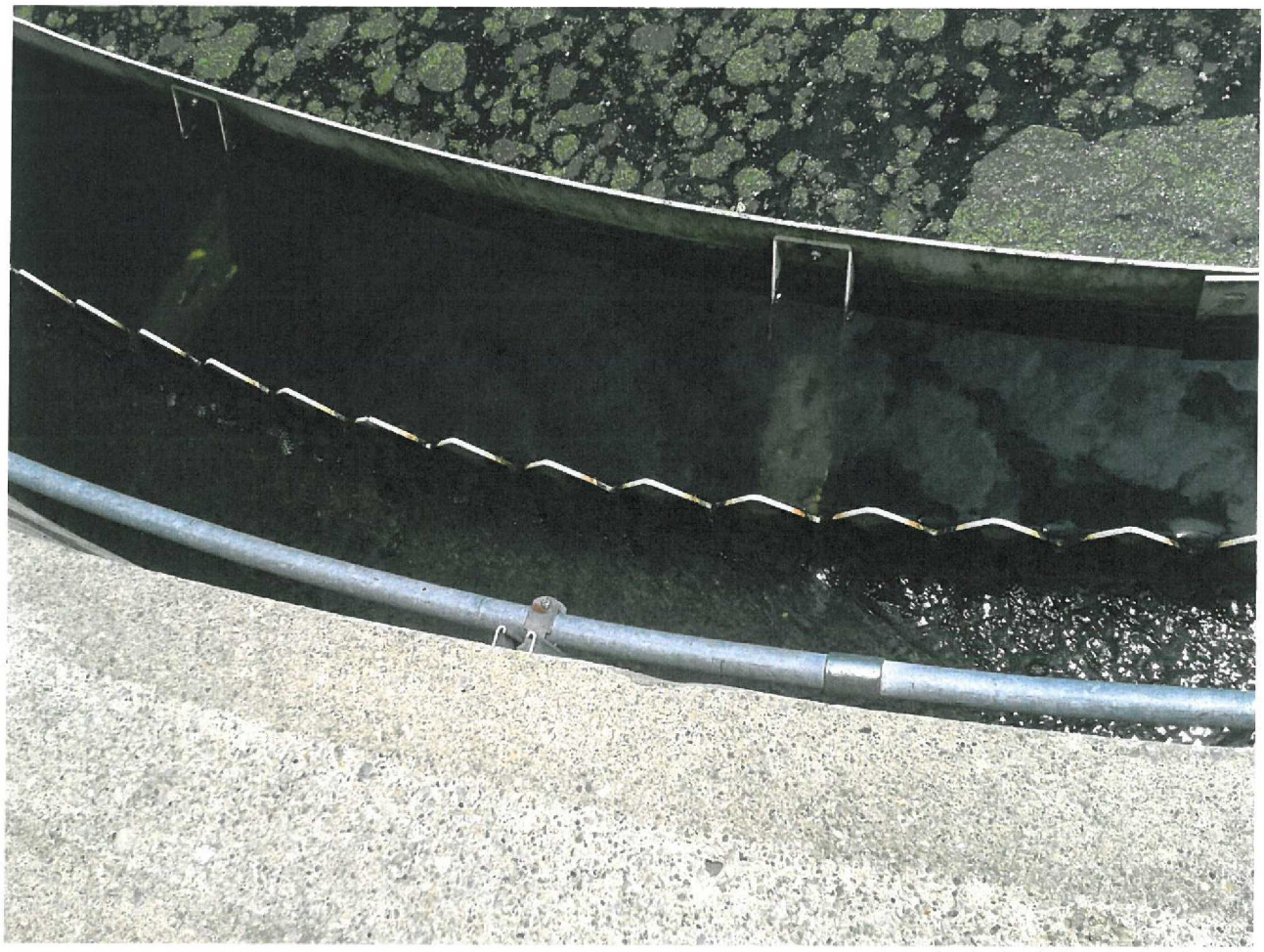
On occasion, WWTW influent flow rates have been so high that the automatic bar screen and the manual bar screen channels were ineffective in containing the flow. As a result, channel overflows have occurred. As a result, WWTW staff have a constructed a channel "rim" (made out of wood), which serves as a bypass around the screens during these high flow events. A new 6 MGD mechanical bar screen/channel will be included in the upgrade so that this condition will be eliminated.

Representatives from DEFA had noted erosion around the newly-constructed Possum Run pump station. The village should provide a means to divert storm water around the tank in order to prevent future gullying. Creating a berm prior to the tank and installing a yard drain with conduit diverting storm water to a receiving water body (storm sewer, stream, ditch, etc.) seems to be a reasonable option.

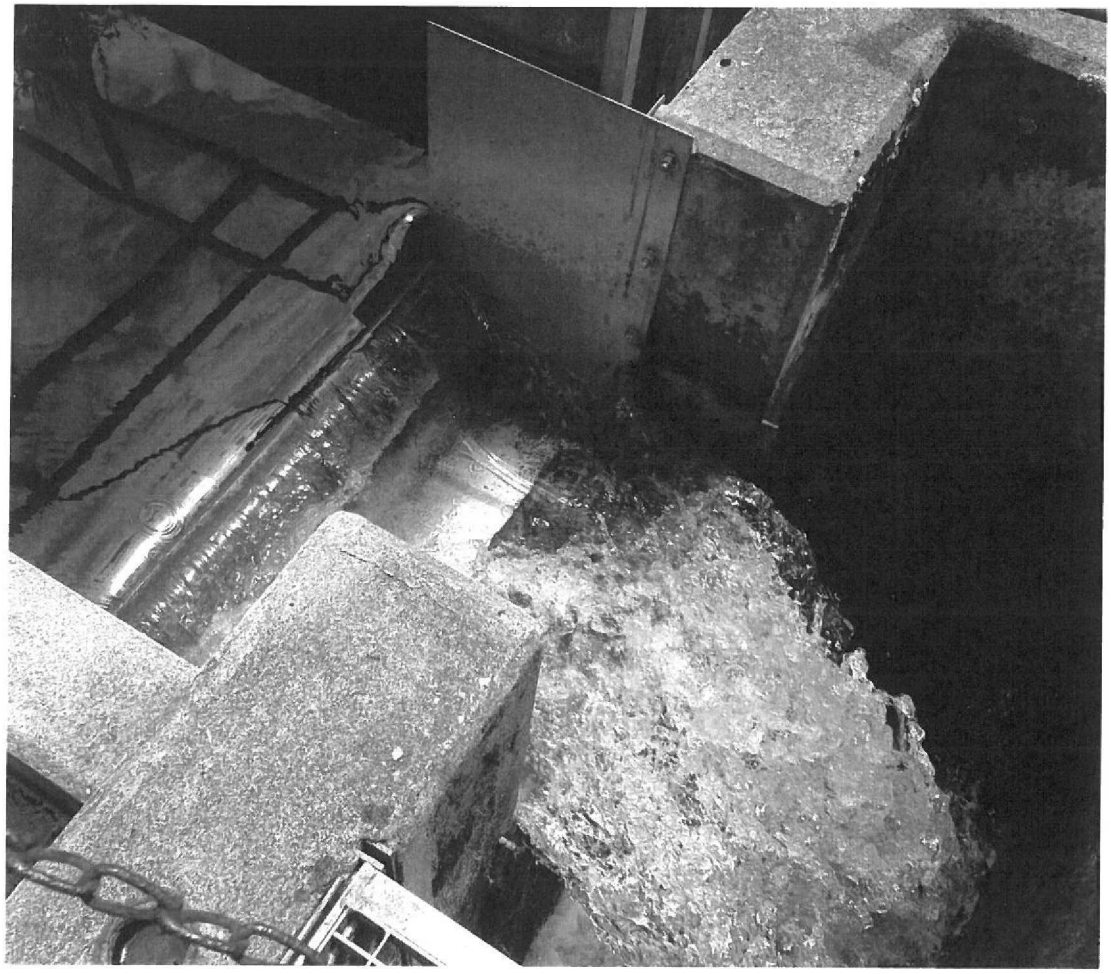
The existing step-feed aeration system has several "dead spots" in the tank where there is no "aeration-roll" being provided. The cause is attributed to a build-up of grit/trash in the tank and the need for improvements to the air header/diffusers. The tank will be drained and cleaned out during the process of converting the step-feed system to an aerobic digester.



The scum pump for the secondary clarifiers was down so operations staff had been manually netting solids and duckweed until the pump had been repaired. Mr. Copas believed that duckweed was introduced into the system when the old storm clarifiers were drained and decommissioned. There was duckweed on the surface of those clarifiers and the contents were drained to the headworks of the WWTW.
Mr. Copas stated that the parts for the scum pump have been ordered and he is hopeful that it will be back on-line within 4-6 weeks.

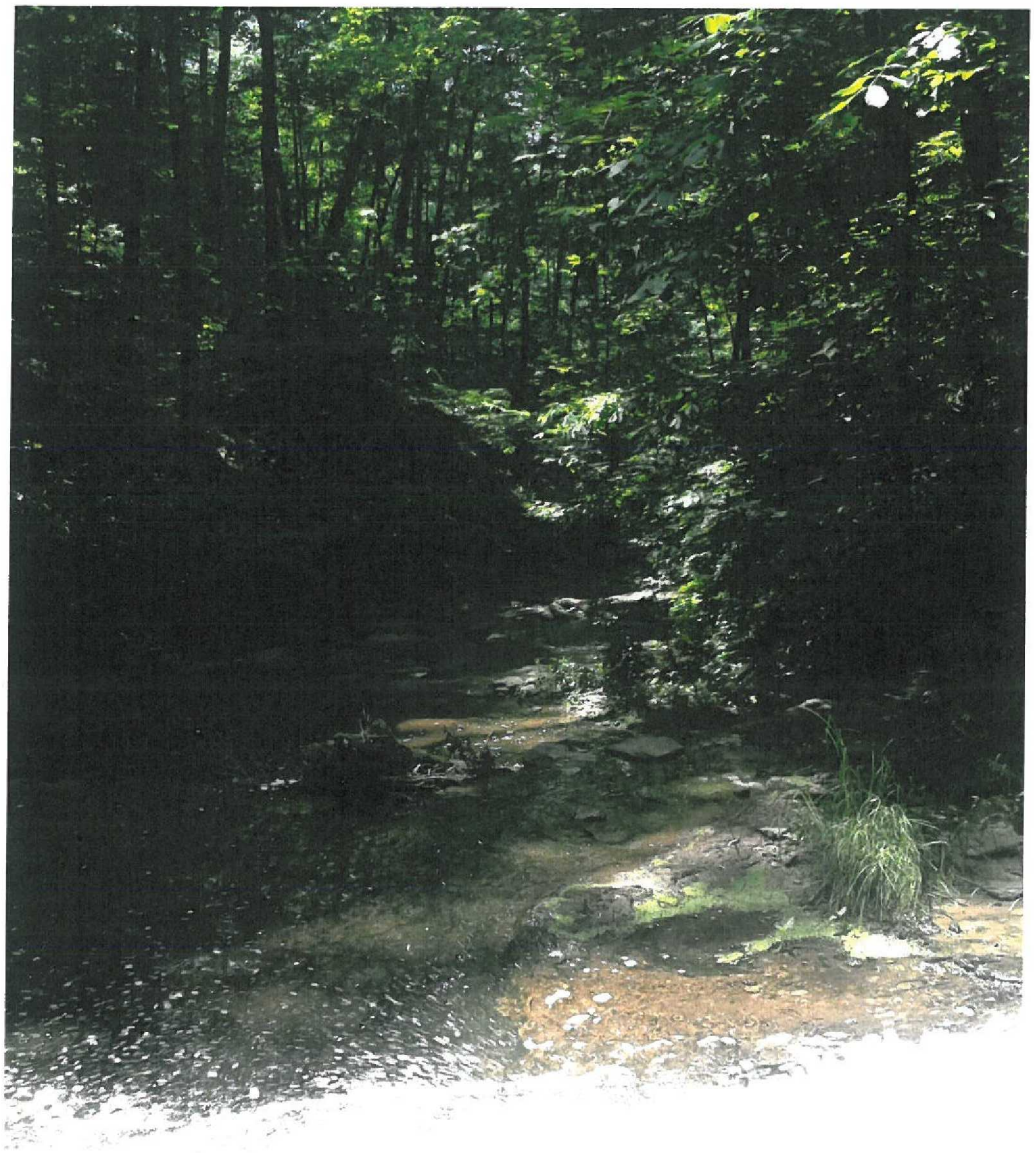


Despite the build-up of solids and duckweed on the surface of the secondary clarifiers, the effluent was relatively free and clear of solids. However, the operations staff should endeavor to return the scum pump to operation without delay in order to reduce the possibility of solids carry-over during significant precipitation events.



WWTW effluent after the UV disinfection unit and the automatic composite sampler.

Georgetown WWTW discharge to Town Run



Town Run downstream of the Georgetown WWTW discharge.

Thank you and your staff for the dedicated time during the inspection process. If you should have any questions, feel free to contact me by telephone at (937) 285-6029 or by electronic mail at joshua.jackson@epa.ohio.gov.

Respectfully,

Joshua Jackson
Environmental Specialist II
Division of Surface Water

Enclosure

cc: Derek Copas, Village of Georgetown

JJ\bp

OhioEPA

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**
1PB00101*ID	OH0021300	6/12/2013	C	S	1

Section B: Facility Data		
Name and Location of Facility Inspected	**Entry Time**	**Permit Effective Date**
Georgetown WWTW 1500 Influent Drive Georgetown, Brown County	10:00 a.m.	9/1/2010
	Exit Time	**Permit Expiration Date**
	2:30 p.m.	5/31/2015
Name(s) and Title(s) of On-Site Representatives	**Phone Number(s)**	
Derek Copas, Operator of Record	937-937-378-3718	
Name, Address and Title of Responsible Official	**Phone Number**	
Mayor & Council Attn: Mr. Jeremy Germann, Village Administrator Municipal Bldg. 301 South Main Street Georgetown, OH 45121	937-378-6395	

Section C: Areas Evaluated During Inspection
(S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated)

S	Permit	S	Flow Measurement	N	Pretreatment
S	Records/Reports	S	Laboratory	S	Compliance Schedule
S	Operations & Maintenance	U	Effluent/Receiving Waters	S	Self-Monitoring Program
M	Facility Site Review	S	Sludge Storage/Disposal	N	Other
S	Collection System				

*Evaluated but not rated.

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

See Attached.

Inspector	Reviewer
6-25-2013	Martyn G Burt 6/25/13
Joshua Jackson Date Environmental Specialist II Division of Surface Water Southwest District Office	Martyn Burt Date Compliance & Enforcement Supervisor Division of Surface Water Southwest District Office

Permit # : 1PB00101*ID
NPDES #: OH0021300

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.....	N/E

Comments/Status:

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:

Permit # : 1PB00101*ID
NPDES #: OH0021300

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.....

All wastewater treatment units

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

Tested weekly...but not under load. Tested quarterly under load.

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

No alarms.
WWTW upgrade includes SCADA with 32 alarm dial-outs for different conditions at the WWTW, Possum Run pump station and Town Run detention facilility.

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

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

No documented preventative maintenance schedule. Once the upgrade is completed, Mr. Copus will develop a preventative maintenance schedule either on a proprietary software program or an in-house excel spreadsheet.

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

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

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

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

Comments/Status:

Secondary clarifier down at different points due to a faulty collector ring and drive motor.
The scum pump for both clarifiers was down at the time of the inspection.
Even though Jones and Henry has been contracted to develop an O&M manual for the upgraded WWTW, Mr. Copas will ensure that the manual is more operator friendly.

Section G: Operation & Maintenance con't

Record Keeping/Operator of Record:

(a) Wastewater Treatment Works classification (OAC 3745-7)..... III
(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.

(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)... N
  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:

ORC logbook was reviewed for the weeks of 05/26/2013 and 04/07/2013. Minimum ORC staffing hours were met for both weeks and it appeared that operation staff provided the detail needed to ascertain significant operations events/decisions.
Operations staff also provided pertinent information in secondary sources such as process control sheets (solids inventory) and laboratory bench sheets and SOPs.

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.....0
- ii. How many pump stations have telemetered alarms.....0
- iii. How many pump stations have operable alarms.....14

(b) Any chronic collection system overflows since last inspection..... N
(c) Regulatory agency notified of all overflows..... N/A
(d) Are there CSOs in the collection system..... N
if so, what is the LTCP 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..... N
(i) Is there a WIB response plan..... N
(j) Is any portion of the collection system at or near dry weather capacity..... N

Comments/Status:

Since the Possum Run pump station (with 750,000 gallons of detention) was completed, there have been no reported overflows in the collection system. Georgetown had reported two overflows at the Possum Run pump station in 2012.

Section H: Sludge Management

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

(b) Has amount of sludge generated changed significantly since the last inspection..... Y

(c) How much sludge storage is provided at the plant.....

42,000 gallons in each digester (2), 4 wedge wire beds 40 20x26 feet, two bays under roof for dried sludge storage (70x25 ft each). More than 6 months of storage.

(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..... N

(f) 5/8" screen at headworks for facilities that land apply sludge..... N/A

(g) Are sludge application sites inspected to verify compliance with NPDES permit..... N/A

(h) Is a contractor used for sludge disposal..... Y

If so, what is the name of the contractor.....

Rumpke

Comments/Status:

Section I: Self-Monitoring Program

Flow Measurement:

(a) Primary/Secondary flow measuring devices (e.g. weir with ultrasonic level sensor):

weir with ultrasonic level sensor

(b) Flow meter calibrated annually ..... Y
(Date of last calibration: April 2013)

(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..... Y

Comments/Status:

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:

See comment on refrigeration unit on influent sampler in the attached report.

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..... Y

- 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 know 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. Y
(f) If (e) is yes, are results in permittee's self-monitoring report..... Y
(g) Satisfactory calibration and maintenance of instruments/equipment. Y (see score from GLC page)
(h) Commercial laboratory used..... Y
Parameters analyzed by commercial lab: Metals, TKN, TP, O&G and COD

Lab name: MASI

Comments/Status:

See attached letter.

Section J: Effluent/Receiving Water Observations

Outfall # 001
Outfall Description: effluent from UV channel was mostly clear with low quantities of floc.

Receiving Stream: Town Run
Receiving Stream Description: mild amount of solids attributed to the WWTW located in the pool area just below the outfall structure.

Comments/Status:

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?

Comments/Status:

Report on Detail Plans and Specifications
Village of Georgetown
Wastewater Treatment Plant Improvements
PTI # 883518

The detail plans and specifications for the Village of Georgetown's Wastewater Treatment Plant Improvement project were received by Ohio EPA on July 11, 2012 and October 4, 2012. These plans and specifications were prepared by Jones & Henry Engineers, Inc., of Toledo, Ohio. The proposed improvements are under consideration for a Water Pollution Control Loan Fund (WPCLF) loan.

EXISTING CONDITIONS

The Village of Georgetown is located in Brown County in southwest Ohio (See Figure 1) with a population of 3,691 (per 2000 census). The wastewater treatment plant (WWTP) operates within its permit requirements during normal flow periods and discharges to Town Run Creek. During extreme precipitation events, the two (2) one million gallon equalization (EQ) basins will overflow and discharge untreated wastewater to Town Run Creek. Historically, the WWTP will be bypassed approximately 10 to 25 days a year. The current average design flow is 1.1 mgd and the current plant maximum design flow is 4 mgd. The current minimum influent flow is 0.2 mgd and the peak hourly flow experienced at the plant is 6 mgd.

The wastewater treatment process consists of the headworks, aeration basins, clarifiers, and UV disinfection works. Solids are processed in two steps prior to disposal. Waste sludge is removed from the clarifiers and stored in aerobic digesters where the sludge is stabilized to meet Class B Bio-Solids criteria. The bio-solids are then dewatered on covered plastic media beds, stored under cover in the bio-solids storage buildings, and applied to agricultural ground for fodder row crop production. Wet weather flows are diverted to the EQ basin pump station and then into two EQ tanks with a capacity of one million gallons each.

PROPOSED IMPROVEMENTS

The improvements will include new processes and/or upgrades to the existing works to manage the wet weather flows, to nitrify the effluent, to reduce phosphorous concentration to less than 1mg/L, and to manage the incremental solid byproducts. For compliance during wet weather, the plant throughput will be increased to 3.5 mgd and will maintain treatment for a sustained flow of 2.9 mgd.

In summary, the wastewater train will be upgraded as follows (see Attachment 1 for specifications):

- Replacement of screening and addition of grit removal
- Additional pumping capacity to enable pump station to pass flows up to 6 mgd
- Addition of influent and effluent flowmeters
- Installation of chemical dosing for phosphorous removal to meet new phosphorous limits
- Replacement of existing aeration and settlement stages with sequencing batch reactors (SBRs) to treat wet weather flows up to 4 mgd (remaining flows to be held in equalization basin)
- Upgrade of UV disinfection system
- Conversion of existing aeration tanks to aerobic digesters
- Modifications to existing aerobic digesters
- Addition of sludge dewatering and conveying equipment
- Additions to existing building including installation of laboratory equipment

ANTIDEGRADATION REVIEW

This project will not result in an increase in pollutant loadings to be discharged to the waters of the State of Ohio. There will be no construction activity in a stream or near a stream bed. All work will be done within existing Village property at the WWTP site. Direct impacts from the project will be short term disruption normally associated with construction. Therefore, the proposed project will not be subject to any additional anti-degradation review by Ohio EPA under OAC Chapter 3745-01-05.

DESIGN DATA SUMMARY

Basis of Design for WWTP	Design
Average Daily Flow	1.1 mgd
Peak Hourly Flow	6.0 mgd
BOD_5 Load	200 mg/l - 2,000 lbs/day
TSS Load	175 mg/l - 1,750 lbs/day
NH_3 Load	18 mg/l - 180 lb/day
TKN Load	35 mg/l
Alkalinity	165 mg/l
Population	3,691

NPDES PERMIT LIMITS

Current NPDES Permit Limits for the Village of Georgetown			
Parameter		Concentration (mg/l)	Loading (lb/day)
		30 day	30 day
$CBOD_5$ (mg/l)	Summer Winter	7.3 10.0	67.2 92.1
Suspended Solids (mg/l)	Summer Winter	8.7 10.0	80.2 92.1
Ammonia Nitrogen (NH_3)	Summer Winter	0.6 1.76	5.5 16.3
Fecal Coliform #/100ml (Summer)		126	NA
Dissolved Oxygen (minimum) Summer and Winter		7.0 mg/l	
Total Phosphorus (year round limits beginning September 1, 2014)		1.0 mg/l (1.5 mg/l for 7 day)	9.26 lb/day (13.89 lbs/day for 7 day)

CONSTRUCTION COST

The total estimated construction cost for improvements is $4,600,000. The construction is scheduled to begin early 2013, and be completed in 12 months.

CONCLUSION

The detail plans and specifications for the Village of Georgetown's Wastewater Treatment Plant Improvements Project appear to be acceptable and in compliance with all applicable rules and regulations. It is recommended that these documents be approved, and that a Permit-to-Install be issued. This is an approval of technical aspects of the plans and specifications for the sanitary sewer works, and does not imply an approval for a WPCLF loan.

Reviewed By:

Gretchen Fickle
Project Engineer
Division of Environmental
and Financial Assistance

Approved By:

Margaret L. Klepic, P.E.
Manager, Engineering Section
Division of Environmental
and Financial Assistance

Attachment 1
Proposed WWTP Design Criteria

Existing Design Flows to WWTP

Average Daily Flow (ADF)	1.1 mgd
Peak Hourly Flow (PHF)	6.0 mgd

Pump Station	**New**	**Existing**
Number of wet wells	1	1
Surface area dimensions	6 ft diameter	15' x 13.5'
Side water depth	28 ft	14 ft
High water alarm	20 ft	14.5
Capacity (gallons)	4,200	21,200
Detention time (minutes @ ADF)	5.5	27.7
Bypass	zero	zero

Primary Pumps	**New**	**Existing**
Number	2	3
Type	centrifugal	centrifugal
Capacity (gpm each)	700	1,600
TDH (ft)	54	58
Speed (RPM)	1,050	1165
HP	18	35

Manual Bar Screen	**New**
Number of screens	1
Size	4.0 ft
Bar size	0.375 in
Clear spacing between bars	1.5 in
Bar slope	30 degrees

Mechanical Fine Screen	**New**
Number of screens	1
Capacity	6.0 mgd
Size	0.25 in

Grit Tank	**New**
Number of tanks	1
Surface area dimensions	10' x 16'
Side water depth	10.69 ft
Flow velocity (@max flow)	0.09 fps

Grit removal mechanics - clamshell bucket, hoist and monorail into dumpster

Grit Tank Aeration	**New**
Number of blowers	1
Type	diffused air
Capacity (CFM)	130 @ 4.8 psi

Flow Equalization	**New**
Number of tanks	1
Surface area dimensions	64' x 66'
Side water depth	16 ft
Capacity (gallons)	505,500
Aeration type	mechanical surface
Capacity (CFM)	82 lb/hr SOTE
Bypass	zero

Sequencing Batch Reactors*	**New**
Process Type (ICEAS)	Intermittent Cycle Extended Aeration
Number of tanks	3
Surface area dimensions (each)	65' x 64'
Side water depth or height (each)	14.3 feet
Detention time	7 hours and 55 minutes, per tank

*See page 8 and 9 of this report for detailed design SBR proposal

Aeration and/or mixing		**New**
Number of blowers		3
Type		diffused air
Capacity (each)		1,100 CFM @ 7.7 psi
Oxygen supplied	- lb O_2/lb BOD_5	1.1
	- lb O_2/lb TKN	4.6
MLSS (design)		4,950 mg/L
F/M ratio		0.045
Organic loading (lb BOD_5/1000 cf)		10.0
WAS flow (% at ADDF)		1.75

UV Channel/Tank	**New**
Number of channels	1
Type (horizontal or vertical)	horizontal
Capacity (each)	5.3 mgd
Surface area dimensions	17' length x 1' width
Side water depth	1.85 feet
Detention time	4.78 seconds

UV Equipment	**New**
Number of modules (per channel)	6
Number of lamps (per module)	8
UV transmittance	253 NM @ 65%

Sludge Stabilization	New	Existing
Number of stabilization tanks	4	5
Surface area dimensions (each)	18' x 39'	23' x 18'
Retention time	35 days	26 days
Side water depth (each)	13.25 feet	14.0 feet
Number of aerobic digestion aerators	660	60
Type of bubble aeration	Fine	Course

O_2 supplied with largest blower out of service

CFM @ psi	1,100 / 7.7	1,200 / 6.4
lb O_2/day	3,666	4,000

Sludge Dewatering:

Project will add volute dewaterer and screw conveyor to achieve cake sludge and reduce volume being processed in the existing sludge drying beds. The digesters will produce 10,700 gallons per day of digested sludge at 2% dry solids. The dewaterer will reduce the daily volume to 1,336 gallons (179 cf) at 16% solids which will be conveyed for transfer to drying beds. Dewaterer to operate for 12 hours per week at 6,300 gph (1,050 dry lb/hour)

Sludge Disposal	New	Existing
Sludge dry solids content (%)	16	10.6
Method of disposal	drying/landfill	drying/landfill

INFLUENT WASTEWATER CHARACTERISTICS AND SITE CONDITIONS

Average Dry Weather Flow	1,100,000 GPD
Peak Dry Weather Flow	2,400,000 GPD
Peak Wet Weather Flow	4,000,000 GPD
BOD_5 (20°C)	200 mg/l
BOD_5 (20°C)	2,000 lb/day
Suspended Solids	175 mg/l
TKN	35 mg/l
Alkalinity	165 mg/l
Max. Wastewater Temperature	20°C
Min. Wastewater Temperature	7.5°C
Ambient Air Temperature	20 – 90°C
Site Elevation	750 ft

ICEAS SBR EFFLUENT QUALITY (MONTHLY AVERAGE)

BOD_5 (20°C), Summer	7.3 mg/l
BOD_5 (20°C), Winter	10.0 mg/l
Suspended Solids, Summer	8.7 mg/l
Suspended Solids, Winter	10.0 mg/l
Ammonia-Nitrogen, Summer	0.6 mg/l
Ammonia-Nitrogen, Winter	1.76 mg/l
Total phosphorous	1.0 mg/l *

* - Requires chemical precipitation

ICEAS SBR PROCESS DESIGN CRITERIA

F/M	0.045 lb BOD_5 / lb MLSS / day
SVI (after 30 minutes settling)	150 ml/g
MLSS at Bottom Water Level	4,950 mg/l
Waste Sludge Produced (Approx.)	1,371 lb/day
Volume of Sludge Produced (Approx. 0.85% solids)	21,394 GPD
Normal Decant Rate	2,639 GPM
Peak Decant Rate	3,704 GPM
Hydraulic Retention Time	1.05 Days
Sludge Age	30.4 Days
Chemical Dosage (as Alum)	40 mg/l

CYCLE	AIR OFF	AIR ON	SETTLE	DECANT	TOTAL
Normal	48 min	120 min	48 min	72 min	4.8 hour
Storm	36 min	90 min	36 min	54 min	3.6 hour

KEY ICEAS SBR DESIGN DETAILS

Number of ICEAS Basins	3
Top Water Level	16.5 ft
Basin Width	65.0 ft
Basin Length	64.0 ft
Bottom Water Level	11.7 ft

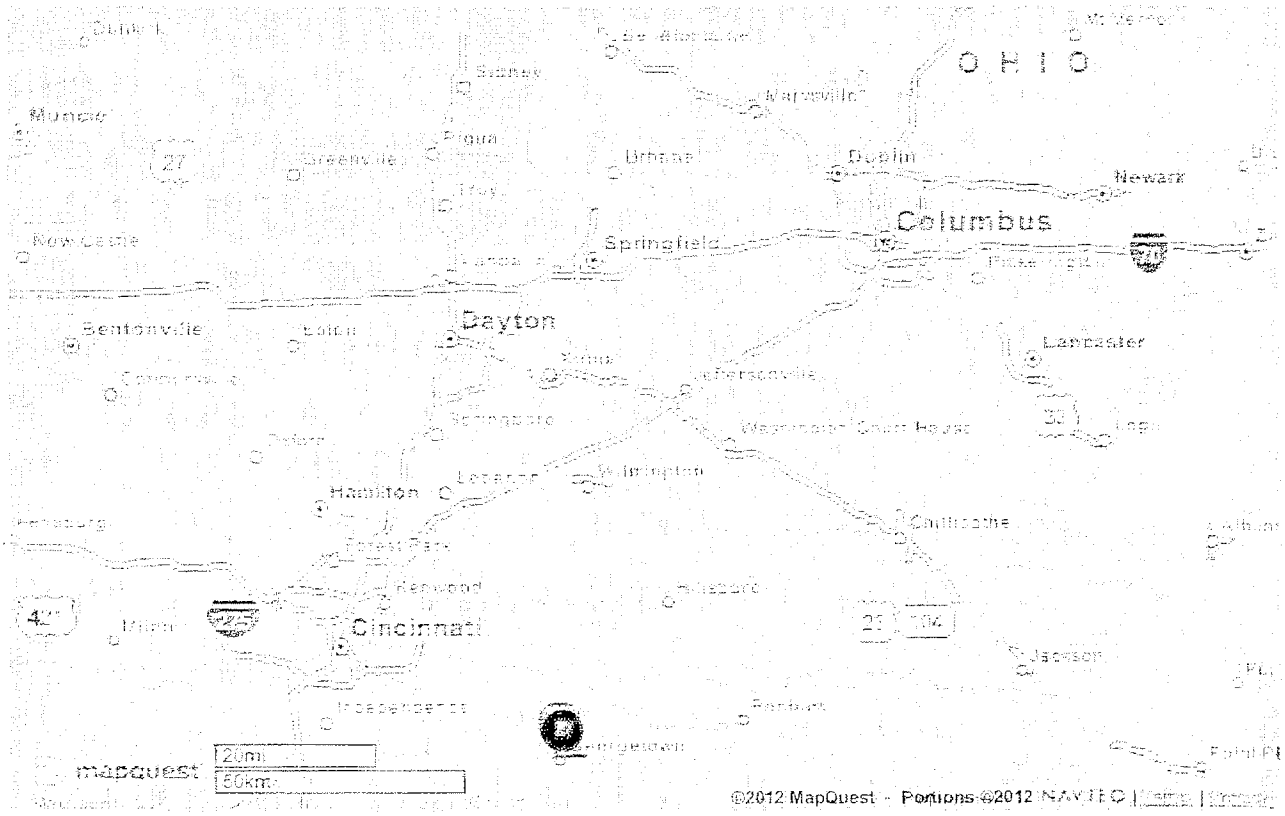
ICEAS EQUIPMENT		Motor HP	No. Req.
Decanter Mechanism	20.0 ft weir length		3
Decanter Drive Unit		1.0	3
ICEAS Blower	1,010 SCFM, 7.7 PSIG	75.0	3
ICEAS Fine Bubble Aeration System		656 Disc Diffusers /	
Basin		3	
Air Control Valve	8-inch		3
Waste Sludge Pump	250 GPM	3.0	3
Submersible Mixer		15.0	3
ICEAS Controls			1
D.O. Control			3

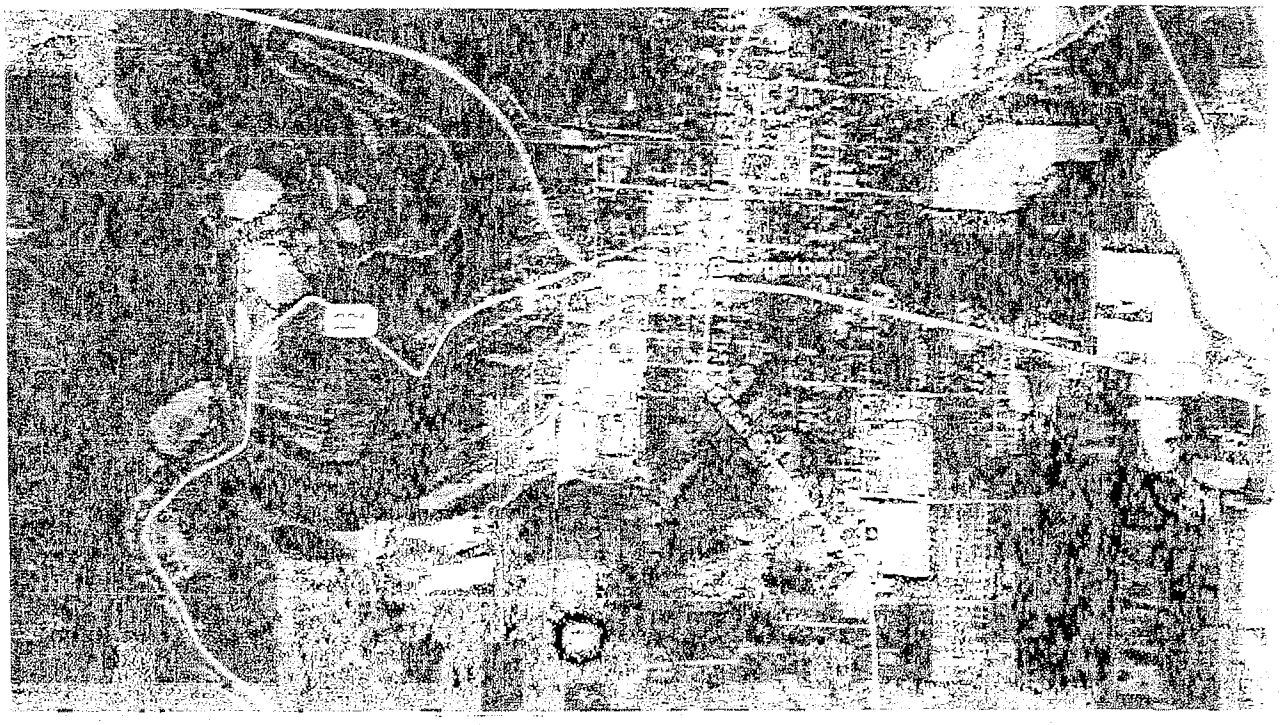
ICEAS POWER REQUIREMENTS (at Average Aeration Depth)					kWh/day
Decanter Drive Unit	0.8 BHP	3 run	@	6 Hrs/day	10.7
ICEAS Air Blowers	48.9 BHP	1 run*	@	20 Hrs/day	730.2
ICEAS Air Blowers	48.9 BHP	1 run**	@	10 Hrs/day	365.1
Waste Sludge Pump	2.4 BHP	3 run	@	1.1 Hrs/day	5.8
Submersible Mixer	12.0 BHP	3 run	@	4 Hrs/day	107.4
				TOTAL kWh/day	1,219.2
				AVERAGE kWh/hr	50.8

*- Shared ICEAS Blowers
*- Dedicated ICEAS Blowers

FIGURE 1

Georgetown, OH





SECTION 6

CARBONACEOUS BIOCHEMICAL OXYGEN DEMAND (CBOD-5DAY) S.M. 5210 B

1. SCOPE AND APPLICATION:

This is the method Georgetown WWTP uses for determination of Carbonaceous Biochemical Oxygen Demand (CBOD) for biweekly sampling of the influent and effluent flows. This method measures the amount of oxygen consumed over a 5-day period by the carbonaceous portion of raw and final wastewater from the plant.

Limit of detection: 2.0 mg/L
Typical Range for Georgetown WWTP results:
Influent: 100-220 mg/L
Effluent: <2 to 20 mg/L

2. SUMMARY OF METHOD:

Composite samples are collected at the influent and effluent locations. The appropriate sample volumes are added to dilution water. An initial DO measurement is recorded and the samples are incubated for 5 days at 20 degrees Celsius. The final DO measurement is recorded, and calculations are made to determine the CBOD content of the water analyzed. Copies of benchsheets for this method are attached to the back of this section and are also available on the WWTP file server. Fill out all appropriate collection and location data on the benchsheet.

3. SAMPLE COLLECTION AND HANDLING:

A. Samples are collected at the points required by the NPDES permit.
Sampling points:
Influent – directly after the barscreen, through 24-hour composite sampler
Effluent – Just prior to the outfall of UV tank, through a 24-hour composite sampler.

B. Samples are collected over a 24-hour period (24 total samples). Samples are homogenized in a blender (after removal of any non-wastewater materials described below as interferences) and dispersed in the laboratory to 1 L for raw and 3 L for final polyethylene sample jar.

C. If storage is required; samples are stored in the jars at 4 degrees C and must be analyzed within 24 hours of collection.

4. INTERFERENCES:

A. Care should be taken to eliminate items (rocks, wood, bug larvae, etc) from the sample that are not part of the normal wastewater stream.

5. **APPARATUS:**

A. DO meter: YSI 5100 is currently being used
B. DO electrode: YSI 5010 with stir paddle is currently being used
C. Calibration/Storage bottle: 300-mL BOD bottle with 1 inch of distilled water in bottom
D. Sequentially numbered 300-mL BOD bottles (at least 3 for raw, and 3 for final)
E. 1 BOD blank bottle (ours numbered 101, 102, 103, 104, 105)
F. Glucose-Glumatic Acid (GGA) bottle set with Seed Control Factor (SCF) bottles and extra blank. The lab uses 2 sets (one for each weekly sample) numbered as follows;

201 blank	207 blank
202 GGA 1	208 GGA 1
203 GGA 2	209 GGA 2
204 SCF 1	210 SCF 1
205 SCF 2	211 SCF 2
206 SCF 3	212 SCF 3

G. Glucose-Glumatic acid solution (NCL GGA standard)
H. Seed (NCL dehydrated seed capsules)
I. Buffering agents (Hach BOD buffer pillow for 6-L buffer/dilution water preparation)
J. Nitrification inhibitor (Hach)
K. 6-L buffer water dispensing carboy
L. Various beakers, volumetric cylinders, and pipettes for sample mixing and dispension.

6. **PROCEDURE (Please see photos at back of this section)**

Preparation of Buffer (Dilution) water;

A. Prior to the analyze for CBOD in wastewater samples, the necessary buffer (dilution) water should be prepared and incubated for 24 hours prior to sample setup. For reference, the lab always has four 6-L dispensers stored in the bottom of the incubator, labeled A-1, B-1, C-1, D-1. These are made up after they are used to prepare the previous sample.
B. 6 liters of water is added to one of four dilution water dispensers.
C. One (1) Hach buffer pillow is added to the water and shaken for at least 1 minute to allow for mixing and aeration.
D. A postit note with the contents, container number, date made and intials of the analyst who prepared the buffer is placed on the lid of the container.
E. These are placed in the incubator left to right, oldest to newest, and in sequential order. For instance if the last dispenser used was A-1, B-1 would be next and A-1 would be prepared as above and added to the right side of the dispensers as they set in the incubator.

Preparation of Glucos-Glumatic Acid and Seed Control:

A. A 6-L dispenser is taking from the incubator and placed on the elevated shelf above the counter space where the DO meter sits.

B. Dispense 500-mL of dilution water into a 500-mL volumetric flask.
C. Using a 1000-mL beaker, pour this water into it and add one (1) NCL seed capsule to the water.
D. Place a stir bar in this solution and place it on the stirrer.
E. Mix the sample for at least 1 hour vigorously, but without causing spillage of the solution
F. After stirring, remove the solution from the stirrer and let it settle out for 15 minutes before use

Preparation of BOD and GGA/SCF bottles:

A. All clean raw-final BOD bottles are kept in the incubator, numbered from 1-89
B. Bottles should be used sequentially, meaning you should start out with the lowest numbered clean bottle available.
C. Get out at least 3 bottles for the Raw and 3 bottles for the Final.
D. The lowest 3 numbered bottles will be Raw and the highest three numbered bottles will be for Final; For instance, if you have bottle 1-6, bottles 1, 2, 3 would be for Raw and Bottle 4, 5, 6 would be for final samples.
E. Also set out the GGA/SCF bottles, along with two blank bottles
F. Add 2 pumps of Hach nitrification inhibitor to all bottles **EXCEPT** the two blanks.
G. Record the bottle numbers in the appropriate blanks in the CBOD and GGA benchsheets.

GGA/ SCF Sample Preparation:

A. Start by dispensing about 20-30 mL of dilution water into raw/final/GGA/SCF bottles and filling the blanks completely up.
B. Add 4 mL of the prepared seed solution to each GGA bottle (X2)
C. Add 10 mL seed to SCF 1, 15 mL seed to SCF 2, 20 mL seed to SCF 3
D. Add 6 mL of NCL Glucose-Glumatic Acid solution to each GGA bottle
E. Fill the bottles up the rest of the way with dilution water

RAW/FINAL Sample Preparation:

A. For the Raw sample, sample volumes of 8-mL, 10-mL and 12-mL usually suffice to meet the required depletion
B. For Final samples, sample volumes of 150-ML, 200-mL and 250-mL usually work
C. Add these volumes to the appropriate bottles, and fill the rest of the way with dilution water.

Initial DO Measurement and Incubation Procedure:

A. After the samples have been set up and all bottles are full, the samples are ready for measuring of the initial DO concentration.
B. Calibrate the DO meter/probe as prescribed in the "DO Measurement" section of this manual.

C. Place the probe in the blank bottle first, followed by GGA, SCF, Final and Raw. Rinse the probe with distilled water after each bottle. Allow the reading to stabilize before recording the measurement in the "Initial DO" blank of the GGA/CBOD benchsheets, under the appropriate bottle number.
D. Place the stoppers in the bottle, ensure that the rim is flooded with water (to prevent air from entering the sample water) and cap them off.
E. Place all the bottles in the incubator, keeping them together to prevent mixing them up with samples that may already be in the incubator. Stored in the incubator for 5 days +/- 4 hours @ 20 degrees Celsius.

Final DO Measurement:

A. Remove the bottles from the incubator, after 5 days.
B. Calibrate the DO meter/probe.
C. Measure each bottle, ensuring that reading is stabilized and that you are recording the readings in the "Final DO" block on the benchsheets.
D. Wash all bottles with Alcon detergent and warm water. Rinse thoroughly with tap water. Perform a final rinse with distilled water and place on the counter to dry.
E. Perform calculations as below;

For CBOD:

(Initial DO – Final DO) = Depletion(Should be > 2, with Final DO above 1)

(Depletion X 300) ÷ ml sample = Gross

The Ave. CBBOD is the average of all Gross results within the tolerances of; depletion of greater than 2, final DO higher than 1.

For SCF/GGA

(Initial DO – Final DO) = Depletion(Should be >2, with Final DO above 1)

For SCF

SCF 1 Depletion X 30 =_____ X 0.0133=_____
SCF 2 Depletion X 20 =_____ X 0.0133=_____
SCF 3 Depletion X 10 =_____ X 0.0133=_____

Add all SCF up and divide by 3 to get avg. SCF
SCF should be in a range between 0.6 and 1.0

For GGA

GGA 1 (Depletion – avg. SCF) / 0.02 =_____ GGA1
GGA 2 (Depletion – avg. SCF) / 0.02 =_____ GGA2
For Avg. GGA, add GGA1 and GGA 2 and divide by 2

7. DATA TREATMENT:

A. All results are recorded to the nearest tenth.
B. Calculate the results by following the example benchsheets at the back of this section. Make notes of any discrepancies or oddities, and inform the Superintendent of any problems encountered. If you are not comfortable making the calculations, please inform the Superintendent.

8. QUALITY CONTROL:

A. Duplicates are performed at least once monthly. These QA/QC records are maintained on the WWTP computer system. Standard Deviations are calculated automatically within the data set of the duplicate program.
B. All meters, probes, incubators and thermometers are checked annually against known values by Labtronix.

9. MAINTENANCE:

A. Rinse the probe before and after placing it in each bottle.
B. Change the membrane and fill solution as recommended in the equipment manual or whenever the membrane becomes damaged and produces erratic results.

10. REFERENCES:

Standard Methods for the Examination of Water and Wastewater, 20th editions, 5210 - B.

AND the meter and probe manuals

GGA BOD 5 DAY ANALYSES

SAMPLE DATE: _____ COLLECTOR/S: _____ WWTP: _____

SET UP DATE: _____ TIME: _____ ANAL YST/S: _____

TAKE - OFF DATE: TIME: ANAL YST/S:

ANALYSES INFORMATION: Osmosis date: Bottle: GGA:

PROCEDURES: Dissolved Oxygen - EPA 360.1 / S. M. 20th 4500-0 G : BOD - EPA 405.1 / S. M. 20th 5210 - Glucose-Glutamic Acid CBBOD - EPA 405.1 / S.M. 20th 5210 B.

GLUCOSE-GLUTAMIC ACID CBBOD INFORMATION:: BOD Standard: _____ Lot#: _____ Lab#: _____

BOD Seed: _____ Lot #: _____ Lab#: _____ Seed solution = 1 cap. to 500 ml water

REMARKS: SC = SEED CONTROL / GGA = GLUCOSE-GLUTAMIC ACID + 2 ML SEED

D. O. uptake range = 0.6 - 1.0 mg/l. Final results range = 198 +/- 30.5 = 167.5 - 228.5. AE = analytical data invalid.

See comments. [(D1-D2)-[(B1-B2)F]] /P = mg/l BOD.

BAROMETER: Set up date = _____ mm

Take off date = mm

D. O. readings in mg/l.

Sample Type/source	Blank		GGA + 4ml seed	GGA + 4ml seed		SC	SC	SC		Extra Blank			
I.D. #	1		1	2		1	2	3		2			
Bottle #													
ml sample	300		6	6		10	15	20		300			
Initial DO													
Final DO													
Depleted													
In / Out -													
Gross					In / Out -								
In / Out													
Ave. CBBOD													
In / Out													

SC 1	_____	X 30 =	_____	X0.0133	_____	_____	GGA 1 (-) / 0.02	=	
SC2	_____	X 20 =	_____	X0.0133	_____	/ 3	GGA 2 (-) / 0.02	=	
SC3		X 15 =		X0.0133	avg. SCF		(SCF)	GGA	

COMMENTS:

GEORGETOWN WASTEWATER TREATMENT PLANT LABORATORY

301 S. MAIN STREET, GEORGETOWN, OHIO 45121-1544 PHONE 937-378-3718 / FAX 937-378-2118

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Tim Hurley, Operator

Delvin L. Daugherty, WWTP Asst. Super. WW III, WW Analyst II

John M. Teeters, Operator

Rev. 01/09

CBBOD 5 DAY ANALYSES

SAMPLE DATE: _____ COLLECTOR/S: _____ WWTP: _____

SET UP DATE: _____ TIME: _____ ANAL YST/S: _____

TAKE - OFF DATE: TIME: ANAL YST/S:

ANALYSES INFORMATION: Osmosis date: Bottle: CBBOD:

PROCEDURES: Dissolved Oxygen - EPA 360.1 / S. M. 20th 4500-0 G : BOD - EPA 405.1 / S. M. 20th 5210 B
CBBOD - EPA 405.1 / S.M. 20th 5210 B.

CBBOD Information: Raw = Influent / Final = Effluent / SOF = Settled Overflow / BE = Blended Effluent / LSOF = Lift Station Overflow

REMARKS: AE = analytical data invalid. / AA = analytical data below detection limit of 2.0 mg/l

BAROMETER: Set up date = _____ mm
Take off date = mm

D. O. readings in mg/l.

Sample Type/source	Blank												
Bottle #													
ml sample	300												
Initial DO													
Final DO													
Depleted													
Gross													
Comment													
Ave. CBBOD													
Time Coll.													
Collector													
Grab													
Composite													
# / Comp.													

COMMENTS:

AE: Too much depletion: AE: Out of UWL:

AE: Not enough depletion: AE: Out of UCL:

GEORGETOWN WASTEWATER TREATMENT PLANT LABORATORY
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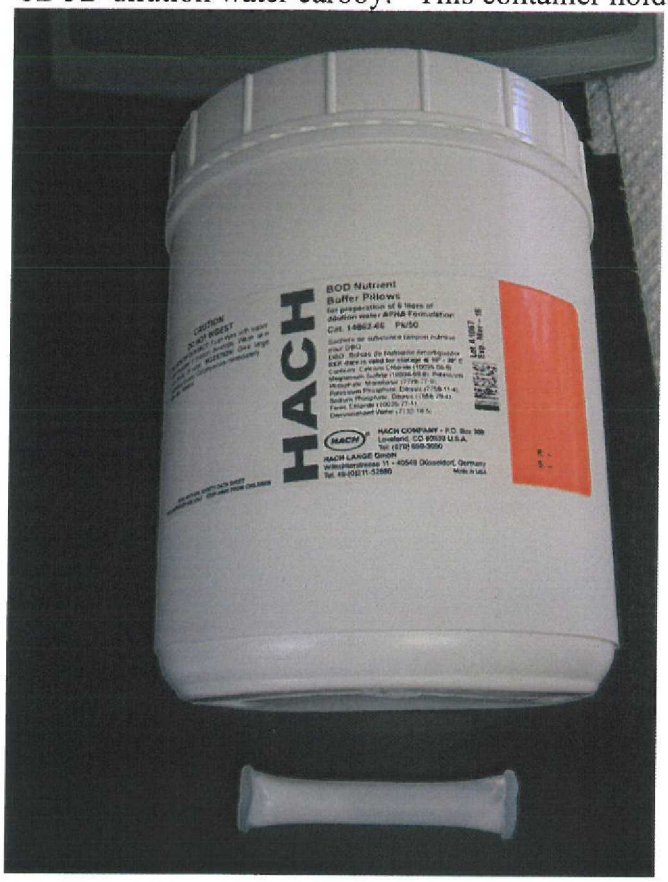
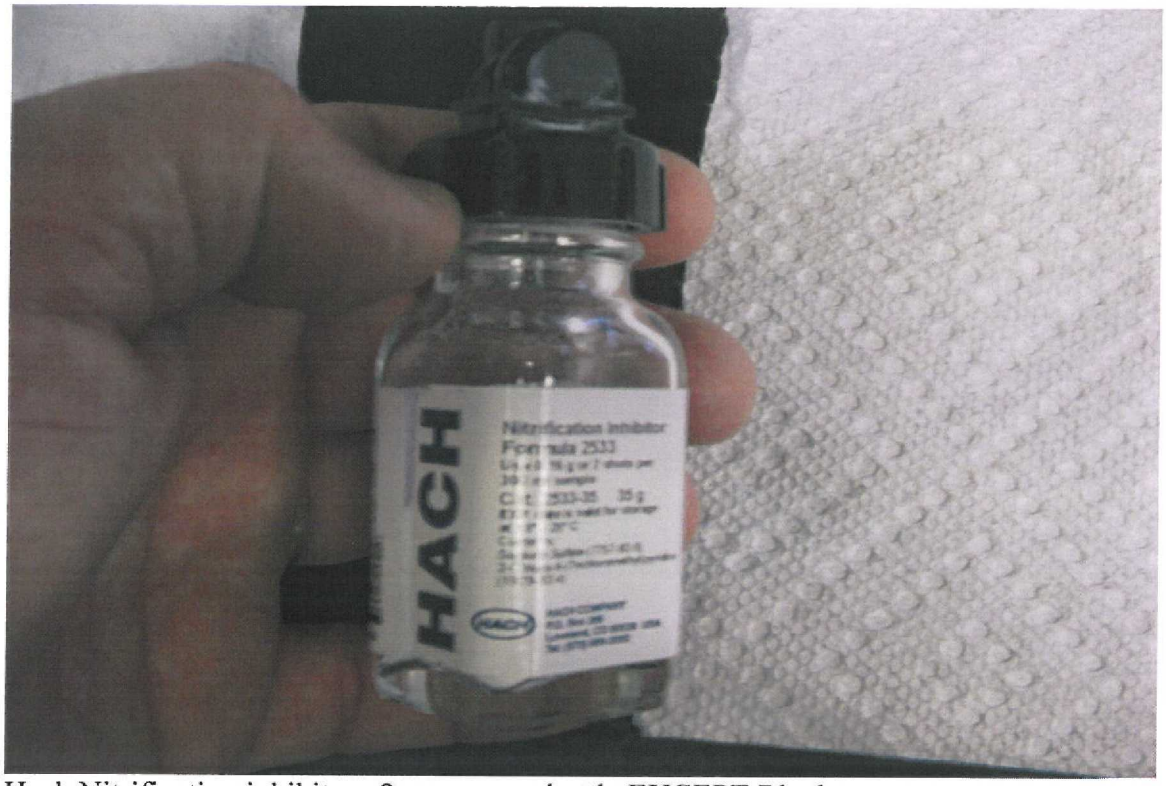
ANALYSTS: Derek J. Copas, WWTP Supervisor, WW III Delvin L. Daugherty, WWTP Asst. Supervisor WW III, WW Analyst II
Tim Hurley, Operator John M. Teeters, Operator

Rev. 01/09

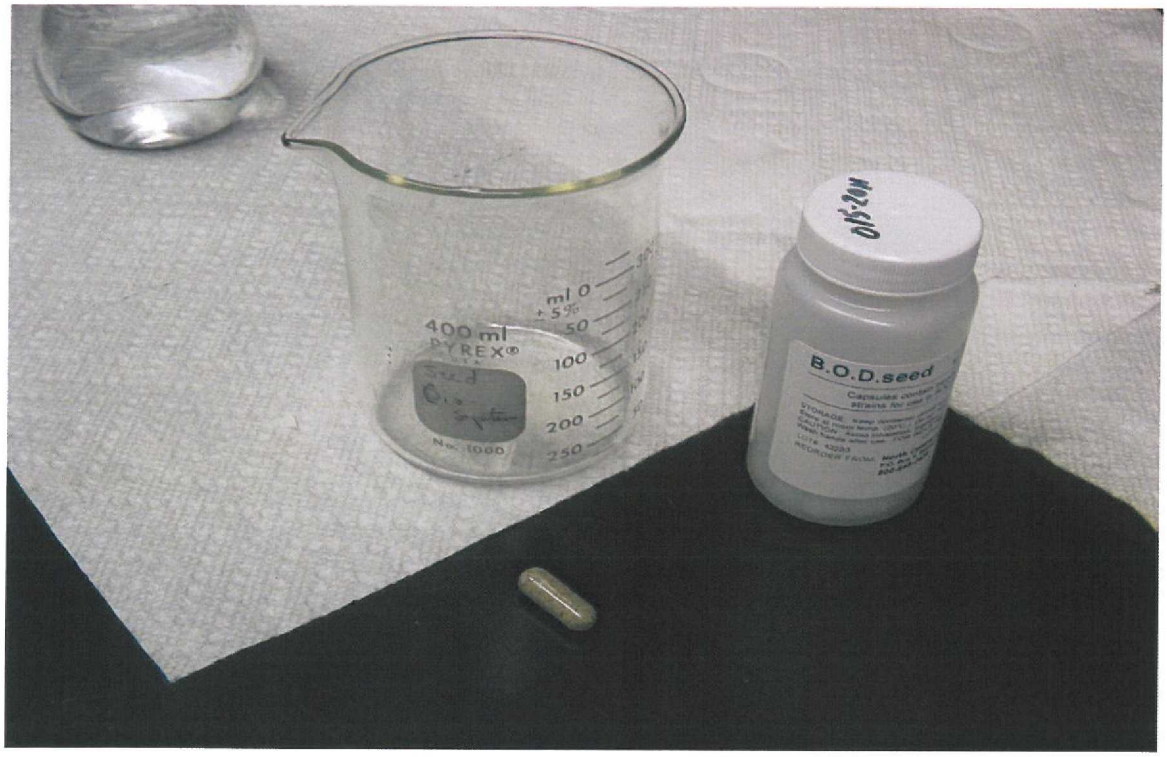
CBOD dilution water carboy. This container holds 6 liters at the black mark.



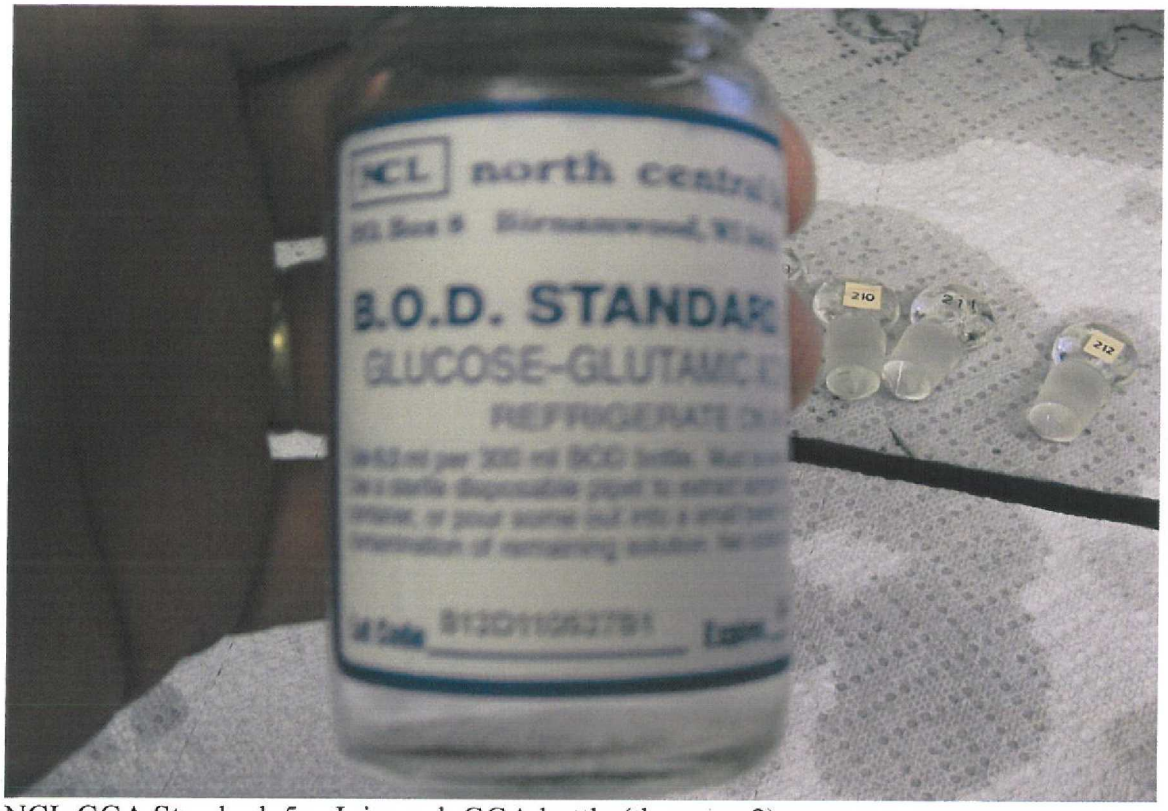
Hach BOD Nutrient pillows. One is added to the dilution water carboy to prepare 6 liters of dilution water



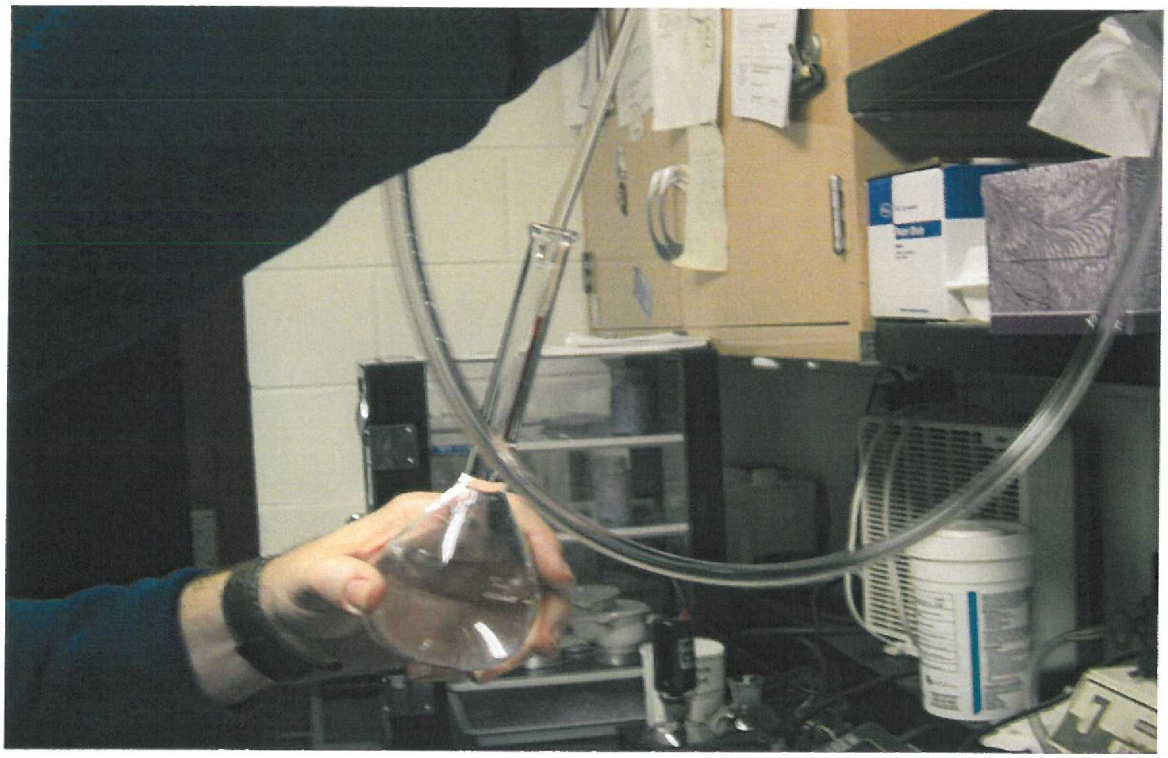
Hach Nitrification inhibitor. 2 pumps per bottle EXCEPT Blanks



Preparation of Seed used for the GGA QA/QC test. One capsule dissolved in 250-mL of dilution water.



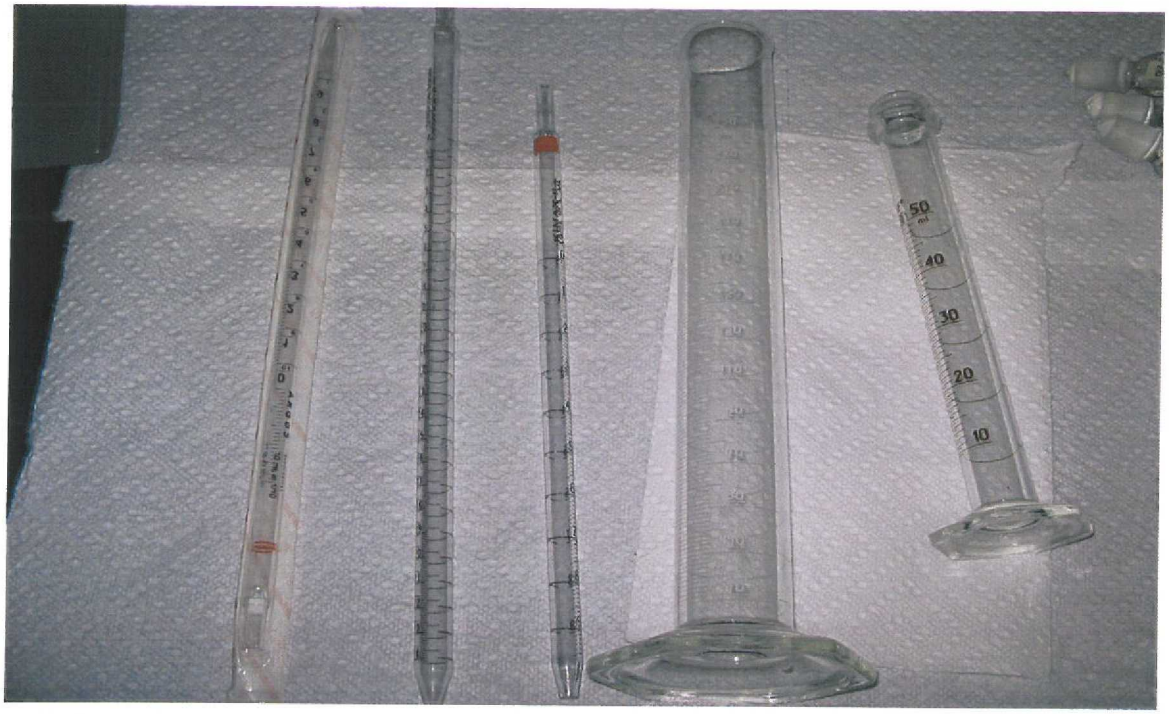
NCL GGA Standard. 5-mL in each GGA bottle (there are 2)



250-mL volumetric flask for seed dilution water.

Seed and magnetic stir bar ready for addition of dilution water

Seed is mixed for 1 hour on magnetic stirrer



Various sizes of pipettes and volumetric cylinders are used to measure out sample volumes.

Sample volumes measured out and ready to add to CBOD sample bottles

After adding the sample volume and topping the bottle off with dilution water, measure the initial DO (dissolved oxygen) of the bottle and record on the benchsheet.

Stoppers are added to the bottles and a BOD cap is added to prevent air being drawn into the bottle during incubation. Bottles are placed in the incubator for 5 days at 20 degrees Celsius. The bottles are then ready for final DO readout.

CBOD with stopper and cap in place