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Report

Date: February 23, 2018

To: IEPA DWPC CAS #19 Email: EPA.PrmtSpecCondtns@Illinois.gov
1021 N. Grand Ave. East
Post Office Box 19276
Springfield, IL 62794-9276

Re: City of Braidwood NPDES Permit #IL0054992
Special Condition #17 Phosphorus Optimization Plan

Dear Sirs:

The city of Braidwood has developed the following plan in an effort to control and reduce the phosphorus in its effluent.

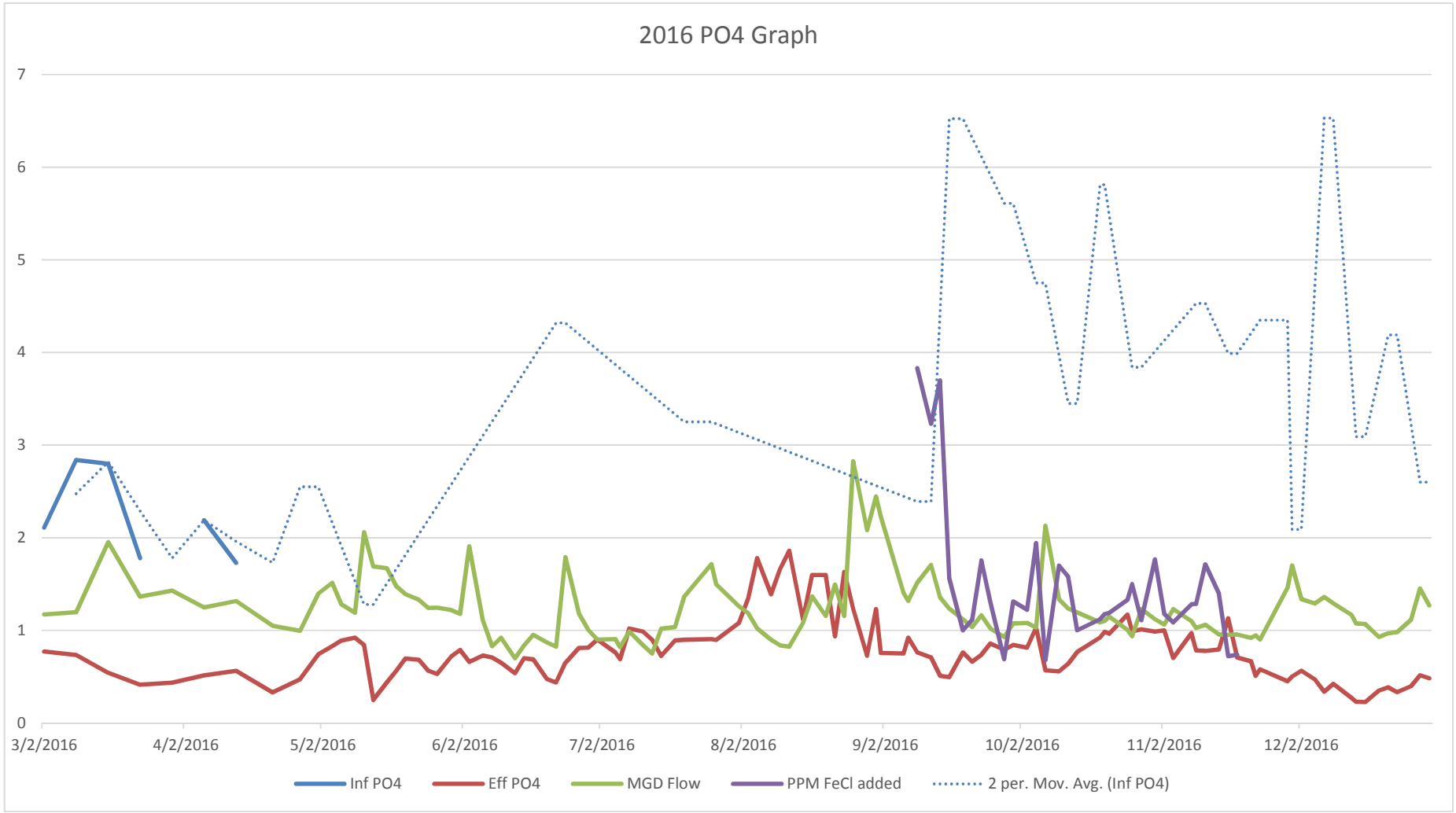
1. Evaluate the sources of phosphorus in the influent.
    a. Residential users: This is best addressed by public education. Consumers need to be educated to “read the label” and use phosphorus free products when available. This is especially true when choosing soaps, laundry and dish washing detergents. The city will look into available education tools like brochures, etc. that may be available to pass out to customers or distribute with the water bills. Reminder notices can also be posted on the water bills and on the City website.
    b. Commercial users: Education again is the key. The city will assemble a list of commercial users, i.e. restaurants, car washes, nursing homes, etc that use significant cleaning products. The city’s existing list of RPZ owners (copy attached) will be useful in preparing this list. These users should be contacted directly as well as via the public education measures to encourage use of phosphorus free products. The city will consider sampling the effluent sewer from these establishments to determine the volume coming from various establishments. On a case by case basis, the city may consider local limits if significant sources are found and voluntary reduction is not achieved. Effluent strength fees generated could offset some of the treatment costs.
    c. Industrial Users: The city does not have any Industrial Users.

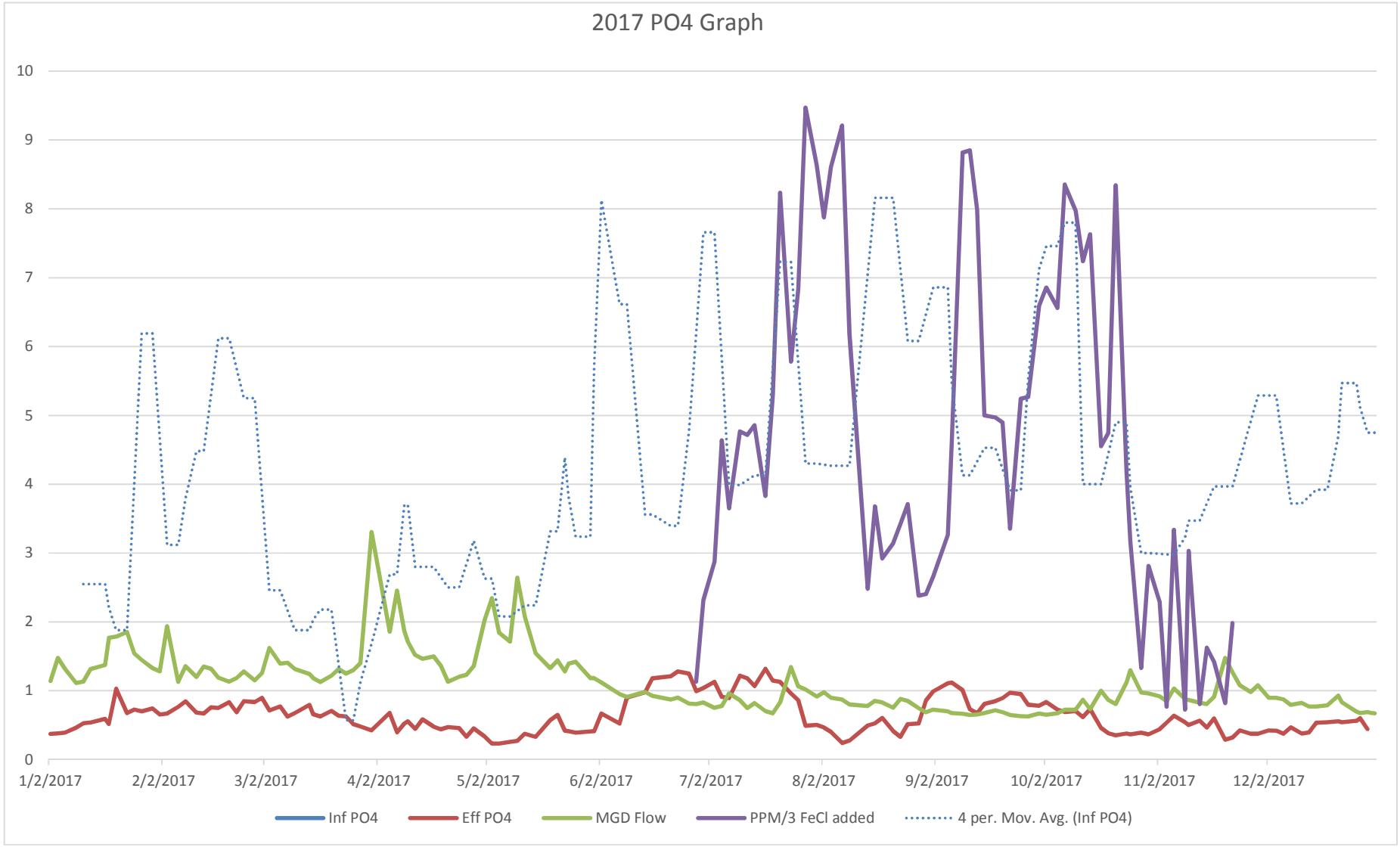
2. Determine where greatest potential for reduction is available. Public education will be significant just because the city has a lot of customers and if a large number decide to go “Phosphate Free” the reduction will be noticeable.
    a. Restaurants and institutions (schools and nursing homes) will be evaluated to determine the phosphate present in their effluent and what would be required to make a reduction.
    b. If voluntary reduction appears difficult, limits may be imposed and a surcharge instituted to offset treatment costs.

3. At the WWTP the following measures will be considered and implemented where possible.
    a. Biological reduction. The SCADA system is being improved to allow better control of aeration and sludge retention. Controlling and reducing dissolved oxygen at points during the treatment process will enhance biological phosphorus removal. The Triton units allow mixing to continue while the air is turned off to enhance biological phosphorus removal as well as other anaerobic treatment processes.
    b. Reducing the head drop at the influent pump station may help reduce aeration of the raw influent and improve biological phosphorus removal during the initial anaerobic treatment phase.
    c. Increasing the sludge depth in the clarifiers may promote fermentation which may also promote phosphorus release.
    d. Braidwood is working with Aeration Industries to optimize the treatment cycles to increase biological phosphorus removal.
    e. Braidwood has used ferric chloride to increase precipitation of phosphorus out of the effluent during the clarification process the last two years. Continued use is recommended. The use of ferric chloride during the late summer and fall has successfully maintained the Phosphate level in the plant effluent under 1.0 mg/l. The downside of using ferric chloride addition is the cost of the chemical and the additional sludge produced. The city has limited sludge storage space and is need of more. Data is limited but adding 5 to 10 PPM ferric chloride in the summer and fall months may keep effluent PO4 below the 1.0 mg/l threshold. See attached graphs.

Braidwood RPZ's

	Business	Ph #	Address
1	AT&T		115 N RR St.
2	Braidwood Fire		275 W. Main
3	Braidwood Fire		275 W. Main
4	Braidwood Fire		275 W. Main
5	Braidwood Fire		275 W. Main
6	Casey's		280 E Main
7	Braidwood BP Store		105 N Front St
8	Braidwood BP Carwash		105 N Front St
9	Anth. Brandolino	210-2339	406 S. Carol Ln
10			389 E Main
11	R-C.I.S.Terry Bennett	378-1215	162 S. School
12	R-C.I.S.Terry Bennett	378-1215	162 S. School
13	R-C.M.S.Terry Bennett	378-1215	307 Comet Dr
14	R-C.M.S.Terry Bennett	378-1215	307 Comet Dr
15	R-C.M.S.Terry Bennett	378-1215	307 Comet Dr
16	R-C.M.S.Terry Bennett	378-1215	249 Comet Dr
17	R-C.H.S.Terry Bennett	378-1215	249 Comet Dr
18	R-C.H.S.Terry Bennett	378-1215	249 Comet Dr
19	R-C.H.S.Terry Bennett	378-1215	249 Comet Dr
20	R-C.H.S.Terry Bennett	378-1215	249 Comet Dr
21	Subway		290 S Front St
22	B-Bright Car Wash		269 E Main St.
23	Shepherd of Peace		1180 W. First St.
24	Shepherd of Peace		1180 W. First St.
25	Fossil Ridge Public Library	458-2181	386 W. Kennedy Rd.


2016 PO4 Graph
7
6
5
4
3
2
1
0
3/2/2016
4/2/2016
5/2/2016
6/2/2016
7/2/2016
8/2/2016
9/2/2016
10/2/2016
11/2/2016
12/2/2016
Inf PO4
Eff PO4
MGD Flow
PPM FeCl added
2 per. Mov. Avg. (Inf PO4)


2017 PO4 Graph
10
9
8
7
6
5
4
3
2
1
0
1/2/2017
2/2/2017
3/2/2017
4/2/2017
5/2/2017
6/2/2017
7/2/2017
8/2/2017
9/2/2017
10/2/2017
11/2/2017
12/2/2017
Inf PO4
Eff PO4
MGD Flow
PPM/3 FeCl added
4 per. Mov. Avg. (Inf PO4)