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

April 2, 2013

RE: MAHONING COUNTY
LOWELLVILLE POTW
NPDES PERMIT NO: 3PC00007

Mayor and Council
Village of Lowellville City Hall
P.O. Box 124
Lowellville, OH 44436

Gentlemen:

On March 4, 2013, this writer conducted an unannounced inspection of the Lowellville publicly owned treatment works (POTW) in response to recent violations for total suspended solids (TSS) and mercury. The violations have placed the Lowellville POTW in Significant Noncompliance with the National Pollutant Discharge Elimination System (NPDES) Permit. Representing the village during the inspection was Rich DeLuca and Bob Gentile.

Observations
Following are observations during the inspection:

1. A previous inspection on September 10, 2012, identified poor floc formation in the oxidation ditch. Floc formation is important to the separation of solids from the wastewater. Poor floc formation prevents solids from settling in the clarifiers and causes high TSS concentrations in the effluent. In addition, it was pointed out in a September 28, 2012 inspection letter that the Mixed Liquor Suspended Solids (MLSS) in the oxidation ditch was low. A 30 minute settleability test showed that solids only accumulated to approximately 50 ml. It was understood that the treatment plant is normally operated at a 30-minute settleability test of 100 - 150 ml. Despite the concerns noted with the oxidation ditch, the effluent appeared clear during the previous inspection.

   These same concerns regarding the oxidation ditch were identified during this most recent inspection on March 4th. The floc formation remained incomplete. It was reported that little to no microbe activity was apparent when a sample of the mixed liquor was viewed through a microscope. However, unlike the September 10, 2012, inspection where the effluent was clear, the effluent during the March 4, 2013, inspection was a greenish-brown color. This is not typical for the Lowellville POTW where the effluent is normally clear and odorless.

   Several possible impacts to the system were discussed with Rich and Bob, and a plan to correct problems was decided. The actions to be taken were:

   - Sample the influent for ammonia, Total Dissolved Solids (TDS), chlorides, sulfates, and Chemical Oxygen Demand (COD) for two weeks to establish influent concentrations of each parameter. These parameters can have a toxic impact on the treatment system at high concentrations.

- In the interim, it was decided that the oxidation ditch would be reseeded with sludge from the digester, and that sludge would not be wasted for several days in order for solids to build up in the system.
- If, after two weeks, the system does not recover, the influent levels of ammonia would be reviewed to determine if the second ditch had to be put on-line. In addition, the influent concentrations for TDS, chlorides and sulfates will be reviewed after two weeks. Also, the COD:$CBOD_5$ concentrations will be reviewed to determine if the ratio is within the acceptable range. A high COD:$CBOD_5$ ratio would indicate that a chemical discharge could be influencing the wastewater plant.
- In the event the plant still had not recovered after making all of the apparent adjustments, consideration would be made to invite the compliance assistance team from Ohio EPA to evaluate the plant. Based on their evaluation, which could take several days, the team would provide recommendations to the village. The compliance assistance team of Ohio EPA is available to wastewater treatment plants across the state to help identify compliance problems.

A follow-up inspection on March 22, 2013 documented an effluent that was turbid and brown in color; however, analytical results of the plant effluent did indicate that conditions were improving. Effluent ammonia levels had dropped from 44.7 mg/l on March 6, 2013 to 4.6 mg/l on March 20, 2013. $CBOD_5$ levels in the plant effluent had dropped from 22.2 mg/l on March 6, 2013 to 10.0 mg/l on March 20, 2013. However, on March 28, 2013, the ammonia and CBOD5 concentrations jumped to 51.8 mg/l and >153.0 mg/l, respectively. This writer will continue to evaluate the analytical results and the treatment plant, and coordinate with Rich DeLuca and Bob Gentile until such time as the plant is fully recovered.

A review of the influent data being collected at the plant indicates that the TDS concentrations are significantly higher than at other wastewater treatment plants. Normal levels of TDS at wastewater plants range from 600 to 800 mg/l. The TDS concentration at the Lowellville POTW is consistently above 1000 mg/l and on March 27 and 28, 2013, the TDS concentrations were 1664 mg/l and 1592 mg/l, respectively. TDS concentrations above 1000 mg/l can cause chronic toxicity issues. The village should continue to monitor for TDS in the influent and effluent in order to establish a background level, and to determine if toxic levels of TDS are entering the plant that could cause an upset. If high TDS levels at the treatment plant continue, the village will be required to identify the source for further action.

2. The exhaust system in the chlorine room was inoperable at the time of the March 4, 2013 inspection. The exhaust fan is activated by a switch on the outside of the entry door so that the room can be ventilated before anyone enters. This is to prevent injury or death in the event of a chlorine leak. It is critical that the ventilation system inside the disinfection room be operational at all times. A follow-up inspection on March 14, 2013 determined that the exhaust system had been repaired.

3. The emergency shower in the chlorine room appeared to be inoperable. The emergency shower must be repaired as needed to make it functional and kept clear of equipment and material. A few metal items, e.g. the metal access door, were corroded and in need of replacement. All metal items showing signs of corrosion must be replaced and/or properly painted as appropriate.

4. The Lowellville POTW is a class III treatment plant. Ohio Administrative Code (OAC) 3745-7 requires that the plant be staffed 40 hrs./week by a Class III operator. The licensed operator responsible for oversight of the plant must maintain a log book to document time spent at the plant. There is currently no log book being maintained to demonstrate that the facility is being staffed as required. There were indications from Mr. DeLuca that the plant has not been properly staffed recently. The 40 hr./week staffing requirement is a condition of the NPDES Permit.

5. The return piping from the equalization tank has two valves that control the flow of water into the two oxidation ditches. It is understood that those valve were not operational for an extended period of time. This prevented the operators from properly controlling the flow rate and direction of flow into the ditches from the equalization tank.

   During the March 14, 2013 inspection, both valves appeared to be operational. Flow to both oxidation ditches could be controlled as a result. It was the understanding of this writer that the valves were not operational for several months. As we discussed, maintaining the system is critical. The valves and other critical components, such as the chlorine room exhaust system, must be repaired immediately upon identifying the problem.

6. Concrete at the effluent weir wall has started to degrade. It is understood that an effluent pump station will be installed in the near future to prevent plant flooding. As discussed, the weir wall will be evaluated and repaired during the plant upgrade. Other structures and mechanical equipment in the plant may be in need of attention and/or upgrade. It is recommended that the operators be consulted to determine necessary plant upgrades that can be incorporated into the future construction project.

Inflow and Infiltration

Inflow and Infiltration (I/I) has historically been an issue at the Lowellville wastewater treatment plant. Collection systems can leak storm water into the system which reduces the capacity of the plant to treat wastewater. Leakage can be excessive at times. This is especially true of older collection systems that may have cracked and separated pipes.

Average daily flow through the 0.5 million gallons per day (mgd) treatment plant operated by Lowellville can exceed 1.5 mgd during precipitation events. It is recommended that the village continue to locate and remove sources of excessive I/I in the collection system. Inflow and infiltration removal requirements may be incorporated into the renewal NPDES Permit for the plant.

Compliance Review

The compliance record for the Lowellville wastewater treatment plant was reviewed as part of this inspection. The period of review was September 2012 through February 2013. Following are violations reported during the review period.

Reporting Period	Parameter	Limit Type	Limit	Reported Value	Violation Date
November 2012	Total Suspended Solids	30D Conc	30.0	33.2	11/1/2012
November 2012	Total Suspended Solids	7D Conc	45.0	47	11/1/2012
November 2012	Mercury, Total (Low Le	30D Conc	12.0	33.6	11/1/2012
December 2012	Total Suspended Solids	30D Conc	30.0	38.6142	12/1/2012
December 2012	Total Suspended Solids	30D Qty	58.1	113.893	12/1/2012

Reporting Period	Parameter	Limit Type	Limit	Reported Value	Violation Date
December 2012	Mercury, Total (Low Le	30D Conc	12.0	21.2	12/1/2012
December 2012	pH	1D Conc	6.5	6.3	12/3/2012
December 2012	Total Suspended Solids	7D Conc	45.0	48.65	12/8/2012
December 2012	Total Suspended Solids	7D Qty	87.1	237.921	12/8/2012
January 2013	Total Suspended Solids	30D Conc	30.0	62.75	1/1/2013
January 2013	Total Suspended Solids	7D Conc	45.0	46.5	1/1/2013
January 2013	Total Suspended Solids	30D Qty	58.1	123.176	1/1/2013
January 2013	Total Suspended Solids	7D Qty	87.1	88.2340	1/1/2013
January 2013	CBOD 5 day	30D Conc	25.0	25.6571	1/1/2013
January 2013	Mercury, Total (Low Le	30D Conc	12.0	18.3	1/1/2013
January 2013	Total Suspended Solids	7D Conc	45.0	84.	1/8/2013
January 2013	Total Suspended Solids	7D Qty	87.1	192.217	1/8/2013
January 2013	Total Suspended Solids	7D Conc	45.0	57.5	1/15/2013
January 2013	Total Suspended Solids	7D Qty	87.1	115.255	1/15/2013
January 2013	Total Suspended Solids	7D Conc	45.0	63.	1/22/2013
January 2013	Total Suspended Solids	7D Qty	87.1	96.9982	1/22/2013
February 2013	Total Suspended Solids	30D Conc	30.0	54.7875	2/1/2013
February 2013	Total Suspended Solids	30D Qty	58.1	157.844	2/1/2013
February 2013	Mercury, Total (Low Le	30D Conc	12.0	17.9	2/1/2013
February 2013	Total Suspended Solids	7D Qty	87.1	87.6378	2/8/2013
February 2013	Total Suspended Solids	7D Conc	45.0	53.	2/15/2013
February 2013	Total Suspended Solids	7D Qty	87.1	108.444	2/15/2013
February 2013	Total Suspended Solids	7D Conc	45.0	87.	2/22/2013
February 2013	Total Suspended Solids	7D Qty	87.1	370.165	2/22/2013
February 2013	CBOD 5 day	7D Qty	77.5	96.3698	2/22/2013

The extent of noncompliance continues to place the Lowellville POTW into Significant Noncompliance (SNC). As we had discussed, the village must identify the source of the violations and make the corrections. It may be necessary to provide greater oversight of the system to ensure that repairs are made in a timely manner and that operations are being properly carried out on a daily basis.

You may contact this writer at (330) 963-1251 or at john.kwolek@epa.ohio.us to discuss any questions you may have.

Respectfully,

John Kwolek
District Engineer
Division of Surface Water

JK/cs

Cc. Rich DeLuca
Bob Gentile