Wauconda NPDES Permit Modification

Message from Agency Director Renee Cipriano

The Illinois Environmental Protection Agency strongly supports public involvement in environmental decisions. The Agency is providing this information in order to assist the public in participating in the September 9 hearing on the Wauconda NPDES permit modification. Again, thank you for getting involved and sharing your concerns.

Wastewater Disinfection

Since December 5, 1990, the Wauconda WWTP has had a year-round disinfection exemption from treating wastewater discharged to Fiddle Creek. The Agency has received numerous letters and verbal comments regarding the discharge to Fiddle Creek and the effects, if any, on adjoining wetlands, downstream areas and private wells. On August 28, 2003, the Village informed the Illinois EPA that a disinfection system will be constructed with the expansion of the treatment plant and that the Village will disinfect the effluent year-round. Consequently, upon completion of construction the present disinfection exemption will be terminated, and the wastewater discharge will be required to meet the fecal coliform standard of 400 colonies per 100 mL as a condition of its NPDES permit and will be required to report fecal coliform monitoring results on its monthly discharge monitoring reports to the Agency.

The Wauconda WWTP monitored its wastewater discharge during the months of June-July-August 2003 and reported fecal coliform levels below 400 colonies per 100 mL. On July 17, the Lake County Health Department reported fewer than 200 colonies. On July 24, the Illinois EPA reported 50 colonies. The Lake County Health Department collected samples on August 19 and will report the results at the public hearing.

Fecal Coliform in Fiddle Creek

Coliform levels can vary dramatically based on the time of day a sample was taken, sunlight, the time of year, environmental factors, wildlife populations and human disturbances. Sources of coliform in Fiddle Creek may include the WWTP discharge, septic tanks, domestic animals, and wildlife. Fecal coliform levels will usually rise after a rainfall event because the rain washes animal waste from the adjoining watershed into the creek.

On July 24, 2003 Illinois EPA collected water samples in Fiddle Creek upstream from the treatment plant and at the WWTP outfall pipe itself, with the following results for fecal coliform (upstream to downstream):

1) approximately 600 feet upstream of the WWTP outfall-- 10,000 colonies/100 mL;
2) approximately 75 feet upstream of WWTP outfall-- 2100 colonies/100 mL;
3) at the WWTP outfall pipe-- 50 colonies per 100 mL.

Discharge Volume

There are two numbers of importance when designing a treatment facility: **the design average flow (DAF)** and **the design maximum flow (DMF)**. The **DAF** is the average of the daily volumes of wastewater to be received for treatment for a continuous 12-month period. Wauconda's current permit is based on a **DAF** of 1.4 million gallons per day (MGD). The proposed phase 1 expansion is to build a facility with a **DAF** of 1.9 MGD; for phase 2, the **DAF** will be 2.4 MGD. The **DMF** is the largest volume of wastewater that can be treated during a continuous 24-hour period. The current permit **DMF** is 4.0 MGD. The proposed phase 1 **DMF** is 5.963 and the phase 2 **DMF** is 7.93 MGD.

The amount of discharge may increase during periods of precipitation when extraneous water enters the collection system. The amount of this extra water is unpredictable, and includes such factors as location of precipitation, rate of precipitation, length of precipitation and degree of saturation of the soils. During periods of heavy and/or prolonged precipitation, the discharge volume increases.

When a WWTP reaches 80 percent of its monthly DAF capacity, it may be placed on critical review status. Critical review is an indication that the plant may be approaching its design capacity or the limits of its expected growth. Critical review status allows the Illinois EPA to still issue permits for limited sewer extensions. However, proposed major sewer projects that would cause the facility to exceed its monthly DAF will be denied. Wauconda was placed on Critical Review Status on May 30, 2003.

DISCHARGE HISTORY

The Wauconda WWTP originally discharged to Bangs Lake Drain Creek (sometimes called Slocum Creek), which flows into Slocum Lake, exits through the Slocum Lake Drain and joins the Fox River. Beginning in the mid 1970s, however, it was evident that the WWTP discharge was causing high levels of phosphorus in Slocum Lake. In 1977, the Illinois Pollution Control Board granted Wauconda a variance from the phosphorus standard in order to have time to resolve the problem. In 1983, the Board terminated the variance, whereupon the discharge was moved away from Slocum Lake to its present location in Fiddle Creek. (Note that Fiddle Creek has previously been designated in Wauconda's NPDES permit and other Illinois EPA documents as "an unnamed tributary to the Fox River" or "Wauconda Creek;" however the permitted discharge point has been the same since 1983.)

Private Wells

Some local residents have expressed concern that the current and future discharges of the Wauconda WWTP are a direct threat to nearby private well owners. The Groundwater Section of the Agency's Division of Public Water Supplies has extensive data on private wells in its files, including well locations and geological information concerning the aquifer from which these wells draw their water. Based on this information, the Agency has concluded that there is a very low potential for well contamination from the Wauconda discharge: the aquifer is "confined" (i.e,. surrounded) by clay material that has a low permeability, so that a hydrologic connection between the aquifer and the Fiddle Creek marsh area is highly unlikely. This is confirmed by the fact that the Lake County Health Department has had no reports of contaminated wells near Fiddle Creek over the past 12 years. However, it should be noted that private well owners may also have septic systems, and improper location of a septic system combined with improper well construction can short-circuit the natural geologic protection and cause well contamination.

(Please note that if during the last year your well tested as being contaminated or if during the past three years a group of wells tested as being contaminated, you should contact Larry Mackey at the Lake County Health Department, 847-356-6222. Public health recommends that private wells be tested annually for fecal coliform and nitrates.)

Wetlands and Flooding Potential

A number of local citizens have expressed concerns that the increased discharge will have an impact on the flooding potential of Fiddle Creek and the marsh area. It is the Agency's opinion that during periods of heavy precipitation, the discharge from the WWTP would be minimal when added to the multi-millions of gallons of floodwaters in Fiddle Creek. Furthermore, issues of water quantity and flooding potential come under the jurisdiction of the Lake County Stormwater Management Commission (SMC). The Agency understands from a letter dated June 13, 2003, from the Executive Director of the Lake County SMC that Wauconda has applied for a watershed development permit for the proposed additional effluent discharge and floodplain construction within Fiddle Creek, and that the related engineering analysis would demonstrate adequate downstream capacity and would be tied to the Flood Insurance Study. Also, the Agency understands that Wauconda will work with the SMC wetland specialist on the design of the outfall so that the additional effluent discharge could potentially improve the functionality of the receiving stream and wetland.

Radium

Many of the deeper drinking water wells (greater than 500 feet below the land surface) in the northern third of Illinois are drawing water from the Mount Simon and Cambrian-Ordovician aquifers, which have naturally occurring radium. According to the Wauconda Water Supply operator, one of the five current wells draws water from an aquifer that contains radium 226. The standard for radium in finished drinking water established under the federal Safe Drinking Water Act (and adopted as Illinois law) is 5 picoCuries/liter. The Wauconda drinking water

plant uses an ion-exchange softener to treat for radium. The Agency understands that the three new deep wells near Liberty Lakes, to be used as a drinking water source for the Wauconda plant all contain radium. The water from these wells will also be subject to the 5 picocuries/liter standard for drinking water.

Superfund Site

The **Wauconda Sand & Gravel Superfund Site,** located west of Garland Road (approximately one block north of Bonner Road) is a former sanitary landfill (1941-1978) that reportedly accepted a small quantity of industrial wastes. It has a leachate collection system and a clay cap. The site has a water pollution control permit (issued to the Wauconda Task Group) that allows the discharge of an average of 4,000 gallons per day of leachate from the collection system to the Wauconda WWTP. As a condition of its permit, the Wauconda Task Group is required to submit quarterly leachate sample results to the Agency for boron, iron, total dissolved solids and ammonia. They are also required to submit annual sample results for 11 metals, volatile organic compounds, pesticides, base/neutrals, cyanide, oils and grease, phenols, oxygen-demand compounds and total suspended solids.

Effluent Quality

As a condition of its NPDES permit, the Wauconda WWTP is required to submit to the Illinois EPA Discharge Monitoring Reports (DMRs) each month to report on the operation of the facility. The DMRs for the last two years are summarized in the two tables below (bold numbers indicate exceedences). Note that the standards for ammonia nitrogen are seasonal.

AMMONIA NITROGEN

Permit Limits	2.5 mg/L monthly average	5.0 mg/L daily max	1.2 mg/L monthly average	3.0 mg/L daily max
DATE				
7/03			0.5036	1.399
6/03			0.136	0.251
5/03			0.1169	0.211
4/03			0.6078	2.986
3/03	0.7112	1.534		
2/03	1.222	2.276		
1/03	0.5766	0.8959		
12/02	0.837	1.433		
11/02	0.414	1.929		
10/02			0.475	1.036
9/02			0.148	0.565
8/02			0.121	0.503

7/02			0.172	0.706
6/02			**2.47**	**6.73**
5/02			0.575	1.997
4/02			0.823	1.784
3/02	0.636	2.139		

DMR	pH	Total Suspended Solids		Total Copper		TRC	CBOD	
Permit Limits	6-9	12 mg/L monthly average	24 mg/L daily max	0.0327 mg/L monthly average	0.0544 mg/L daily max	0.05 mg/L	10 mg/L monthly average	20 mg/L daily max
DATE								
7/03	7.10-7.45	4.12	7.50	0.0191	0.0240	0.03	5.36	9.67
6/03	7.13-7.5	2.35	4.6	0.0142	0.017	0.03	3.88	5.87
5/03	7.11-7.63	1.99	3.1	0.0156	0.024	0.02	4.13	5.56
4/03	7.14-7.54	2.36	6.2	0.0081	0.014	0.03	5.43	8.05
3/03	7.09-7.49	1.93	4.10	0.0178	0.0229	0.05	4.09	5.81
2/03	6.43-7.47	2.51	3.10	0.0185	**0.0624**	0.03	5.19	6.57
1/03	7.14-7.61	2.49	3.60	0.0166	0.0197	0.04	4.97	7.48
12/02	7.39-7.69	2.87	4.10	0.0188	0.0229	0.03	4.81	5.92
11/02	7.36-7.60	2.0	5.0	0.0106	0.0175	0.03	3.54	4.38
10/02	7.27-7.87	1.85	5.0	0.017	0.034	0.04	3.30	5.61
9/02	7.22-7.60	1.6	5.6	0.018	0.041	**0.08**	3.66	8.50
8/02	7.13-7.56	3.06	6.9	0.014	0.019	0.04	3.45	6.97
7/02	7.15-7.44	2.28	4.40	0.026	0.037	0.05	3.22	5.14
6/02	7.18-7.64	3.34	5.0	0.028	0.0517	0.03	4.60	6.94
5/02	7.24-7.59	4.6	9.6	0.0292	0.505	0.03	4.37	5.49
4/02	7.37-	5.8	13.6	0.0297	0.046	0.05	6.87	15.18

	7.74							
3/02	7.50-7.84	3.5	7.4	0.0049	0.0142	0.04	6.19	13.06
2/02	7.43-7.78	2.7	4.0	0.0237	0.0544	0.05	4.28	8.66
1/02	7.3-7.7	1.78	3.60	0.0176	0.0240	0.03	3.43	7.60