Engineering Enterprises, Inc.

Phosphorus Discharge Optimization Plan

November 2016

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PHOSPHORUS DISCHARGE OPTIMIZATION PLAN

Village of Huntley, IL

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Abbreviations

1 BFP: Belt Filter Press
2 BNR: Biological Nutrient Removal
3 BOD: Biochemical Oxygen Demand
4 BOD_5: Five-Day Biochemical Oxygen Demand
5 BPR: Biological Phosphorus Removal
6 CIP: Capital Improvement Project
7 COD: Chemical Oxygen Demand
8 DAF: Design Average Flow
9 DO: Dissolved Oxygen
10 EBPR: Enhanced Biological Phosphorus Removal
11 ffCOD: Flocculated-Filtered Chemical Oxygen Demand
12 FOG: Fats, Oils, and Grease
13 GBT: Gravity Belt Thickener
14 GPCD: Gallons Per Capita per Day
15 HRT: Hydraulic Retention Time
16 I/I: Inflow and Infiltration
17 IEPA: Illinois Environmental Protection Agency
18 MCL: Maximum Containment Limit
19 MGD: Millions of Gallons per Day
20 MSDS: Material Safety Data Sheet
21 NPDES: National Pollutant Discharge Elimination System
22 ORP: Oxidation-Reduction Potential
23 PAO: Polyphosphate Accumulating Organisms
24 PHA: Polyhydroxyalkanoate
25 RAS: Return Activated Sludge
26 $_{RB}$COD: Readily Biodegradable Chemical Oxygen Demand
27 SCOD: Soluble Chemical Oxygen Demand
28 SRT: Solids Retention Time
29 TKN: Total Kjeldahl Nitrogen
30 TP: Total Phosphorus
31 USEPA: United States Environmental Protection Agency
32 VFA: Volatile Fatty Acids
33 VFD: Variable Frequency Drive
34 WAS: Waste Activated Sludge
35 WWTF: Wastewater Treatment Facility

Definitions

1 Aerobic: Free and dissolved Oxygen (DO) is available in an aqueous environment
2 Alum: Aluminum Sulfate
3 Anaerobic: Free, dissolved, and combined oxygen is unavailable in an aqueous environment
4 Anoxic: Oxygen is only available in a combined form such as nitrate (NO_3) or nitrite (NO_2) in an aqueous environment
5 Total Kjeldahl Nitrogen: Sum of organic nitrogen, ammonia, and ammonium
6 Total Phosphorus: Sum of ortho-phosphate, organic phosphorus, and polyphosphate

Section 1: Introduction and Phosphorus Discharge Optimization Plan Overview

1.1 The Village of Huntley

According to a special census completed in January, 2016, the Village of Huntley, Illinois has a population of 26,632 people. Chicago Metropolitan Agency for Planning (CMAP) projections estimate a population of nearly 59,000 by 2040. The Village is located between Rockford, Illinois and Chicago, Illinois directly on the crossroads of Interstate 90 and Route 47. Huntley has land in both McHenry and Kane Counties.

The Village of Huntley municipal wastewater collection, conveyance and treatment system was first installed in the late 1940s. The original WWTF was located east of Route 47, just south of the existing Main and Bakley Streets intersection. The sanitary sewer system has continued to broaden as areas within the Village have developed. The increase in flows required the original wastewater treatment facility, currently named the East WWTF, to expand several times. Its current Design Average Flow (DAF) capacity is 1.8 MGD. As the Village's planning boundaries continued to expand and the build out of the East WWTF property was in sight, the Village planned for a second WWTF. The West WWTF was originally constructed in 1999. It is located west of Route 47 near the southwest corner of the intersection of Main Street and Kreutzer Roads, and, after several expansions, its current DAF capacity is 2.6 MGD. The wastewater from the Southwind Subdivision, which has a population of about 2,400, is tributary to the Lake in the Hills Sanitary District.

1.1.1 East WWTF – The East WWTF has a DAF capacity of 1.8 MGD. It currently treats approximately 1.1 MGD of wastewater on an average day. The Design Maximum Flow (DMF) of the East WWTF is 4.5 MGD. The East WWTF treatment train consists of fine screens, oxidation ditches, secondary clarification and ultraviolet disinfection. The facility contains two rapid sand filter basins, which are currently not in service. Alum is currently fed within the treatment train to aid in the removal of barium from the liquid phase stream to meet the pertinent water quality standard. The biosolids treatment train consists of aerobic digestion and mechanical dewatering with the use of a belt filter press. The facility also has a gravity sludge thickener tank, which is currently not in service. Exhibit 3-2 is a process flow diagram of the facility.

1.1.2 West WWTF – The West WWTF has a DAF capacity of 2.6 MGD and a DMF capacity of 6.5 MGD. It currently treats approximately 1.0 MGD of wastewater on an average day. The West WWTF treatment train consists of screening, oxidation ditches, secondary clarification, filtration and ultraviolet disinfection. Alum is currently fed within the treatment train to aid in the removal of barium and phosphorus from the liquid phase stream to meet the pertinent water quality standard. The biosolids treatment train consists of thickening with gravity belt thickeners, aerobic digestion, and mechanical dewatering with the use of a belt filter press. Exhibit 3-12 is a process flow diagram of the facility.

1.2 The Village of Huntley Phosphorus Discharge Optimization Plan Overview

WWTFs that discharge into navigable waters are required by the United States Environmental Protection Agency (USEPA) to have a National Pollutant Discharge Elimination System (NPDES) permit; both the East and West WWTFs have NPDES permits. The Village of Huntley was required by the East WWTF NPDES

permit (Permit No. IL0029238) Special Condition No. 19, to complete a Phosphorus Discharge Optimization plan. NPDES Permit No. IL0029238, dated May 28, 2015 is included as Appendix A. This report is meant to satisfy the requirements of the NPDES permit special condition as well as provide a guide for ongoing and future evaluation and improvements to the Village's phosphorus management plan.

The West WWTF's permit expired on July 31, 2015 and the facility is currently awaiting an updated NPDES permit; until the new NPDES permit is finalized, the West WWTF is still following the guidelines on their expired NPDES permit. It's likely that the West WWTF's new NPDES permit will contain a special condition requiring a Phosphorus Discharge Optimization Plan as well. For this reason, both the East WWTF and the West WWTF will be evaluated in one report. The influent and effluent streams from the Lake in the Hills Sanitary District are not controlled by the Village of Huntley and will not be considered in this report.

Phosphorus is considered to be a problem constituent due to its ability to cause eutrophication of lakes and rivers (surface water). Eutrophication is the enrichment of waters by inorganic plant nutrients such as phosphorus and nitrogen; eutrophication causes algal blooming which poorly affects water quality. Algal blooms consume dissolved oxygen and thus decrease the oxygen level in water to a point where it can be deadly for fish and other aquatic wildlife. Additionally, excessive algal blooms can cause both aesthetic and navigational problems for those who wish to use surface water recreationally.

When evaluating phosphorus removal options, removal can be categorized into two distinct categories. One category is 'influent reduction measures' which can be defined as preventing phosphorus from entering into the WWTF by regulating sources of phosphorus. The other category is 'effluent reduction measures' which is defined as treating the wastewater in a way that reduces the phosphorus significantly. When treating wastewater, both chemical and biological methods of reducing phosphorus may be considered.

Reducing phosphorus in wastewater effluent is vital not only to satisfy the NPDES permits regulations, it's vital in order to ensure the downstream health of the water. Evaluation of the reduction of phosphorus by both modifications to both the influent and effluent of the WWTF is mandated by the NPDES permit. Additionally, evaluating reduction measures for both the influent and effluent of the WWTF is likely to produce more economical outcomes than evaluating just one option.

Section 2: WWTF Influent Reduction Measures

The optimization of phosphorus removal, as defined in the NPDES Permit Special Condition, can be classified into either reducing phosphorus in the WWTF influent flow through controlling sources of excessive phosphorus or reducing phosphorus in the WWTF effluent flow through plant optimization of existing processes. This section outlines steps the Village can take to reduce phosphorus in their WWTF influent, thus reducing the amount of phosphorus that must be removed from the wastewater altogether.

2.1 Phosphorus Sources in Wastewater

There are several major sources of phosphorus in wastewater, including human excrement, chemicals added to drinking water for treatment, food waste from garbage disposals, industrial cleaners and detergents, effluents from dairy productions, and illegal discharge of chemicals into the sanitary sewers. Large phosphorus contributors may include dairies and industries that use phosphoric acid as a cleaning agent (e.g. metal finishing). Household detergents have historically been sources of phosphorus, but most household detergents are now phosphorus-free.[1] Presently, total phosphorus in untreated municipal wastewater can range from 5-20 mg/L with some influents being lower.[2]

Phosphorus in wastewater can also come from sources of infiltration and inflow (I/I) into the collection system. I/I occur when clear water enters the sanitary sewer system via illegal storm water connection (inflow) or by ground water seeping into the sanitary sewer through cracks or other structural defects (infiltration). Stormwater causes runoff which can be high in phosphorus from factors such as residue from agricultural fertilizers, residue from residential fertilizers, and soil that has become suspended in the stormwater due to soil erosion. Much of the Village's sanitary sewer network is relatively new. Therefore, the collection system has shown to have a relatively small amount of I/I, and a concerted effort to mitigate I/I would not produce a tangible reduction in the amount of phosphorus entering the WWTF.

2.2 Phosphorus Speciations

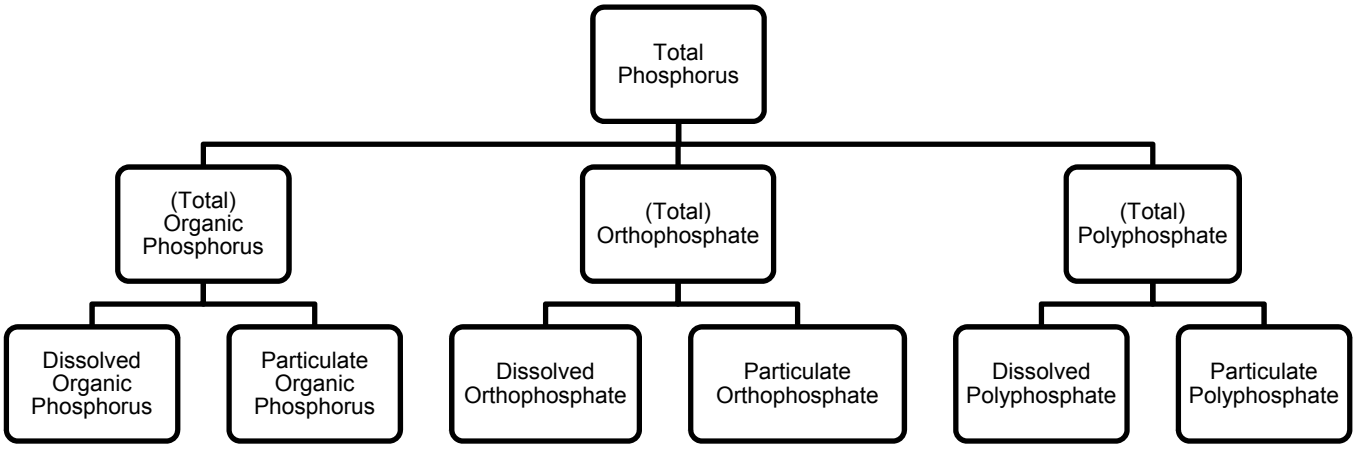
There are several speciations of phosphorus found in municipal wastewater. Total Phosphorus can be classified as the sum of organic phosphorus, orthophosphate, and polyphosphate. Organic phosphorus is classified as phosphorus that is associated with a carbon-based molecule such as plant or animal tissue. Orthophosphate can be classified as simple, inorganic forms of phosphate such as PO_4^{3-}, HPO_4^{2-}, H_2PO^{4-} and H_3PO_4; orthophosphate is the form of phosphate most readily taken up by plants and aquatic life. Finally, Polyphosphates have two or more phosphorus atoms with other atoms such as hydrogen or oxygen in one complex molecule. Polyphosphates can undergo hydrolysis and revert to the orthophosphate forms.

Phosphorus can also be classified as either soluble/dissolved (passing through a 45 µm filter) or insoluble/particulate (not passing through a 45 µm filter). The sum of soluble organic phosphorus, soluble orthophosphate, and soluble polyphosphate will produce the total soluble phosphorus; and the sum of

[1] References – Item 1 (pg 1)
[2] References – Items 1 (pg 1), 2 (pg 6), and 3

particulate organic phosphorus, particulate orthophosphate, and particulate polyphosphate will produce the total particulate phosphorus. Exhibit 2-1 displays a flowchart for the speciations of phosphorus.

Exhibit 2-1: Phosphorus Speciation Flowchart
Village of Huntley



Certain forms of phosphorus are more easily converted into forms that can be removed in the wastewater treatment process either biologically or chemically. Section 2.3 identifies the influent speciation of phosphorus at each of the Village's WWTFs. Section 3 of this report analyzes this data as it relates to potential biological phosphorus removal at the facilities.

Speciating influent phosphorus can also help identify potential sources of phosphorus in the sanitary collection system. Certain forms of phosphorus can be correlated to certain industrial processes that might lead to the discovery of a previously unidentified phosphorus contributor. Sections 2.4 and 2.5 highlight the analysis of potential phosphorus contributors in the collection system.

2.3 Baseline Influent Phosphorus Sampling

The first step in the determination of WWTF influent reduction measures is to understand the characteristics of the influent flow. Sampling for total phosphorus and phosphorus compounds was conducted at each WWTF to establish a baseline for phosphorus entering each WWTF from the collection system. Furthermore, a goal of the sampling was to determine if there were any influent trends that might lead to identification of any previously unidentified high phosphorus contributors. Speciation of the types of phosphorus entering and exiting each WWTF would assist with analysis of WWTF effluent reduction measures (see Section 3: WWTF Effluent Reduction Measures). Sections 2.3.1 and 2.3.2 outline the results of phosphorus sampling at the East and West WWTFs respectively.

2.3.1 East WWTF Influent Phosphorus Sampling Results – Appendix C outlines the results of phosphorus samples that were taken from the East WWTF's influent stream. The influent total phosphorus ranges from 2.97 mg/L to 9.43 mg/L with an average of 4.97 mg/L. The total dissolved or soluble phosphorus fraction was

greater than total particulate phosphorus fraction with concentrations of 3.24 mg/L and 1.73 mg/L respectively. Of the total phosphorus fraction, orthophosphate was higher than organic phosphorus or polyphosphate. Of the dissolved fraction, dissolved orthophosphate was also higher than the other dissolved fractions. For the particulate fraction, particulate polyphosphate was the highest. Exhibits 2-2 through 2-5 graphically display average phosphorus speciations from the results found in Appendix C.

Exhibit 2-2: East WWTF Influent Total Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

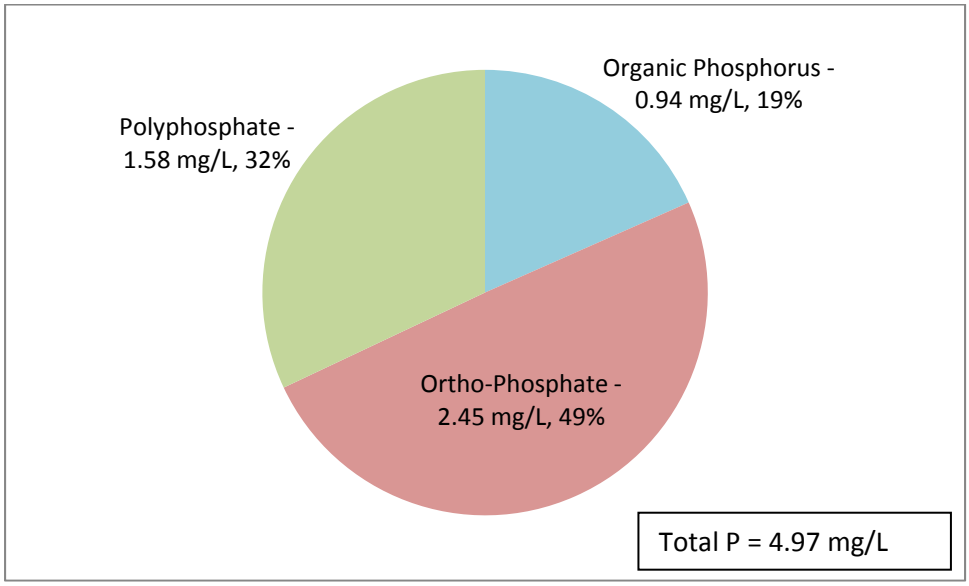


Exhibit 2-3: East WWTF Influent Particulate Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

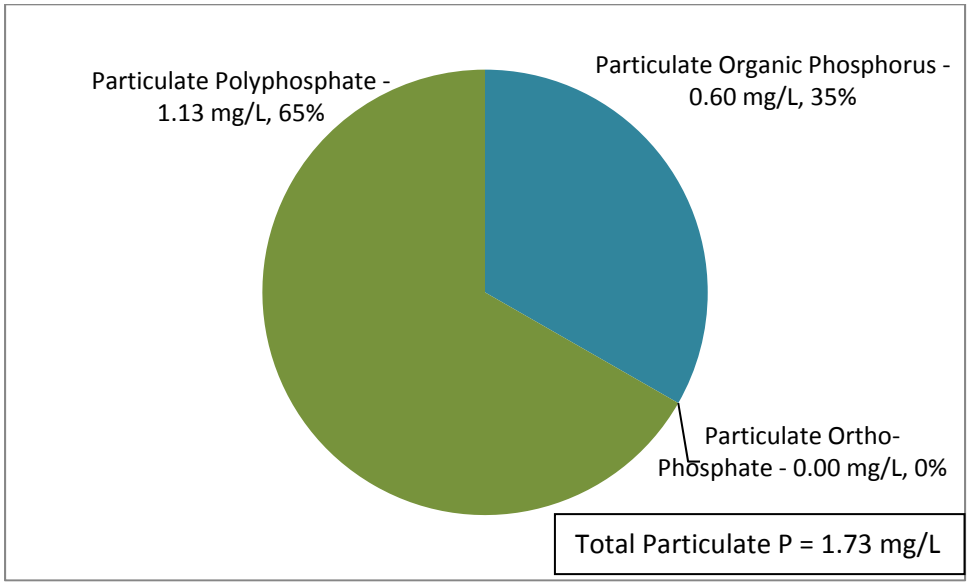


Exhibit 2-4: East WWTF Influent Dissolved Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

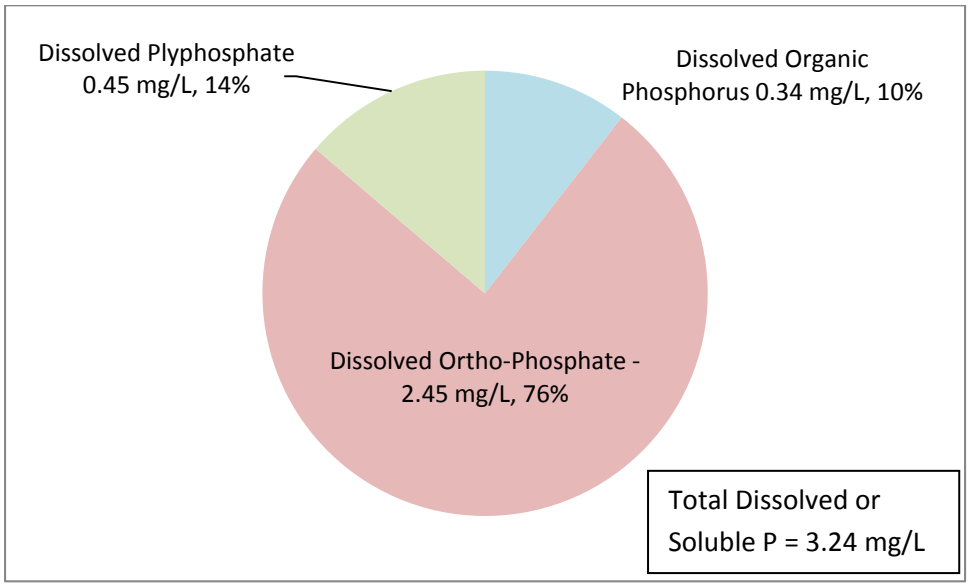
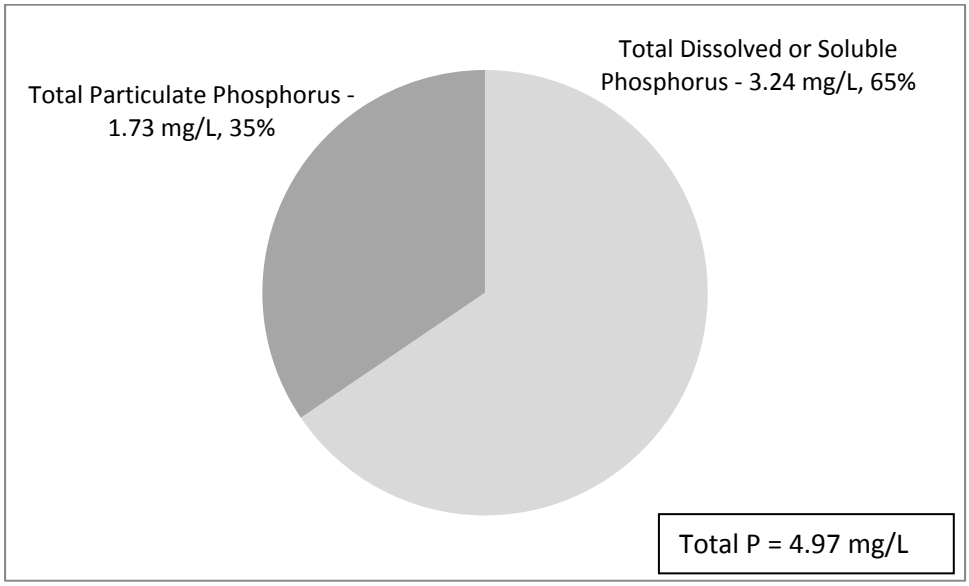


Exhibit 2-5: East WWTF Influent Dissolved vs. Particulate Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL



2.3.2 West WWTF Influent Phosphorus Sampling Results – Appendix D outlines the results of phosphorus samples that were taken from the influent of the West WWTF. The total influent phosphorus ranges from 4.21 mg/L to 11.70 mg/L with an average of 6.31 mg/L. The total dissolved or soluble phosphorus (4.02) mg/L is higher than the total particulate phosphorus (2.29 mg/L). Of the total phosphorus fraction, the orthophosphate fraction was higher than organic phosphorus or polyphosphate. Dissolved Orthophosphate was also higher

than the other dissolved fractions; however, of the particulate fractions organic phosphorus was the highest. Exhibits 2-6 through 2-9 graphically display average phosphorus speciations from the results found in Appendix D.

Exhibit 2-6: West WWTF Influent Total Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

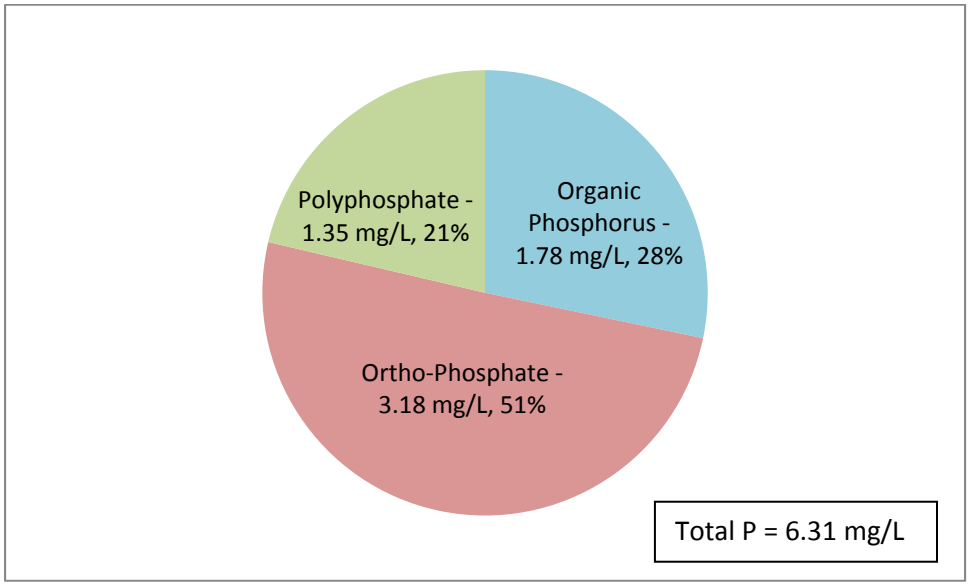


Exhibit 2-7: West WWTF Influent Particulate Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

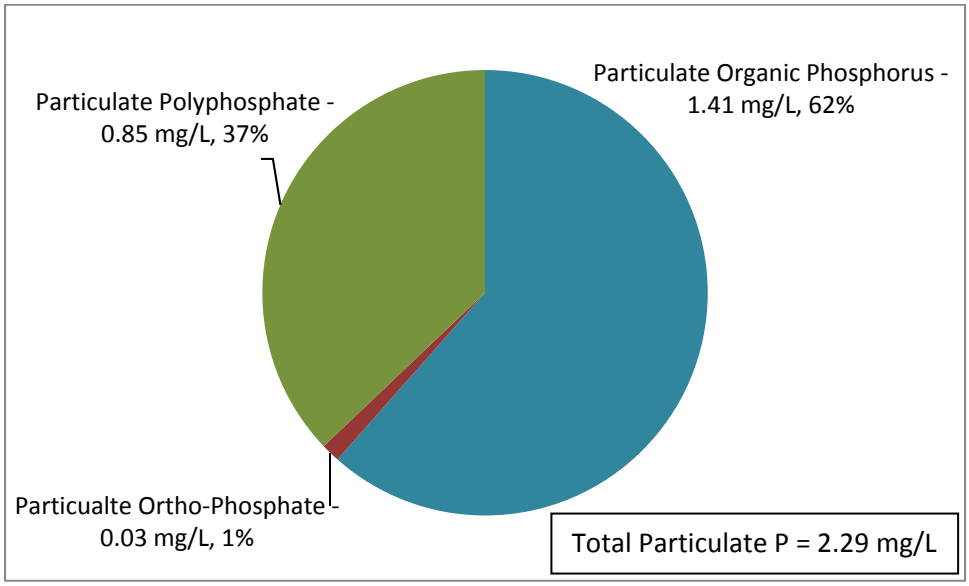


Exhibit 2-8: West WWTF Influent Dissolved Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

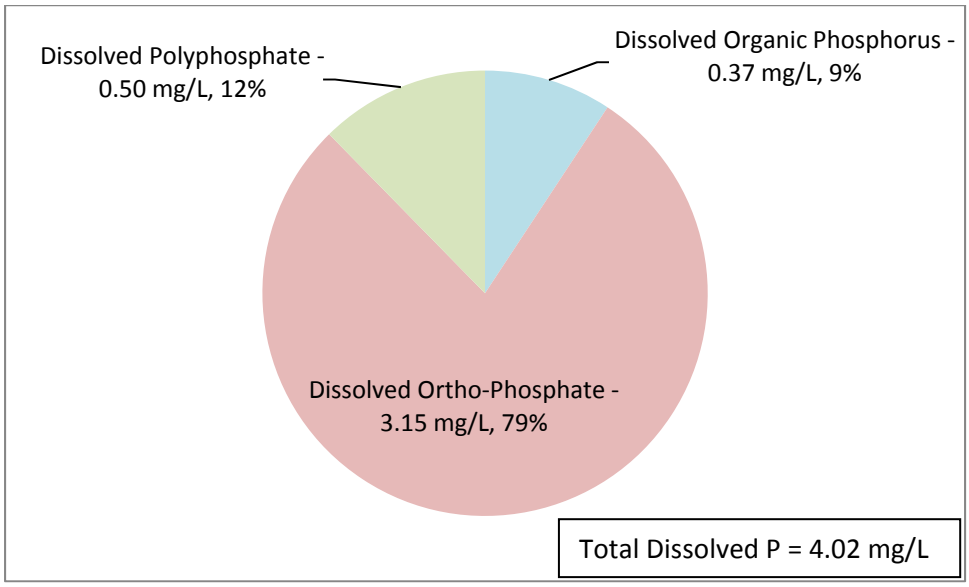
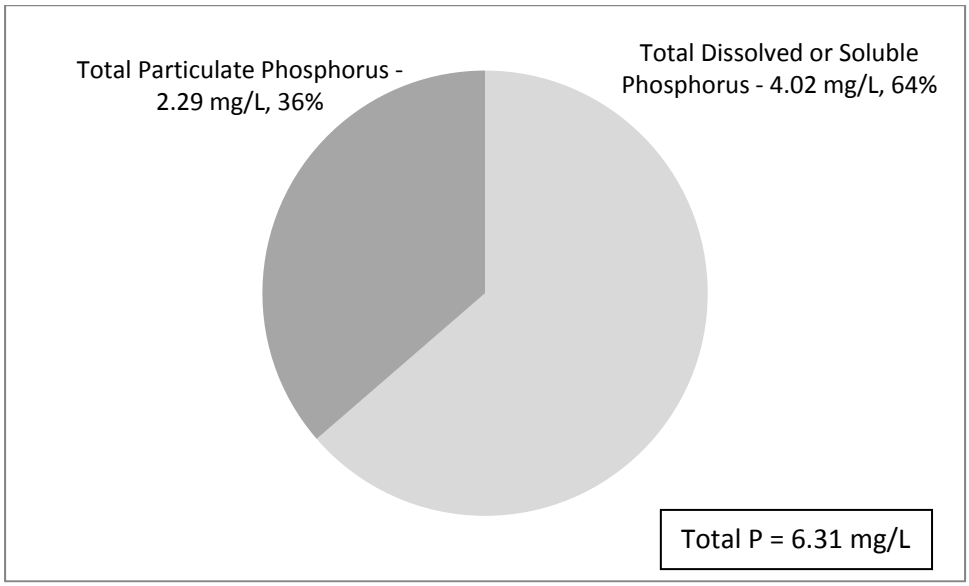


Exhibit 2-9: West WWTF Influent Dissolved vs. Particulate Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL



2.4 Evaluation of Phosphorus Sources

2.4.1 Industrial and Commercial Sources of Phosphorus – In 2011, the Village of Huntley distributed a sewer survey to all businesses in Huntley. These surveys were used to determine the amount of wastewater,

as well as potential contaminates, that might be entering the waste stream based on the business and activities of each business. Additionally, if businesses stored any material onsite in quantities exceeding 5 gallons, the survey required that the MSDS of each material be included with the survey as a response.

This survey was completed five years prior to the completion of the Phosphorus Discharge Optimization Plan; however, it still provides valuable information regarding the businesses that may be contributing high levels of phosphorus to the collection system. Review of the surveys outlined 35 businesses that may be contributing high phosphorus content to Huntley's sanitary sewer system. This list was created with an understanding that typical commercial/industrial phosphorus contributors typically include metal finishers, metal fabricators, dairy processing, cleaners, and other miscellaneous manufacturing facilities. A list of these businesses and their summarized response to the surveys can be found in Table No. 2-1.

The highest potential phosphorus contributors are likely Dean Dairy Holdings, LLC (dairy processing), Extrude Hone (metal cleaning/finishing), and Weber (metal cleaning/finishing). Dean and Weber already have discharge permits in accordance with the Village's Industrial Discharge Program and are closely monitored. Extrude Home has a pretreatment system has submitted a baseline sewer survey to the Village for review.

2.4.2 Municipal Sources of Phosphorus – The Village utilizes blended phosphates for corrosion control in their water distribution system. The blended phosphates are injected into the finished water leaving their Water Treatment Plants and are generally carried throughout their water distribution system to prevent iron deposition on piping and to prevent corrosion of lead and copper piping by sequestering iron and creating a protective barrier on the distribution piping. Any phosphate that is carried through the water system and discharged into a drain connected to the sanitary sewer system is then carried to the WWTFs. The Village is currently dosing 1.0 mg/L of a blended phosphate (as PO4), comprised of 10% polyphosphate and 90% orthophosphate at each Water Treatment Plant. 1.0 mg/L *as PO4* equates to 0.33 mg/L *as P*, which is the unit of measurement for phosphorus at the WWTF. While this source of phosphate is comprising a portion of the phosphorus in the collection system, it is a relatively small percentage of the overall phosphorus, and unlikely that there will be much opportunity to reduce this source. The Village will continue to seek optimization of the blended phosphate feed into the water supply, but this process is essential to provide safe and compliant drinking water to its users.

2.5 Determination of Sources with the Greatest Opportunity for Reducing Phosphorus

The businesses that were added to Table No. 2-1 were added because their business was likely to use chemicals containing phosphorus or their survey stated they were using phosphorus-based products. Review of the list highlighted several businesses that were categorized as needing additional monitoring to determine the amount of phosphorus that is produced. Actions taken regarding the businesses can be seen in the last column of the table. The Village should continue to closely monitor the influent phosphorus results and track potential phosphorus contributors from commercial/industrial sources. In the future, the Village will continue to monitor their wastewater and communicate with local businesses to determine if additional wastewater discharge permits or other mitigation strategies are necessary.

The Village of Huntley currently has an industrial pretreatment ordinance that includes arsenic, barium, cadmium, chromium, copper, cyanide, lead, mercury, nickel, FOG, silver, total phenols, zinc, ammonia, BOD_5, and TSS. All the items listed are for both WWTFs except the last three which are applicable only to the East WWTF. It is recommended that a local limit for phosphorus be considered for inclusion to the Village's Pretreatment Ordinance. The local limit would provide the Village a mechanism for monitoring and enforcement of potential phosphorus contributors. The Village Sewer Ordinance is included in this report as Appendix B.

Table No. 2-1: Businesses/Industries With Potentially High Sources of Phosphorus
Village of Huntley, IL

Company	Description	Daily Flow to SS (GPD)	MSDS Included?	Products Used	Phosphorus Containing?	Action Taken By Huntley as of 11/15/2016	Discharge Permit Number
Card Clothing and Services Midwest	Machinery Manufacturer for Fiber Processing Equipment	260	No	N/A	N/A	No further action at this time.	N/A
Century Automatics	Machine Shop producing metal parts	360	No	N/A	N/A	No further action at this time.	N/A
Crown Polymers	Manufacture of Polymer Coatings	100	No	N/A	N/A	No further action at this time.	N/A
Crocker (HS Crocker)	Specialty printing, food lidding, pharmaceutical labeling, security solutions, quality assurance	Not Provided	No	Water Based Non-Toxic Ink	-*	Site inspection performed by Village Staff in 2016. Site was unbelievably clean. No need to sample.	N/A
Dean Dairy Holdings, LLC	Dairy Product Processing and Packaging Facility	2,840	Yes	Nitric Acid	N/A	Dean's currently has a wastewater discharge permit. There is no further action at this time.	Huntley 2014-001. Expires July 31, 2017.
				Ammonia	N/A		
				Sodium Hydroxide	N/A		
				SANI-GLIDE	-*		
				EVAP-O-KLEEN	Yes, 9% Phosphoric Acid by weight according to MSDS		
				MANDATE PLUS	Yes, 7% Phosphoric Acid by weight according to MSDS		
				MATRIXX	-*		
				SC-205	-*		
				Sulfuric Acid	N/A		
Extrude Hone	Thermal Deburring	3,200	Yes	MOBIL DTE 25	-*	Extrude Hone has a pretreatment system. Village staff recently performed site inspection and sampled discharge from their onsite treatment system. Awaiting sample results and completed sewer survey.	N/A
				Product No. 1354	-*		
				Surftran D-Oxidal	Yes, 42.5% Phosphoric Acid by weight according to MSDS		
				DIS-PRO-TEC	-*		
				Product No. 5976	-*		
				Shurcool #45+F25:J32	-*		
FGS Fabrication LLC., GFS, RLH, BCC (sp?)	Guardrail, Fence & Sign Fabrication	650	No	N/A	N/A	No further action at this time.	N/A
Four Seasons Cleaners	Dry Cleaners	N/A	Yes	Perchloroethylene	N/A	No further action at this time.	N/A
Huntley 47 Cleaners	Dry Cleaning and Laundering	0	No	N/A	N/A	No further action at this time.	N/A
Huntley Collision Center, Inc.	Auto body Repair & Refinish	380	No	N/A	N/A	No further action at this time.	N/A
Image Industries Inc.	MF for Weld Studs	<600	Yes	CLC Lube AW 200	-*	No further action at this time.	N/A
				Zepride	-*		
				Clean 777	-*		
				CLC Lube Go Series	-*		
International Water Werks	Wholesale of Water Treatment Products	160	No	N/A	N/A	No further action at this time.	N/A
Kalbfleisch Mold Co. Inc.	Manufacture of Molds for the Rubber Industry	100	No	BLASTOCUT2000 METALWORKING FLUID	-*	No further action at this time.	N/A
LDI Industries	Metal Fabrication of Hydraulic Tanks & Components	100	Yes	Rust Preservatives 38-1	-*	No further action at this time.	N/A
				Cleaner 16-2	Yes, contains TetraPotassium Pyrophosphate		
				Organic Solvent (Thinner)	-*		
				Radnor Anti-Spatter Premium Water Base	-*		
				Suppress	-*		
				CLC Lube WL ISO Series: 32, 46, 68, 100, 150, 220, 320, 460	-*		
				CLC Lube HO Z SERIES	-*		
				CLC Colant CF 66	-*		
Maass Midwest & MG. INC.	Light machining and Assembly	520	Yes	AMOCO 300 Motor Oil SAE 30	-*	No further action at this time.	N/A
				AMOCO AW Oil No. 46	-*		
				AMOCO Soluble Oil	-*		

Table No. 2-1: Businesses/Industries With Potentially High Sources of Phosphorus
Village of Huntley, IL

Northern Illinois Mold Corp.	Produce Repair/Steel Molds	160	No	N/A	N/A	No further action at this time.	N/A
Rohrer Corporation	Specialty convertor of skin and blister packaging board, folding cartons, and thermo-formed blisters	2,200	Yes - only some of the chemicals listed in the sanitary sewer survey are listed in this report.	Questar CTP One Step F.C.	-*	No further action at this time.	N/A
				Crystal Clean 100+	-*		
				MRC-B	-*		
				Red Magic X	-*		
				Odorized Propane	-*		
				E-CURE UV 5.0	-*		
				ISOPROPANOL	-*		
				SUPERKLENE 1 IC	-*		
				Fuji LH-DPW2 Digital Thermal Positive Plate Dev.	-*		
				FN-G FUJI PLATE FINISHER GUM	-*		
				FOAMKILL S-830HP	-*		
				Paraffin Wax	-*		
				AGLAN BP1200 S/F Blister Pak Coating	-*		
				PRESSMAX 881 Coating	-*		
				1311 B, BC, C Matte	-*		
				Kustom Kote - Satin Aqueous Coating	-*		
				ALGAN COATING	-*		
				MIRACURE (The legibility of the MSDS was such that I was unable to read the full name)	-*		
				Latiseal B7346AR	-*		
T&J Printing Supply, Inc.	Textile Screen Printing Supply Sales	100	Yes	EasiStrip SUPRA One Step Ink Cleaner & Emulsion Remover	-*	No further action at this time.	N/A
				Plastisolve 820	-*		
				Plastisolve 842	-*		
				Easisolve 701	-*		
				Rutland NPT Screen Printing Plastisol	-*		
Tek Packaging, LLC	Custom Thermoforming & Design and Manufacture of Thermoformed Product	200 & 1300	Yes	Mobile Delvac 1310 (Zinc Alkyl Dithiophosate 1-5%)	Yes	No further action at this time.	N/A
				Admiral AW-46	-*		
				Propylene Glycol	N/A		
				Admiral AW-32	-*		
				Isopropyl Alcohol 99%, Anhydrous	N/A		
Union Special LLC	Manufacturing	349	Lab analysis for pretreatment system included; no MSDSs included.	N/A	N/A	Inspected in 2016 by Village Staff and the IEPA.	N/A
Village Green Cleaners	Clean and Press Clothes (No Dry Cleaning Happens at This Facility)	840	No	N/A	N/A	No further action at this time.	N/A

Table No. 2-1: Businesses/Industries With Potentially High Sources of Phosphorus
Village of Huntley, IL

Weber	Manufacture of Barbeque Grills -Aluminum and steel parts are washed in a four-stage water washer prior to powder coating -Aluminum castings and steel parts are de-burred, sanded, drilled, and washed. After washing, the castings are dried and covered with dry powder coating which is baked-on in an oven. Finished parts are staged for packaging and shipping. -Coils of steel are stamped, formed, de-burred, sanded, drilled and washed. After washing, the parts are dried and covered with dry powder coating which is baked-on in an oven. Finished parts are staged for packaging and shipping.	17,000-25,000	No	There is a letter from the consultant listing the processes used, but there is no information on chemicals used	N/A	The Village of Huntley has issued Weber a Wastewater Discharge Permit. There is no further action at this time.	Huntley 2016-002. Expires July 31, 2017.
Whisper Creek (Maintenance Building)	Golf Course Maintenance	150	Yes	Sledgehammer	-*	No further action at this time.	N/A
				Biodiesel Blend B2-B5-B10-B20	-*		
				Gasoline, All Grades	N/A		
				MobilFluid 424	Yes		
				Mobil Delvac 1300 Super 15W-40	Yes		
				SPEED ZONE Lawn Weed Killer	-*		
				LESCO Wet Plus Liquid	-*		
				K-phite 7LP	Yes (Phosphate)		
				Triplet Low Odor Premium Selective Herbicide	-*		
				FERROMEC Liquid Iron 15-0-0	-*		

G:\Public\Huntley\2015\HU1501 2016 Wastewater System Planning Documents\01A - Phosphorus Removal Feasibility Study\Info from Village\2011 Sewer Survey\[HU_ReviewOfDataProvidedByCity.xlsx]Sheet1 (2)

Notes:
Businesses that have Wastewater Discharge Permits
*MSDS did not list all ingredients, but is not believed to contain phosphorus

Section 3: WWTF Effluent Reduction Measures

As stated in Section 1, the optimization of phosphorus can be classified into either controlling the influent by regulatory means or controlling the effluent by plant optimization or renovation. While Section 2 focuses on the reduction of phosphorus by controlling the influent, Section 3 outlines steps that the Village of Huntley can take to control their effluent by optimizing the operation of their existing WWTF processes. The guidelines for the Discharge Optimization Plan do not include analysis of new WWTF treatment processes; and this will be the focus of a separate Phosphorus Removal Feasibility Report, as required in the NPDES Permit. The East and West WWTFs have different flow processes and treatment capacities, so discussion in this section will focus on each facility individually. Both sections will discuss phosphorus removal in terms of biological phosphorus (Bio-P) removal and chemical phosphorus (Chem-P) removal.

Bio-P removal involves the use of phosphate accumulating organisms (PAOs) to remove phosphorus. While typical WWTF activated sludge contains 1.5% to 2.5% phosphorus, PAOs take up phosphates in excess of their normal biological requirements, typically raising the phosphorus concentration in activated sludge to 3.0% to 6.0% or higher[1]. Enhanced biological phosphorus removal (EBPR) occurs when alternating anaerobic and aerobic zones provide an environment that encourages the growth of PAOs. PAOs will uptake BOD as Volatile Fatty Acids (VFAs) in the anaerobic zone, and release ortho-phosphorus (Ortho-P) into the mixed liquor. As the source of food (BOD/VFA) decreases in the aerobic zone, the PAOs uptake the excess Ortho-P to replenish their poly-phosphate supplies. These PAOs are then ready to be settled and/or filtered and removed in the biosolids process. Generally speaking, EBPR is required to reach phosphorus effluent limits of 1.0 mg/L or less, excluding the aid of chemicals. There are several types of EBPR systems including anaerobic/aerobic, anaerobic/anoxic/aerobic, modified Bardenpho, University of Cape Town, and various oxidation ditch designs. No matter the design, all EBPR systems provide an aerobic zone and an anaerobic zone[2]. Instrumentation and controls that monitor and manipulate Dissolved Oxygen (DO) levels in the biological treatment process are ideal for assistance in promoting growth of PAOs. Furthermore, the process tanks must be configured for creating distinct zones for manipulating the DO. Each of the Village's WWTFs utilizes extended aeration oxidation ditch processes for biological treatment.

Dissolved Oxygen in oxidation ditches should be evaluated not only to determine if distinct anaerobic zones are created, but also whether the oxygenation rates could promote simultaneous nitrification-denitrification. Nitrogen typically enters WWTFs as organic nitrogen and ammonia (NH_3) or ammonium (NH_4^+). For the influent nitrogen to be completely removed, the wastewater must undergo nitrification (a change from ammonia or ammonium to nitrite then nitrate) followed by denitrification (a change from nitrate to nitrogen gas). It is vital to maintain correct amounts of oxygen in each stage for the facility to see proper removal. Excess oxygen not only decreases denitrification, oxygen can eat away at the alkalinity in the system causing an acidic environment. This acidic environment can accelerate the wear on a WWTF and can therefore increase maintenance and replacement costs. Typically, in the nitrification step a DO of 2.0 mg/L or higher is

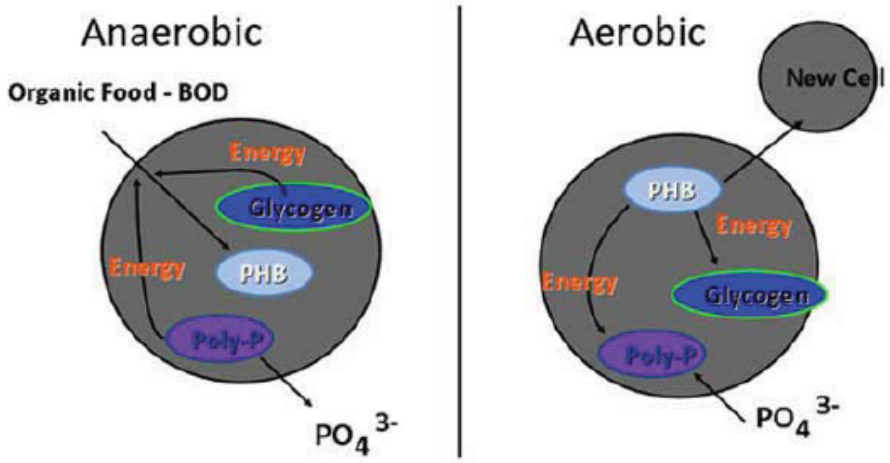
[1] References – Item 6 (pg 18)
[2] References – Item 6 (pg 12)

ideal and in the denitrification step a DO of 0.0 mg/L is ideal[3]; however, various sources have stated that denitrification can occur below 0.5 mg/L of DO.

Chem-P removal involves the addition of metal salts to react with soluble phosphate to form solid precipitates that can be removed by a solids separation process. In Huntley's case, Aluminum Sulfate (Alum) is already used at the West WWTF to aid with phosphorus and barium removal, and the Village has begun using Alum at the East WWTF for barium removal. Therefore, it is assumed the Village will continue to utilize Alum as the metal salt for Chem-P removal. Alum precipitates the phosphorus as Aluminum Phosphate, which can then be removed via typical settling and filtration.

Not all phosphorus fractions can be easily removed from wastewater and some phosphorus fractions must be converted to a different fraction to be removed by either Bio-P or Chem-P. With the present technology, there is some phosphorus that is recalcitrant, or that cannot be feasibly removed from wastewater. In the cases of both Bio-P and Chem-P removal, the goal is to effectively and efficiently convert phosphorus to a particulate form for removal in the biosolids process. Wastewater chemistry and biology are both incredibly complex, there are many competing reactions and many environmental factors which will affect all reactions. Factors such as temperature, pH, and DO content can affect the biota available and cause unexpected reactions.

The particulate fractions, which do not pass through a 45 µm filter, are typically assumed to be removed via the same methods used for TSS removal. The dissolved or soluble fractions must be removed by converting them to particulate fractions. PAOs take up orthophosphate and store it as polyphosphate the aerobic zone and the PAOs release polyphosphate as orthophosphate in the anaerobic zones. The diagram below outlines this interaction. Polyphosphates, which are considered non-reactive, can be hydrolyzed to orthophosphates over time.



A facility's ability to remove the phosphorus once it is in a particulate fraction is vital. A reliable metric for gauging the facilities' solids removal effectiveness is solids retention time (SRT). SRT is not a measured

[3] References – Item 4 (pg 47)

parameter; rather, it is calculated by taking the total solids inventory divided by the total solids wasted. Maintaining a low SRT will help create positive conditions for settling and removing solids in the Final Clarifiers, thus minimizing excursions of solids from this process. Furthermore, if particulate phosphorus remains bound in PAOs for a long period of time, particularly when exposed to anaerobic or anoxic conditions, the particulate phosphorus can convert back to soluble form and release back into the process liquid. Once back into soluble form, the phosphorus is much more difficult to remove. A low SRT will maintain a "younger" sludge age, which prevents conditions conducive for phosphorus release back into soluble form. Literature suggests a SRT range of 12 to 20 days as being optimal for phosphorus removal for extended aeration activated sludge processes with oxidation ditches, which is applicable for both the East and West WWTFs.

Side-streams refer to the return streams from biosolids processing. Although side-streams typically represent < 5% of raw plant flow, they can represent 15% to 40% of the typical discharge nutrient load[4]. The comparative low flows and higher nutrient concentrations can make side-streams a very cost-effective way to remove nutrients as compared to main-stream processes. While anoxic zones are typically a mainstream process, there has been some success treating just the side-stream flow as an anoxic zone before combining the side-stream flow with the influent in the anaerobic zone[5]. The creation of anoxic side-stream treatment would allow more nitrate to be removed from the return flow through denitrification, thus ensuring a more efficient anaerobic zone and better phosphorus uptake.

3.1 Baseline Nutrient Sampling

Section 2 of the report identifies the different phosphorus speciations and the baseline influent phosphorus sampling results at each WWTF, as related to the analysis of influent reduction measures. The influent phosphorus speciation testing results, combined with effluent speciation sampling assist with analysis of WWTF effluent reduction measures. This is accomplished through understanding of the transformation of phosphorus forms throughout the treatment processes, and what forms are effectively removed through treatment. The goal is to convert dissolved/soluble forms of phosphorus to particulate/insoluble forms that can be removed as a solid through settling and filtration mechanisms.

Sampling was conducted to speciate influent and effluent phosphorus at each WWTF. The sampling also included total nitrogen, VFAs, flocculated-filtered chemical oxygen demand (ffCOD), soluble COD (SCOD), and readily biodegradable COD (rbCOD). In the industry, there is still much research and analysis to be done to further understand the relationship between influent wastewater characteristics and Bio-P removal through a WWTF. However, meeting a 1.0 mg/L phosphorus limit with Bio-P removal generally requires the following ratios at the WWTF influent:

BOD:TP	>20:1
rbCOD: TP	>10:1
VFA:TP	>4:1

[4] References – Item 5 (pg 13)
[5] References – Item 4 (pg 53)

rbCOD is a precursor of VFAs and is the most accurate indicator of a wastewater's ability to form PAOs for Bio-P removal. Determining WWTF influent rbCOD values provides an estimate of Bio-P removal capabilities. Due to the significant expense of testing specifically for rbCOD, primarily due to the speciation of soluble COD (biodegradable and non-biodegradable), a more cost effective method to determine a reasonable estimate for influent rbCOD was used in the analysis. Since rbCOD is the difference between Particulate (filtered and flocculated COD or ffCOD) and Non-biodegradable soluble COD (rbCOD = ffCOD – Soluble Non-Biodegradable COD), we can look at these parameters more closely. It was decided to test the WWTF effluent soluble COD, which should be essentially free of biodegradable COD and only left with the non-biodegradable form carried from the plant influent. Therefore, if we test the influent ffCOD and effluent soluble COD (which is the non-biodegradable COD), this should help provide a reasonable estimate of the rbCOD. It should be noted that this method does not provide an exact value for a number of reasons, including testing of two separate samples (at two locations), loss of some soluble non-biodegradable COD in the biosolids process, and residual amount of soluble biodegradable COD remaining in the effluent. However, it does provide an estimate of rbCOD that is useful in generally determining the wastewater's ability to form PAOs for Bio-P removal.

3.2 East WWTF

3.2.1 Overview – Huntley's East WWTF was originally constructed in the 1940s and has undergone several expansions and upgrades since it was built. The WWTF currently has 1.8 MGD of Design Average Flow (DAF) capacity. Exhibit 3-1 displays an aerial view and Exhibit 3-2 outlines the flow process of the East WWTF.

Due to the facility's age, it has undergone several expansions and major technology changes. Additionally, due to the age of this facility most of the processes were designed primarily for BOD_5, TSS, and Ammonia removal, but not designed for Biological Nutrient Removal (BNR), particularly Bio-P removal.

There are three (3) separate oxidation ditches, none of which was designed to create a dedicated anaerobic zone nor do they currently have the controls mechanisms necessary to create such a zone. There are two (2) oxidation ditches (Oxidation Ditch No. 1 and No. 3) with equipment and configuration designed and supplied by Evoqua (Envirex). Each of these oxidation ditches is a 2-ring arrangement, which makes it very difficult to create an anaerobic zone while still maintaining an aerobic zone necessary for nitrification (ammonia removal). 3-ring arrangements are a more traditional configuration for promoting Bio-P removal, as the outer ring has the necessary volume and equipment to be operated effectively as an anaerobic zone, the inner channel operated as an aerobic zone, and the middle channel operated as a "swing" zone – buffering between the anaerobic and aerobic zones.

Exhibit 3-1: Existing East WWTF Aerial View

Village of Huntley, IL

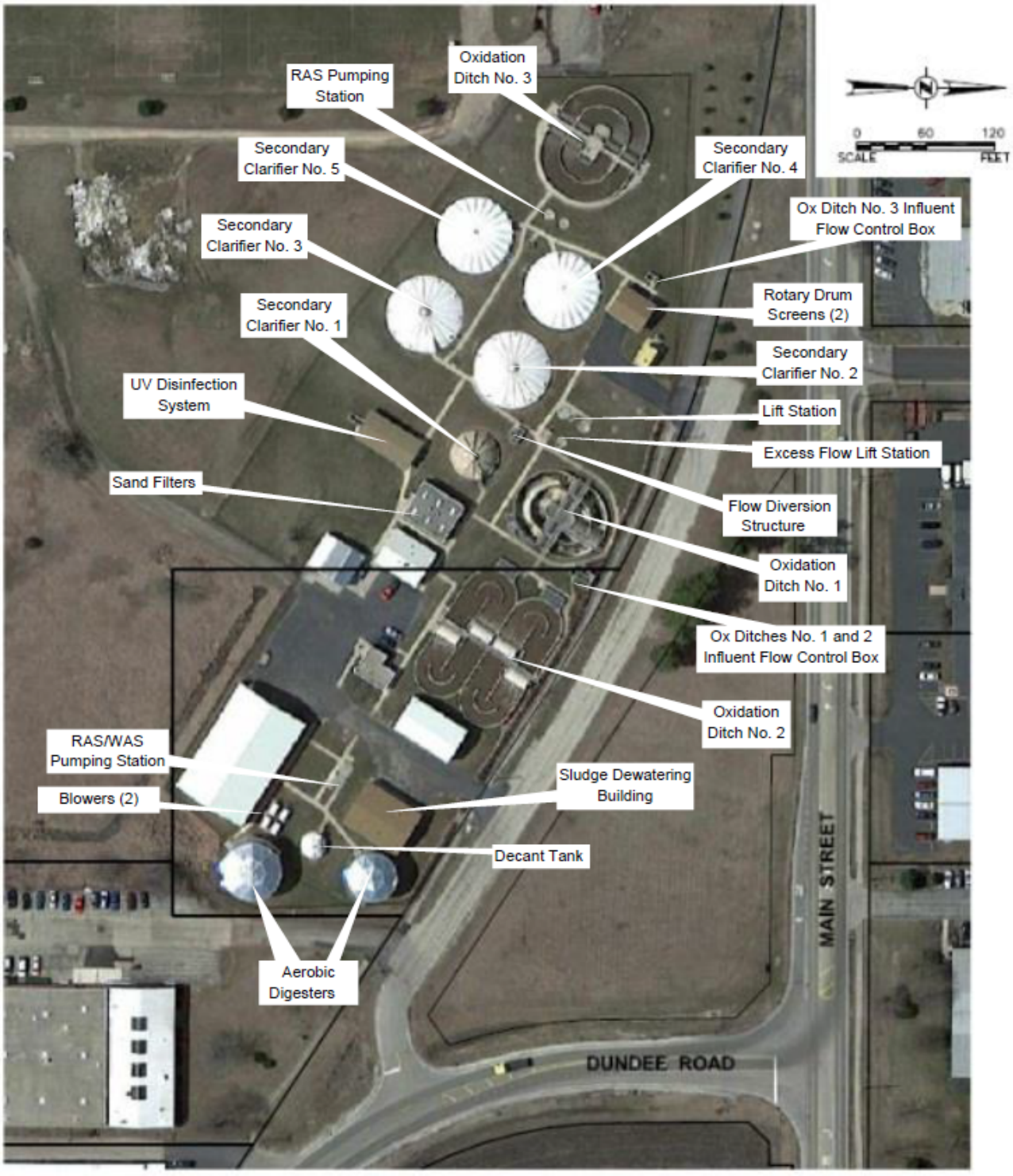
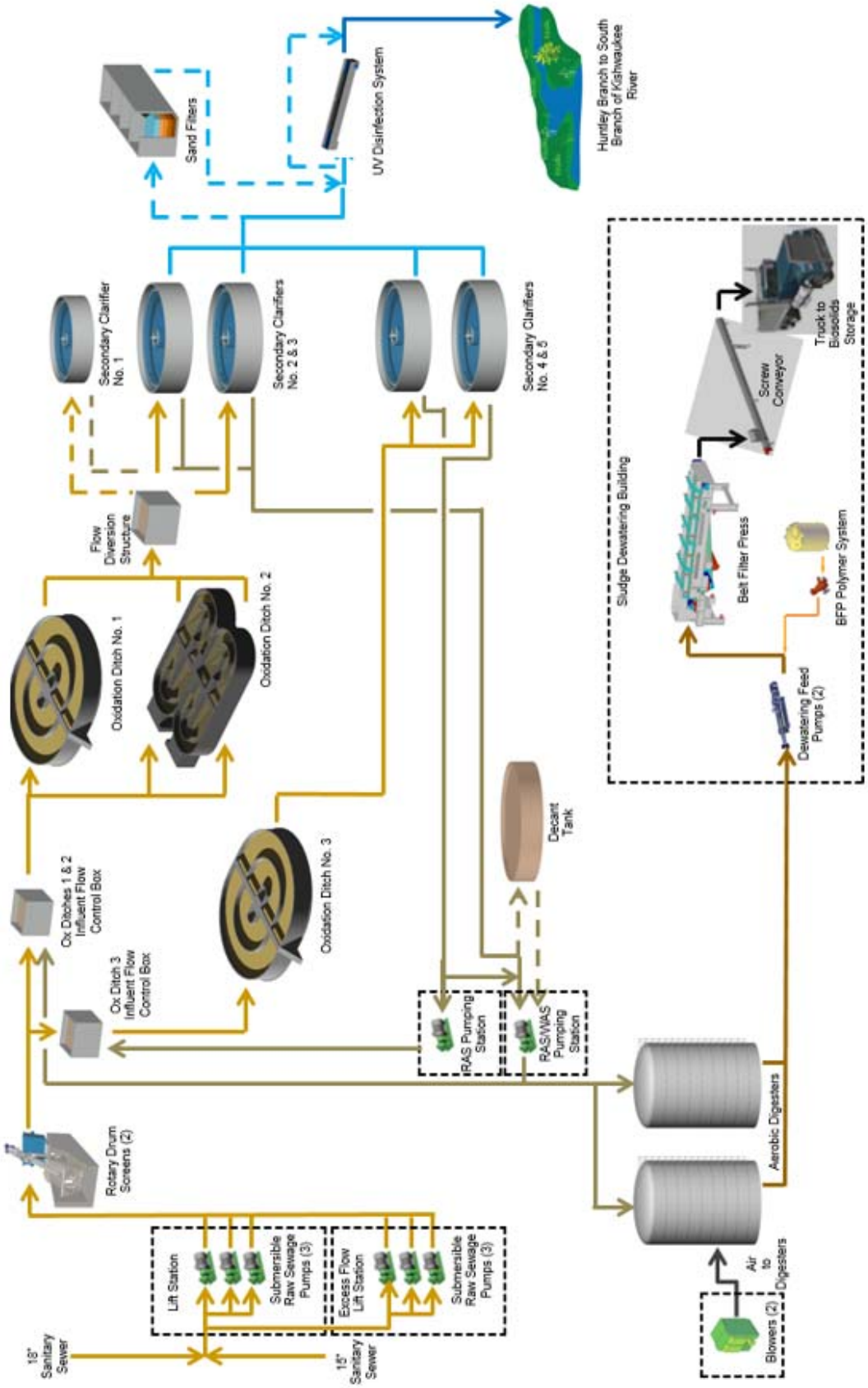


Exhibit 3-2: Existing East WWTF Process Flow Diagram

Village of Huntley, IL



The other oxidation ditch (Oxidation Ditch No. 2) was designed and supplied by Lakeside and is known as their Closed Loop Reactor (CLR) arrangement. There are two (2) tanks in this CLR arrangement and flow can pass through each tank in a parallel or series configuration. This provides a nominal amount of flexibility for creating an anaerobic zone, if the tanks are operated in series and one of the rotors is turned off, while the remaining rotor creates just enough mixing energy to maintain solids suspension. Unfortunately, it can be cumbersome to operate the ditch in this manner without automatic controls.

Furthermore, none of the oxidation ditch aerator motors are equipped with VFDs. This limits the ability to adjust aeration in individual zones of the ditches. Since automatic aeration adjustment is not currently possible, permanent DO and Oxygen Reduction Potential (ORP) probes have not been utilized. The lack of essential processes and instrumentation commonly required for Bio-P removal makes nutrient removal optimization difficult.

The biosolids treatment processes also present challenges. There are process limitations on measuring and adjusting the amount of Return Activated Sludge (RAS) conveyed to the oxidation ditches, and this can affect the food to mass ratio while influent flows fluctuate. Also, the Aerobic Digesters have operational difficulties in cold temperatures because the digester tanks are completely above grade and not insulated. The operators cannot turn off the air for extended periods of time to allow for decanting because the digester contents will begin to freeze. Therefore, biosolids are not thickened during these times, which leads to reduced solids wasting due to limited digester capacity. This creates longer SRTs and negatively affects phosphorus removal performance.

3.2.2 Analysis Nutrient Sampling – As part of the Phosphorus Discharge Optimization plan, the influent and effluent phosphorus fractions were tested along with several other constituents that provide indicators of potential Bio-P removal performance. Appendix C includes Influent and Effluent testing that occurred at the East WWTF from October, 2014 through February, 2016; and Exhibits 3-3 through 3-7 summarize the testing results.

Exhibit 3-8 displays a bar chart showing the removal efficiencies of each speciation. Particulate ortho-phosphate (Ortho-P) is not shown in this bar chart because there is no measured particulate Ortho-P in the influent or effluent, thus rendering a removal percentage unquantifiable. Both the dissolved and particulate organic phosphates had calculated effluent rates of 0 mg/L and correspondingly had 100% removal efficiency. Dissolved Ortho-P was the constituent with the worst removal efficiency of 53%. Dissolved and particulate polyphosphate were removed at a rate of 64% and 91% respectively. As seen in Exhibit 3-3, the largest fraction of influent phosphorus is from dissolved Ortho-P; because dissolved Ortho-P also has a poor removal rate at the East WWTF, the dissolved Ortho-P makes up 82% of the total effluent phosphorus.

Exhibit 3-3: East WWTF Influent/Effluent Analysis (10/2014-02/2016)

Village of Huntley, IL

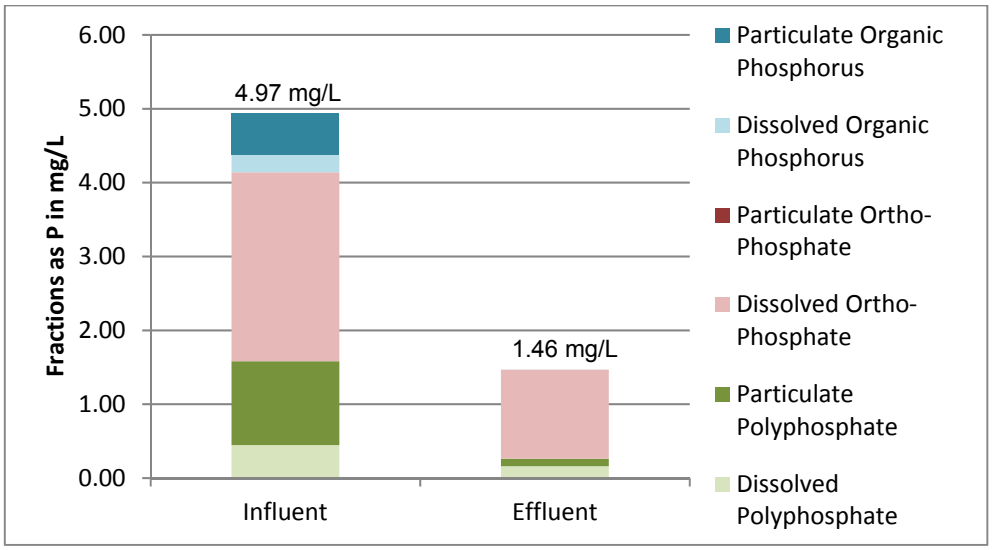


Exhibit 3-4: East WWTF Effluent Total Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

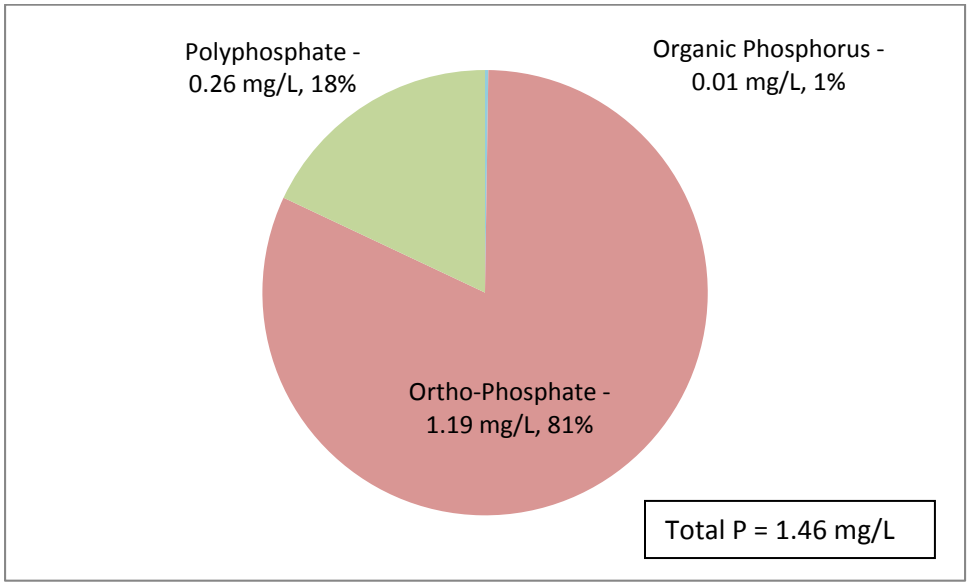


Exhibit 3-5: East WWTF Effluent Particulate Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

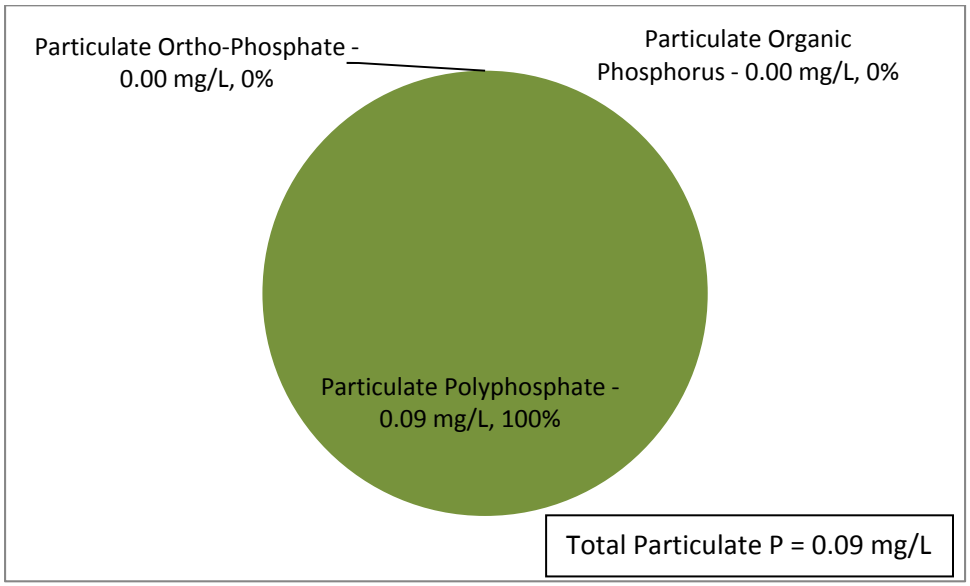


Exhibit 3-6: East WWTF Effluent Dissolved Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

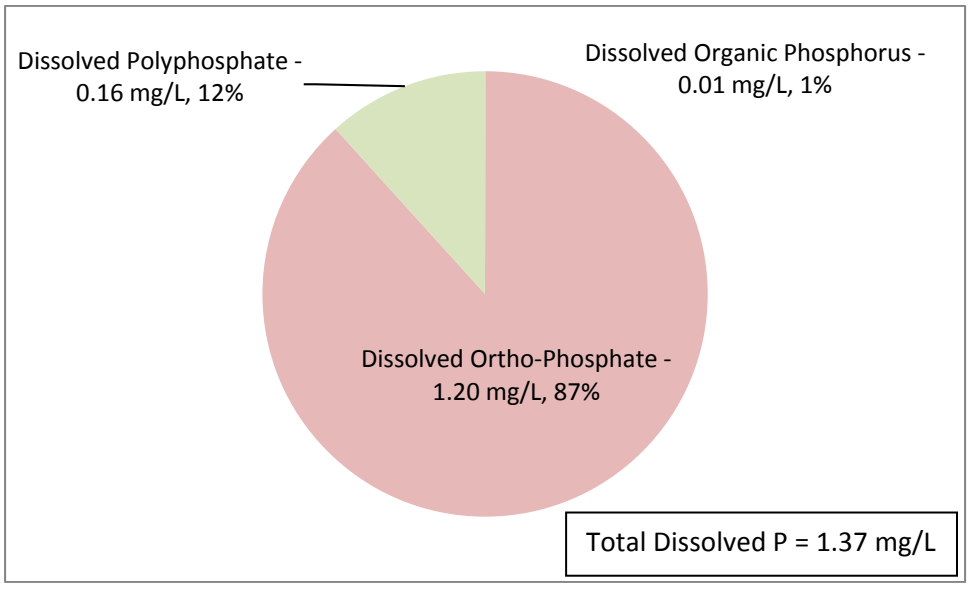


Exhibit 3-7: East WWTF Effluent Dissolved vs. Particulate Phosphorus Speciations (10/2014-02/2016)
Village of Huntley, IL

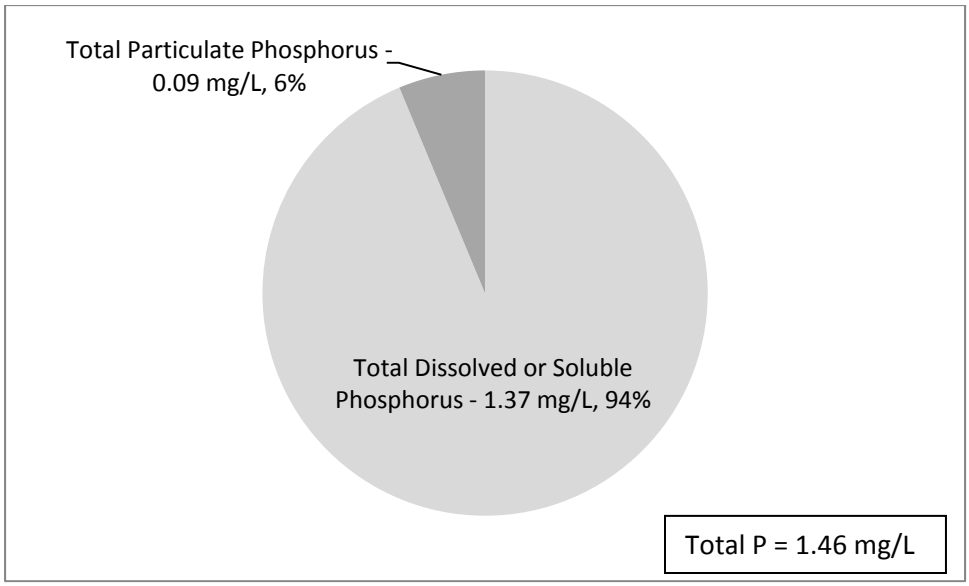
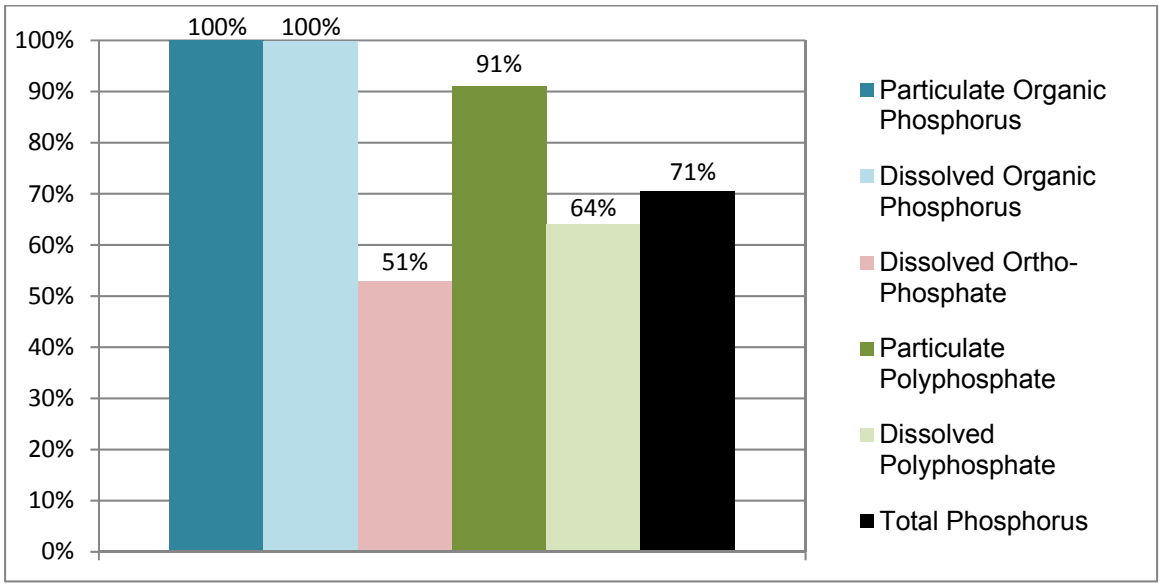


Exhibit 3-8: East WWTF Speciated Removal Efficiency (10/2014-02/2016)
Village of Huntley, IL



These results are indicative of the facilities' limitations for effectively removing phosphorus biologically. There is very little conversion of Dissolved Ortho-P to Particulate Ortho-P, which is the primary mechanism for allowing phosphorus to be removed in the biosolids process. It would appear that the inability to create and utilize PAOs is a major factor in the relatively poor Bio-P removal performance. Other contributing factors and further optimization discussion is included in subsequent sections.

Influent sampling also included BOD, VFAs, and readily biodegradable COD (rbCOD) to further gauge the conditions for optimal Bio-P removal. Appendix C includes these lab results and Table No. 3-1 includes the ratios of these parameters to the influent phosphorus concentrations over the same sampling period, and compares them to the desired ratios conducive for Bio-P removal. In each case, the observed ratio was greater than the desired minimum ratio. This indicates that Bio-P removal to 1.0 mg/L is possible given the proper physical and operational treatment mechanisms.

Table No. 3-1: East WWTF Influent Conditions for Bio-P Removal

Village of Huntley, IL

Parameter Ratio	Desired Ratio	Observed Ratio
BOD:TP	>20 :1	57.6 :1
rbCOD:TP	>10 :1	13.9 :1
VFA:TP	>4 :1	5.1 :1

G:\ Publ\ Huntley\ 2015\ HU150120 16 Wastewater System Planning Documents\ 01B - Phosphorus Discharge Optimization Plan\ Engl\ Water Quality Samples\ [Phosphorus Ratios.xlsx]Sheet1

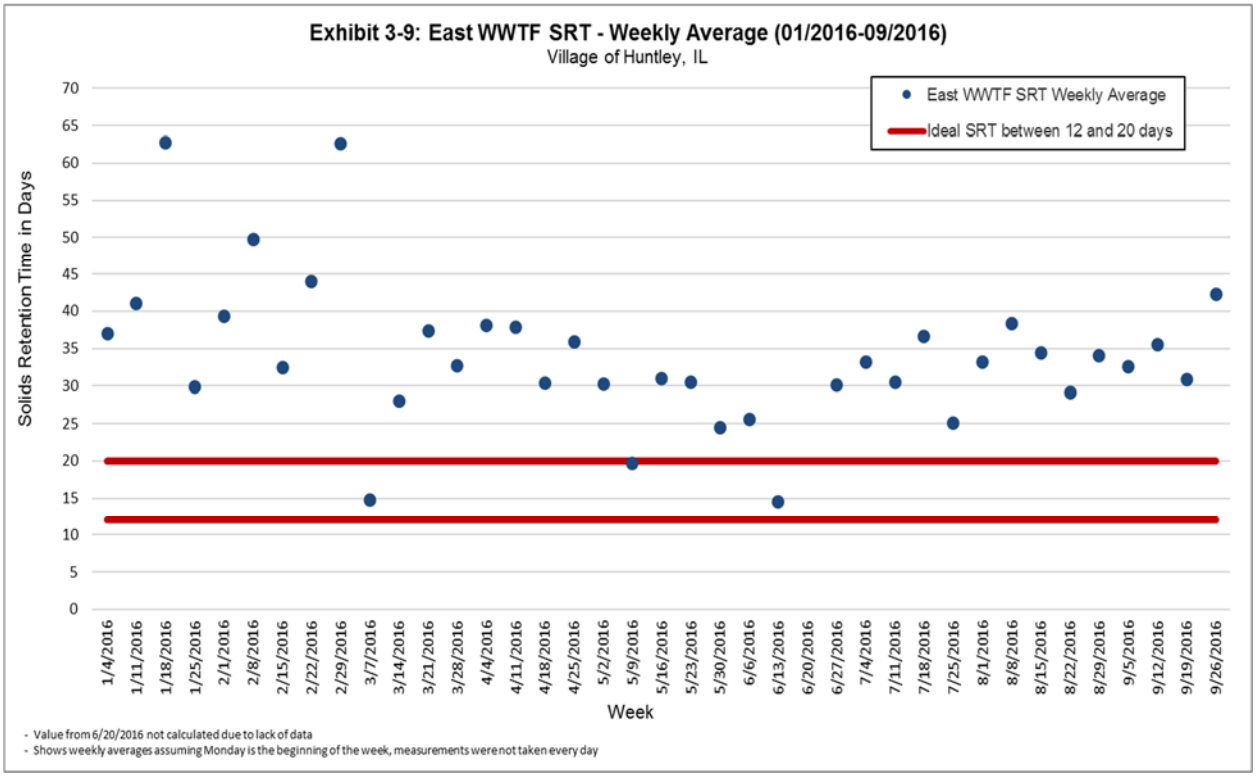
Notes:
-BOD values from DMR Averages 1/2014-12/2015
-rbCOD values from phosphorus testing 10/2014-2/2016
-During phosphorus testing 10/2014-2/2016, every VFA sample measured non-detect (<50 mg/L). An assumed value of half of the non-detect limit, 25 mg/L, was used

3.2.3 SRT Tracking – As part of the Phosphorus Discharge Optimization Plan, the SRT of the East WWTF was tracked from January, 2016 to September, 2016; the tracking sheets can be found in Appendix E and a summary can be found in Exhibit 3-9. As mentioned in Section 1, phosphorus must be removed through solids wasting. Therefore, proper SRT is vital for optimum removal.

An optimum SRT of 12 to 20 days is suggested by the manufacturer of the oxidation ditches. The average SRT in from January to September fluctuated but was typically around 25 to 45 days. Although the SRT is higher than ideal, a reduction has been seen since monitoring began in January. Additionally, the operators have had challenges during this time some with process limitations that have affected their ability to waste and process biosolids.

The recorded information suggests that the Village should attempt to continue to lower their SRTs and promote more solids wasting. The Village will target a SRT of 20 days, through incrementally increasing the amount of sludge wasted to the Aerobic Digesters and the subsequent increase in Belt Filter Press (BFP) operations. Effectiveness of this plan may be limited in cold weather months due to operational challenges with the Aerobic Digesters. Typically, as long as the digesters are working properly, there should be adequate capacity to reach a consistent SRT of 20 days or less. The Village will continue to track their SRT

and monitor their digesters to determine what SRT will provide the best nutrient removal based on digester performance other performance factors.



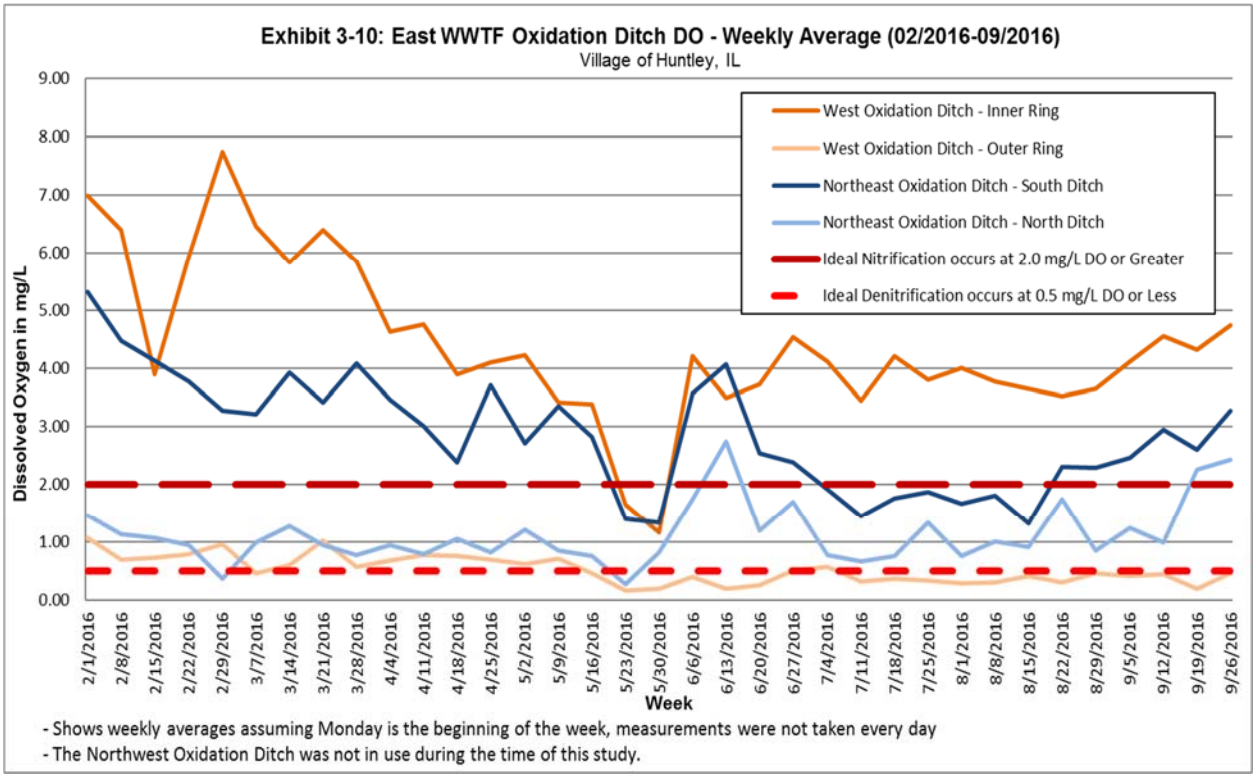
3.2.4 DO Tracking – Dissolved Oxygen in the East WWTF oxidation ditches was evaluated to determine if distinct anaerobic zones are created and whether the oxygenation rates could promote simultaneous nitrification-denitrification. Although the East WWTF lacks permanent DO analyzers in their oxidation ditches, they utilize hand-held DO monitors for spot checking.

Appendix F outlines DO testing results that were taken from the East WWTF during the months of February through September and Exhibit 3-10 displays a summary of the data. It should be noted that Oxidation Ditch No. 2 (Northeast) was operating with the tanks in series. Flow entered the north tank first and then exited from the south tank.

The data shows a general trend of over-aeration in each oxidation ditch (Oxidation Ditch No. 1 was not operating during this time). However, review of the exhibit clearly displays that the Village of Huntley has reduced the dissolved oxygen in their oxidation ditches since they began monitoring in February of 2016. While they are likely creating conditions conducive for nitrification in the outer/north tanks, they are not creating truly anaerobic or anoxic conditions in those tanks. This explains why the facility is adept at ammonia removal, but does not excel at Bio-P removal.

It should be noted that the East WWTF does have a variety of operational constraints. As noted earlier, there is no flow meter for the RAS system on the treatment train for Oxidation Ditches No. 1 and 2. Therefore, the

operators cannot effectively measure and adjust the amount of RAS conveyed to these oxidation ditches, and this can affect the food to mass ratio while influent flows fluctuate. Additionally, the East WWTF lacks monitoring equipment, such as permanently installed DO and ORP probes.



Installing DO and ORP probes in the oxidation ditches is a cost effective way to allow the WWTF operators to more effectively track the DO and ORP, thus helping them make adjustments to avoid over-aeration. Other costlier modifications to assist with DO control include adding VFDs for the oxidation ditch aerators, removing disks from the aerators, and implementing controls to automatically adjust aerator speeds based on DO/ORP measurements.

3.2.5 Side-Stream Flows – As part of the Phosphorus Discharge Optimization Plan, the side-streams were evaluated for phosphorus, total nitrogen, nitrite/nitrate, and total Kjeldahl nitrogen (TKN). At the East WWTF, the side-stream flow sample was obtained from a mix of the Aerobic Digester decant and BFP filtrate flows. Table No. 3-2 outlines the nutrient concentrations that were sampled. The test completed in February shows that total phosphorus was 5.04 mg/L, and total nitrogen was measured at 16.00 mg/L and the entirety of that was nitrate/nitrite which means there was no remaining TKN. The high ratio of total nitrate/nitrate to TKN further exhibits that if the East WWTF is able to decrease oxygenation, they may create more efficient anaerobic/anoxic zone.

Side-streams may also pose a threat to optimum treatment due to flows that may contain unwanted nutrients or microbes combining with mainstream flows that may be in a sensitive stage of treatment. A way to mitigate unwanted nutrients or microbes in side-stream flows without chemical treatment is to split the flows or to change the zone in the system unto which the recycle lines return. Side-stream flows at the East WWTF are conveyed directly, without detention or treatment, to the Raw Sewage Pump Station. Changing the configuration and treatment of the side-stream flows would require significant resources and would not have a drastic impact on Bio-P removal at the WWTF, especially when considering the current discharge limit.

Table No. 3-2: East WWTF Decant and BFP Filtrate Nutrient Sampling (02/2016)

Village of Huntley, Illinois

Sampling Date	McHenry Analytical Water Laboratory, Inc. / PDC	Total Phosphorus (as P) (mg/L)	Total Nitrogen (mg/L)	Nitrate/Nitrite - N (mg/L)	Total Kjeldahl Nitrogen (TKN) (mg/L)
2/4/2016	16B0423 / 6021116	5.04	16.00	16.00	< 1.0

G:\Public\Huntley\2015\HU15012016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\Water Quality Sampling\[Nutrient WQ Sampling Results.xlsm]Side Stream Samples

3.2.6 Other Optimization Strategies – The phosphorus discharge optimization study reviews optimization strategies which do not require capital costs to complete. Optimization strategies may include items such as monitoring flows, adjusting flowrates, adjusting aeration rates, etc. In addition to evaluating the SRT, DO, and side-stream flow as outlined above, other phosphorus removal optimization options should be evaluated. For instance, adding baffles to existing units can improve microorganism conditions by creating divided anaerobic, anoxic, and aerobic zones. Creating these zones would allow for the tanks to more efficiently act as selectors and to optimize nutrient removal. Adding baffles to an oxidation ditch is a difficult proposition due not only to constructability, but also because it would result in dead zones in the channels that could become septic. Therefore, this is not a viable option for the East WWTF.

Another optimization strategy involves operating the oxidation ditches to act as a plug-flow system. Oxidation ditches by nature act as a plug-flow system, although not in the same way as aeration tanks. To enhance the oxidation ditch plug flow system, adding mixers would be required. The addition of mixers to the oxidation ditches in order to operate them as a plug flow system would be unlikely to cause significant additional phosphorus removal.

Reconfiguring the flow through the existing basins may also enhance biological nutrient removal. For the reconfiguring to be successful, a study into the hydraulic retention time (HRT) and SRT of the environments would have to be considered. Reconfiguring the plant would result in costly and time consuming modifications to current equipment and piping systems, and would have little to no observed benefit.

Finally, increasing VFAs is another way to increase phosphorus uptake by increasing PAOs. VFAs are a result of the fermentation of organic material and act as a food source for PAOs and other microbes. A way of increasing VFAs for the East WWTF would be to add a new fermenter to promote the fermentation of RAS, prior to introduction back into the oxidation ditches, and thus the creation of VFAs. This fermenter would be part of a capital project and is evaluated in the 'Phosphorus Removal Feasibility Report'. Another way to add VFAs is to accept supplemental influent flow that has high concentrations of VFAs. This can be via septic haulers or industries. The Village will be mindful of these opportunities should they become available.

3.2.7 Optimization Recommendations Summary – The East WWTF's effluent total phosphorus concentration averages 1.46 mg/L which is nearly 150% of the 1.0 mg/L limit that will become mandatory for the WWTF on November 30, 2018. The East WWTF currently lacks the key components and infrastructure to meet the upcoming phosphorus regulations. During the Phosphorus Discharge Optimization Plan, several potential actions were evaluated to optimize the East WWTF's phosphorus discharge.

Although the facility appears unable to consistently reduce phosphorus to the upcoming effluent limit of 1.0 mg/L using their current equipment, the WWTF staff will continue to utilize the SRT and DO tracking sheets to help optimize the phosphorus removal performance. Corresponding efforts to decrease SRT will help disperse phosphorus with the solids by reducing secondary release of soluble phosphorus from older biosolids. The Village will target a SRT of 20 days, through incrementally increasing the amount of sludge wasted to the Aerobic Digesters and the subsequent increase in BFP operations. Effectiveness of this plan may be limited in cold weather months due to operational challenges with the Aerobic Digesters. More closely monitoring the DO in the oxidation ditches will provide the best opportunity to optimize aerobic zones and create near-anaerobic conditions in the outer tanks. The Village may also see a reduction in the costs used to aerate the wastewater if, due to monitoring the DO, the wastewater is aerated more efficiently.

In order to meet the impending 1.0 mg/L total phosphorus effluent limit, per the current NPDES permit requirements, the Village will make several facility upgrades which will require capital investment. These upgrades are part of a larger construction project that is intended to provide other enhancements for ease of use and amelioration of damage caused by wear over time. These improvements are not directly related to this report, but a general discussion of the planned improvements follows to highlight some of the ways that nutrient removal can be optimized upon completion of the project.

One project scope item will include adding VFDs and DO probes for each oxidation ditch, which will allow the Village staff to more closely monitor and adjust the DO content of the oxidation ditches. While the configuration of the ditches still will not fully support anaerobic conditions, these improvements will provide the best opportunity to maximize aeration efficiency for better Bio-P removal. In addition to making changes that will optimize biological phosphorus removal, the Village plans to build a new chemical feed building. This feed building will allow for the use of Alum in polishing for both phosphorus and barium concentrations.

Long-term planning of upgrades for a WWTF is a difficult, but necessary task. Although currently regulatory trends are mandating a 1.0 mg/L phosphorus concentration, there is the possibility that future regulatory trends will be more restrictive of phosphorus effluents and may lower the limit. As part of their NPDES Permit, the East WWTF is required to submit a Phosphorus Removal Feasibility Study to the IPEA that studies the steps that would be necessary to lower the phosphorus effluent concentration to 0.5 mg/L and 0.1 mg/L. The Phosphorus Removal Feasibility Study for this facility is due to the IEPA on the same date as the Phosphorus Discharge Optimization Plan, November 30, 2016.

While phosphorus will be removed using Alum, the chemical feed rate-limiting agent in Huntley's WWTFs will likely be barium, due to the high levels of barium discharged to the sanitary system from the Village's drinking

water treatment plants. There is no known biological treatment for barium removal, so all treatment must be accomplished chemically. The Village has been utilizing Alum effectively for barium removal at its West WWTF for a number of years, and has recently begun utilizing it at the East WWTF to meet the limits established in the NPDES Permit. To perform future Bio-P removal optimization by turning off the Alum feed system, the Village may require an effluent barium exemption from the IEPA for a period of time to test Bio-P removal performance without the use of chemical.

3.2.8 General Cost Considerations - As stated previously, the East WWTF operators plan to continue monitoring DO (with hand-held probes) and SRT to optimize the phosphorus effluent. The monitoring of DO and SRT does not require a large capital investment and can be used to optimize the plant functions on a day to day basis based on operator input. When needed, lab sampling performed by an outside laboratory will be completed to ensure that the operators have enough information to make informed decisions about plant operations. The Village currently budgets $5,000 per year for sewage testing split between both facilities.

Based on historic DO sampling, some energy cost savings should be expected through lowering of oxygen required to meet target DO levels in the oxidation ditches. However, by decreasing SRT, operational costs for the biosolids process will increase. Additional energy costs will be incurred for Aerobic Digester aeration and BFP operations; additional chemical costs will be incurred for BFP operations; and sludge hauling costs will increase due to the additional dewatered biosolids created. A net operational cost increase should be expected through these changes.

3.2.9 Proposed Implementation Schedule – As evidenced by the DO and SRT tracking completed, the Village has already begun optimization at the East WWTF. Until the future upgrades to the East WWTF can be completed as required to meet the pending 1.0 mg/L effluent limit, tracking DO and SRT with corresponding operational adjustments will continue to be utilized to optimize phosphorus removal at the facility. Per the NPDES Permit, construction to upgrade the facility to meet the 1.0 mg/L total phosphorus effluent limit must be completed by May 28, 2018. The Village will then have until November, 2018 to optimize treatment before the 1.0 mg/L effluent limit becomes effective.

3.3 West WWTF

3.3.1 Overview - Huntley's West WWTF was originally constructed in 1999 and has since then undergone several expansions and currently has a 2.6 MGD DAF capacity. Exhibit 3-11 displays an aerial view and Exhibit 3-12 outlines the flow process of the West WWTF.

Exhibit 3-11: Existing West WWTF Aerial View

Village of Huntley, IL

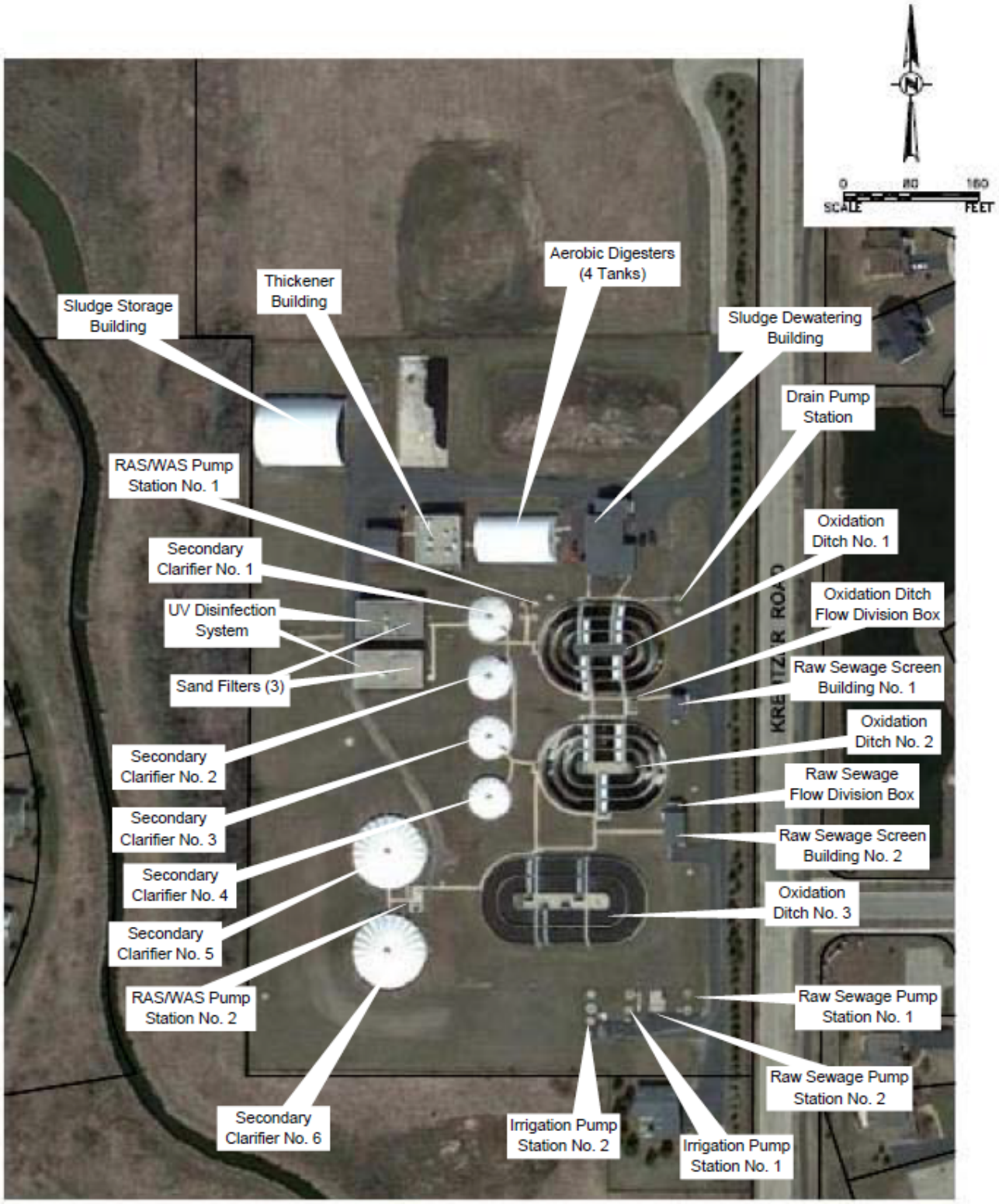
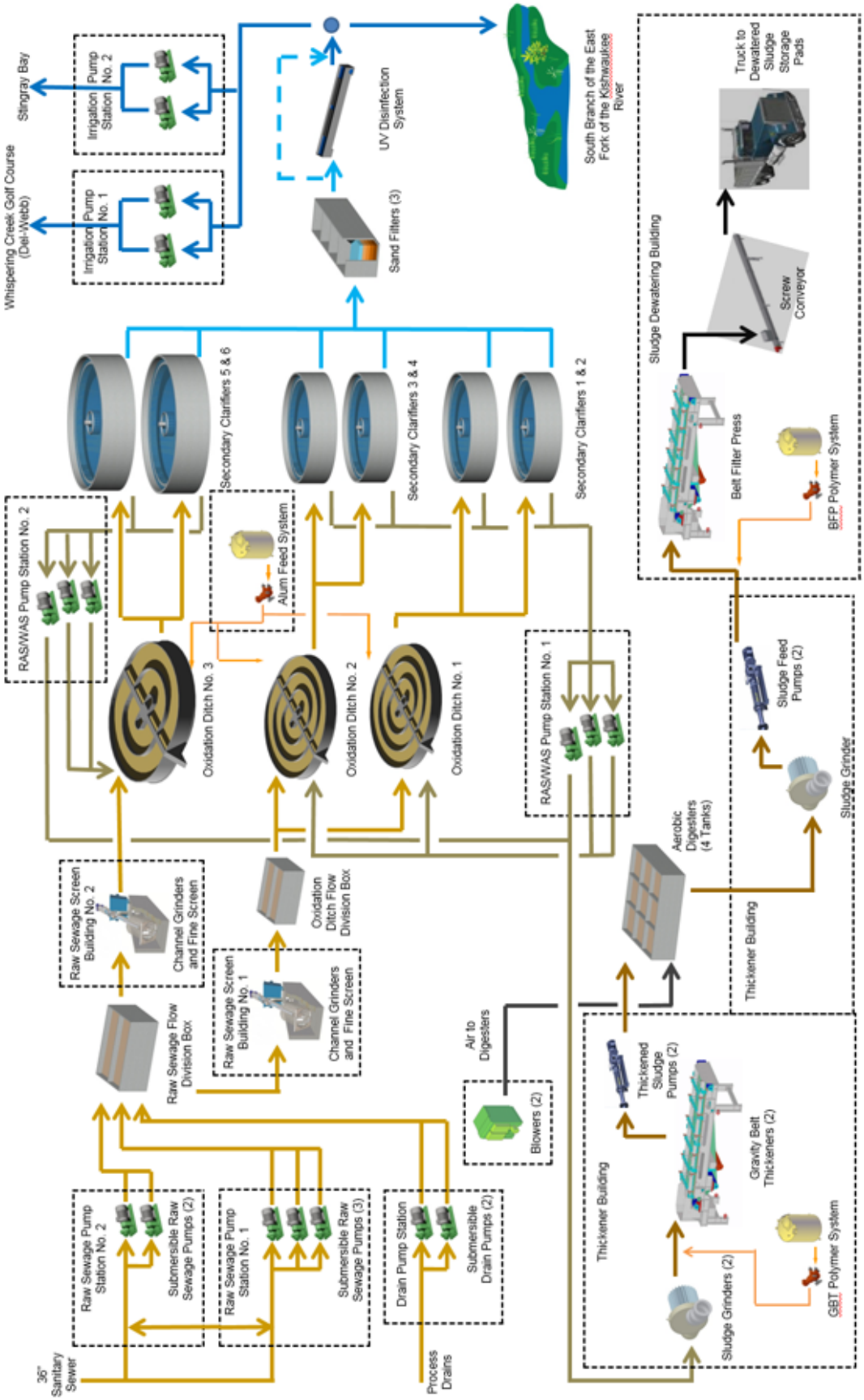


Exhibit 3-12: Existing West WWTF Process Flow Diagram

Village of Huntley, IL



There are three (3) separate oxidation ditches, although current flow volumes to the WWTF were such that only one of the oxidation ditches (Oxidation Ditch No. 3) was in operation during the testing and analysis included in this plan. All three of the oxidation ditches were designed with equipment supplied by Evoqua (Envirex). Oxidation Ditches No. 1 and 2 are each 3-ring arrangements, which are a more traditional configuration for promoting Bio-P removal, as the outer ring has the necessary volume and equipment to be operated effectively as an anaerobic zone, the inner channel operated as an aerobic zone, and the middle channel operated as a "swing" zone – buffering between the anaerobic and aerobic zones. Oxidation Ditch No. 3 is a 2-ring arrangement, which makes it more difficult to create an anaerobic zone while still maintaining an aerobic zone necessary for nitrification (ammonia removal).

Oxidation Ditch No. 3 and the outer ring drives for Oxidation Ditch No. 1 are equipped with VFDs. Oxidation Ditch No. 2 and the middle/inner rings of Oxidation Ditch No. 1 are not equipped with VFDs, which limits the ability to adjust aeration in individual zones of these ditches. Permanent DO and ORP probes have been utilized in each of the oxidation ditches for monitoring and control.

The Aerobic Digesters do not have automatic controls for cycling of air to promote nitrification/denitrification. Therefore, the operations typically better promote nitrification over denitrification. The lack of denitrification can result in side-stream flows that are high in nitrates, which will compete against the PAOs in the oxidation ditches for Bio-P removal.

It is important to note that the West WWTF already has a 1.0 mg/L Total Phosphorus effluent limit, as well as a 2.0 mg/L Barium effluent limit. Due to these effluent limits, this facility employs the use of an Alum Feed System. This system was operational during the testing and analysis related to this plan. Therefore, the true Bio-P removal performance cannot be determined from the results herein. Instead, the focus will be upon general methods for improving Bio-P removal performance based upon existing treatment and controls processes currently employed at the West WWTF.

3.3.2 Analysis Nutrient Sampling – As part of the Phosphorus Discharge Optimization plan, the influent and effluent phosphorus were tested along with several other important constituents. Appendix D shows all influent and effluent testing for the West WWTF that occurred from October, 2014 through February, 2016.

Exhibit 3-13: West WWTF Influent/Effluent Analysis (10/2014-02/2016)

Village of Huntley, IL

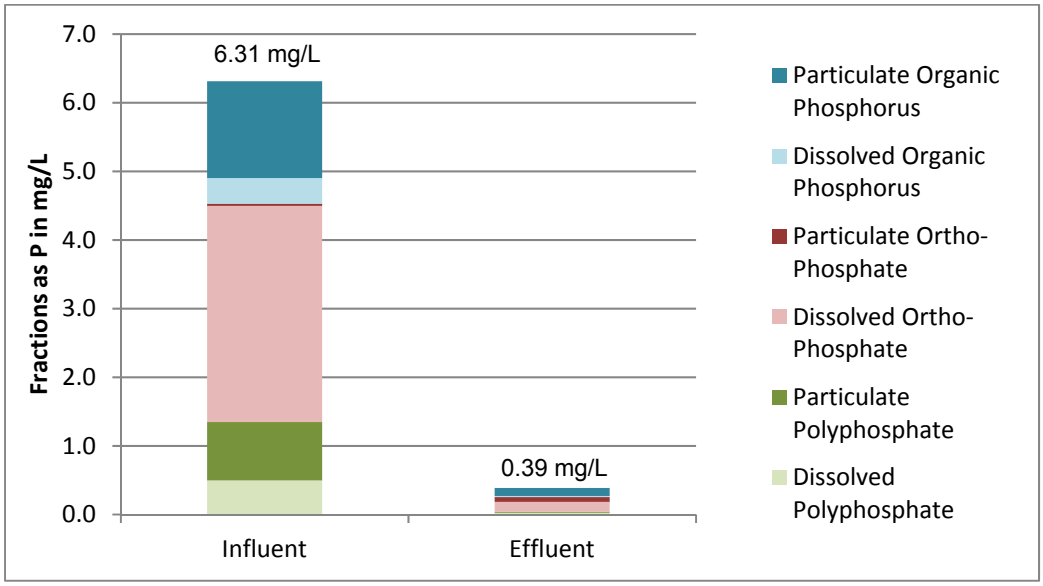


Exhibit 3-14: West WWTF Effluent Total Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

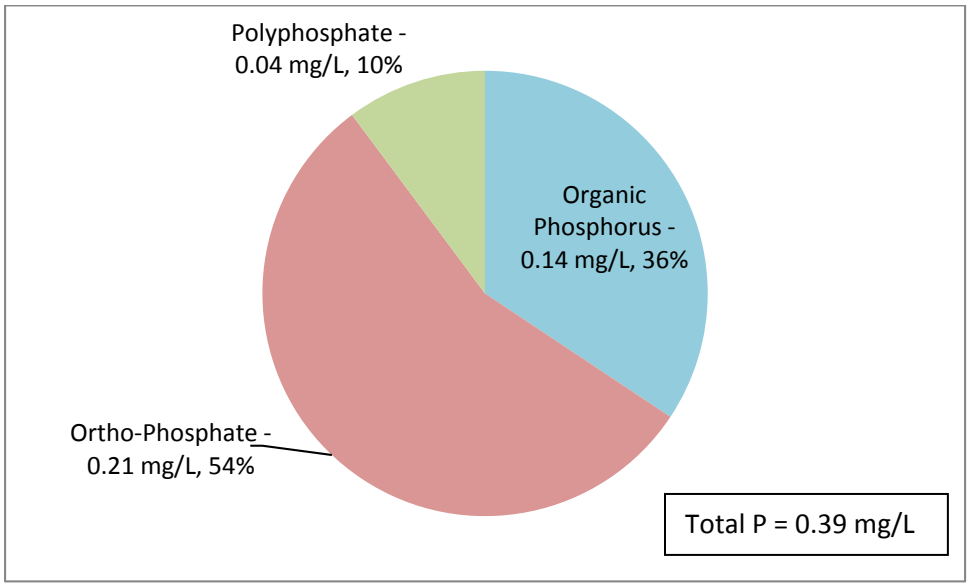


Exhibit 3-15: West WWTF Effluent Particulate Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

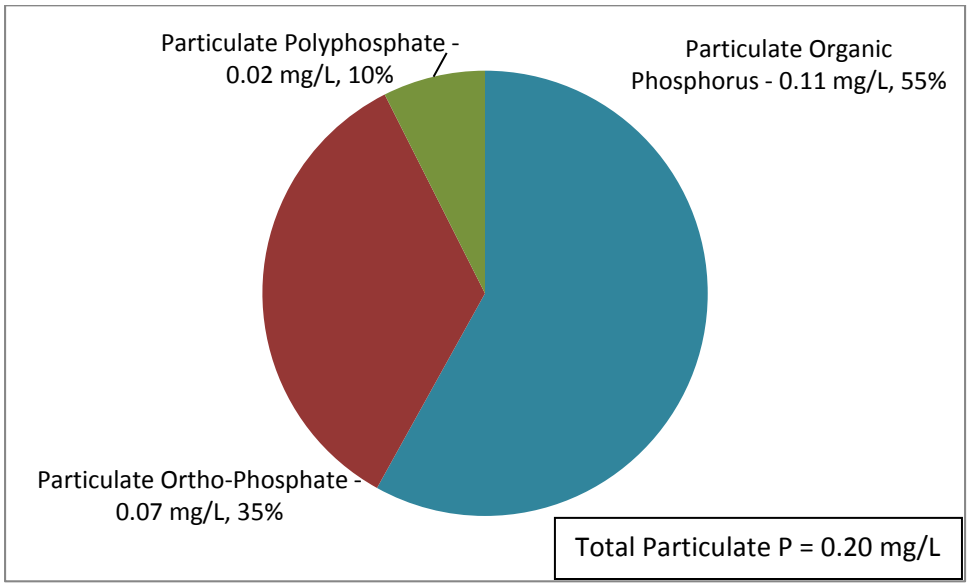


Exhibit 3-16: West WWTF Effluent Dissolved Phosphorus Speciations (10/2014-02/2016)

Village of Huntley, IL

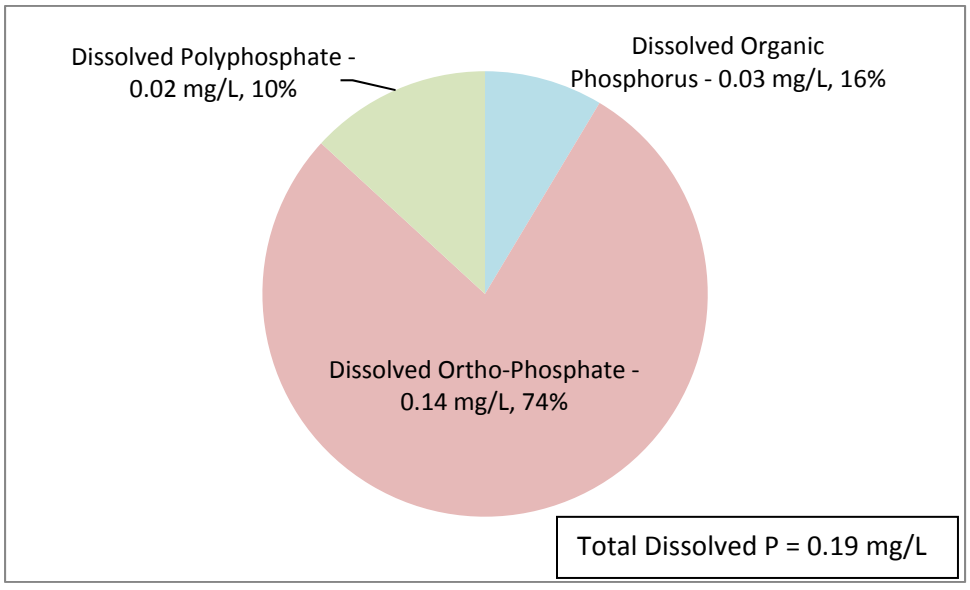


Exhibit 3-17: West WWTF Effluent Dissolved vs. Particulate Phosphorus Speciations (10/2014-02/2016)
Village of Huntley, IL

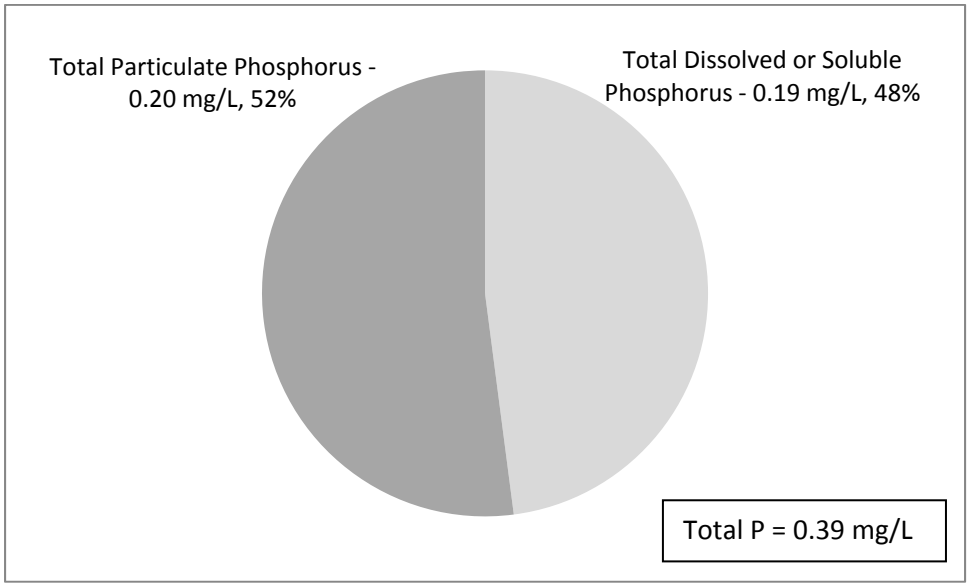
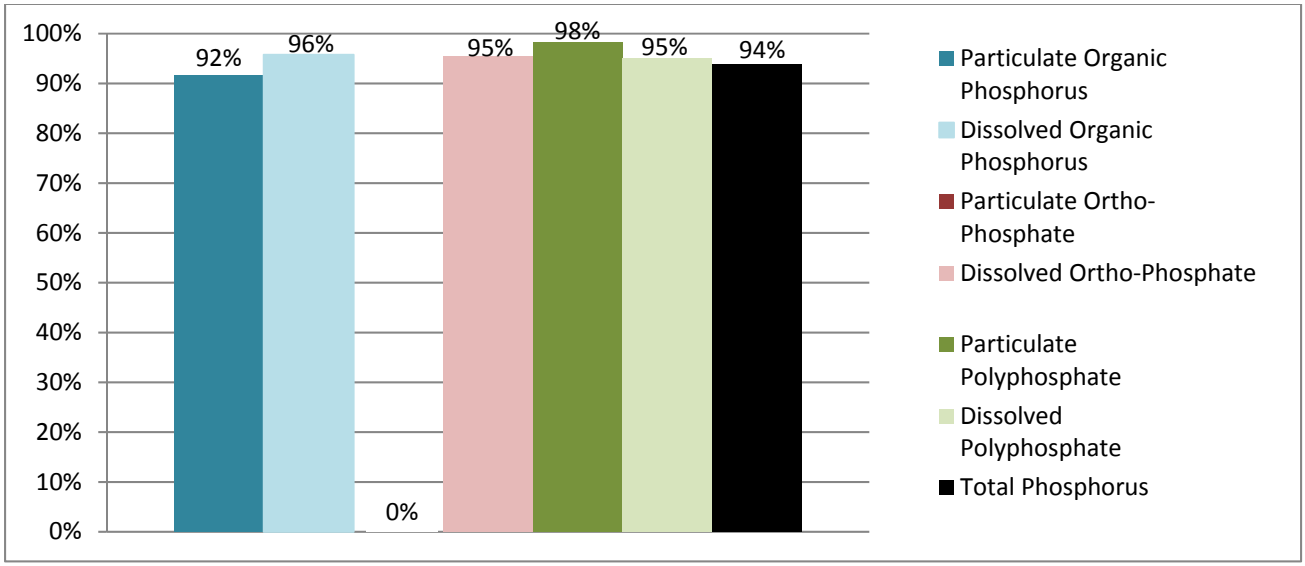


Exhibit 3-18: West WWTF Speciated Removal Efficiency (10/2014-02/2016)
Village of Huntley, IL



The influent and effluent analysis shows that the overall phosphorus removal from the West WWTF is an excellent 94%. The West WWTF exhibits consistent phosphorus removal across all phosphorus fractions except for particulate ortho-phosphate which increases from 0.03 mg/L in the influent to 0.07 mg/L in the effluent as shown by the averages during the phosphorus testing. At such low concentrations, this could be somewhat attributed to laboratory error. Another likely reason is that such a large portion of the total phosphorus is converted to particulate form, and the clarifiers and sand filters simply cannot remove all of the particulate Ortho-P. A majority of the conversion from soluble/dissolved forms to insoluble/particulate forms is likely driven by the Alum feed system. As such, it is difficult to make any tangible conclusion from this data about Bio-P removal performance.

Influent sampling also included BOD, VFAs, and rbCOD to further gauge the conditions for optimal Bio-P removal. Appendix D includes the testing results and Table No. 3-3 includes the ratios of these parameters to the influent phosphorus concentrations over the same sampling period, and compares them to the desired ratios conducive for Bio-P removal. In each case, the observed ratio was greater than the desired minimum ratio. This indicates that Bio-P removal to 1.0 mg/L is possible given the proper physical and operational treatment mechanisms.

Table No. 3-3: West WWTF Influent Conditions for Bio-P Removal

Village of Huntley, IL

Parameter Ratio	Desired Ratio	Observed Ratio
BOD:TP	>20 :1	34.5 :1
rbCOD:TP	>10 :1	13.8 :1
VFA:TP	>4 :1	5.4 :1

G:\ Publ\ Huntley\ 2015\ HU150120 16 Wastewater System Planning Documents\ 01B - Phosphorus Discharge Optimization Plan\ Engl Water Quality Samples\ [Phosphorus Ratios.xlsx]Sheet1

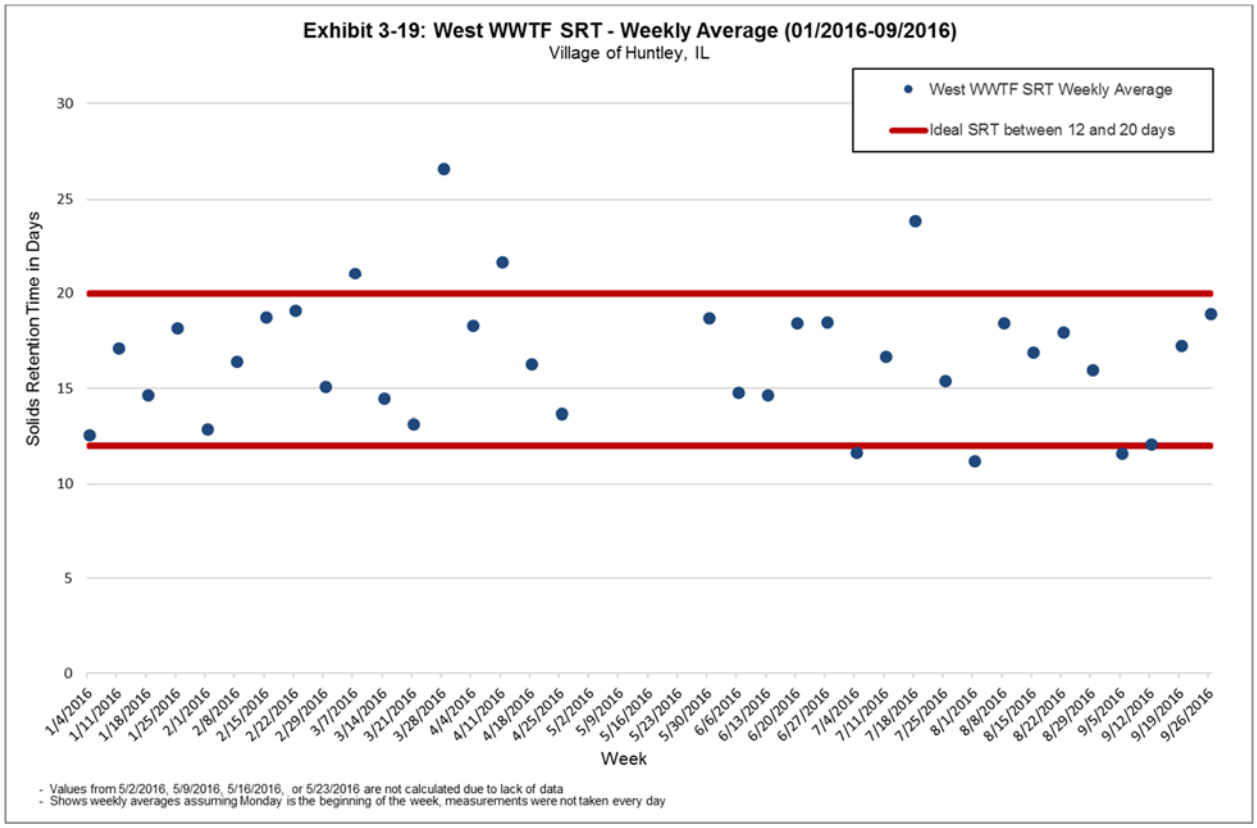
Notes:
-BOD values from DMR Averages 1/2014-12/2015
-rbCOD values from phosphorus testing 10/2014-2/2016
-During phosphorus testing 10/2014-2/2016, 11 of 13 VFA samples measured non-detect (<50 mg/L). An assumed value of half of the non-detect limit, 25 mg/L, was assumed for all non-detect samples

3.3.3 SRT Tracking – As part of the Phosphorus Discharge Optimization Plan, the SRT of the West WWTF was tracked from January, 2016 to September, 2016; the tracking sheets can be found in Appendix G with a summary seen in Exhibit 3-19. Phosphorus must be removed through solids wasting; therefore, proper SRT is vital for optimum removal.

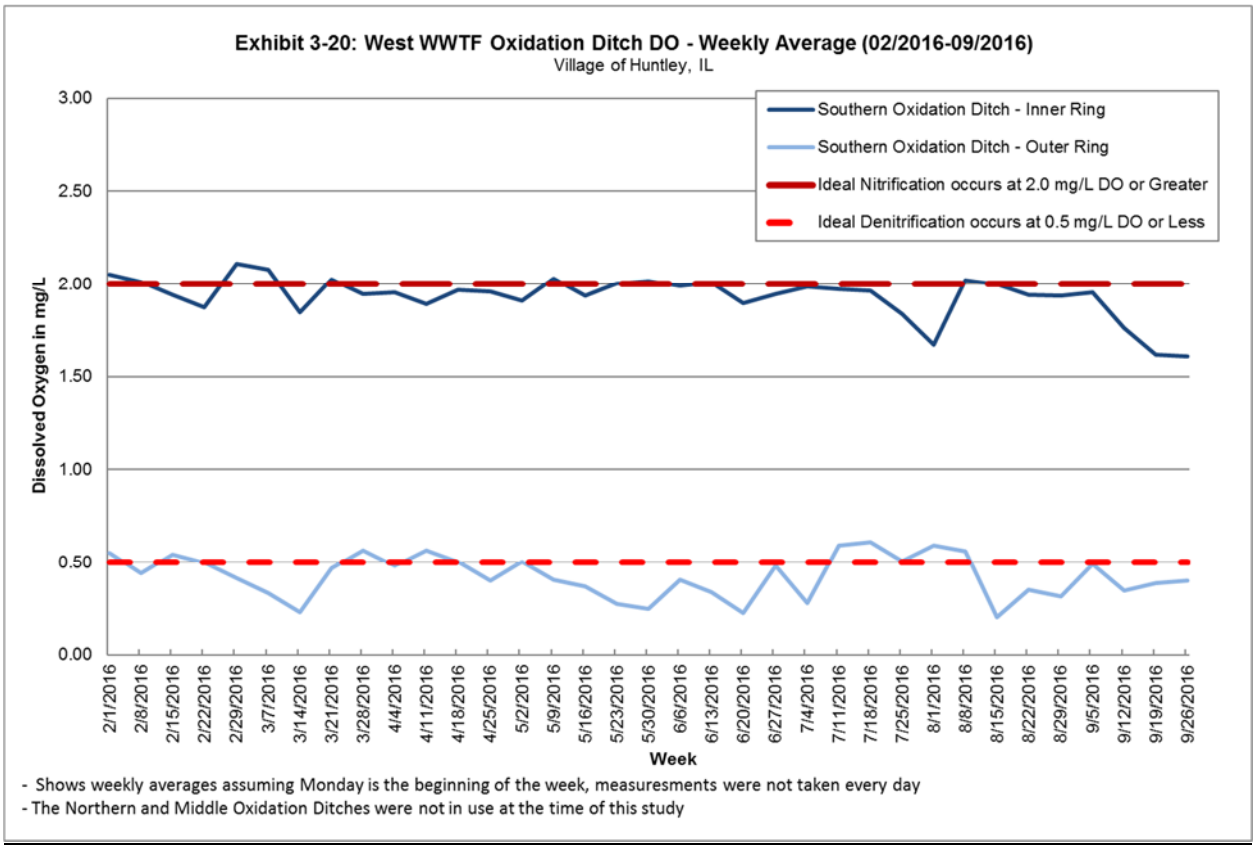
SRT is not a measured parameter; rather, it is calculated by taking the total solids inventory divided by the total solids wasted. The Village has maintained an excellent SRT through its use of equipment. Most of the measured values have been within the target range with several falling high and several falling low.

Alum is added to many WWTFs to facilitate better uptake of problem constituents such as barium and phosphorus into the solids. The alum added to the West WWTF was measured to be 100 gallons per day total between pumps. The alum is dosed equally over the course of the day.

Because the West WWTF is already meeting the phosphorus discharge limit, one option for facility optimization could be to decrease the Alum addition to better understand the Bio-P removal performance. If the Village can optimize Bio-P removal, they may be able to decrease their need and cost for Alum. However, the Village would require permission from the IEPA for a temporary variance to their barium and phosphorus effluent limits while they optimized Bio-P removal.



3.3.4 DO Tracking – As stated in section 3.2.4, the optimization of aeration is beneficial for nitrogen and phosphorus removal. Appendix H outlines DO testing results that were taken from the West WWTF during the months of February through September and Exhibit 3-20 provides a summary of the data. The weekly results show very stable DO concentrations; the aeration zone in the inner ring is typically very close to the 2.0 mg/L recommended for the oxidation of TKN to nitrite and nitrate. The DO in the outer ring typically hovers at or below the 0.5 mg/L recommended zone for denitrification.



3.3.5 Side-Stream Flows – As in the Section 3 introduction, the optimization of side-stream flows can be a cost-effective and vital way to treat nutrient levels in wastewater. As part of the Phosphorus Discharge Optimization Plan, the side streams were evaluated for phosphorus, total nitrogen, nitrite/nitrate, and TKN.

At the West WWTF, a sample was obtained from a mix of the Gravity Belt Thickener (GBT) and BFP filtrate flows. The total phosphorus measured was 0.92 mg/L; the total nitrogen measured was 4.80 mg/L. Of the nitrogen measured, 3.70 mg/L was measured as nitrate/nitrate and 1.10 mg/L was measured as TKN. While the total phosphorus measured in the side streams was approximately three times the effluent total phosphorus, it was still much less than the influent total phosphorus. This is indicative of good capture and removal of phosphorus in the biosolids process and minimization of secondary phosphorus release. The total nitrogen was somewhat less than the effluent and far lower than the influent total nitrogen, which indicates some denitrification in the biosolids process.

Table No. 3-4 below shows the side stream sampling completed at the West WWTF; unlike the East WWTF, the West WWTF is showing that not all of the TKN was oxidized to nitrate/nitrite. The West WWTF, similar to the East WWTF, is unlikely to reap much of a benefit from side-stream treatment. The nutrient levels in the side streams aren't high and the current layout is already providing adequate removal of nutrients for their current permit.

Table No. 3-4: West WWTF GBT and BFP Filtrate Nutrient Sampling (02/2016)

Village of Huntley, Illinois

Sampling Date	McHenry Analytical Water Laboratory, Inc. / PDC	Total Phosphorus (as P) (mg/L)	Total Nitrogen (mg/L)	Nitrate/Nitrite - N (mg/L)	Total Kjeldahl Nitrogen (TKN) (mg/L)
2/4/2016	16B0424 / 6021125	0.92	4.80	3.70	1.10

G:\Public\Huntley\2015\HU150120 16 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\Water Quality Sampling\[Nutrient WQ Sampling Results.xlsm]Side Stream Samples

3.3.6 Other Optimization Strategies – The phosphorus discharge optimization study reviews optimization strategies which do not require capital costs to complete. Optimization strategies may include items such as monitoring flows, adjusting flowrates, adjusting aeration rates, etc. In addition to evaluating the SRT, DO, and side-stream flow as outlined above, other phosphorus removal optimization options should be evaluated. For instance, adding baffles to existing units can improve microorganism conditions by creating divided anaerobic, anoxic, and aerobic zones. Creating these zones would allow for the tanks to more efficiently act as selectors and to optimize nutrient removal. Adding baffles to an oxidation ditch is a difficult proposition due not only to constructability, but also because it would result in dead zones in the channels that could become septic. Therefore, this is not a viable option for the West WWTF.

Another optimization strategy involves operating the oxidation ditches to act as a plug-flow system. Oxidation ditches by nature act as a plug-flow system, although not in the same way as aeration tanks. To enhance the oxidation ditch plug flow system, adding mixers would be required. Two of the oxidation ditches (Oxidation Ditches No. 1 and 2) already have a 3rd ring, which helps promote an extended anaerobic zone and this meets the intent of this recommendation. Oxidation Ditch No. 3, which presently has two rings, was built to be upgraded to a three ring structure when the facility undergoes its next planned construction phase.

Reconfiguring the flow through the existing basins may also enhance biological nutrient removal. For the reconfiguring to be successful, a study into the hydraulic retention time (HRT) and SRT of the environments would have to be considered. Reconfiguring the plant would result in costly and time consuming modifications to current equipment and piping systems, and would have little to no observed benefit.

Finally, increasing VFAs was another way to increase phosphorus uptake by increasing PAOs. VFAs are a result of the fermentation of organic material and act as a food source for PAOs and other microbes. A way of increasing VFAs for the West WWTF would be to add a new fermenter to promote the fermentation of RAS, prior to introduction back into the oxidation ditches, and thus the creation of VFAs. Another way to add VFAs is to accept supplemental influent flow that has high concentrations of VFAs. This can be via septic haulers or industries. While there are no such current opportunities available, the Village will be mindful of these opportunities should they become available.

3.3.7 Optimization Recommendations Summary – The West WWTF's effluent total phosphorus concentration average of 0.33 mg/L during the testing period is less than the permitted 1.0 mg/L limit. Although they are already maintaining compliance, the Village may be able to reduce the cost needed to treat wastewater or may be able to cost-effectively reduce phosphorus in the effluent to an even greater extent. Additionally, although currently regulatory trends are mandating a 1.0 mg/L phosphorus concentration, there

is the possibility that future regulatory trends will be more restrictive of phosphorus effluents and may lower the effluent limit to 0.5 mg/L or 0.1 mg/L. As such, the Village will continue striving towards full optimization of Bio-P removal. In this Phosphorus Discharge Optimization Plan, several potential actions were evaluated in order to optimize the West WWTF's phosphorus discharge.

Exhibits No. 3-19 and 3-20 show the West WWTF has already undergone significant optimization related SRT and DO conditions for biological phosphorus removal. The Village will continue to utilize the DO and SRT spreadsheet tools to track these parameters so that they can continue to operate at ideal situations for biological phosphorus removal.

The West WWTF also has an upcoming modernization project that involves items that will help further optimize BPR, amongst general upgrades. These improvements are not directly related to this report, but a general discussion of the planned improvements follows to highlight some of the ways that nutrient removal can be further optimized upon completion of the project. One project scope item will include adding VFDs to the Middle Oxidation Ditch (No. 2), which will allow for better DO control when the ditch is in use. While presently, only the South Oxidation Ditch (No. 3) is used, the Middle Oxidation Ditch (No. 2) and Northern Oxidation Ditch (No. 1) are likely to be used in the future as the Village of Huntley continues to see residential and non-residential buildout and subsequent flows to the WWTF. Another scope item is adding a 1.5-meter BFP system to their current biosolids dewatering process, which includes a 1.0-meter BFP system. This additional dewatering capacity will allow more biosolids to be processed, thus providing potential for lowering SRT. Furthermore, controls will be added to the Aerobic Digester aeration system to better manipulate the DO in the tanks. This will help optimize nitrification/denitrification in the digesters, which will in turn reduce nutrients returning to the head of the plant through side-stream flows.

While phosphorus is removed using Alum, the chemical feed rate-limiting agent in Huntley's WWTFs is likely barium, due to the high levels of barium discharged to the sanitary system from the Village's drinking water treatment plants. There is no known biological treatment for barium removal, so all treatment must be accomplished chemically. The Village has been utilizing Alum effectively for barium removal at its West WWTF for a number of years. In order to perform future Bio-P removal optimization by turning off the Alum feed system, the Village may require an effluent barium exemption from the IEPA for a period of time to test Bio-P removal performance without the use of chemical.

3.3.8 General Cost Considerations - As stated previously, the West WWTF plans to continue monitoring DO and SRT in order to optimize the phosphorus effluent. The monitoring of DO and SRT does not require a large capital investment and can be used to optimize the plant functions on a day to day basis based on operator input. When needed, lab sampling performed by an outside laboratory will be completed in order to ensure that the operators have enough information to make informed decisions about plant operations. The Village currently budgets $5,000 per year for sewage testing split between both facilities when testing cannot be completed by the facilities themselves.

3.3.9 Proposed Implementation Schedule - The Village is currently using DO and SRT tracking sheets to optimize SRT and will continue to do so at this time. Additionally, the Village will continue to implement best practices to optimize both the cost of treatment and the quality of the effluent exiting the facility. Since the facility has an existing 1.0 mg/L effluent limit, there is no strict guideline for additional improvements.

Section 4: Recommended Plan Summary

The optimization of phosphorus removal, as defined in the Village of Huntley East WWTF NPDES Permit Special Condition 19, can be classified into either reducing phosphorus in the WWTF influent flow through controlling sources of excessive phosphorus or reducing phosphorus in the WWTF effluent flow through plant optimization of existing processes. This report has confirmed Huntley has taken proactive steps to control the influent phosphorus and has identified a number of opportunities to reduce the amount of phosphorus leaving the plant.

A small portion of the influent phosphorus comes from chemicals added to the drinking water system for corrosion control. A small portion likely also comes from the limited amount Infiltration and Inflow observed in the system. Phosphorus from both drinking water chemicals and I/I are a relatively small percentage of the overall phosphorus in the system and do not offer practical pathways for source reduction. Traditionally, a greater portion is likely attributed to commercial/industrial sources, including metal finishers, metal fabricators, dairy processing, cleaners, and other miscellaneous manufacturing facilities.

The Village has performed a baseline survey of its commercial/industrial users and has an Industrial Pretreatment Ordinance. Diligence in monitoring the flows from these sources has helped identify significant contributors of phosphorus to the WWTF. Additionally, as seen in Table No. 2-1 several businesses have implemented pretreatment systems which ensure that the WWTFs owned by the Village are not overloaded with unexpected or large amounts of contaminants. The Village should consider adding a local limit for phosphorus in their Pretreatment Ordinance to officially set a maximum allowable phosphorus concentration for all contributors to the system. However, the relatively low amount of influent phosphorus at each WWTF is indicative that the Village's proactive practices have led to positive results. Summary discussion of influent phosphorus particular to each WWTF is included in Sections 4.1 and 4.2 below.

Removal of phosphorus through WWTF processes generally entails conversion of phosphorus to particulate forms that can be taken out via the biosolids system. This can be done by adding a chemical to aid in the necessary reaction to particulate form and in settling out the solids. However, a more cost effective approach is to use the biology of the WWTF to drive the necessary reactions, wherein the phosphorus will be bound in the solids, settled, and removed from the effluent flow. Optimization of this Bio-P removal is a key goal for the Village and a focus of this report.

Each of the Village's WWTFs utilizes extended aeration oxidation ditches for biological treatment with secondary clarification. Extensive sampling was done at the WWTFs to speciate phosphorus to gain an understanding of the existing removal efficiencies and fate of the different forms of phosphorus within the WWTFs. The Village has tracked SRT at each facility to understand the solids profile and possible optimization options. They have also tracked DO in their oxidation ditches to better understand whether anaerobic conditions are created, which enhance the Bio-P process. Summary discussion of phosphorus reduction through WWTF treatment particular to each WWTF is included in Sections 4.1 and 4.2 below.

4.1 East WWTF

The East WWTF influent total phosphorus sampling performed in conjunction with this report yielded an average of 4.97 mg/L, which is on the low end of the range of typical WWTF influent total phosphorus. This indicates that the commercial/industrial businesses tributary to the East WWTF do not contribute a significant amount of phosphorus. It is unlikely that efforts to further reduce influent phosphorus at the East WWTF would produce significant benefits. Additionally, Huntley's flow and constituent monitoring has provided evidence that there are no significant commercial contributors.

The East WWTF's effluent total phosphorus sampling performed in conjunction with this report yielded an average of 1.46 mg/L. The facility was not designed for Bio-P removal and currently lacks some key components and infrastructure to meet the upcoming phosphorus regulations (1.0 mg/L). The operators at the East WWTF are operationally limited in their ability to create anaerobic zones in their oxidation ditches and to significantly reduce their SRTs. Nonetheless, they will continue to monitor these components and make all possible adjustments to optimize these parameters. Particularly, the Village will target a SRT of 20 days, through incrementally increasing the amount of sludge wasted to the Aerobic Digesters and the subsequent increase in BFP operations. Capital improvements to the WWTF are necessary to meet the future 1.0 mg/L and these improvements are identified in greater detail in the Phosphorus Removal Feasibility Study, which is submitted separately.

4.2 West WWTF

The West WWTF influent total phosphorus sampling performed in conjunction with this report yielded an average of 6.31 mg/L, which is squarely within the range of typical WWTF influent total phosphorus. This indicates that the commercial/industrial users tributary to the West WWTF do not contribute a significant amount of phosphorus, although their contributions appear to be higher than those related to the East WWTF. The Village will continue to monitor users in this part of the system to maintain their already low amount of influent phosphorus concentration.

The West WWTF's effluent total phosphorus sampling performed in conjunction with this report yielded an average of 0.39 mg/L. However, it is very important to note that the Village was heavily dosing Alum during this time in order to meet their barium effluent limit. The facility was partially designed for Bio-P removal, as it includes some equipment and instrumentation to create anaerobic conditions in their oxidation ditches. Furthermore, this facility has operational sand filters. Their SRT and DO tracking indicates that they operate in conditions ideal for Bio-P removal to 1.0 mg/L. Unfortunately, due to the heavy dosing of Alum during the analysis period, it is impossible to gauge the current effectiveness of Bio-P removal at the facility. In order to properly understand this, the Alum system must be turned off for a period of time, which would require temporary phosphorus and barium effluent exemptions from the regulatory agencies. Nonetheless, the Village will continue to closely monitor and optimize the SRT and DO conditions at the facility.

References

1) **Review of Phosphorus Control Measures in the United States and Their Effects on Water Quality -** http://pubs.usgs.gov/wri/wri994007/pdf/wri99-4007.pdf
2) **Cost Estimate of Phosphorus Removal at Wastewater Treatment Plants -** http://epa.ohio.gov/Portals/35/wqs/nutrient_tag/OhioTSDNutrientRemovalCostEstimate_05_06_13.pdf
3) **Phosphorus Removal from Wastewater -** http://www.lenntech.com/phosphorous-removal.htm
4) **Case Studies on Implementing Low-Cost Modifications to Improve Nutrient Reduction at Wastewater Treatment Plants -** https://www.epa.gov/sites/production/files/2015-08/documents/case_studies_on_implementing_low-cost_modification_to_improve_potw_nutrient_reduction-combined_508_-_august.pdf
5) **Potential Nutrient Reduction by Treatment Optimization and Treatment Upgrades -** http://bacwa.org/wp-content/uploads/2015/05/BACWA_ScopingEvalPlan_Final.pdf
6) **Nutrient Removal – Total Phosphorus –** http://dnr.wi.gov/regulations/opcert/documents/StudyGuidePhosphorus.pdf

Appendix A

East WWTF NPDES Permit

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-2829

BRUCE RAUNER, GOVERNOR LISA BONNETT, DIRECTOR

217/782-0610

May 28, 2015

Village of Huntley
10987 Main Street
Huntley, Illinois 60142

Re: Village of Huntley - East WWTP
NPDES Permit No. IL0029238
Final Permit

Gentlemen:

Attached is the final NPDES Permit for your discharge. The Permit as issued covers discharge limitations, monitoring, and reporting requirements. Failure to meet any portion of the Permit could result in civil and/or criminal penalties. The Illinois Environmental Protection Agency is ready and willing to assist you in interpreting any of the conditions of the Permit as they relate specifically to your discharge.

The Agency has begun a program allowing the submittal of electronic Discharge Monitoring Reports (NetDMRs) instead of paper Discharge Monitoring Reports (DMRs). If you are interested in NetDMRs, more information can be found on the Agency website, http://epa.state.il.us/water/net-dmr/index.html. If your facility is not registered in the NetDMR program, a supply of preprinted paper DMR Forms for your facility will be sent to you prior to the initiation of DMR reporting under the reissued permit. Additional information and instructions will accompany the preprinted DMRs upon their arrival.

The attached Permit is effective as of the date indicated on the first page of the Permit. Until the effective date of any re-issued Permit, the limitations and conditions of the previously-issued Permit remain in full effect. You have the right to appeal any condition of the Permit to the Illinois Pollution Control Board within a 35 day period following the issuance date.

Should you have questions concerning the Permit, please contact Kaushal Desai at 217/782-0610.

Sincerely,

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:KKD:14060901.bah

Attachment: Final Permit
cc: Records
Compliance Assurance Section
Des Plaines Region
Billing
CMAP
Facility
US EPA

NPDES Permit No. IL0029238

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Reissued (NPDES) Permit

Expiration Date: May 31, 2020

Issue Date: May 28, 2015
Effective Date: June 1, 2015

Name and Address of Permittee:

Village of Huntley
10987 Main Street
Huntley, Illinois 60142

Facility Name and Address:

Village of Huntley - East WWTP
11313 Dundee Road
Huntley, Illinois 60142
(McHenry County)

Receiving Waters: Huntley Branch

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of the Ill. Adm. Code, Subtitle C, Chapter I, and the Clean Water Act (CWA), the above-named Permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the Permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:KKD:14060901.bah

NPDES Permit No. IL0029238

Effluent Limitations, Monitoring, and Reporting

FINAL

Discharge Number(s) and Name(s): 001 STP Outfall

Load limits computed based on a design average flow (DAF) of 1.8 MGD (design maximum flow (DMF) of 4.5 MGD).

From the effective date of this Permit until the expiration date, the effluent of the above discharge(s) shall be monitored and limited at all times as follows:

	LOAD LIMITS lbs/day DAF (DMF)*			CONCENTRATION LIMITS mg/L				
Parameter	Monthly Average	Weekly Average	Daily Maximum	Monthly Average	Weekly Average	Daily Maximum	Sample Frequency	Sample Type
Flow (MGD)							Continuous	
$CBOD_5$**[1]	150 (375)		300 (751)	10		20	3 Days/Week	Composite
Suspended Solids[1]	180 (450)		360 (901)	12		24	3 Days/Week	Composite
pH	Shall be in the range of 6 to 9 Standard Units						3 Days/Week	Grab
Fecal Coliform***	Daily Maximum shall not exceed 400 per 100 mL (May through October)						3 Days/Week	Grab
Chlorine Residual****						0.05	****	Grab
Ammonia Nitrogen: As (N)								
April-May/Sept.-Oct.	17 (41)	57 (143)	71 (176)	1.1	3.8	4.7	3 Days/Week	Composite
June-August	17 (41)	50 (124)	74 (184)	1.1	3.3	4.9	3 Days/Week	Composite
Nov.-Feb.	21 (53)		75 (188)	1.4		5.0	3 Days/Week	Composite
March	21 (53)	57 (143)	71 (176)	1.4	3.8	4.7	3 Days/Week	Composite
Total Phosphorus (as P)*****	15 (38)			1.0			1 Day/Week	Composite
Total Nitrogen	Monitor only						1 Day/Month	Composite
Barium	30 (75)		60 (150)	2.0		4.0	1 Day/Month	Composite
				Monthly Average not less than	Weekly Average not less than	Daily Minimum		
Dissolved Oxygen								
March-July				N/A	6.0	5.0	3 Days/Week	Grab
August-February				5.5	4.0	3.5	3 Days/Week	Grab

*Load limits based on design maximum flow shall apply only when flow exceeds design average flow.
**Carbonaceous BOD_5 ($CBOD_5$) testing shall be in accordance with 40 CFR 136.
***See Special Condition 11.
****See Special Condition 10.
***** See Special Condition 18

Flow shall be reported on the Discharge Monitoring Report (DMR) as monthly average and daily maximum.
Fecal Coliform shall be reported on the DMR as a daily maximum value.
pH shall be reported on the DMR as minimum and maximum value.
Chlorine Residual shall be reported on DMR as daily maximum value.
Dissolved oxygen shall be reported on the DMR as a minimum value.
Total Phosphorus shall be reported on the DMR as a monthly average and daily maximum value.
Total Nitrogen shall be reported on the DMR as a daily maximum value.

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Effluent Limitations, Monitoring, and Reporting

FINAL

Discharge Number(s) and Name(s): 001 STP Outfall (Continued from previous page)

[1]BOD_5 and Suspended Solids (85% removal required): In accordance with 40 CFR 133, the 30-day average percent removal shall not be less than 85 percent except as provided in Sections 133.103 and 133.105. The percent removal need not be reported to the IEPA on DMR's but influent and effluent data must be available, as required elsewhere in this Permit, for IEPA inspection and review. For measuring compliance with this requirement, 5 mg/L shall be added to the effluent $CBOD_5$ concentration to determine the effluent BOD_5 concentration.

Percent removal is a percentage expression of the removal efficiency across a treatment plant for a given pollutant parameter, as determined from the 30-day average values of the raw wastewater influent concentrations to the facility and the 30-day average values of the effluent pollutant concentrations for a given time period.

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Influent Monitoring, and Reporting

The influent to the plant shall be monitored as follows:

Parameter	Sample Frequency	Sample Type
Flow (MGD)	Continuous	
BOD_5	3 Days/Week	Composite
Suspended Solids	3 Days/Week	Composite

Influent samples shall be taken at a point representative of the influent.

Flow (MGD) shall be reported on the Discharge Monitoring Report (DMR) as monthly average and daily maximum.

BOD_5 and Suspended Solids shall be reported on the DMR as a monthly average concentration.

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SPECIAL CONDITION 1. This Permit may be modified to include different final effluent limitations or requirements which are consistent with applicable laws and regulations. The IEPA will public notice the permit modification.

SPECIAL CONDITION 2. The use or operation of this facility shall be by or under the supervision of a Certified Class 1 operator.

SPECIAL CONDITION 3. The IEPA may request in writing submittal of operational information in a specified form and at a required frequency at any time during the effective period of this Permit.

SPECIAL CONDITION 4. The IEPA may request more frequent monitoring by permit modification pursuant to 40 CFR § 122.63 and Without Public Notice.

SPECIAL CONDITION 5. The effluent, alone or in combination with other sources, shall not cause a violation of any applicable water quality standard outlined in 35 Ill. Adm. Code 302.

SPECIAL CONDITION 6. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) Forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee may choose to submit electronic DMRs (NetDMRs) instead of mailing paper DMRs to the IEPA. More information, including registration information for the NetDMR program, can be obtained on the IEPA website, http://www.epa.state.il.us/water/net-dmr/index.html.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 25th day of the following month, unless otherwise specified by the permitting authority.

Permittees not using NetDMRs shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Attention: Compliance Assurance Section, Mail Code # 19
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

SPECIAL CONDITION 7. The provisions of 40 CFR Section 122.41(m) & (n) are incorporated herein by reference.

SPECIAL CONDITION 8. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

SPECIAL CONDITION 9. This Permit may be modified to include requirements for the Permittee on a continuing basis to evaluate and detail its efforts to effectively control sources of infiltration and inflow into the sewer system and to submit reports to the IEPA if necessary.

SPECIAL CONDITION 10. For Discharge No. 001, any use of chlorine to control slime growths, odors or as an operational control, etc. shall not exceed the limit of 0.05 mg/L (daily maximum) total residual chlorine in the effluent. Sampling is required on a daily grab basis during the chlorination process. Reporting shall be submitted on the DMR's on a monthly basis.

SPECIAL CONDITION 11. Fecal Coliform limits for Discharge Number 001 are effective May thru October. Sampling of Fecal Coliform is only required during this time period.

SPECIAL CONDITION 12. The Permittee shall conduct semi-annual monitoring of the effluent and report concentrations (in mg/l) of the following listed parameters. Monitoring shall begin three (3) months from the effective date of this permit. The sample shall be a 24-hour effluent composite except as otherwise specifically provided below and the results shall be submitted on Discharge Monitoring Report Forms to IEPA unless otherwise specified by the IEPA. The parameters to be sampled and the minimum reporting limits to be attained are as follows:

STORET CODE	PARAMETER	Minimum reporting limit
01002	Arsenic	0.05 mg/L
01007	Barium	0.5 mg/L
01027	Cadmium	0.001 mg/L

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STORET CODE	PARAMETER	Minimum reporting limit
01032	Chromium (hexavalent) (grab)	0.01 mg/L
01034	Chromium (total)	0.05 mg/L
01042	Copper	0.005 mg/L
00718	Cyanide (grab)(available *** or amenable to chlorination)	5.0 ug/L
00720	Cyanide (total) (grab not to exceed 24 hours)	5.0 ug/L
00951	Fluoride	0.1 mg/L
01045	Iron (total)	0.5 mg/L
01046	Iron (Dissolved)	0.5 mg/L
01051	Lead	0.05 mg/L
01055	Manganese	0.5 mg/L
71900	Mercury (grab)**	1.0 ng/L*
01067	Nickel	0.005 mg/L
00556	Oil (hexane soluble or equivalent) (Grab Sample only)	5.0 mg/L
32730	Phenols (grab)	0.005 mg/L
01147	Selenium	0.005 mg/L
01077	Silver (total)	0.003 mg/L
01092	Zinc	0.025 mg/L

Minimum reporting limits are defined as – (1) The minimum value below which data are documented as non-detects. (2) Three to ten times the method detection limit. (3) The minimum value of the calibration range.

All sample containers, preservatives, holding time, analyses, method detection limit determinations and quality assurance/quality control requirements shall be in accordance with 40 CFR 136.

Unless otherwise indicated, concentrations refer to the total amount of the constituent present in all phases, whether solid, suspended or dissolved, elemental or combined, including all oxidation states.

*1.0 ng/L = 1 part per trillion.
**Utilize USEPA Method 1631E and the digestion procedure described in Section 11.1.1.2 of 1631E.
***USEPA Method 0IA-1677.

The Permittee shall provide a report briefly describing the permittee's pretreatment activities and an updated listing of the Permittee's significant industrial users. The list should specify which categorical pretreatment standards, if any, are applicable to each Industrial User. Permittees who operate multiple plants may provide a single report. Such report shall be submitted within six (6) months of the effective date of this Permit to the following addresses:

U.S. Environmental Protection Agency
Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604
Attention: Water Enforcement and Compliance Assurance Branch

Illinois Environmental Protection Agency
Division of Water Pollution Control
Attention: Compliance Assurance Section, Mail Code #19
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

SPECIAL CONDITION 13. During January of each year the Permittee shall submit annual fiscal data regarding sewerage system operations to the Illinois Environmental Protection Agency/Division of Water Pollution Control/Compliance Assurance Section. The Permittee may use any fiscal year period provided the period ends within twelve (12) months of the submission date.

Submission shall be on forms provided by IEPA titled "Fiscal Report Form For NPDES Permittees".

SPECIAL CONDITION 14. The Permittee shall conduct biomonitoring of the effluent from Discharge Number(s) 001.

Biomonitoring

A. Acute Toxicity - Standard definitive acute toxicity tests shall be run on at least two trophic levels of aquatic species (fish, invertebrate) representative of the aquatic community of the receiving stream. Testing must be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (Fifth Ed.) EPA/821-R-02-012. Unless substitute tests are pre-approved; the following tests are required:

1. Fish - 96 hour static LC_{50} Bioassay using fathead minnows (Pimephales promelas).

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2. Invertebrate 48-hour static LC_{50} Bioassay using Ceriodaphnia.

B. Testing Frequency - The above tests shall be conducted using 24-hour composite samples unless otherwise authorized by the IEPA. Samples must be collected in the 18th, 15th, 12th, and 9th month prior to the expiration date of this Permit.

C. Reporting - Results shall be reported according to EPA/821-R-02-012, Section 12, Report Preparation, and shall be submitted to IEPA, Bureau of Water, Compliance Assurance Section within one week of receipt from the laboratory. Reports are due to the IEPA no later than the 16th, 13th, 10th, and 7th month prior to the expiration date of this Permit.

D. Toxicity - Should a bioassay result in toxicity to >20% of organisms test in the 100% effluent treatment, the IEPA may require, upon notification, six (6) additional rounds of monthly testing on the affected organism(s) to be initiated within 30 days of the toxic bioassay. Results shall be submitted to IEPA within (1) week of becoming available to the Permittee. Should any of the additional bioassays result in toxicity to ≥50% of organisms tested in the 100% effluent treatments, the Permittee shall immediately notify IEPA in writing of the test results.

E. Toxicity Reduction Evaluation and Identification - Should the biomonitoring program identify toxicity and result in notification by IEPA, the Permittee shall develop a plan for toxicity reduction evaluation and identification. The plan shall be developed and implemented in accordance with Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833B-99/002, and shall include an evaluation to determine which chemicals have a potential for being discharged in the plant wastewater, a monitoring program to determine their presence or absence and to identify other compounds which are not being removed by treatment, and other measures as appropriate. The Permittee shall submit to the IEPA its plan within ninety (90) days following notification by the IEPA. The Permittee shall implement the plan within ninety (90) days of notification of the permittee above or other such date as is received by letter from IEPA.

The IEPA may modify this Permit during its term to incorporate additional requirements or limitations based on the results of the biomonitoring. In addition, after review of the monitoring results and toxicity reduction evaluation, the IEPA may modify this Permit to include numerical limitations for specific toxic pollutants and additional whole effluent toxicity monitoring to confirm the results of the evaluation. Modifications under this condition shall follow public notice and opportunity for hearing.

SPECIAL CONDITION 15. For the duration of this Permit, the Permittee shall determine the quantity of sludge produced by the treatment facility in dry tons or gallons with average percent total solids analysis. The Permittee shall maintain adequate records of the quantities of sludge produced and have said records available for IEPA inspection. The Permittee shall submit to the IEPA, at a minimum, a semi-annual summary report of the quantities of sludge generated and disposed of, in units of dry tons or gallons (average total percent solids) by different disposal methods including but not limited to application on farmland, application on reclamation land, landfilling, public distribution, dedicated land disposal, sod farms, storage lagoons or any other specified disposal method. Said reports shall be submitted to the IEPA by January 31 and July 31 of each year reporting the preceding January thru June and July thru December interval of sludge disposal operations.

Duty to Mitigate. The Permittee shall take all reasonable steps to minimize any sludge use or disposal in violation of this Permit.

Sludge monitoring must be conducted according to test procedures approved under 40 CFR 136 unless otherwise specified in 40 CFR 503, unless other test procedures have been specified in this Permit.

Planned Changes. The Permittee shall give notice to the IEPA on the semi-annual report of any changes in sludge use and disposal.

The Permittee shall retain records of all sludge monitoring, and reports required by the Sludge Permit as referenced in Standard Condition 23 for a period of at least five (5) years from the date of this Permit.

If the Permittee monitors any pollutant more frequently than required by the Sludge Permit, the results of this monitoring shall be included in the reporting of data submitted to the IEPA.

The Permittee shall comply with existing federal regulations governing sewage sludge use or disposal and shall comply with all existing applicable regulations in any jurisdiction in which sewage sludge is actually used or disposed.

The Permittee shall comply with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish the standards for sewage sludge use or disposal even if the permit has not been modified to incorporate the requirement.

The Permittee shall ensure that the applicable requirements in 40 CFR Part 503 are met when the sewage sludge is applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator.

Monitoring reports for sludge shall be reported on the form titled "Sludge Management Reports" to the following address:

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Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section
Mail Code #19
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

SPECIAL CONDITION 16. The Permittee shall, within eighteen (18) months of the effective date of this permit, prepare and submit to the Agency a feasibility study that identifies the method, timeframe, and costs of reducing phosphorus levels in its discharge to a level consistently meeting a potential future effluent limit of 0.5 mg/L and 0.1 mg/L. The study shall evaluate the construction and O & M costs of the application of these limits on a monthly, seasonal and annual average basis.

SPECIAL CONDITION 17. This Permit may be modified to include alternative or additional final effluent limitations pursuant to an approved Total Maximum Daily Load (TMDL) study or upon completion of an alternate water quality study.

SPECIAL CONDITION 18. A phosphorus limit of 1.0 mg/L (Monthly Average) shall become effective three and one-half (3 1/2) years from the effective date of this Permit.

In order for the Permittee to achieve the above limit, it will be necessary to modify existing treatment facilities to include phosphorus removal, reduce phosphorus sources or explore other ways to prevent discharges that exceed the limit. The Permittee must implement the following compliance measures consistent with the schedule below:

A. Interim Report on Phosphorus Removal Feasibility Report	6 months from the effective date of this Permit
B. Interim Report on Phosphorus Removal Feasibility Report	12 months from the effective date of this Permit
C. Phosphorus Removal Feasibility Report Submitted	18 Months from the effective date of this Permit
D. Plans and specifications submitted	24 months from the effective date of this Permit
E. Progress Report on Construction	30 months from the effective date of this Permit
F. Progress Report on Construction	36 months from the effective date of this Permit
G. Achieve Monthly Concentration and Loading Effluent Limitations for Total Phosphorus	42 months from the effective date of this Permit

Compliance dates may be modified based on the results of the Phosphorus Removal Feasibility Report required by Special Condition 16 of this Permit. All modifications of this Permit must be in accordance with 40 CFR 122.62 or 40 CFR 122.63.

Reporting shall be submitted on the DMR's on a monthly basis.

REPORTING

The Permittee shall submit progress reports for items A, B, C, D, E, F, and G of the compliance schedule indicating: a) the date the item was completed, or b) that the item was not completed, the reasons for non-completion and the anticipated completion date to the Agency Compliance Section.

SPECIAL CONDITION 19. The Permittee shall develop and submit to the Agency a Phosphorus Discharge Optimization Plan within eighteen (18) months of the effective date of this permit. The plan shall include a schedule for the implementation of these optimization measures. Annual progress reports on the optimization of the existing treatment facilities shall be submitted to the Agency by March 31 of each year. In developing the plan, the Permittee shall evaluate a range of measures for reducing phosphorus discharges from the treatment plant, including possible source reduction measures, operational improvements, and minor facility modifications that will optimize reductions in phosphorus discharges from the wastewater treatment facility. The Permittee's evaluation shall include, but not be limited to, an evaluation of the following optimization measures:

A. WWTF influent reduction measures.

1. Evaluate the phosphorus reduction potential of users.
2. Determine which sources have the greatest opportunity for reducing phosphorus (i.e., industrial, commercial, institutional, municipal and others).
   a. Determine whether known sources (i.e., restaurant and food preparation) can adopt phosphorus minimization and water conservation plans.
   b. Evaluate and implement local limits on influent sources of excessive phosphorus.

B. WWTF effluent reduction measures.

1. Reduce phosphorus discharges by optimizing existing treatment processes.
   a. Adjust the solids retention time for nitrification, denitrification, or biological phosphorus removal.
   b. Adjust aeration rates to reduce dissolved oxygen and promote simultaneous nitrification-denitrification.
   c. Add baffles to existing units to improve microorganism conditions by creating divided anaerobic, anoxic, and aerobic zones.
   d. Change aeration settings in plug flow basins by turning off air or mixers at the inlet side of the basin system.
   e. Minimize impact on recycle streams by improving aeration within holding tanks.
   f. Reconfigure flow through existing basins to enhance biological nutrient removal.
   g. Increase volatile fatty acids for biological phosphorus removal.

SPECIAL CONDITION 20. The Permittee shall work towards the goals of achieving no discharges from sanitary sewer overflows or basement back-ups and ensuring that overflows or back-ups, when they do occur do not cause or contribute to violations of applicable standards or cause impairment in any adjacent receiving water. Overflows from sanitary sewers are expressly prohibited by Ill. Adm. Code 306.304. In order to accomplish these goals, the Permittee shall develop, implement and submit to the IEPA a Capacity, Management, Operations, and Maintenance (CMOM) plan which includes an Asset Management strategy within eighteen (18) months of the effective date of this Permit or review and revise any existing plan accordingly. The permittee shall modify the Plan to incorporate any comments that it receives from IEPA and shall implement the modified plan as soon as possible. The Permittee should work as appropriate, in consultation with affected authorities at the local, county, and/or state level to develop the plan components involving third party notification of overflow events. The Permittee may be required to construct additional sewage transport and/or treatment facilities in future permits or other enforceable documents should the implemented CMOM plan indicate that the Permittee's facilities are not capable of conveying and treating the flow for which they were designed.

The CMOM plan shall include the following elements:

A. Measures and Activities:

1. A complete map and system inventory for the collection system owned and operated by the Permittee;
2. Organizational structure; budgeting; training of personnel; legal authorities; schedules for maintenance, sewer system cleaning, and preventative rehabilitation; checklists, and mechanisms to ensure that preventative maintenance is performed on equipment owned and operated by the Permittee;
3. Documentation of unplanned maintenance;
4. An assessment of the capacity of the collection and treatment system owned and operated by the Permittee at critical junctions and immediately upstream of locations where overflows and back-ups occur or are likely to occur; use flow monitoring as necessary;
5. Identification and prioritization of structural deficiencies in the system owned and operated by the Permittee;
6. Scheduled inspections and testing;
7. The Permittee shall develop and implement an Asset Management strategy to ensure the long-term sustainability of the collection system. Asset management shall be used to assist the Permittee in making decisions on when it is most appropriate to repair, replace or rehabilitate particular assets and develop long-term funding strategies; and
8. Asset management shall include but is not limited to the following elements:
   a. Asset Inventory and State of the Asset;
   b. Level of Service;
   c. Critical Asset Identification;
   d. Life Cycle Cost; and
   e. Long-Term Funding Strategy.

Special Conditions

B. Design and Performance Provisions:

1. Monitor the effectiveness of CMOM;
2. Upgrade the elements of the CMOM plan as necessary; and
3. Maintain a summary of CMOM activities.

C. Overflow Response Plan:

1. Know where overflows and back-ups within the facilities owned and operated by the Permittee occur;
2. Respond to each overflow or back-up to determine additional actions such as clean up; and
3. Locations where basement back-ups and/or sanitary sewer overflows occur shall be evaluated as soon as practicable for excessive inflow /infiltration, obstructions or other causes of overflows or back-ups as set forth in the System Evaluation Plan.

D. System Evaluation Plan:

1. Summary of existing SSO and Excessive I/I areas in the system and sources of contribution;
2. Evaluate plans to reduce I/I and eliminate SSOs;
3. Special provisions for Pump Stations and force mains and other unique system components; and
4. Construction plans and schedules for correction.

E. Reporting and Monitoring Requirements:

1. Program for SSO detection and reporting; and
2. Program for tracking and reporting basement back-ups, including general public complaints.

F. Third Party Notice Plan:

1. Describes how, under various overflow scenarios, the public, as well as other entities, would be notified of overflows within the Permittee's system that may endanger public health, safety or welfare;
2. Identifies overflows within the Permittee's system that would be reported, giving consideration to various types of events including events with potential widespread impacts;
3. Identifies who shall receive the notification;
4. Identifies the specific information that would be reported including actions that will be taken to respond to the overflow;
5. Includes a description of the lines of communication; and
6. Includes the identities and contact information of responsible POTW officials and local, county, and/or state level officials.

For additional information concerning USEPA CMOM guidance and Asset Management please refer to the following web site addresses.
http://www.epa.gov/npdes/pubs/cmom_guide_for_collection_systems.pdf and
http://water.epa.gov/type/watersheds/wastewater/upload/guide_smallsystems_assetmanagement_bestpractices.pdf

Attachment H

Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24-Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8-Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) **Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

(2) **Duty to reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) **Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) **Duty to mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) **Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) **Permit actions.** This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62 and 40 CFR 122.63. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(7) **Property rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) **Duty to provide information.** The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency upon request, copies of records required to be kept by this permit.

(9) **Inspection and entry**. The permittee shall allow an authorized representative of the Agency or USEPA (including an authorized contractor acting as a representative of the Agency or USEPA), upon the presentation of credentials and other documents as may be required by law, to:
  (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
  (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
  (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
  (d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) **Monitoring and records**.
  (a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
  (b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. Records related to the permittee's sewage sludge use and disposal activities shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503). This period may be extended by request of the Agency or USEPA at any time.
  (c) Records of monitoring information shall include:
    (1) The date, exact place, and time of sampling or measurements;
    (2) The individual(s) who performed the sampling or measurements;
    (3) The date(s) analyses were performed;
    (4) The individual(s) who performed the analyses;
    (5) The analytical techniques or methods used; and
    (6) The results of such analyses.
  (d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) **Signatory requirement**. All applications, reports or information submitted to the Agency shall be signed and certified.
  (a) **Application**. All permit applications shall be signed as follows:
    (1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation:
    (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
    (3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.
  (b) **Reports**. All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    (1) The authorization is made in writing by a person described in paragraph (a); and
    (2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and
    (3) The written authorization is submitted to the Agency.
  (c) **Changes of Authorization**. If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.
  (d) **Certification**. Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

  I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(12) **Reporting requirements**.
  (a) **Planned changes**. The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility.
  Notice is required when:
    (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source pursuant to 40 CFR 122.29 (b); or
    (2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements pursuant to 40 CFR 122.42 (a)(1).
    (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
  (b) **Anticipated noncompliance**. The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
  (c) **Transfers**. This permit is not transferable to any person except after notice to the Agency.
  (d) **Compliance schedules**. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
  (e) **Monitoring reports**. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
    (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

(f) **Twenty-four hour reporting**. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24-hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and time; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24-hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit.

(2) Any upset which exceeds any effluent limitation in the permit.

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit or any pollutant which may endanger health or the environment.

The Agency may waive the written report on a case-by-case basis if the oral report has been received within 24-hours.

(g) **Other noncompliance**. The permittee shall report all instances of noncompliance not reported under paragraphs (12) (d), (e), or (f), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12) (f).

(h) **Other information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) **Bypass**.

(a) Definitions.

(1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

(2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(b) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (13)(c) and (13)(d).

(c) Notice.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph (12)(f) (24-hour notice).

(d) Prohibition of bypass.

(1) Bypass is prohibited, and the Agency may take enforcement action against a permittee for bypass, unless:

(i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(iii) The permittee submitted notices as required under paragraph (13)(c).

(2) The Agency may approve an anticipated bypass, after considering its adverse effects, if the Agency determines that it will meet the three conditions listed above in paragraph (13)(d)(1).

(14) **Upset**.

(a) Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(b) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (14)(c) are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

(c) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in paragraph (12)(f)(2) (24-hour notice).

(4) The permittee complied with any remedial measures required under paragraph (4).

(d) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(15) **Transfer of permits**. Permits may be transferred by modification or automatic transfer as described below:

(a) Transfers by modification. Except as provided in paragraph (b), a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued pursuant to 40 CFR 122.62 (b) (2), or a minor modification made pursuant to 40 CFR 122.63 (d), to identify the new permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

(b) Automatic transfers. As an alternative to transfers under paragraph (a), any NPDES permit may be automatically

transferred to a new permittee if:

(1) The current permittee notifies the Agency at least 30 days in advance of the proposed transfer date;

(2) The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage and liability between the existing and new permittees; and

(3) The Agency does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement.

(16) All manufacturing, commercial, mining, and silvicultural dischargers must notify the Agency as soon as they know or have reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant identified under Section 307 of the Clean Water Act which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6 dinitrophenol; and one milligram per liter (1 mg/l) for antimony.

(3) Five (5) times the maximum concentration value reported for that pollutant in the NPDES permit application; or

(4) The level established by the Agency in this permit.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the NPDES permit application.

(17) All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Agency of the following:

(a) Any new introduction of pollutants into that POTW from an indirect discharge which would be subject to Sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

(b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

(c) For purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

(18) If the permit is issued to a publicly owned or publicly regulated treatment works, the permittee shall require any industrial user of such treatment works to comply with federal requirements concerning:

(a) User charges pursuant to Section 204 (b) of the Clean Water Act, and applicable regulations appearing in 40 CFR 35;

(b) Toxic pollutant effluent standards and pretreatment standards pursuant to Section 307 of the Clean Water Act; and

(c) Inspection, monitoring and entry pursuant to Section 308 of the Clean Water Act.

(19) If an applicable standard or limitation is promulgated under Section 301(b)(2)(C) and (D), 304(b)(2), or 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit, or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked, and reissued to conform to that effluent standard or limitation.

(20) Any authorization to construct issued to the permittee pursuant to 35 Ill. Adm. Code 309.154 is hereby incorporated by reference as a condition of this permit.

(21) The permittee shall not make any false statement, representation or certification in any application, record, report, plan or other document submitted to the Agency or the USEPA, or required to be maintained under this permit.

(22) The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $25,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318 or 405 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both.
Additional penalties for violating these sections of the Clean Water Act are identified in 40 CFR 122.41 (a)(2) and (3).

(23) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

(24) The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(25) Collected screening, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into waters of the State. The proper authorization for such disposal shall be obtained from the Agency and is incorporated as part hereof by reference.

(26) In case of conflict between these standard conditions and any other condition(s) included in this permit, the other condition(s) shall govern.

(27) The permittee shall comply with, in addition to the requirements of the permit, all applicable provisions of 35 Ill. Adm. Code, Subtitle C, Subtitle D, Subtitle E, and all applicable orders of the Board or any court with jurisdiction.

(28) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit is held invalid, the remaining provisions of this permit shall continue in full force and effect.

Appendix B

Village of Huntley Ordinance, Chapter 51: Sewer Use Regulations

CHAPTER 51: SEWER USE REGULATIONS

Section

Use of the Public Sewers

Administration and Enforcement

Cross-reference:

Department of Public Works, see Title III - § 32.15 et seq.
For other sewer use provisions pertaining to industrial and nonindustrial users, rates and charges, wastewater and the like, see Title V - Chapter 52

GENERAL PROVISIONS

§ 51.01 DEFINITIONS

For the purpose of this chapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

AUTHORIZED ENFORCEMENT AGENCY. Employees or designees of the municipal agency designated to enforce this Section.

BEST MANAGEMENT PRACTICES (BMPs). Schedules of activities, prohibitions of practices, general good housekeeping practices, stormwater pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, and stormwater drainage systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage, leaks, sludge and wastewater disposal, and drainage from raw materials storage areas.

BOD or ***BIOCHEMICAL OXYGEN DEMAND.*** The quantity of oxygen used in the biochemical oxidation of organic matter in five days at 20° C., determined by standard laboratory test procedures and expressed in mg/l.

BUILDING OFFICIAL. The Building Official of the Village or his duly authorized deputy or representative.

BUILDING DRAIN. That part of the lowest piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of a building and conveys it to the building sewer or other approved point of discharge, beginning five feet (1.5 meters) outside the inner face of the building wall.

BUILDING SEWER. The extension from the building drain to the public sewer or other place of disposal.

CLEAN WATER ACT. The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

CONSTRUCTION ACTIVITY. Activities subject to an NPDES Construction Site Activities Permit. Currently, these activities include construction projects resulting in a land disturbance of 1 acre or more. Such activities include, but are not limited to, clearing, grubbing, grading, excavating, and demolition.

CONTROL MANHOLE. A structure specifically designed and constructed for sampling and metering industrial wastes discharged to a public sewer.

DIRECTOR. The Director of Public Works of the Village or his duly authorized deputy or representative.

EASEMENT. An acquired legal right for the specific use of land owned by others.

FEDERAL ACT. The Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.) as amended by the Federal Water Pollution Control Act of Amendments of 1972 (Public Law 92-500 and Public Law 93-243).

HAZARDOUS MATERIALS. Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

GARBAGE. Solid wastes from the domestic and commercial preparation, cooking, and dispensing of food, and from the handling, storage and sale of produce.

ILLEGAL DISCHARGE. Any direct or indirect non-stormwater discharge to the stormwater drainage system, except as exempted in Section 7 of this Section.

ILLICIT CONNECTION. An illicit connection is defined as either of the following:

(1) Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the stormwater drainage system, including, but not limited to, any conveyances which allow any non-stormwater discharges such as sewage, process wastewater, and wash water, to enter the stormwater drainage system and any connections to the stormwater drainage system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency; or,

(2) Any drain or conveyance connected from a commercial or industrial land use to the stormwater drainage system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

INDUSTRIAL ACTIVITY. Activities subject to an NPDES Industrial Activities Permit as defined in 40 CFR, Section 122.26 (b)(14).

INDUSTRIAL USER. Any user of the sewer system who discharges industrial wastes to the sewer system.

INDUSTRIAL WASTE. The wastewater discharged, permitted to flow, or escaping from any industrial, manufacturing, commercial or business establishment or process, or from the development, recovery or processing of any natural resource as distinct from employees' wastes or wastewater from sanitary conveyances.

mg/l. Milligrams per liter.

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4). The system of stormwater drainage facilities, including sidewalks, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels and storm drains, owned and operated by the Village of and used for collecting and/or conveying stormwater. The municipal separate storm sewer system is not used for collecting and/or conveying sewage.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER DISCHARGE PERMIT. A permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group or general area-wide basis.

NATURAL OUTLET. Any outlet into a watercourse, pond, ditch, lake, or other body of surface water.

NON-INDUSTRIAL USER. Any user of the sewer system not classified as an industrial user.

NON-STORMWATER DISCHARGE. Any discharge to the stormwater drainage system that is not composed entirely of stormwater.

PERSON. Any and all persons, natural or artificial including any individual, firm, company, public or private corporation, association, society, institution, enterprise, governmental agency or other entity recognized by law and acting as either the owner or as the owner's agent.

pH. The logarithm (base 10) of the reciprocal of the hydrogen ion concentration expressed in gram molecular weight (moles) per liter.

POLLUTANT. Anything which causes or contributes to pollution. Pollutants may include, but are not limited to, paints, varnishes, solvents, oil and other automotive fluids, non-hazardous liquid and solid wastes, yard wastes, refuse, rubbish, garbage, litter or other discarded or abandoned objects, sections, accumulations that may cause or contribute to pollution, floatables, pesticides, herbicides, fertilizers, hazardous substances and wastes, sewage, fecal coliform and pathogens, dissolved and particulate metals, animal wastes, wastes and residues that result from construction activity, and noxious or offensive matter of any kind.

PREMISES. Any building, lot, parcel of land, or portion of land, whether improved or unimproved, including adjacent sidewalks and parking strips.

PRETREATMENT. The treatment of wastewater from sources before discharge into the public sewer.

PROPERLY SHREDDED GARBAGE. Garbage that has been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than ½ inch (1.27 centimeters) in any dimension.

PUBLIC SEWER. A sewer in which all owners of abutting properties have equal rights of connection and use, and is operated, maintained and controlled by the Village.

SANITARY SEWER. A sewer that conveys sewage and polluted industrial wastes, and to which stormwater, surface drainage, groundwater or unpolluted wastewater are not intentionally admitted.

SEWAGE TREATMENT PLANT. An arrangement of devices, structures and processes for treating sewage.

SEWAGE. A combination of the wastewater from residential, commercial, industrial and institutional buildings together with such groundwater infiltration and surface water inflow that may be in the sewers.

SEWER. A pipe or conduit for conveying sewage or any other wastewater, including stormwater, surface water and groundwater drainage.

SEWERAGE WORKS. All facilities for collecting, pumping, treating and disposing of sewage and industrial wastes.

SLUG. Any discharge of sewage, industrial waste or other wastewater which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than 15 minutes more than five times the average 24-hour concentration or flows during normal operation.

STATE ACT. The Illinois Environmental Protection Act effective July 1, 1970 (ILCS Ch. 415, Act 5, §§ 1 through 51).

STORM SEWER or ***STORM DRAIN.*** A sewer that conveys stormwater runoff and surface water drainage, but excludes sewage and polluted industrial wastes.

STORMWATER. Any surface flow, runoff, and drainage consisting entirely of water resulting from any form of natural precipitation.

STORMWATER DRAINAGE SYSTEM. The facilities by which stormwater is collected and/or conveyed, including, but not limited to, sidewalks, roads with drainage systems, municipal streets, catch basins, curbs, gutters, storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

STORMWATER POLLUTION PREVENTION PLAN. A document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, receiving waters, and stormwater drainage systems to the maximum extent practicable.

STORMWATER RUNOFF. That portion of precipitation which is not absorbed into the ground and which is drained from the ground surface to a natural outlet or watercourse.

SUSPENDED SOLIDS. Solids that either float on the surface of, or are in suspension in, water, sewage, industrial wastes or other wastewater, the quantity of which is determined by standard laboratory filtering test procedures and referred to as nonfilterable residue expressed in mg/l.

UNPOLLUTED WASTEWATER. Wastewater that would not cause any violation of water quality standards of the Water Pollution Regulations of the state when discharged to a natural outlet or watercourse.

WASTEWATER. Any water or other liquid, other than uncontaminated stormwater, discharged from any premises.

WATERCOURSE. Any stream, creek, brook, branch, natural or artificial depression, slough, gulch, ditch, reservoir, lake, pond, or other natural or man-made drainageway in or into which stormwater runoff and surface water drainage flow either continuously or intermittently.

§ 51.02 DEPOSIT OF UNSANITARY SUBSTANCES PROHIBITED

It shall be unlawful for any person to place, deposit, or permit to be deposited in any unsanitary manner on public or private property within any area under the jurisdiction of the Village, any human or animal excrement, garbage or other objectionable waste.
Penalty, see § 51.99

§ 51.03 DISCHARGE INTO NATURAL OUTLET PROHIBITED

It shall be unlawful to discharge to any natural outlet or watercourse within any area under the jurisdiction of the Village, any sewage or other polluted waters, except where suitable treatment has been provided in accordance with subsequent provisions of this chapter.
Penalty, see § 51.99

§ 51.04 PRIVIES AND CESSPOOLS REGULATED

Except as provided § 51.15 et seq., it shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended or used for the disposal of sewage.
Penalty, see § 51.99

§ 51.05 TOILET FACILITIES REQUIRED

The owner of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes situated within the Village and abutting on any street, alley, or right-of-way in which there is now located or may in the future be located any public sanitary sewer of the Village, is hereby required at his expense to install suitable toilet facilities therein, and to connect such facilities directly with the public sanitary sewer in accordance with the provisions of this chapter, within 90 days after date of official notice to do so, provided that the sewer is within 250 feet of the property line. Penalty, see § 51.99

§ 51.06 DISCHARGES PROHIBITED INTO THE DRAINAGE SYSTEM OF ROUTE 47

The discharge of any sanitary or industrial wastes into any storm drainage system as an appurtenance to Illinois Route 47 or the drainage thereof is prohibited.
Penalty, see § 51.99

PRIVATE SEWAGE DISPOSAL

§ 51.15 PRIVATE SEWAGE DISPOSAL SYSTEM PERMITTED

Where a public sanitary sewer is not available under the provisions of § 51.05, the building sewer shall be connected to a private sewage disposal system complying with the provisions of this subchapter.

§ 51.16 PERMIT REQUIRED

Before commencement of construction of a private sewage disposal system, the owner shall first obtain a written permit signed by the Building Official. The application for such permit shall be made on a form furnished by the Village which the applicant shall supplement by any plans, specifications and other information as are deemed necessary by the Building Official. A permit and inspection fee as required by the Village shall be paid at the time the application is filed.

§ 51.17 INSPECTION BY BUILDING OFFICIAL

A permit for a private sewage disposal system shall not become effective until the installation is completed to the satisfaction of the Building Official. He shall be allowed to inspect the work at any stage of construction and, in any event, the applicant for the permit shall notify the Building Official when the work is ready for final inspection, and before any underground portions are covered. The inspection shall be made within 72 hours of the receipt of written notice by the Building Official.

§ 51.18 PRIVATE SYSTEM TO COMPLY WITH STATE REGULATIONS; OTHER RESTRICTIONS IMPOSED

(A) The type, capacities, location, and layout of a private sewage disposal system shall comply with all recommendations of the state Private Sewage Disposal Licensing Act and Code and with the state Environmental Protection Agency.

(B) No permit shall be issued for any private sewage disposal system employing subsurface soil absorption facilities where the area of the lot is less than the area required by the county health department.

(C) No septic tank or cesspool shall be permitted to discharge to any natural outlet or watercourse.
Penalty, see § 51.99

§ 51.19 PRIVATE SYSTEM TO BE SANITARY

The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times, and at no expense to the Village.
Penalty, see § 51.99

§ 51.20 CONNECTION TO VILLAGE SEWER SYSTEM REQUIRED WHEN AVAILABLE

At such time as a public sanitary sewer becomes available to a property served by a private sewage disposal system, as provided in § 51.05, the building sewer shall be connected to Village sewer within 90 days and the private sewage disposal system shall be cleaned of sludge and filled with sand or gravel.
Penalty, see § 51.99

§ 51.21 ADDITIONAL REQUIREMENTS MAY BE IMPOSED

No statement contained in this subchapter shall be construed to interfere with any additional requirements that may be imposed by the Building Official.

BUILDING SEWERS AND CONNECTIONS

§ 51.30 PERMISSION REQUIRED FOR MAKING SEWER CONNECTION

No unauthorized person shall uncover, make any connections with, or opening into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Director.
Penalty, see § 51.99

§ 51.31 DISCHARGES TO BE IN COMPLIANCE

It shall be unlawful to discharge wastewater to any public sanitary sewer except those wastewaters in compliance with standards promulgated pursuant to the Federal Act, or the State Act, or any applicable rules, regulations set forth in this code or in other ordinances or standards of the Village.
Penalty, see § 51.99

§ 51.32 BUILDING SEWER PERMITS

(A) There shall be two classes of building sewer permits:

(1) For nonindustrial service; and

(2) For service to establishments producing industrial wastes.

(B) In either case, the owner or his agent shall make application on a special form furnished by the Village [see Appendix at the end of this chapter]. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Building Official. A permit and inspection fee as established by the Village for a building sewer permit shall be paid to the Village at the time the application is filed. In addition,

an industrial user as a condition of permit authorization, must provide information describing its wastewater constituents, characteristics, and type of activity.

§ 51.33 SEWER CONNECTION NOT TO OVERLOAD SYSTEM

A building sewer permit will only be issued and a sewer connection shall only be allowed if it can be demonstrated that the downstream sewerage works, including sewers, pump stations and wastewater treatment facilities, have sufficient reserve capacity to adequately and efficiently handle the additional anticipated waste load.
Penalty, see § 51.99

§ 51.34 CONNECTION REQUIREMENTS; BOND AND INSURANCE

(A) All costs and expenses incident to the installation and connection of the building sewer shall be borne by the owner.

(B) The person installing the building sewer for said owner shall be a plumber or sewer contractor; and he shall indemnify the Village from any loss or damage that may directly or indirectly be occasioned by said installation.

(C) Before a building sewer permit is issued, the plumber or sewer contractor shall file with the Building Official an indemnity bond in the amount of $10,000, with corporate surety licensed to do business in the state, on a bond form supplied by the Village. In addition thereto, the plumber or sewer contractor shall file with the Village Clerk a certificate of insurance covering public liability insurance in the amount of $100,000/$300,000 for bodily injury and $50,000 covering property damage.
Penalty, see § 51.99

§ 51.35 SEPARATE CONNECTION REQUIRED FOR EACH BUILDING; EXCEPTION

A separate and independent building sewer shall be provided for every building; except where one building stands at the rear of another on an interior lot and no private sewer is available or can be constructed to the rear building through an adjoining alley, court, yard, or driveway, the building sewer from the front building may be extended to the rear building and the whole considered as one building sewer.
Penalty, see § 51.99

§ 51.36 OLD BUILDING SEWER USED FOR CONNECTION

Old building sewers may be used in connection with new buildings only when they are found on examination and test by the Director to meet all requirements or this chapter.
Penalty, see § 51.99

§ 51.37 BUILDING SEWER SPECIFICATIONS; INSTALLATION

(A) *Material*

The building sewer shall be extra strength materials approved by the Director.

(B) *Installation*

(1) The building sewer shall not be less than six-inch diameter size pipe installed at a minimum invert slope of 0.125 (1/8) inch per foot, or not less than four-inch diameter size pipe in length of not less than ten feet installed at a minimum invert slope of 0.25 (1/4) inch per foot. Building sewers shall be constructed in accordance with the requirements of the Director as to trench excavation and backfilling, installation of pipe and fittings and testing.

(2) The building sewer pipe shall be bedded on a layer of gravel or crushed stone conforming to ASTM No. 67 specifications, and shall have a minimum thickness of four inches under the pipe barrel and two inches under bells. It shall be carefully placed and compacted around the pipe to provide uniform support to the bottom quadrant.

(C) *Connection*

The connection of the building sewer into the public sewer shall be made at the "Y" branch, if such branch is available at a suitable location. If the public sewer is 12 inches in diameter or less, and no properly located "Y" branch is available, the owner shall, at his expense, install a "Y" branch in the public sewer at the location specified and installation approved by the Director. Where the public sewer is greater than 12 inches in diameter, and no properly located "Y" branch is available, special fittings may be used for the connection when approved by the Director.

(D) *Other installation requirements*

(1) Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. No building sewer shall be laid parallel to or within three feet of any bearing wall which might thereby be weakened.

(2) The depth shall be sufficient to afford protection from frost.

Penalty, see § 51.99

§ 51.38 LIFTERS AND PUMPING DEVICES

In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sewage carried by such drains shall be lifted by approved pumping devices and discharged to the building sewer.
Penalty, see § 51.99

§ 51.39 RUNOFF AND GROUNDWATER CONNECTIONS PROHIBITED

No person shall make connection of roof downspouts, exterior foundation drains, areaway drains, or other sources of surface runoff or groundwater to a building sewer or building drain which in turn is connected directly or indirectly to a public sanitary sewer.
Penalty, see § 51.99

§ 51.40 INSPECTION REQUIRED

The applicant for the building sewer permit shall notify the Director when the building sewer is ready for inspection and connection to the public sewer. The connection shall be made under the supervision of the Director or his representative.
Penalty, see § 51.99

§ 51.41 EXCAVATION REQUIREMENTS

(A) *Barricades and lights.* All excavations for building sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazard.

(B) *Restoration.* Streets, sidewalks, parkways, and other property disturbed in the course of the work shall be restored in a manner satisfactory to the Village.

(C) *Notification of utilities.* Prior to any excavation, the plumber or sewer contractor shall notify all public and private utility companies.
Penalty, see § 51.99

USE OF THE PUBLIC SEWERS

§ 51.50 STORMWATER AND OTHER UNPOLLUTED WATER DISCHARGES

(A) No person shall discharge, or cause to be discharged, any stormwater, surface water, groundwater, roof runoff, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any public sanitary sewer.

(B) Stormwater runoff that is discharged to ponds, lakes or streams by means of the Village of Huntley's Municipal separate storm sewer system shall be considered as an unpolluted water discharge as regulated by the National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Discharge Program and § 51.50(C) of this Ordinance.

(C) Illicit Discharge and Connection

1. PURPOSE/INTENT

The purpose of this Section is to provide for the health, safety, and general welfare of the citizens of the Village through the regulation of non-stormwater discharges to the stormwater drainage system to the maximum extent practicable, as required by federal and state law. This Section establishes methods for controlling the introduction of pollutants into the Village's municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit program. The objectives of this Section are:

1) To regulate the discharge of pollutants to the municipal separate storm sewer system
2) To prohibit illicit connections and discharges to the municipal separate storm sewer system
3) To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this Section

2. DISCHARGE PROHIBITIONS

I. Prohibition of Illegal Discharges.

No person shall discharge or cause to be discharged into the stormwater drainage system or waters or the United States any materials, pollutants, or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards.

The commencement, conduct, or continuance of any illegal discharge to the stormwater drainage system is prohibited except as described as follows:

(a) The following discharges are exempt from discharge prohibitions established by this Section: water line flushing, fire hydrant flushing, discharges from potable water sources, landscape irrigation, lawn watering, rising groundwater, groundwater infiltration, uncontaminated pumped groundwater, diverted stream flows, natural riparian habitat and wetland flows, springs, storm sewer cleaning water, street wash water from streets where spills or leaks of pollutants or toxic or hazardous materials has not occurred (unless the pollutants or toxic or hazardous materials have been removed), foundation drains, footing drains, crawl space pumps, air conditioning condensation, non-commercial vehicle washing, routine external building washing that does not use detergents, dechlorinated swimming pool discharges (discharges must contain less than one part per million chlorine), fire fighting activities, and any other water source not containing pollutants or toxic or hazardous materials.

(b) Discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety.

(c) Dye testing is an allowable discharge, but requires a verbal notification to the authorized enforcement agency prior to the time of the test.

(d) The prohibition shall not apply to any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the United States Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and all other applicable laws and regulations, and provided that written approval has been granted by the authorized enforcement agency for the discharge to the stormwater drainage system.

II. Prohibition of Illicit Connections

The construction, use, maintenance, or continued existence of illicit connections to the stormwater drainage system is prohibited. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection. A person is considered to be in violation of this Section if the person connects a line conveying sewage or any other non-stormwater discharge to the MS4, or allows such a connection to continue.

3. SUSPENSION OF MS4 ACCESS

I. Suspension Due to Illicit Discharges in Emergency Situations

The Village may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, to the health or welfare of persons, to the MS4, or to waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the authorized

enforcement agency may take such steps as deemed necessary to prevent or minimize damage to the MS4 or waters of the United States and to minimize danger to persons.

II. Suspension Due to the Detection of Illicit Discharge

Any person discharging to the MS4 in violation of this Section may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The authorized enforcement agency will notify a violator, in writing, of the proposed termination of its MS4 access. The violator may petition the authorized enforcement agency for a reconsideration and hearing.

A person violates this Section if the person reinstates MS4 access to premises terminated pursuant to this Section, without the prior written approval of the authorized enforcement agency.

4. INDUSTRIAL OR CONSTRUCTION ACTIVITY DISCHARGES

Any person subject to an NPDES Construction Site Activities Permit or NPDES Industrial Activities Permit shall comply with all provisions of such permit. Said person shall submit to the Village a copy of the Notice of Intent (NOI) that was provided to the Illinois Environmental Protection Agency (IEPA). Additional proof of compliance with an NPDES Construction Site Activities Permit or NPDES Industrial Activities Permit may be required, in a form acceptable to the Village, prior to the allowing of discharges to the MS4.

5. MONITORING OF DISCHARGES

(a) The authorized enforcement agency shall be permitted to enter and inspect premises subject to regulation under this Section as often as may be necessary to determine compliance with this Section. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the authorized enforcement agency.

(b) Facility operators shall allow the authorized enforcement agency ready access to all parts of the premises for the purposes of inspection, sampling, examination, copying of records that must be kept under the conditions of an NPDES permit, and the performance of any additional duties as required by state and federal law.

(c) The authorized enforcement agency shall have the right to set up on any premises such devices as are necessary in the opinion of the authorized enforcement agency to conduct monitoring and/or sampling of the premises' stormwater discharge.

(d) The authorized enforcement agency has the right to require the discharger to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.

(e) Any temporary or permanent obstruction to safe and easy access to the premises to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the authorized enforcement agency and shall not be replaced. The costs of clearing such access shall be borne by the operator.

(f) Unreasonable delays in allowing the authorized enforcement agency access to a premises is a violation of this Section. A person who is the operator of a facility with an NPDES permit to discharge stormwater associated with industrial activity commits a violation of this Section if the person denies the authorized enforcement agency reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this Section.

(g) If the authorized enforcement agency has been refused access to any part of the premises from which stormwater is discharged, and it is able to demonstrate probable cause to believe that there may be a violation of this Section, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this Section or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the authorized enforcement agency may seek issuance of a search warrant from any court of competent jurisdiction.

6. REQUIREMENT TO PREVENT, CONTROL, AND REDUCE STORMWATER POLLUTANTS BY THE USE OF BEST MANAGEMENT PRACTICES

The authorized enforcement agency will adopt requirements identifying Best Management Practices for any activity, operation, or facility which may cause or contribute to pollution or contamination of stormwater, the stormwater drainage system, or waters of the United States. The owner, or operator of a commercial or industrial establishment, shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal stormwater drainage system or waters of the United States through the use of these structural and non-structural BMPs. Further, any person responsible for a property or premises, which is, or may be, the source of an illicit discharge, may be required to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the municipal separate storm sewer system. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMPs shall be part of a stormwater pollution prevention plan (SWPPP) as necessary for compliance with requirements of the NPDES permit.

7. WATERCOURSE PROTECTION

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

8. NOTIFICATION OF SPILLS

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or any person responsible for emergency response for a facility or operation, has information regarding any known or suspected release of materials which are resulting or may result in illegal discharges or in pollutants entering stormwater, the stormwater drainage system, or waters of the United States, said person shall take all necessary steps to ensure the

discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials, said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the authorized enforcement agency in person, by phone, or by facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Village within three business days of the phone call or personal notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

9. NOTICE OF VIOLATION

Whenever the Village finds that a person has violated a prohibition or failed to meet a requirement of this Section, the authorized enforcement agency may order compliance by written Notice of Violation to the responsible person. Such notice may require, without limitation:

a) The performance of monitoring, analyses, and reporting;
b) The elimination of illicit connections or discharges;
c) That violating discharges, practices, or operations shall cease and desist;
d) The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
e) Payment of a fine to cover administrative and remediation costs; and
f) The implementation of source control or treatment BMPs.

If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work may be performed by the authorized enforcement agency and the expense thereof shall be charged to the violator.

10. APPEAL OF NOTICE OF VIOLATION

Any person receiving a Notice of Violation may appeal the determination of the authorized enforcement agency. The notice of appeal must be received within 15 days from the date of the Notice of Violation. Hearing on the appeal before a hearing officer of the Village, or other designated administrative body, shall take place within 30 days from the date of receipt of the notice of appeal. The decision of the designated hearing officer shall be final.

11. ENFORCEMENT

If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, or, in the event of an appeal, within 30 days of the decision of the designated hearing officer, then the authorized enforcement agency reserves the right to enter upon the subject private property and to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the authorized enforcement agency or designee to enter upon the premises for the purposes set forth above.

The authorized enforcement agency may extend the period for corrective action upon a showing of good cause for extension of the corrective action period.

12. COST OF ABATEMENT OF THE VIOLATION

Within 30 days after abatement of the violation by the authorized enforcement agency, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the assessment within 15 days. If the amount due is not paid within a timely manner as determined by the decision of the designated management agency or by the expiration of the time in which to file an appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment.

Any person violating any of the provisions of this Section shall become liable to the Village by reason of such violation. The liability shall be paid in not more than 12 equal monthly payments. Interest at the rate of prime plus 2 percent per annum shall be assessed on the balance beginning on the 1st day following discovery of the violation.

13. INJUNCTIVE RELIEF

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this Section. If a person has violated or continues to violate the provisions of this Section, the authorized enforcement agency may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

14. COMPENSATORY ACTION

In lieu of enforcement proceedings, penalties, and remedies authorized by this Section, the authorized enforcement agency may impose upon a violator alternative compensatory actions including, but not limited to, storm drain stenciling, attendance at compliance workshops and cleanup activities.

15. VIOLATIONS DEEMED A PUBLIC NUISANCE

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this Section is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

16. CRIMINAL PROSECUTION

Any person that has violated or continues to violate this Section shall be liable to criminal prosecution to the fullest extent of the law, and shall be subject to a criminal penalty of not less than $50.00 and not more than $500.00 per violation per day.

Each violation and each day upon which an individual violation occurs shall constitute a separate offense.

17. REMEDIES NOT EXCLUSIVE

The remedies listed in this Section are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the authorized enforcement agency to seek cumulative remedies.

The authorized enforcement agency may recover all attorney's fees court costs and other expenses associated with enforcement of this Section, including sampling and monitoring expenses.

Penalty, see § 51.99

§ SECTION 51.52 GENERAL PRE-TREATMENT REGULATIONS

Section I. - GENERAL PROVISIONS

1.1. Purpose and Policy. These regulations set forth uniform requirements for Users of the Publicly Owned Treatment Works for the Village of Huntley. The objectives of these regulations are:

A. To prevent the introduction of pollutants into the Publicly Owned Treatment Works that will interfere with its operation;

B. To prevent the introduction of pollutants into the Publicly Owned Treatment Works that will pass through the Publicly Owned Treatment Works, inadequately treated, into receiving waters, or otherwise be incompatible with the Publicly Owned Treatment Works;

C. To protect both Publicly Owned Treatment Works personnel who may be affected by wastewater and sludge in the course of their employment and the general public;

D. To promote reuse and recycling of industrial wastewater and sludge from the Publicly Owned Treatment Works;

E. To enable the Village to comply with its National Pollutant Discharge Elimination System permit conditions, sludge use and disposal requirements, and any other Federal or State laws to which the Publicly Owned Treatment Works is subject.

1.2. Administration. Except as otherwise provided herein, the Director of Public Works shall administer, implement, and enforce the provisions of these regulations. Any powers granted to or duties imposed upon the Director may be delegated by the Director to a duly authorized Village employee or professional consultant retained by the Village for said purpose.

1.3. Abbreviations. The following abbreviations, when used in these regulations, shall have the designated meanings:

BOD – Biochemical Oxygen Demand
BMP – Best Management Practice
BMR – Baseline Monitoring Report
CFR – Code of Federal Regulations
CIU – Categorical Industrial User
COD – Chemical Oxygen Demand
EPA – U.S. Environmental Protection Agency

gpd – gallons per day
IU – Industrial User
mg/l – milligrams per liter
NPDES – National Pollutant Discharge Elimination System
NSCIU – Non-Significant Categorical Industrial User
POTW – Publicly Owned Treatment Works
RCRA – Resource Conservation and Recovery Act
SIU – Significant Industrial User
SNC – Significant Noncompliance
TSS – Total Suspended Solids
U.S.C. – United States Code

1.4. Definitions. Unless a provision explicitly states otherwise, the following terms and phrases, as used in these regulations, shall have the meanings hereinafter designated.

A. Act or "the Act." The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. section 1251 et seq., as currently in effect, and specifically including any amendments, modifications, or additions thereto after the effective date of these regulations. Reference to any specific section or provision of the Act shall mean any such section or provision as newly designated, re-numbered, or otherwise included in any such amendment, modification, or addition.

B. Approval Authority. The United States Environmental Protection Agency.

C. Authorized or Duly Authorized Representative of the User.

(1) For any private entity:

(a) The officer, member, general partner, manager or director in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the entity, including a manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the duty of making major capital investment recommendations, and initiating and directing other comprehensive measures, to assure long-term compliance with environmental laws and regulations; can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit requirements; and where authority to sign documents has been duly assigned or delegated to the manager in accordance.

(2) For a proprietorship: The proprietor.

(3) If the User is a Federal, State, or local governmental facility: a director or the highest official appointed or designated to oversee the operation and performance of the activities of the governmental facility, or his designee.

(4) The individuals described in paragraphs 1 through 3 above may designate a Duly Authorized Representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates or having overall responsibility for environmental matters for the company, and the written authorization is submitted to the Village.

D. Biochemical Oxygen Demand or BOD. The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures for five (5) days at 20 degrees centigrade, usually expressed as a concentration (e.g., mg/l).

E. Best Management Practices or BMPs means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to implement the prohibitions listed in Section 2.1(A) and (B). BMPs include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw materials storage.

F. Bypass. Bypass means the intentional diversion of wastestreams from any portion of a User's treatment facility.

G. Categorical Pre-Treatment Standard or Categorical Standard. Any regulation containing pollutant discharge limits promulgated by EPA in accordance with sections 307(b) and (c) of the Act (33 U.S.C. section 1317) that apply to a specific category of Users and that appear in 40 CFR Chapter I, Subchapter N, Parts 405-471.

H. Categorical Industrial User. An Industrial User subject to a Categorical Pre-Treatment Standard or Categorical Standard.

I. Chemical Oxygen Demand or COD. A measure of the oxygen required to oxidize all compounds, both organic and inorganic, in water.

J. Composite Sample. A sample that is based on 24-hour flow proportional sampling that may be done manually or automatically, and discretely or continuously. If discrete sampling is employed, at least 12 aliquots should be composited. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. All composites should be flow proportional to either the stream flow at the time of collection of the influent aliquot or to the total influent flow since the previous influent aliquot.

K. Control Authority. The Village of Huntley.

L. Daily Maximum. The arithmetic average of all effluent samples for a pollutant collected during a calendar day.

M. Daily Maximum Limit. The maximum allowable discharge limit of a pollutant during a calendar day. Where Daily Maximum Limits are expressed in units of mass, the daily discharge is the total mass discharged over the course of the day. Where Daily Maximum Limits are expressed in terms of a concentration, the daily discharge is the arithmetic average measurement of the pollutant concentration derived from all measurements taken that day.

N. Environmental Protection Agency or EPA. The U.S. Environmental Protection Agency or, where appropriate, the Regional Water Management Division Director, the Regional Administrator, or other duly authorized official of said agency.

O. Existing Source. Any source of discharge that is not a "New Source."

P. Grab Sample. A sample that is taken from a wastestream without regard to the flow in the wastestream and over a period of time not to exceed fifteen (15) minutes.

Q. Hazardous Waste. Hazardous Waste means any waste so defined by the Act.

R. Indirect Discharge. The introduction of pollutants into the POTW from any non-domestic source. Sometimes also referred to herein as "discharge."

S. Industrial User. A source of indirect discharge. Sometimes also referred to herein as a "User."

T. Instantaneous Limit. The maximum concentration of a pollutant allowed to be discharged at any time, determined from the analysis of any discrete or composited sample collected, independent of the industrial flow rate and the duration of the sampling event.

U. Interference. A discharge that, alone or in conjunction with a discharge or discharges from other sources, inhibits or disrupts the POTW, its treatment processes or operations or its sludge processes, use or disposal; and therefore, is a cause of a violation of the Village's NPDES permit or of the prevention of sewage sludge use or disposal in compliance with any of the following statutory/regulatory provisions or permits issued thereunder, or any more stringent State or local regulations: section 405 of the Act; the Solid Waste Disposal Act, including Title II commonly referred to as the Resource Conservation and Recovery Act (RCRA); any State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the Solid Waste Disposal Act; the Clean Air Act; the Toxic Substances Control Act; and the Marine Protection, Research, and Sanctuaries Act.

V. Local Limit. Specific discharge limits developed and enforced by the Village upon industrial or commercial facilities to implement the general and specific discharge prohibitions listed in 40 CFR 403.5(a)(1) and (b).

W. Medical Waste. Isolation wastes, infectious agents, human blood and blood products, pathological wastes, sharps, body parts, contaminated bedding, surgical wastes, potentially contaminated laboratory wastes, and dialysis wastes.

X. Monthly Average. The sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Y. Monthly Average Limit. The highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Z. New Source.

(1) Any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced after the publication of proposed Pre-Treatment Standards under Section 307 (c) of the Act which will be applicable to such source if such Standards are thereafter promulgated in accordance with that section, provided that:

(a) The building, structure, facility, or installation is constructed at a site at which no other source is located; or

(b) The building, structure, facility, or installation totally replaces the process or production equipment that causes the discharge of pollutants at an Existing Source; or

(c) The production or wastewater-generating processes of the building, structure, facility, or installation are substantially independent of an Existing Source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the Existing Source, should be considered.

(2) Construction on a site at which an Existing Source is located results in a modification rather than a New Source if the construction does not create a new building, structure, facility, or installation meeting the criteria of Section (1)(b) or (c) above but otherwise alters, replaces, or adds to existing process or production equipment.

(3) Construction of a New Source as defined under this paragraph has commenced if the owner or operator has:

(a) Begun, or caused to begin, as part of a continuous onsite construction program

(i) any placement, assembly, or installation of facilities or equipment; or

(ii) significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

(b) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

AA. Non-contact Cooling Water. Water used for cooling that does not come into direct contact with any raw material, intermediate product, waste product, or finished product.

BB. Pass Through. A discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the Village's NPDES permit, including an increase in the magnitude or duration of a violation.

CC. Person. Any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity, or any other legal entity; or their legal representatives, agents, or assigns. This definition includes all Federal, State, and local governmental entities.

DD. pH. A measure of the acidity or alkalinity of a solution, expressed in standard units.

EE. Pollutant. Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, Medical Wastes, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, municipal, agricultural and industrial wastes, and certain characteristics of wastewater (e.g., pH, temperature, TSS, turbidity, color, BOD, COD, toxicity, or odor).

FF. Pre-Treatment. The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, introducing such pollutants into the POTW. This reduction or alteration can be obtained by physical, chemical, or biological processes; by process changes; or by other means, except by diluting the concentration of the pollutants unless allowed by an applicable Pre-Treatment Standard.

GG. Pre-Treatment Requirements. Any substantive or procedural requirement related to Pre-Treatment imposed on a User, other than a Pre-Treatment Standard.

HH. Pre-Treatment Standards or Standards. Pre-Treatment Standards shall mean prohibited discharge standards, Categorical Pre-Treatment Standards, and Local Limits.

II. Prohibited Discharge Standards or Prohibited Discharges. Absolute prohibitions against the discharge of certain substances; these prohibitions appear in Section 2.1 of these regulations.

JJ. POTW. A Publicly Owned Treatment Works or POTW is a treatment works, as defined by section 212 of the Act (33 U.S.C. section 1292), which is owned by a municipality such as the Village. This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature and any conveyances, which convey wastewater to a treatment plant.

KK. Septic Tank Waste. Any sewage from holding tanks such as vessels, chemical toilets, campers, trailers, and septic tanks.

LL. Sewage. Human excrement and gray water (household showers, dishwashing operations, etc.

MM. Significant Industrial User (SIU).

Except as provided in paragraphs (3) and (4) of this Section, a Significant Industrial User is:

(1) An Industrial User subject to Categorical Pre-Treatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and

(2) An Industrial User that:

(a) Discharges an average of twenty-five thousand (25,000) gpd or more of process wastewater to the POTW (excluding sanitary, non-contact cooling and boiler blow-down wastewater);

(b) Contributes a process wastestream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or

(c) Is designated as such by the Village on the basis that it has a reasonable potential for adversely affecting the POTW's operation or for violating any Pre-Treatment Standard or Requirement (in accordance with 40 CFR 403.8(f)(6)).

(3) The Village may determine that an Industrial User subject to Categorical Pre-Treatment Standards under §403.6 and 40 CFR chapter I, subchapter N is a Non-Significant Categorical Industrial User rather than a Significant Industrial User on a finding that the Industrial User never discharges more than 100 gallons per day (gpd) of total categorical wastewater (excluding sanitary, non-contact cooling and boiler blow-down wastewater, unless specifically included in the Pre-Treatment Standard) and the following conditions are met:

(a) The Industrial User, prior to the Village's finding, has consistently complied with all applicable Categorical Pre-Treatment Standards and Requirements;

(b) The Industrial User annually submits the certification statement required in §403.12(q) together with any additional information necessary to support the certification statement; and

(c) The Industrial User never discharges any untreated concentrated wastewater.

(4) Upon a finding that a User meeting the criteria in Subsection (2) of this definition has no reasonable potential for adversely affecting the POTW's operation or for violating any Pre-Treatment Standard or Requirement, the Village may at any time, on its own initiative or in response to a petition received from such User, and in accordance with 40 CFR 403.8(f)(6), determine that such User should not be considered a Significant Industrial User.

NN. Slug Load or Slug Discharge. Any discharge at a flow rate or concentration, which could cause a violation of the prohibited discharge standards in Section 2.1 of these regulations. A Slug Discharge is any Discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch Discharge, which has a reasonable potential to cause Interference or Pass Through, or in any other way violate the POTW's regulations, Local Limits or Permit conditions.

OO. Storm Water. Any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt.

PP. Director. The Director of Public Works for the Village of Huntley. The person designated by the Village to supervise the operation of the POTW, and who is charged with certain duties and responsibilities by these regulations**.** The term also means a Duly Authorized Representative of the Director.

QQ. Total Suspended Solids or Suspended Solids. The total suspended matter that floats on the surface of, or is suspended in, water, wastewater, or other liquid, and that is removable by laboratory filtering.

RR. User. See "Industrial User," above.

SS. Village. The Village of Huntley, Kane and McHenry Counties, Illinois.

TT. Wastewater. Liquid and water-carried industrial wastes and sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities, and institutions, whether treated or untreated, which are contributed to the POTW.

UU. Wastewater Treatment Plant or Treatment Plant. That portion of the POTW which is designed to provide treatment of municipal sewage and industrial waste.

Section II. - GENERAL REQUIREMENTS

2.1 Prohibited Discharge Standards

A. General Prohibitions.

(1) These general prohibitions apply to all Users of the POTW whether or not they are subject to Categorical Pre-Treatment Standards or any other National, State, or local Pre-Treatment Standards or Requirements.

(2) No User shall introduce or cause to be introduced into the POTW any pollutant or wastewater which causes any Pass Through or Interference.

B. Specific Prohibitions. No User shall introduce or cause to be introduced into the POTW, or shall process or store in a manner that would or could allow for discharge to the POTW, the following pollutants, substances, or wastewater:

(1) Pollutants which create a fire or explosive hazard in the POTW, including, but not limited to, wastestreams with a closed-cup flashpoint of less than 140 degrees F (60 degrees C) using the test methods specified in 40 CFR 261.21;

(2) Wastewater having a pH less than 6.0 or more than 9.0, or otherwise causing corrosive structural damage to the POTW or equipment;

(3) Solid or viscous substances in amounts which will cause obstruction of the flow in the POTW resulting in Interference;

(4) Pollutants, including oxygen-demanding pollutants (BOD, etc.), released in a discharge at a flow rate and/or pollutant concentration which, either singly or by interaction with other pollutants, will cause Interference with the POTW;

(5) Wastewater having a temperature greater than 157 degrees F (65 degrees C), or which will inhibit biological activity in the treatment plant resulting in Interference, but in no case wastewater which causes the temperature at the introduction into the treatment plant to exceed 104 degrees F (40 degrees C);

(6) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin, in amounts that will cause Interference or Pass Through;

(7) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;

(8) Trucked or hauled pollutants, except at discharge points designated by the Director in accordance with these regulations;

(9) Noxious or malodorous liquids, gases, solids, or other wastewater which, either singly or by interaction with other wastes, are sufficient to create a public nuisance or a hazard to life, or to prevent entry into the sewers for maintenance or repair;

(10) Wastewater which imparts color which cannot be removed by the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions, which consequently imparts color to the treatment plant's effluent, thereby violating the Village's NPDES permit;

(11) Storm Water, surface water, ground water, artesian well water, roof runoff, subsurface drainage, swimming pool drainage, condensate, de-ionized water, Non-contact Cooling Water, and unpolluted wastewater, unless specifically authorized by the Director;

(12) Sludges, screenings, or other residues from the Pre-Treatment of industrial wastes;

(13) Medical Wastes, except as specifically authorized by the Director in a wastewater discharge permit;

(14) Wastewater causing, alone or in conjunction with other sources, the treatment plant's effluent to fail toxicity test;

(15) Detergents, surface-active agents, or other substances which that might cause excessive foaming in the POTW;

(16) Wastewater causing two readings on an explosion hazard meter at the point of discharge into the POTW, or at any point in the POTW, of more than 5 percent (5%) or any single reading over 10 percent (10%)] of the Lower Explosive Limit of the meter. Materials for which discharge is prohibited under this subsection include, but are not limited to, gasoline, kerosene, naptha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, polychlorinated biphenyls, carbides, hydrides, standard solvents and sulfides.

(17) Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the Village in compliance with applicable state or federal regulations.

(18) Materials which exert or cause excessive discoloration (such as, but not limited to, dye wastes and vegetable tanning solutions).

2.2. Categorical Pre-Treatment Standards. Users must comply with the Categorical Pre-Treatment Standards found at 40 CFR Chapter I, Subchapter N, Parts 405–471, as now stated and as hereinafter amended or modified**.**

A. Where a Categorical Pre-Treatment Standard is expressed only in terms of either the mass or the concentration of a pollutant in wastewater, the Director may impose equivalent concentration or mass limits in accordance with Sections 2.2E and 2.2F below.

B. When the limits in a Categorical Pre-Treatment Standard are expressed only in terms of mass of pollutant per unit of production, the Director may convert the limits to equivalent limitations expressed either as mass of pollutant discharged per day or effluent concentration for purposes of calculating effluent limitations applicable to individual Industrial Users.

C. When wastewater subject to a Categorical Pre-Treatment Standard is mixed with wastewater not regulated by the same Standard, the Director shall impose an alternate limit in accordance with 40 CFR 403.6(e).

D. A CIU may obtain a net/gross adjustment to a Categorical Pre-Treatment Standard in accordance with the following paragraphs of this Section.

(1) Categorical Pre-Treatment Standards may be adjusted to reflect the presence of pollutants in the Industrial User's intake water in accordance with this Section. Any Industrial User wishing to obtain credit for intake pollutants must make application to the Village. Upon request of the Industrial User, the applicable Standard will be calculated on a "net" basis (i.e., adjusted to reflect credit for pollutants in the intake water) if the requirements of paragraph (2) of this Section are met.

(2) Criteria.

(a) Either (a) the applicable Categorical Pre-Treatment Standards contained in 40 CFR subchapter N specifically provide that they shall be applied on a net basis; or (b) the Industrial User demonstrates that the control system it proposes or uses to meet applicable Categorical Pre-Treatment Standards would, if properly installed and operated, meet the Standards in the absence of pollutants in the intake waters.

(b) Credit for generic pollutants such as biochemical oxygen demand (BOD), total suspended solids (TSS), and oil and grease should not be granted unless the Industrial User demonstrates that the constituents of the generic measure in the User's effluent are substantially similar to the constituents of the generic measure in the intake water or unless appropriate additional limits are placed on process water pollutants either at the outfall or elsewhere.

(c) Credit shall be granted only to the extent necessary to meet the applicable Categorical Pre-Treatment Standard(s), up to a maximum value equal to the influent value. Additional monitoring may be necessary to determine eligibility for credits and compliance with Standard(s) adjusted under this Section.

(d) Credit shall be granted only if the User demonstrates that the intake water is drawn from the same body of water as that into which the POTW discharges. The Village may waive this requirement if it finds that no environmental degradation will result.

E. When a Categorical Pre-Treatment Standard is expressed only in terms of pollutant concentrations, an Industrial User may request that the Village convert the limits to equivalent mass limits. The determination to convert concentration limits to mass limits is within the discretion of the Director. The Village may establish equivalent mass limits only if the Industrial User meets all the conditions set forth in Sections2.2E(1)(a) through 2.2E(1)(e) below.

(1) To be eligible for equivalent mass limits, the Industrial User must:

(a) Employ, or demonstrate that it will employ, water conservation methods and technologies that substantially reduce water use during the term of its individual wastewater discharge permit;

(b) Currently use control and treatment technologies adequate to achieve compliance with the applicable Categorical Pre-Treatment Standard, and not have used dilution as a substitute for treatment;

(c) Provide sufficient information to establish the facility's actual average daily flow rate for all wastestreams, based on data from a continuous effluent flow monitoring device, as well as the facility's long-term average production rate. Both the actual average daily flow rate and the long-term average production rate must be representative of current operating conditions;

(d) Not have daily flow rates, production levels, or pollutant levels that vary so significantly that equivalent mass limits are not appropriate to control the Discharge; and

(e) Have consistently complied with all applicable Categorical Pre-Treatment Standards during the period prior to the Industrial User's request for equivalent mass limits.

(2) An Industrial User subject to equivalent mass limits must:

(a) Maintain and effectively operate control and treatment technologies adequate to achieve compliance with the equivalent mass limits;

(b) Continue to record the facility's flow rates through the use of a continuous effluent flow monitoring device;

(c) Continue to record the facility's production rates and notify the Director whenever production rates are expected to vary by more than 20 percent from its baseline production rates determined in Section 2.2E(1)(c). Upon notification of a revised production rate, the Director will reassess the equivalent mass limit and revise the limit as necessary to reflect changed conditions at the facility; and

(d) Continue to employ the same or comparable water conservation methods and technologies as those implemented pursuant to Section 2.2E(1)(a) so long as it discharges under an equivalent mass limit.

(3) When developing equivalent mass limits, the Director:

(a) Will calculate the equivalent mass limit by multiplying the actual average daily flow rate of the regulated process(es) of the Industrial User by the concentration-based Daily Maximum and Monthly Average Standard for the applicable Categorical Pre-Treatment Standard and the appropriate unit conversion factor;

(b) Upon notification of a revised production rate, will reassess the equivalent mass limit and recalculate the limit as necessary to reflect changed conditions at the facility; and

(c) May retain the same equivalent mass limit in subsequent individual wastewater discharger permit terms if the Industrial User's actual average daily flow rate was reduced solely as a result of the implementation of water conservation methods and technologies, and the actual average daily flow rates used in the original calculation of the equivalent mass limit were not based on the use of dilution as a substitute for treatment. The Industrial User must also be in compliance with the provisions of these regulations regarding Bypass.

F. The Director may convert the mass limits of the Categorical Pre-Treatment Standards of 40 CFR Parts 414, 419, and 455 to concentration limits for purposes of calculating limitations applicable to individual Industrial Users. The conversion is at the discretion of the Director.

G. Once included in its permit, the Industrial User must comply with the equivalent limitations developed in this Section in lieu of the promulgated Categorical Standards from which the equivalent limitations were derived.

H. Many Categorical Pre-Treatment Standards specify one limit for calculating maximum daily discharge limitations and a second limit for calculating maximum Monthly Average, or 4-day average, limitations. Where such Standards are being applied, the same production or flow figure shall be used in calculating both the average and the maximum equivalent limitation.

I. Any Industrial User operating under a permit incorporating equivalent mass or concentration limits calculated from a production-based Standard shall notify the Director within two (2) business days after the User has a reasonable basis to know that the production level will significantly change within the next calendar month. Any User not notifying the Director of such anticipated change will be required to meet the mass or concentration limits in its permit that were based on the original estimate of the long term average production rate.

2.3. State Pre-Treatment Standards. Users must comply with Illinois Environmental Protection Agency Pre-Treatment Standards.

2.4. Local Pre-Treatment Standards – Local Limits.

A. The Director is authorized to establish Local Limits pursuant to 40 CFR 403.5(c).

B. The following local pre-treatment standards are established as Local Limits on pollutants, in order to protect against Pass Through and Interference in relation to the East and West POTW. No User shall discharge wastewater to the East or West POTW containing in excess of the following Daily Maximum Limit:

0.50	mg/l arsenic
4.0	mg/l barium
0.30	mg/l cadmium
2.0	mg/l chromium (total)
1.0	mg/l copper
0.20	mg/l cyanide
0.40	mg/l lead
0.001	mg/l mercury
2.0	mg/l nickel
30	mg/l fats, oil and/or grease, non-polar (non-polar FOG)
0.20	mg/l silver
0.60	mg/l total phenols
2.0	mg/l zinc

In addition, no User shall discharge wastewater to the East POTW containing in excess of the following Daily Maximum Limit:

20	mg/l ammonia
211	mg/l BOD_5
240	mg/l total suspended solids

C. The above limits apply at the point where the wastewater is discharged to the POTW. All concentrations for metallic substances are for total metal unless indicated otherwise. The Director may impose mass limitations in addition to the concentration-based limitations above.

D. The Director may develop Best Management Practices (BMPs), by ordinance or in a wastewater discharge permit, to implement Local Limits and the requirements of this Section.

2.5. Village's Right of Revision. The Village reserves the right at any time to establish, by ordinance or in an individual wastewater discharge permit, more stringent Standards or Requirements on discharges to the POTW consistent with the purpose of these regulations.

2.6. Dilution. No User shall ever increase the use of process water, or in any way attempt to dilute a discharge, as a partial or complete substitute for adequate treatment to achieve compliance with a discharge limitation unless expressly authorized by an applicable Pre-Treatment Standard or Requirement. The Director may impose mass limitations on Users who are using or attempting to use dilution to meet applicable Pre-Treatment Standards or Requirements, or in other cases when the imposition of mass limitations is appropriate.

Section III. - PRE-TREATMENT OF WASTEWATER

3.1. Pre-Treatment Facilities. Users shall provide wastewater treatment as necessary to comply with these regulations and shall achieve compliance with all Categorical Pre-Treatment Standards, Local Limits, and the prohibitions set out in Section II. of these regulations within the time limitations specified by EPA, the State, or the Director, whichever is more stringent.

A. Any facilities necessary for compliance shall be provided, operated, and maintained at the User's expense.

B. Detailed plans describing such facilities and operating procedures shall be submitted to the Director for review, and shall be approved by the Director before such facilities are constructed.

C. Review of such plans and operating procedures by the Village or by any other regulatory entity shall in no way relieve the User from the responsibility of modifying such facilities as necessary to produce a discharge acceptable to the Village under the provisions of these regulations.

3.2. Additional Pre-Treatment Measures.

A. Whenever deemed necessary, the Director may require any User to restrict its discharge during peak flow periods, designate that certain wastewater be discharged only into specific sewers, relocate and/or consolidate points of discharge, separate sewage wastestreams from industrial wastestreams, and may impose such other conditions as may be necessary to protect the POTW and to determine and monitor the User's compliance with the requirements of these regulations.

B. The Director may require any person discharging into the POTW to install and maintain, on his property and at his expense, a suitable storage and flow-control facility to ensure equalization of flow. A wastewater discharge permit may be issued solely for flow equalization.

C. Grease, oil, and sand interceptors shall be provided when, in the opinion of the Director, any or all are necessary for the proper handling of wastewater containing excessive amounts of grease, oil, or sand; except that such interceptors shall not be required for residential users. All interception units shall be of a type and capacity approved by the Director and shall be so located to be easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned, and repaired by the User at its expense.

D. A User with the potential to discharge flammable substances may be required to install and maintain an approved combustible gas detection meter.

3.3. Accidental Discharge/Slug Discharge Control Plans.

A. The Director shall evaluate whether each User needs an accidental discharge/slug discharge control plan or other action to control Slug Discharges. The Director may require any User to develop, submit for approval, and implement such a plan or take such other action that may be necessary to control Slug Discharges. Alternatively, the Director may develop such a plan for any User.

B. An accidental discharge/slug discharge control plan shall address, at a minimum, the following:

(1) Description of discharge practices, including non-routine batch discharges;

(2) Description of stored chemicals;

(3) Procedures for immediately notifying the Director of any accidental or Slug Discharge in compliance with the requirements of this Article; and

(4) Procedures to prevent adverse impact from any accidental or Slug Discharge, including but not limited to, inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants, including solvents, and/or measures and equipment for emergency response.

3.4. Hauled Wastewater Discharges Prohibited.

A. Discharge of hauled waste is strictly prohibited at Village of Huntley Wastewater Treatment Facilities.

Section IV. - WASTEWATER DISCHARGE PERMITS

4.1. Requirements.

A. No Significant Industrial User shall discharge wastewater into the POTW without first obtaining a wastewater discharge permit from the Director, provided, any Significant

Industrial User that has filed a timely and complete application for such permit may continue to discharge as specified in this Section.

B. The Director may require any other User to obtain a wastewater discharge permit as necessary to carry out the purposes of these regulations.

C. Any violation of the terms and conditions of a wastewater discharge permit shall be deemed a violation of these regulations and subjects the wastewater discharge permittee to the sanctions set out in this Article.

D. Obtaining a wastewater discharge permit does not relieve a User of its obligation to comply with all Federal and State Pre-Treatment Standards or Requirements or with any other requirements of Federal, State, and local law.

4.2. Existing Connections. Any User who was discharging wastewater into the POTW prior to the effective date of these regulations, and who is required by these regulations to obtain a wastewater discharge permit, and who wishes to continue such discharge in the future, shall promptly apply to the Director for a wastewater discharge permit.

A. No such User shall cause or allow any discharge to the POTW after ninety (90) days after the effective date of these regulations, except in accordance with a wastewater discharge permit issued by the Director.

B. For good cause shown, a permit issued by the Director may allow a reasonable period of time, in excess of the ninety (90) day period after the effective date of these regulations, for the User to achieve full compliance with the requirements of these regulations. For purposes of this Section, "good cause" shall include the need to acquire and install specialized equipment for Pre-Treatment of any such discharge.

4.3. New Connections. Any User who proposes to begin or re-commence discharging into the POTW, and who is required by these regulations to obtain a wastewater discharge permit, must obtain such permit prior to beginning or re-commencing such discharge. An application for wastewater discharge permit must be filed at least ninety (90) days prior to the date upon which any discharge will begin or re-commence.

4.4. Application. Any User required to obtain a wastewater discharge permit must submit a permit application. The application shall include the following information:

A. Identifying Information.

(1) The name and address of the facility, including the name(s) of the owner(s).

(2) The name and address of any and all licensed operators employed by applicant.

(3) Contact information, including telephone and e-mail (if available)

(4) Description of activities, facilities, and plant production processes on the premises;

B. Environmental Permits. A list of any environmental control permits held by or for the facility.

C. Description of Operations.

(1) A brief description of the nature, average rate of production (including each product produced by type, amount, processes, and rate of production), and standard industrial classifications of the operation(s) carried out by such Use, specifically including a schematic process diagram which indicates the point(s) of discharge to the POTW from the processes.

(2) Types of wastes generated, and a list of all raw materials and chemicals used or stored at the facility which are, or could accidentally or intentionally be, discharged to the POTW;

(3) Number and type of employees, hours of operation, and proposed or actual hours of operation;

(4) Type and amount of raw materials processed (average and maximum per day);

(5) Site plans, floor plans, mechanical and plumbing plans, and details to show all sewers, floor drains, and appurtenances by size, location, and elevation, and all points of discharge;

D. Time and duration of discharges;

E. The location for monitoring all wastes covered by the permit;

F. Flow Measurement. Information showing the measured average daily and maximum daily flow, in gallons per day, to the POTW from regulated process streams and other streams, as necessary, to allow use of the combined wastestream formula set out in Section2.2C (40 CFR 403.6(e)).

G. Measurement of Pollutants.

(1) The Categorical Pre-Treatment Standards applicable to each regulated process and any new categorically regulated processes for Existing Sources.

(2) The results of sampling and analysis identifying the nature and concentration, and/or mass, where required by the Standard or by the Director, of regulated pollutants in the discharge from each regulated process.

(3) Instantaneous, Daily Maximum, and long-term average concentrations, or mass, where required, shall be reported.

(4) The sample shall be representative of daily operations and shall be analyzed in accordance with procedures set out in this Section. Where the Standard requires compliance with a BMP or pollution prevention alternative, the User shall submit documentation as required by the Director or the applicable Standards to determine compliance with the Standard.

(5) Sampling must be performed in accordance with procedures set out in these regulations.

H. Any requests for a monitoring waiver (or a renewal of an approved monitoring waiver) for a pollutant neither present nor expected to be present in the discharge in accordance with 40 CFR §403.12(e)(2).

I. Any other information as may be deemed necessary by the Director to evaluate the permit application.

J. A certification statement as set out in Section5.14 below.

K. Incomplete or inaccurate applications will not be processed and will be returned to the User for revision.

L. Signatories; Certifications.

(1) All wastewater discharge permit applications and the required certification statement must be signed by an Authorized Representative of the User. The required certification statement pursuant to 40 CFR Part §403.6(a)(2)(ii) is as follows:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(2) If the designation of an Authorized Representative is no longer accurate because a different individual or position has been assigned responsibility for the overall operation of the facility or overall responsibility for environmental matters for the company, a new written authorization must be submitted to the Director prior to or together with any reports to be signed by an Authorized Representative.

4.5. Decision. The Director shall review and evaluate any application for individual wastewater discharge permit; may require the submission of additional information needed for a full and complete evaluation of the application; and shall within sixty (60) days of receipt of a complete permit application determine whether to issue the permit. The Director may deny any application for a wastewater discharge permit.

4.6. Duration. A wastewater discharge permit shall be issued for a specified time period, not to exceed three (3) years from the effective date of the permit. A wastewater discharge permit may be issued for a period less than three (3) years, at the discretion of the Director. Each individual wastewater discharge permit will indicate a specific date upon which it will expire.

4.7. Contents. A wastewater discharge permit shall include such conditions as are deemed reasonably necessary by the Director to prevent Pass Through or Interference, protect the quality of the water body receiving the treatment plant's effluent, protect worker health and safety, facilitate sludge management and disposal, and protect against damage to the POTW.

A. Individual wastewater discharge permits must contain:

(1) A statement that indicates the wastewater discharge permit issuance date, expiration date and effective date;

(2) A statement that the wastewater discharge permit is nontransferable without prior notification to the Village as required by these regulations, and provisions for furnishing the new owner or operator with a copy of the existing wastewater discharge permit;

(3) Effluent limits, including Best Management Practices, based on applicable Pre-Treatment Standards;

(4) Self monitoring, sampling, reporting, notification, and record-keeping requirements. These requirements shall include an identification of pollutants (or best management practice) to be monitored, sampling location, sampling frequency, and sample type based on Federal, State, and local law.

(5) A reference to the process for seeking a waiver from monitoring for a pollutant neither present nor expected to be present in the Discharge in accordance with these regulations.

(6) A description of any compliance schedule; provided, any such schedule may not extend the time for compliance beyond that required by applicable Federal, State, or local law.

(7) A statement of applicable civil and criminal penalties for violation of Pre-Treatment Standards and Requirements, and any applicable compliance schedule. Such schedules may not extend the compliance date beyond applicable federal deadlines;

(8) Requirements to control Slug Discharge, if determined by the Director to be necessary.

(9) Any grant of a monitoring waiver must be specifically included as a condition in the User's permit.

B. Individual wastewater discharge permits may also contain any or all of the following additional conditions:

(1) Limits on the average and/or maximum rate of discharge, time of discharge, and/or requirements for flow regulation and equalization;

(2) Requirements for the installation of Pre-Treatment technology, pollution control, or construction of appropriate containment devices, designed to reduce, eliminate, or prevent the introduction of pollutants into the treatment works;

(3) Requirements for the development and implementation of spill control plans or other special conditions including management practices necessary to adequately prevent accidental, unanticipated, or non-routine discharges;

(4) A requirement that any industrial user shall control production and/or all discharges to the extent necessary to maintain compliance with all applicable regulations in the event of any reduction, loss, or failure of its treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost or fails.

(5) Development and implementation of waste minimization plans to reduce the amount of pollutants discharged to the POTW;

(6) The unit charge or schedule of User charges and fees for the management of the wastewater discharged to the POTW;

(7) Requirements for installation and maintenance of inspection and sampling facilities and equipment, including flow measurement devices;

(8) A statement that compliance with the individual wastewater discharge permit does not relieve the permittee of responsibility for compliance with all applicable Federal and State Pre-Treatment Standards, including those which become effective during the term of the individual wastewater discharge permit; and

(9) Other conditions as deemed appropriate by the Director to ensure compliance with these regulations, and State and Federal laws, rules, and regulations.

4.8. Modification. The Director may modify a wastewater discharge permit for good cause, including, but not limited to, the following reasons:

A. To incorporate any new or revised Federal, State, or local Pre-Treatment Standards or Requirements;

B. To address significant alterations or additions to the User's operation, processes, or wastewater volume or character since the time of the individual wastewater discharge permit issuance;

C. A change in the POTW that requires either a temporary or permanent reduction or elimination of the authorized discharge;

D. Information indicating that the permitted discharge poses a threat to the Village's POTW, Village personnel, or the receiving waters;

E. Violation of any terms or conditions of the individual wastewater discharge permit;

F. Misrepresentations or failure to fully disclose all relevant facts in the wastewater discharge permit application or in any required reporting;

G. Revision of or a grant of variance from Categorical Pre-Treatment Standards pursuant to 40 CFR 403.13;

H. To correct typographical or other errors in the individual wastewater discharge permit; or

I. To reflect a transfer of the facility ownership or operation to a new owner or operator.

4.9. Transfer

A. Individual wastewater discharge permits may be transferred to a new owner or operator only if the permittee gives at least ninety (90) days advance notice to the Director and the Director approves the individual wastewater discharge permit transfer.

B. The notice to the Director must include a written certification by the new owner or operator which:

(1) States that the new owner and/or operator has no immediate intent to change the facility's operations and processes;

(2) Identifies the specific date on which the transfer is to occur; and

(3) Acknowledges full responsibility for complying with the existing individual wastewater discharge permit.

C. Failure to provide advance notice of a transfer renders the individual wastewater discharge permit void as of the date of facility transfer.

4.10. Revocation.

A. The Director may revoke a wastewater discharge permit for good cause, including, but not limited to, the following reasons:

(1) Failure to notify the Director of significant changes to the wastewater prior to a change in discharge;

(2) Failure to provide prior notification to the Director of changed conditions as required by these regulations;

(3) Failure to notify the Director of any discharge of Hazardous Waste(s) as required by these regulations.

(4) Failure to notify the Director of any accidental, non-routine, episodic, batch, or Slug Discharge, or any Slug Load, as required by these regulations.

(5) Misrepresentation or failure to fully disclose all relevant facts in a wastewater discharge permit application;

(6) Falsifying any self-monitoring report or certification statement;

(7) Tampering with monitoring equipment;

(8) Refusing to allow the Director timely access to the facility premises and records;

(9) Failure to meet any applicable effluent limitation(s);

(10) Failure to pay any fine;

(11) Failure to pay any applicable sewer charge;

(12) Failure to meet any pertinent compliance schedule;

(13) Failure to complete a wastewater survey or the wastewater discharge permit application;

(14) Failure to provide advance notice of the transfer of business ownership of a permitted facility; or

(15) Violation of any Pre-Treatment Standard or Requirement, or any terms or conditions of a permit, or these regulations.

B. Individual wastewater discharge permits shall be revocable upon cessation of operations or transfer of business ownership.

C. All individual wastewater discharge permits issued to a User are void upon the issuance of a new individual wastewater discharge permit to that User.

4.11. Re-issuance. A User shall not less than ninety (90) days prior to the expiration of the User's existing permit apply for re-issuance of such permit.

Section V. - REPORTING REQUIREMENTS

5.1. Wastewater Analysis. When requested by the Director, a User must within any time period specified in such request and, if no time is specified then within 30 days after the date of the request, submit a report of information on the nature and characteristics of its wastewater. The Director is authorized to prepare a form for this purpose and may periodically require Users to update the information called for on the form.

5.2. Baseline Monitoring Reports.

A. A Baseline Monitoring Report shall be due from each existing Categorical Industrial Users currently discharging to or scheduled to discharge to the POTW. The report shall be due within one hundred eighty (180) days after either the effective date of an applicable Categorical Pre-Treatment Standard, or the final administrative decision on a category determination under 40 CFR 403.6(a)(4), whichever is later.

B. A Baseline Monitoring Report shall be due from any New Source, and from any source that becomes a Categorical Industrial User subsequent to the promulgation of an applicable Categorical Standard, not less than ninety (90) days prior to commencement of discharge.

C. Each Baseline Monitoring Report shall include the following information:

(1) The name and address of the facility, including the name of the operator and owner.

(2) Environmental Permits. A list of any environmental control permits held by or for the facility.

(3) Production Data. A brief description of the nature, average rate of production (including each product produced by type, amount, processes, and rate of production), and standard industrial classifications of the operation(s) carried out by such User. This description should include a schematic process diagram, which indicates points of discharge to the POTW from the regulated processes.

(4) Flow Measurement. Information showing the measured average daily and maximum daily flow, in gallons per day, to the POTW from regulated process streams and other streams, as necessary, to allow use of the combined wastestream formula set out in Section 2.2(C) (40 CFR 403.6(e)).

(5) Measurement of pollutants.

(a) The Categorical Pre-Treatment Standards applicable to each regulated process and any new categorically regulated processes for Existing Sources.

(b) The results of sampling and analysis identifying the nature and concentration, and/or mass, where required by the Standard or by the Director, of regulated pollutants in the discharge from each regulated process.

(c) Instantaneous, Daily Maximum, and long-term average concentrations, or mass, where required, shall be reported.

(d) The sample shall be representative of daily operations and shall be analyzed in accordance with procedures set out in these regulations. Where the Standard requires compliance with a BMP or pollution prevention alternative, the User shall submit documentation as required by the Director or the applicable Standards to determine compliance with the Standard.

(e) The User shall take a minimum of one representative sample to compile that data necessary to comply with the requirements of this paragraph.

(f) Samples should be taken immediately downstream from Pre-Treatment facilities if such exist or immediately downstream from the regulated process if no Pre-Treatment exists. If other wastewaters are mixed with the regulated wastewater prior to Pre-Treatment the User should measure the flows and concentrations necessary to allow use of the combined wastestream formula in 40 CFR 403.6(e) to evaluate compliance with the Pre-Treatment Standards. Where an alternate concentration or mass limit has been calculated in accordance with 40 CFR 403.6(e) this adjusted limit along with supporting data shall be submitted to the Control Authority;

(g) Sampling and analysis shall be performed in accordance with these regulations;

(h) The Director may allow the submission of a baseline report which utilizes only historical data so long as the data provides information sufficient to determine the need for industrial Pre-Treatment measures;

(i) The baseline report shall indicate the time, date and place of sampling and methods of analysis, and shall certify that such sampling and analysis is representative of normal work cycles and expected pollutant Discharges to the POTW.

(6) Compliance Certification. A statement, reviewed by the User's Authorized Representative and certified by a qualified professional, indicating whether Pre-Treatment Standards are being met on a consistent basis, and, if not, whether additional operational and maintenance measures and/or additional Pre-Treatment measures are required to meet the Pre-Treatment Standards and Requirements.

(7) Compliance Schedule. If additional Pre-Treatment and/or Operations and maintenance measures will be required to meet the Pre-Treatment Standards, the shortest schedule by which the User will provide such additional Pre-Treatment and/or Operations and Maintenance measures shall be described. Provided, the completion date in such schedule shall not be later than the compliance date established for the applicable Pre-Treatment Standard; and any compliance schedule pursuant to this Section must meet the requirements set out in Section 5.3 of these regulations.

(8) Signature and Certification. All baseline monitoring reports must be signed and certified by an Authorized Representative of the User.

D. In addition, any New Source shall report the method of Pre-Treatment it intends to use to meet applicable Categorical Standards, together with estimates of its anticipated flow and quantity of pollutants to be discharged.

5.3. Compliance Schedule Progress Reports. The following conditions shall apply to the compliance schedule required by these regulations:

A. The schedule shall contain progress increments in the form of dates for the commencement and completion of major events leading to the construction and operation of additional Pre-Treatment required for the User to meet the applicable Pre-Treatment Standards (such events include, but are not limited to, hiring an engineer, completing preliminary and final plans, executing contracts for major components, commencing and completing construction, and beginning and conducting routine operation);

B. No increment referred to above shall exceed nine (9) months;

C. The User shall submit a progress report to the Director no later than fourteen (14) days following each date in the schedule and the final date of compliance including, as a minimum, whether or not it complied with the increment of progress, the reason for any delay, and, if appropriate, the steps being taken by the User to return to the established schedule; and

D. In no event shall more than nine (9) months elapse between such progress reports to the Director.

5.4. Reports on Compliance with Categorical Pre-Treatment Standard Deadline.

A. Within ninety (90) days following the date for final compliance with applicable Categorical Pre-Treatment Standards, or in the case of a New Source following commencement of the introduction of wastewater into the POTW, any User subject to such Pre-Treatment Standards and Requirements shall submit to the Director a report containing the information described in Sections 5.2C of this Regulation.

B. For Industrial Users subject to equivalent mass or concentration limits established by the Control Authority in accordance with the procedures in §403.6(c), this report shall contain a reasonable measure of the User's long term production rate.

C. For any User subject to Categorical Pre-Treatment Standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), the report shall include the User’s actual production during the appropriate sampling period.

D. All compliance reports must be signed and certified by an Authorized Representative.

E. All sampling will be done in conformance with these regulations.

5.5. Periodic Compliance Reports.

A. All Significant Industrial Users are required to submit periodic compliance reports; in addition, any User which has been designated as a Non-Significant Categorical Industrial

User shall also be required to submit periodic compliance reports in order to maintain such designation.

B. Except as otherwise specified below, all Significant Industrial Users must submit reports not less than twice per year (June and December) indicating the nature, concentration of pollutants in the discharge which are limited by Pre-Treatment Standards, and the measured or estimated average and maximum daily flows for the reporting period; provided, the Director may in his sole discretion require more frequent reporting from any permit holder.

C. In any case where the Pre-Treatment Standard requires compliance with a Best Management Practice (BMP) or pollution prevention alternative, the User must submit documentation required by the Director or the Pre-Treatment Standard necessary to determine the compliance status of the User.

D. The Village may authorize an Industrial User subject to a Categorical Pre-Treatment Standard to forego sampling of a pollutant regulated by a Categorical Pre-Treatment Standard if the Industrial User has demonstrated through sampling and other technical factors that the pollutant is neither present nor expected to be present in the Discharge, or is present only at background levels from intake water and without any increase in the pollutant due to activities of the Industrial User, [see 40 CFR 403.12(e)(2)] subject to the following conditions:

(1) The waiver may be authorized where a pollutant is determined to be present solely due to sanitary wastewater discharged from the facility provided that the sanitary wastewater is not regulated by an applicable Categorical Standard and otherwise includes no process wastewater.

(2) The monitoring waiver is valid only for the duration of the effective period of the individual wastewater discharge permit, but in no case longer than three (3) years. The User must submit a new request for the waiver before the waiver can be granted for each subsequent individual wastewater discharge permit. See Section 4.4H

(3) In making a demonstration that a pollutant is not present, the Industrial User must provide data from at least one sampling of the facility's process wastewater prior to any treatment present at the facility that is representative of all wastewater from all processes.

(4) The request for a monitoring waiver must be signed and certified by an Authorized Representative in accordance with Section 1.4C and include the certification statement in Section 5.14 (40 CFR 403.6(a)(2)(ii)).

(5) Non-detectable sample results may be used only as a demonstration that a pollutant is not present if the EPA approved method from 40 CFR Part 136 with the lowest minimum detection level for that pollutant was used in the analysis.

(6) Any grant of the monitoring waiver by the Director must be included as a condition in the User's permit. The reasons supporting the waiver and any information submitted by the User in its request for the waiver must be maintained by the Director for 3 years after expiration of the waiver.

(7) Upon approval of the monitoring waiver and revision of the User's permit by the Director, the Industrial User must certify on each report with the statement in 40 CFR

403.12(e)(2)(v) that there has been no increase in the pollutant in its wastestream due to activities of the Industrial User.

(8) In the event that a waived pollutant is found to be present or is expected to be present because of changes that occur in the User's operations, the User must immediately notify the Director of such condition, and thereafter comply with the monitoring requirements of this Section, or any other more frequent monitoring requirements imposed by the Director.

(9) This provision does not supersede the certification processes and requirements established in Categorical Pre-Treatment Standards, except as otherwise specified in the Categorical Pretreatment Standard.

E. The Village may reduce the requirement for periodic compliance reports [see Section 5.5 B and C (40 CFR 403.12(e)(1))] to a requirement to report no less frequently than once a year, unless required more frequently in the Pre-Treatment Standard or by the EPA, where the Industrial User's total categorical wastewater flow does not exceed any of the following:

(1) POTW's value for 0.01 percent of the POTW's design dry-weather *hydraulic capacity* of the POTW, or five thousand (5,000) gallons per day, whichever is smaller, as measured by a continuous effluent flow monitoring device unless the Industrial User discharges in batches

(2) POTW's value for 0.01 percent of the design dry-weather organic treatment capacity of the POTW; and

(3) POTW's value for 0.01 percent of the maximum allowable headworks loading for any pollutant regulated by the applicable Categorical Pre-Treatment Standard for which approved Local Limits were developed in accordance with Section 2.4 of these regulations.

F. Reduced reporting shall not apply to the following:

(1) Any Industrial User that has in the last two (2) years been in Significant Non-compliance, as defined below.

(2) Any Industrial User with daily flow rates, production levels, or pollutant levels that vary so significantly that, in the sole discretion of the Director, decreasing the reporting requirement for this Industrial User would result in data that are not representative of conditions occurring during the reporting period.

G. All periodic compliance reports must be signed and certified by an Authorized Representative in accordance with Section 5.14 of this ordinance.

H. All wastewater samples must be representative of the User's discharge, or the same may be rejected. Wastewater monitoring and flow measurement facilities shall be properly operated, kept clean, and maintained in good working order at all times; and, the failure of a User to keep its monitoring facilities in good working order shall not be grounds for the User to claim that sample results are not representative of its actual discharge.

I. If a User monitors any regulated pollutant at the appropriate sampling location more frequently than required by the Director, using the procedures prescribed in Section 5.11 of this ordinance, the results of this monitoring shall be included in any required report.

5.6. Reports of Changed Conditions. Not less than ninety (90) days prior to any significant change to the User's operations or system which may alter the nature, quality, or volume of its wastewater, each User shall in writing notify the Director of the prospective change. The Director may after such notice require the User to submit such information as he may in his sole discretion deem necessary to evaluate the changed condition.

5.7. Reports of Discharge Problems

A. In the case of any discharge, including but not limited to accidental discharges, discharges of a non-routine, episodic nature, a non-customary batch discharge, a Slug Discharge or a Slug Load that in each case might cause any potential treatment problem for the POTW, the User shall immediately by telephone and in writing notify the Director of the discharge. The notification shall include the location, type of waste, concentration and volume, if known, and corrective actions taken by the User in regard to the discharge.

B. Within five (5) days following such discharge, the User shall, unless waived by the Director, submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the User to prevent similar future occurrences. Such notification shall not relieve the User of any expense, loss, damage, or other liability which might be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the User of any fines, penalties, or other liability which may be imposed pursuant to these regulations**.**

C. A notice, on a form to be supplied by the Village, shall be permanently posted on the User's bulletin board or other prominent place advising employees who to call in the event of such a discharge; and furthermore, each User shall ensure that all employees, agents or servants whose activities could result in such a discharge are specifically advised of the emergency notification procedure.

D. Significant Industrial Users are required to notify the Director immediately of any changes at the User's facility which may affect the potential for a Slug Discharge

5.8. Notice of Violation / Repeat Sampling and Reporting.

A. If any sampling performed by a User indicates any violation, the User shall notify the Director, both by telephone within twenty-four (24) hours of becoming aware of the violation, and in writing as soon as practicable.

B. The User shall also as directed by the Director thereafter both repeat the sampling and submit the results of the repeated sampling to the Director.

C. Repeated sampling by the User is not required if the Village otherwise performs sampling at the User's facility at least once a month; or if the Village performs sampling at the User's location between the time when the initial sampling was conducted and the time when the User or the Village receives the results of analysis of this sampling, or if the Village has performed the sampling and analysis in lieu of the Industrial User.

5.9. Notification of Discharge of Hazardous Waste

A. Any User who commences the discharge of any Hazardous Waste shall notify the Director, the EPA Regional Waste Management Division Director, and State hazardous waste

authorities, in writing, of any discharge into the POTW of a substance which, if otherwise disposed of, would be a Hazardous Waste under 40 CFR Part 261, subject to the following requirements:

(1) Such notification must include the name of the Hazardous Waste as set forth in 40 CFR Part 261, the EPA hazardous waste number, and the type of discharge (continuous, batch, or other).

(2) If the User discharges more than one hundred (100) kilograms of such waste per calendar month to the POTW, the notification also shall contain the following information to the extent such information is known and readily available to the User:

(a) Identification of the hazardous constituents contained in the wastes,

(b) An estimation of the mass and concentration of such constituents in the wastestream discharged during that calendar month, and

(c) An estimation of the mass of constituents in the wastestream expected to be discharged during the following twelve (12) months.

(3) All notifications must take place no later than one hundred and eighty (180) days after the discharge commences.

(4) Any notification under this paragraph need be submitted only once for each hazardous waste discharged.

(5) Notification of any changed condition must be filed as otherwise required under these regulations.

(6) The notification requirement in this Section does not apply to pollutants reported by Users subject to Categorical Pre-Treatment Standards under the self-monitoring requirements of these regulations.

B. A discharge of not more than fifteen (15) kilograms of any Hazardous Waste or Wastes shall be exempt from the requirements of this sub-section, during a calendar month in which the discharge occurs, unless the wastes are acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e). No additional notification shall be required for any subsequent month(s) during which the User discharges more than such quantities of any hazardous waste.

C. Discharge of more than fifteen (15) kilograms of non-acute hazardous wastes in a calendar month, or of any quantity of acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e), requires a one-time notification. No additional notification shall be required for any subsequent month(s) during which the User discharges more than such quantities of any hazardous waste.

D. In the case of any new regulations under section 3001 of RCRA identifying additional characteristics of hazardous waste, or listing any additional substance as a hazardous waste, a User must notify the Director, the EPA Regional Waste Management Waste Division Director, and State hazardous waste authorities of the discharge of such substance within ninety (90) days of the effective date of such regulations.

E. In the case of any notification made under this Section, the User shall also certify that it has put in place a program to reduce the volume and toxicity of any such Hazardous Waste(s) generated by it or its operations to the degree it has determined such program to be economically practical**.**

F. This provision does not create a right to discharge any substance not otherwise permitted to be discharged by either these regulations, a permit issued hereunder, or any applicable Federal or State law.

5.10. Requirements for Sampling and Analyses. All pollutant analyses, including sampling techniques, shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto, unless otherwise specified in an applicable Categorical Pre-Treatment Standard. Provided, if 40 CFR Part 136 does not describe or specify sampling or analytical techniques for the pollutant in question, or where the EPA determines that the Part 136 sampling and analytical techniques are inappropriate for the pollutant in question, sampling and analyses shall be performed by using validated analytical methods or any other applicable sampling and analytical procedures, including procedures suggested by the Director or other parties approved by EPA.

5.11. Sample Collection.

A. All samples collected to satisfy reporting requirements must be based on data obtained through appropriate sampling and analysis performed during the period covered by the report, based on data that is representative of conditions occurring during the reporting period.

B. Except as indicated in this sub-section, or unless time-proportional composite sampling or grab sampling is authorized by the Director, a User shall collect wastewater samples using 24-hour flow-proportional composite sampling techniques. Where time-proportional composite sampling or grab sampling is authorized by the Village the samples must be representative of the discharge.

C. Using protocols (including appropriate preservation) specified in 40 CFR Part 136 and appropriate EPA guidance, multiple grab samples collected during a 24-hour period may be composited prior to the analysis as follows:

(1) for cyanide, total phenols, and sulfides the samples may be composited in the laboratory or in the field;

(2) for volatile organics and oil and grease, the samples may be composited in the laboratory.

(3) for other parameters unaffected by the compositing procedures as documented in approved EPA methodologies, other composite samples may be authorized by the Village, as appropriate.

D. Grab Samples may be required by the Director to show compliance with Instantaneous Limits.

E. Grab Samples must be obtained for oil and grease, temperature, pH, cyanide, total phenols, sulfides, and volatile organic compounds.

F. For sampling required in support of baseline monitoring and 90-day compliance reports, a minimum of four (4) Grab Samples must be used for pH, cyanide, total phenols, oil and grease, sulfide and volatile organic compounds for any facilities for which historical sampling data do not exist. For facilities for which historical sampling data are available, the Director may authorize a lower minimum.

G. For reports required by paragraph sub-section E of this Section (40 CFR 403.12(e) and 403.12(h)), the Industrial User is required to collect the number of grab samples necessary to assess and assure compliance with applicable Pre-Treatment Standards and Requirements

5.12. Date of Receipt of Reports. Written reports will be deemed to have been submitted on the date postmarked. For reports which are not mailed, postage prepaid, into a mail facility serviced by the United States Postal Service, the date of receipt of the report at the Director's Office in the Village shall govern.

5.13. Recordkeeping.

A. Any User subject to the reporting requirements of these regulations shall retain, and make available for inspection and copying, all records of information obtained pursuant to any monitoring activities required by these regulations, any additional records of information obtained pursuant to monitoring activities undertaken by the User independent of such requirements, and documentation associated with Best Management Practices established under these regulations.

B. Such records shall include the date, exact place, method, and time of sampling, and the name of the person(s) taking the samples; the dates analyses were performed; who performed the analyses; the analytical techniques or methods used; and the results of such analyses.

C. Such records shall remain available for a period of at least three (3) years; provided, such period shall be automatically extended for the duration of any litigation related to these regulations and concerning the User and/or the Village, or where the User has been specifically notified of a longer retention period by the Director.

5.14. Certification Statements. The following certification statement, signed by an Authorized Representative of the User, is required to be signed and included with any submission of any report due under this Article, as well as with any application submitted for a permit, as specified above: .

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for any knowing violation.

Section VI. - COMPLIANCE MONITORING

6.1. Right of Entry. The Director shall have the right to enter the premises of any User at any time to determine whether the User is complying with all requirements of these regulations or order issued hereunder.

A. A User shall allow the Director immediate and ready access to all parts of the User's premises for the purposes of inspection, sampling, records examination and copying, and the performance of any additional duties.

B. Where a User has security measures in place which require proper identification and clearance before entry into its premises, the User shall inform its security guards that, upon presentation of identification, the Director shall be permitted to enter User's premises without delay.

C. Any temporary or permanent obstruction to immediate and ready access to any pollution control, pre-treatment, discharge or other pertinent facility on User's premises shall be promptly removed by the User at the written or verbal request of the Director and shall not thereafter be replaced. The cost of removing any such obstruction to access shall be borne by the User.

D. Any delay in allowing the Director access to the User's premises shall be a violation of these regulations.

6.2. Sampling and Monitoring Equipment.

A. The Director may require the User at its expense to install sampling and/or monitoring equipment as reasonably necessary to accomplish the purposes of this Article. Any such sampling and/or monitoring equipment shall be maintained at all times in a safe and proper operating condition, and free of any temporary or permanent obstruction to immediate and ready access to the Director, by the User at its own expense.

B. The Director shall, in the alternative, also have the right in his sole discretion to set up on the User's property such devices as are necessary to conduct sampling and/or monitoring, or metering, of the User's discharge.

C. All devices used to measure wastewater flow and quality shall be calibrated on not less than a bi-annual frequency (every two years) to ensure their accuracy.

6.3. Search Warrants. If the Director has been refused access to a building, structure, or property, or any part thereof by any User, or his immediate and ready access to any pollution control, pre-treatment, discharge or other pertinent facility on User's premises is temporarily or permanently obstructed, and the Director is able to demonstrate in accordance with law sufficient probable cause to believe that there may be occurring thereon or therein a violation of these regulations, or that there is a need to inspect and/or sample either as part of a routine inspection and sampling program of the Village designed to verify compliance with these regulations or any permit or order issued hereunder, or to protect the overall public health, safety and welfare of the community, or any other basis sufficient under law, then the Director may petition a judge of the local circuit court for issuance of, and obtain, an appropriate search warrant.

Section VII. - CONFIDENTIAL INFORMATION

A. Information and data on any User, obtained from reports, surveys, permits, and monitoring programs, or from the Director's inspection and sampling activities, shall be available to the public without restriction, unless the User specifically states, and is able to demonstrate to the satisfaction of the Director, that the release of such information would divulge information, processes, or methods of production entitled to protection as trade secrets or trade processes under applicable State law.

(1) Any such statement must be asserted at the time of submission of the information or data.

(2) When requested and demonstrated by the User furnishing a report that such information should be held confidential, the portions of a report which might disclose trade secrets or secret processes shall not be made available for inspection by the public, but shall be made available immediately upon request to governmental agencies for uses related to the NPDES program or any Pre-Treatment program, and in enforcement proceedings involving the User furnishing the report.

(3) Wastewater constituents and characteristics and other effluent data, as defined at 40 CFR 2.302, shall not be recognized as confidential information and shall be available to the public without restriction.

(4) In the event that the Director finds that any information submitted by a User is not to be deemed confidential, the User may within ten (10) days of such determination by the Director file a written appeal with the Village Manager.

(a) The Village Manager may decide the appeal without a hearing, or may in the alternative, convene a hearing on the appeal, at which the User and the Director may present oral argument on the matter. Such hearing may be chaired by the Village Manager, or his designee.

(b) The Village Manager shall render a decision on the appeal as soon as practicable.

Section VIII. - USERS IN SIGNIFICANT NON-COMPLIANCE – PUBLICATION OF NOTICE

A. The Director shall publish annually, in a newspaper of general circulation in the Village, a list of the Users which, at any time during the previous twelve (12) months, were in Significant Non-compliance with applicable Pre-Treatment Standards and Requirements.

B. For purposes of this section, the term Significant Non-compliance shall be applicable to all Significant Industrial Users (or any other Industrial User that violates paragraphs (3), (4) or (8) of this Section) and shall mean:

(1) Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent (66%) or more of all the measurements taken for the same pollutant parameter taken during a six- (6-) month period exceed (by any magnitude) a numeric Pre-Treatment Standard or Requirement, including Instantaneous Limits as defined in Section 2;

(2) Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent (33%) or more of wastewater measurements taken for each pollutant parameter during a six- (6-) month period equals or exceeds the product of the numeric Pre-Treatment Standard or Requirement including Instantaneous Limits, as defined by Section 2 multiplied by the applicable criteria (1.4 for BOD, TSS, fats, oils and grease, and 1.2 for all other pollutants except pH);

(3) Any other violation of a Pre-Treatment Standard or Requirement as defined by Section 2 (Daily Maximum, long-term average, Instantaneous Limit, or narrative standard) that the Director determines has caused, alone or in combination with other discharges, Interference or Pass Through, including endangering the health of POTW personnel or the general public;

(4) Any discharge of a pollutant that has caused imminent endangerment to the public or to the environment, or has resulted in the Director's exercise of its emergency authority to halt or prevent such a discharge;

(5) Failure to meet, within ninety (90) days of the scheduled date, a compliance schedule milestone contained in a permit or an enforcement order for starting construction, completing construction, or attaining final compliance;

(6) Failure to provide within thirty (30) days after the due date, any required reports, including baseline monitoring reports, reports on compliance with Categorical Pre-Treatment Standard deadlines, periodic self-monitoring reports, and reports on compliance with compliance schedules;

(7) Failure to accurately report noncompliance; or

(8) Any other violation(s), which may include a violation of Best Management Practices, which the Director determines will adversely affect the operation or implementation of the local Pre-Treatment program.

Section IX. - ADMINISTRATIVE ENFORCEMENT ACTIONS

9.1. Notice of Violation

A. When the Director finds that a User has violated, or continues to violate, any provision of these regulations, a permit or any order issued hereunder, or any other Pre-Treatment Standard or Requirement, the Director may serve upon that User a written Notice of Violation.

B. Within seven (7) days of the receipt of such notice, the User shall submit to the Director a written explanation of the violation and a plan for the satisfactory correction and prevention thereof. Provided, submission of such an explanation and/or plan in no way relieves the User of liability for any violation occurring before or after receipt of the Notice of Violation.

C. Nothing in this Section shall limit the authority of the Director to take any action, including emergency actions or any other enforcement action, without first issuing a Notice of Violation.

9.2. Consent Order. The Director may enter into a Consent Order, an assurance of compliance agreement, or other similar document establishing an agreement with any User responsible for non-compliance. Any such document shall describe each specific action, and a time period for completion thereof, to be taken by the User to correct the non-compliance. Such documents shall expressly be made enforceable through the local Circuit Court.

9.3. Show Cause Hearing. The Director may order a User which has violated, or continues to violate, any provision of these regulations, a permit, or any order issued hereunder, or any other Pre-Treatment Standard or Requirement, to appear before the Director and show cause why an enforcement action should not be taken.

A. Notice of the Show Cause Order shall be served on the User specifying the time and place for the hearing, the proposed enforcement action, the reasons for such action, and a request that the User show cause why the proposed enforcement action should not be taken.

B. Notice of the hearing shall be served personally or by registered or certified mail (return receipt requested) at least fourteen (14) days prior to the hearing.
C. Such notice may be served on any Authorized Representative of the User.

D. A show cause hearing shall not be a prerequisite for, or a bar against, the Village taking any other action against the User.

9.4. Compliance Order. When the Director finds that a User has violated, or continues to violate, any provision of these regulations, a permit, or any order issued hereunder, or any other Pre-Treatment Standard or Requirement, the Director may issue an order to the User responsible for the discharge directing that the User come into compliance within a specified time.

A. If the User does not come into compliance within the time provided, sewer service for the User may be discontinued unless adequate treatment facilities, devices, or other related appurtenances are or have been installed and properly operated by the User.

B. A compliance order also may contain other requirements to address the non-compliance, including additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the POTW.

C. A compliance order may not extend the deadline for compliance established for a Pre-Treatment Standard or Requirement, nor does a compliance order relieve the User of liability for any violation, including any continuing violation, and the legal consequences thereof.

D. Issuance of a compliance order shall not be a prerequisite for, or a bar against, the Village taking any other action against the User.

9.5. Cease and Desist Order. When the Director finds that a User has violated, or continues to violate, any provision of these regulations, a permit, or any order issued hereunder, or any other Pre-Treatment Standard or Requirement, or that the User's past violations are likely to recur, the Director may issue an order to the User directing it to cease and desist all such violations.

A. Any such cease and desist order may also order the User to:

(1) Immediately comply with all pertinent requirements of law; and

(2) Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating discharge.

B. Issuance of a cease and desist order shall not be a prerequisite for, or a bar against, the Village taking any other action against the User.

9.6. Emergency Suspensions

A. The Director may immediately suspend a User's discharge, after informal notice to the User, whenever such suspension is necessary to stop an actual or threatened discharge, which reasonably appears to present, or may cause, an imminent or substantial endangerment to the health or welfare of any person or persons.

B. The Director may also immediately, after notice and opportunity to respond, suspend a User's discharge that threatens to interfere with the operation of the POTW, or which presents, or may present, an endangerment to the environment.

C. Any User notified of a suspension of its discharge shall immediately stop or eliminate such discharge.

D. In the event of a User's failure to immediately voluntarily comply with the suspension order, the Director may take such steps as he deems reasonably necessary, including immediate severance of the User's connection to the Village's sanitary sewer system, to prevent or minimize damage to the POTW, its receiving stream, or endangerment to any individuals or the environment.

E. The Director may allow the User to re-commence its discharge when the User has demonstrated to the satisfaction of the Director that the period of endangerment has passed, unless formal termination proceedings are initiated against the User pursuant to this Section.

F. A User that is responsible, in whole or in part, for any discharge presenting imminent endangerment to any person or persons or the environment shall submit a detailed written statement, describing the causes of the harmful discharge and the measures taken to prevent any future occurrence, to the Director prior to the date of any show cause or termination hearing commenced under this Section.

G. Nothing in this Section shall be interpreted as requiring a hearing prior to any Emergency Suspension under this Section.

9.7. Administrative Fines.

A. When the Director finds that a User has violated, or continues to violate, any provision of these regulations, a permit or any order issued hereunder, or any other Pre-Treatment Standard or Requirement, the Director may impose a fine upon such User in an amount not to exceed $1,000.00. Any such fine shall be assessed on a per-violation, per-day basis. In the case of a violation of a monthly or other long-term average discharge limit, a fine shall be assessed for each day during the period of violation.

B. Unpaid charges, fines, and penalties shall, after thirty (30) calendar days, be assessed an additional penalty of one and one-half percent (1.5%) of the unpaid balance, and interest

shall accrue thereafter at a rate of one and one-half percent (1.5%) per month. A lien against the User's property shall be sought for unpaid charges, fines, and penalties.

C. A User desiring to dispute a fine shall within ten (10) days of being notified of the fine file a written appeal of the amount of said fine with the Village Manager. Provided, the User shall also make payment in full of the fine imposed either prior to or at the time of filing the written appeal.

(1) The Village Manager may decide the appeal without a hearing, or in the alternative, may convene a hearing on the request, at which the User and the Director may present oral argument on the matter. Such hearing may be chaired by the Village Manager, or his designee.

(2) The Village Manager shall decide upon the appeal as soon as practicable.

(3) If after hearing, the Village Manager agrees to reduce the fine, any balance due from the payment made by the User shall be returned to the User.

D. The costs incurred in preparing any administrative enforcement action, such as notice and any orders, shall be added to any administrative fine imposed under this Section.

E. Issuance of an administrative fine shall not be a bar against, or a prerequisite for, the Village taking any other enforcement action against the User.

9.8. Termination of Discharge.

In addition to the provisions in Section 4.10 of this ordinance, any User who violates the following conditions is subject to discharge termination:

A. Violation of individual wastewater discharge permit conditions;

B. Failure to accurately report the wastewater constituents and characteristics of its discharge;

C. Failure to report significant changes in operations or wastewater volume, constituents, and characteristics prior to discharge;

D. Refusal of reasonable access to the User's premises for the purpose of inspection, monitoring, or sampling; or

E. Violation of the Pretreatment Standards in Section II. of this ordinance.

Such User will be notified of the proposed termination of its discharge and be offered an opportunity to show cause under Section9.3 of this ordinance why the proposed action should not be taken. Exercise of this option by the Director shall not be a bar to, or a prerequisite for, taking any other action against the User.

9.9. Elimination of Discharge. Any user notified of a disconnection of wastewater treatment service under this Section and/or revocation of its wastewater discharge permit shall immediately stop or eliminate the discharge.

A. In the event of a failure of the user to comply voluntarily with the disconnection or revocation order, the Village shall take such steps as deemed necessary, including immediate

severance of the sewer connection, to prevent or minimize damage to the POTW and/or the wastewater conveyance system, or any danger to individuals.

B. The Director shall reinstate the wastewater discharge permit and/or the wastewater treatment service unless and until the User has submitted to him satisfactory proof of the elimination of the non-complying discharge.

Section X. - JUDICIAL ENFORCEMENT ACTIONS

10.1. Injunctive Relief.

A. Whenever the Director finds that a User has violated, or continues to violate, any provision of these regulations, any general or specific permit or order issued hereunder, or any other Pre-Treatment standard or requirement, the Village may petition the local Circuit Court for the issuance of a temporary or permanent injunction, as appropriate, which will restrain or compel the specific performance of the permit, order, or other requirement imposed by these regulations on the activities of the User.

B. The Village may also seek such other remedy as may be appropriate for legal and/or equitable relief, including a requirement for the User to conduct environmental remediation.

C. A petition for injunctive relief shall not be a bar against, or a prerequisite for, the Village taking any other action against a User.

10.2. Civil Penalties

A. A User who has violated, or continues to violate, any provision of these regulations, a permit or any order issued hereunder, or any other Pre-Treatment Standard or Requirement shall be liable to the Village for a maximum civil penalty of$1,000.00 per violation, per day. In the case of violation of a discharge limit expressed in monthly or other long-term average terms, a penalty shall accrue for each day during the period of the violation.

B. The Village may recover reasonable attorneys' fees, court costs, court reporter costs, other expenses of litigation, and any other expenses incurred in connection with, or associated with, enforcement activities under this Article, including sampling and monitoring expenses, and the cost of any actual damages incurred by the Village.

C. In determining the amount of civil liability, the Court shall take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefit gained through the User's violation, corrective actions by the User, the compliance history of the User, and any other factor as justice requires.

D. Filing a suit for civil penalties shall not be a bar against, or a prerequisite for, taking any other action against a User.

10.3. Criminal Prosecution

A. A User who willfully or negligently violates any provision of this ordinance, an individual wastewater discharge permit or order issued hereunder, or any other Pretreatment Standard or Requirement shall, upon conviction, be guilty of a misdemeanor, punishable by a fine of not more than $1,000.00 per violation, per day.

B. A User who willfully or negligently introduces any substance into the POTW which causes personal injury or property damage shall, upon conviction, be guilty of a misdemeanor and be subject to a penalty of $1,000.00. This penalty shall be in addition to any other cause of action for personal injury or property damage available under State law.

C. A User who knowingly makes any false statements, representations, or certifications in any application, record, report, plan, or other documentation filed, or required to be maintained, pursuant to this ordinance, individual wastewater discharge permit, or order issued hereunder, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this ordinance shall, upon conviction, be punished by a fine of not more than $1,000.00 per violation, per day.

D. In the event of a second conviction, a User shall be punished by a fine of not more $1,000.00 per violation, per day.

10.4. Remedies Nonexclusive.

A. The remedies provided for in this ordinance are not exclusive. The Director may take any, all, or any combination of these actions against a noncompliant User. Enforcement of pretreatment violations will generally be in accordance with the Village's enforcement response plan. However, the Director may take other action against any User when the circumstances warrant. Further, the Director is empowered to take more than one enforcement action against any noncompliant User.

Section XI. - AFFIRMATIVE DEFENSES TO DISCHARGE VIOLATIONS

11.1. Upset

A. For the purposes of this Section, upset means an exceptional incident in which there is unintentional and temporary noncompliance with Categorical Pre-Treatment Standards because of factors beyond the reasonable control of the User. An upset does not include non-compliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

B. An upset shall constitute an affirmative defense to an action brought for non-compliance with Categorical Pre-Treatment Standards only as provided herein.

C. A User who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and the User can identify the cause(s) of the upset;

(2) The facility was at the time being operated in a prudent and workman-like manner and in compliance with applicable operation and maintenance procedures; and

(3) The User has submitted the following information to the Director within twenty-four (24) hours of becoming aware of the upset (if this information is first provided orally, a written submission must be provided within five (5) days thereafter):

(a) A description of the indirect discharge and cause of noncompliance;

(b) The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

(c) Steps being taken and/or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

D. In any enforcement proceeding, the User seeking to establish the occurrence of an upset shall have the burden of proof.

E. A User shall have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for noncompliance with Categorical Pre-Treatment Standards.

F. A User shall control production of all discharges to the extent necessary to maintain compliance with Categorical Pre-Treatment Standards upon reduction, loss, or failure of its treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

11.2. Pass Through or Interference – Certain Conditions

A. A User shall have an affirmative defense to an enforcement action brought against it for non-compliance with the general prohibitions in Section 2.1A of these regulations, or the specific prohibitions in Sections2.1B(3)-(7) and (9) - (16) of these regulations, if it can prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause Pass Through or Interference, and that either:

(1) A Local Limit exists for each pollutant discharged and the User was in compliance with each limit directly prior to, and during, the Pass Through or Interference; or

(2) No Local Limit exists, but the discharge did not change substantially in nature or constituents from the User's prior discharge when the Village was regularly in compliance with its NPDES permit, and in the case of Interference, was in compliance with applicable sludge use or disposal requirements.

11.3. Allowable Bypass.

A. A User may allow any Bypass to occur which will not result in any violation of any Pre-Treatment Standard or Requirement, or of any condition of a permit issued pursuant to these regulations, but only if the Bypass also is reasonably necessary for essential maintenance of User's facilities in order to assure efficient and complying operation. Such Bypass is not subject to the notification provisions of this Section.

B. Bypass is otherwise prohibited, and the Director may take an enforcement action against a User for a Bypass, unless

(1) The Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) There were no feasible alternatives to the Bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. Provided, this condition shall not be deemed satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a Bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(3) The User submitted notices as required in this Section.

(4) For purposes of this Section, "severe property damage" means substantial physical damage to property, damage to the POTW which causes it to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a Bypass. Severe property damage does not mean economic loss to the User caused by delays in production.

C. The Director may approve an anticipated Bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed in this sub-section.

D. Notice of Bypass.

(1) If a User knows in advance of the need for a Bypass, it shall submit notice of the Bypass to the Director, at least ten (10) days before the date of the Bypass, if possible.

(2) A User shall submit oral notice to the Director of an unanticipated Bypass that exceeds applicable Pre-Treatment Standards within twenty-four (24) hours of the time it becomes aware of the Bypass; provided, the User shall also file written notice of said Bypass with the Director, within five (5) days of the time the User becomes aware of the Bypass.

(3) The written notice shall contain a description of the Bypass and its cause; the duration of the Bypass, including exact dates and times, and, if the Bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the Bypass.

(4) The Director may waive the written report on a case-by-case basis if the oral report has been received within twenty-four (24) hours.

Section XII. - MISCELLANEOUS PROVISIONS

12.1. Pre-Treatment Charges and Fees

A. The Village may adopt reasonable fees for reimbursement of costs of setting up and operating the Village's Pre-Treatment Program, which may include:

(1) Fees for wastewater discharge permit applications including the cost of processing such applications;

(2) Fees for monitoring, inspection, and surveillance procedures including the cost of collection and analyzing a User's discharge, and reviewing monitoring reports and certification statements submitted by Users;

(3) Fees for reviewing and responding to accidental discharge procedures and construction;

(4) Fees for filing appeals;

(5) Fees to recover administrative and legal costs (not included in Section12.1A(2) associated with the enforcement activity taken by the Director to address User non-compliance; and

(6) Other fees as the Village may deem necessary to carry out the requirements contained herein.

B. These fees shall relate solely to the matters covered by these regulations and shall be separate from all other fees, fines, and penalties charged by the Village.

12.2. Costs. Any and all costs for application, permitting, reporting, compliance, compliance equipment or facilities, sampling, analysis, remediation, and any other activities mandated by these regulations, required by the Director, imposed under any permit, or required by law, shall be borne by the User.

12.3. Severability. If any provision of these regulations is invalidated by any court of competent jurisdiction, the remaining provisions shall not be affected and shall continue in full force and effect.

12.4. Effective Date. These regulations shall be in full force and effect as of the date of its passage.

§ 51.55 MANHOLE REQUIRED

(A) Any manufacturing or industrial (as defined by the zoning code) user of the public sanitary sewer system of the Village may be required to install a control manhole together with such necessary meters and other appurtenances to facilitate the observation, sampling and measurement of the effluent at the discretion of the Village.

(B) Where more than one manufacturing or industrial user is located in one building, then each user is required to install a separate control manhole with such necessary meters and other appurtenances to facilitate observation, sampling and measurement of the effluent discharges of the user as provided in this subchapter.

(C) If any existing building is converted to a multi-use building and more than one manufacturing or industrial user is located in the that building, then each user is required to install a separate control manhole with such necessary meters and other appurtenances to facilitate the observation, sampling and measurement of the effluent discharges by the user as provided in this subchapter. The location and construction of the manhole shall be approved by the Village Engineer.

(D) The cost of the installation and construction of the manhole shall be paid by the user. The cost of sampling and testing of the effluent as well as any charge by the Village Engineer to establish and monitor the sampling program shall be paid by the user.

(E) No permit for the use of the Village public sanitary sewer system shall be issued and no connection to the public sanitary sewer system shall be allowed until the manhole has been constructed by the user and approved by the Village Engineer.

(F) Where an existing manufacturing or industrial user is required to install a control manhole, the installation shall be completed within 45 days of the notification.

(G) Failure to timely install the control manhole will result in termination of sanitary sewer service.

Penalty, see § 51.99

ADMINISTRATION AND ENFORCEMENT

§ 51.65 INSPECTION PROCEDURES

(A) The Director and other duly authorized employees of the Village, the Illinois Environmental Protection Agency, and the U.S. Environmental Protection Agency, bearing proper credentials and identification, shall be permitted to enter all properties for the purposes of inspection, observation, measurement, sampling, and testing in accordance with the provisions of this chapter. The Director or his representative shall have no authority to inquire into any processes, including metallurgical, chemical, oil refining, ceramic, paper, or other industries beyond that point having a direct bearing on the kind and source of discharge to the sewers or waterway or facilities for waste treatment.

(B) While performing the necessary work on private properties referred to in division (A) above, the Director or duly authorized employees of the Village, the Illinois Environmental Protection Agency, and the U.S. Environmental Protection Agency shall observe all safety rules applicable to the premises established by the company and the company shall be held harmless for injury or death to the Village employees and the Village shall indemnify the company against loss or damage to its property by Village employees and against liability claims and demands for personal injury or property damage asserted against the company and growing out of the gauging and sampling operation, except as such may be caused by negligence or failure of the company to maintain safe conditions as required in § 51.55.

§ 51.66 RIGHT OF ENTRY

The Director and other duly authorized employees of the Village bearing proper credentials and identification shall be permitted to enter all private properties through which the Village holds a duly negotiated easement for the purposes of, but not limited to, inspection, observation, measurements, sampling, repair, and maintenance of any portion of the sewerage works lying within the easement. All entry and subsequent work, if any, on said easement, shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

§ 51.98 VIOLATIONS

(A) Any person found to be violating any provision of this chapter, except § 51.58 and any other section for which another penalty is set forth, shall be served by the Village with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations. The Village may revoke any permit for sewage disposal as a result of any violation of any provision of this chapter.

(B) Any person violating any of the provisions of this chapter for which no other penalty is set forth shall become liable to the Village by reason of such violation.
Penalty, see § 51.99

§ 51.99 PENALTY

(A) Any person who shall continue any violation of any section of this chapter except as it pertains to violations of the Village's General Pretreatment Regulations, for which no other penalty is set forth, beyond the time limit provided for in § 51.98, shall be guilty of a misdemeanor and on conviction thereof shall be fined in the amount not less than $25 nor more than $500 for each violation. Each day in which any such violation shall continue shall be deemed a separate offense.

CHAPTER 52: WATER AND SEWERS; RATES AND CHARGES

Section

General Provisions

Appendix C

East WWTF Analysis Nutrient Sampling (10/2014-02/2016)

Appendix C: East WWTF Influent Analysis Nutrient Sampling (10/2014-02/2016)

Village of Huntley, Illinois

Sampling Date	Suburban Labs Work Order No.	Influent (mg/L)																	
		Dissolved Fractions (as P) mg/L - Suburban Labs				Total Phosphorus (as P) mg/L - Suburban Labs				Analysis of Phosphorus Fractions (as percentages) - EEI					Other Constituents - Suburban Labs (mg/L)					
		Dissolved Organic Phosphorus	Dissolved Ortho-Phosphate	Dissolved Polyphosphate	Dissolved or Soluble Phosphorus	Organic Phosphorus	Ortho-Phosphate	Polyphosphate	Total Phosphorus	% of Dissolved/Total Organic	% of Dissolved/Total Ortho	% of Dissolved/Total Poly	% Difference for Dissolved Org+Ortho +Poly	% Difference for Total Org+Ortho +Poly	Nitrate & Nitrite	TKN	Total N	VFAs	Flocculated-Filtered COD (ffCOD)	Readily Biodegradable COD (rbCOD)
10/15/2014	1410841	0.020	3.200	0.780	4.000	0.000	2.900	1.800	4.11	-	1.10	0.43	0.000	0.14	**0.000**	27.800	27.800	**0.000**	-	-
10/22/2014	1410C73	1.900	2.500	**0.000**	4.400	0.690	2.500	0.820	4.01	2.75	1.00	0.00	0.000	0.00	**0.000**	29.700	29.700	**0.000**	-	-
10/29/2014	1410G11	0.000	5.300	**0.000**	5.300	1.580	5.300	1.300	8.18	0.00	1.00	0.00	0.000	0.00	0.278	74.900	75.178	**0.000**	-	-
11/5/2014	1411245	0.200	3.800	**0.000**	4.000	0.730	3.600	0.910	5.24	0.27	1.06	0.00	0.000	0.00	**0.000**	42.800	42.800	**0.000**	-	-
11/30/2015	1511I93	0.000	2.600	**0.000**	2.600	0.590	2.500	1.400	4.49	0.00	1.04	0.00	0.000	0.00	-	-	-	**0.000**	86.000	49.600
12/2/2015	1512161	0.100	1.600	0.200	1.900	0.150	1.700	1.600	3.45	0.67	0.94	0.13	0.000	0.00	-	-	-	-	-	-
12/4/2015	1512475	0.218	2.000	0.082	2.300	1.940	2.000	1.200	5.14	0.11	1.00	0.07	0.000	0.00	-	-	-	-	-	-
12/7/2015	1512557	1.200	2.200	**0.000**	3.400	1.520	2.300	0.810	4.63	0.79	0.96	0.00	0.000	0.00	-	-	-	**0.000**	100.000	80.000
12/9/2015	1512720	0.080	2.700	0.420	3.200	0.000	2.600	1.800	4.05	-	1.04	0.23	0.000	0.09	-	-	-	-	-	-
12/10/2015	1512848	0.000	4.000	1.300	4.300	0.830	2.200	1.500	4.53	0.00	1.82	0.87	0.233	0.00	-	-	-	-	-	-
12/14/2015	1512A49	0.000	2.100	0.640	2.300	0.900	2.000	1.600	4.50	0.00	1.05	0.40	0.191	0.00	-	-	-	**0.000**	95.000	60.900
12/18/2015	1512E75	0.280	2.100	0.420	2.800	0.210	2.100	1.300	3.61	1.33	1.00	0.32	0.000	0.00	-	-	-	-	-	-
12/21/2015	1512F51	0.770	2.200	0.730	3.700	0.860	2.200	1.400	4.46	0.90	1.00	0.52	0.000	0.00	-	-	-	**0.000**	110.000	83.000
12/22/2015	1512G28	0.270	1.200	0.430	1.900	0.880	1.500	1.200	3.58	0.31	0.80	0.36	0.000	0.00	-	-	-	-	-	-
12/23/2015	1512G79	0.080	1.800	0.420	2.300	2.230	1.700	5.500	9.43	0.04	1.06	0.08	0.000	0.00	-	-	-	-	-	-
12/28/2015	1512H40	0.050	1.700	0.250	2.000	0.480	1.600	0.890	2.97	0.10	1.06	0.28	0.000	0.00	-	-	-	**0.000**	67.000	37.600
1/4/2015	1601022	0.250	1.900	0.450	2.600	0.940	1.900	1.700	4.54	0.27	1.00	0.26	0.000	0.00	-	-	-	**0.000**	95.000	65.600
1/11/2015	1601485	0.260	1.700	0.740	2.700	1.880	1.900	**0.000**	3.78	0.14	0.89	-	0.000	0.00	-	-	-	**0.000**	86.000	59.000
1/20/2016	1601B31	0.200	3.900	1.000	5.100	1.390	3.800	2.200	7.49	0.14	1.03	0.45	0.000	-0.01	-	-	-	**0.000**	88.000	56.300
1/25/2016	1601D30	0.510	2.500	0.390	3.400	0.850	2.400	1.600	4.85	0.60	1.04	0.24	0.000	0.00	-	-	-	**0.000**	120.000	90.600
2/1/2016	1602032	0.000	2.700	1.100	3.800	1.250	2.800	2.700	6.75	0.00	0.96	0.41	0.000	0.00	-	-	-	**0.000**	140.000	103.600
Average		0.30	2.56	0.45	3.24	0.95	2.45	1.58	4.94						0.070	43.800	43.870	0.000	98.700	68.620
Maximum		1.90	5.30	1.30	5.30	2.23	5.30	5.50	9.43						0.278	74.900	75.178	0.000	140.000	103.600
Minimum		0.00	1.20	0.000	1.90	0.00	1.50	0.000	2.97						0.000	27.800	27.800	0.000	67.000	37.600

Notes:

Bolded values were measured as 'non-detect'

Sampling found phosphorus fractions that were mathematically impossible. For this reason, the body of the report lists the 'corrected' phosphorus samples and this appendix shows the raw data.

Appendix C: East WWTF Effluent Analysis Nutrient Sampling (10/2014-02/2016)

Village of Huntley, Illinois

Sampling Date	Suburban Labs Work Order No.	Effluent (mg/L)																
		Dissolved Fractions (as P) mg/L - Suburban Labs				Total Phosphorus (as P) mg/L - Suburban Labs				Analysis of Phosphorus Fractions (as percentages) - EEI					Other Constituents - Suburban Labs (mg/L)			
		Dissolved Organic Phosphorus	Dissolved Ortho-Phosphate	Dissolved Polyphosphate	Dissolved or Soluble Phosphorus	Organic Phosphorus	Ortho-Phosphate	Polyphosphate	Total Phosphorus	% of Dissolved/Total Organic	% of Dissolved/Total Ortho	% of Dissolved/Total Poly	% Difference for Dissolved Org+Ortho +Poly	% Difference for Total Org+Ortho +Poly	Nitrate & Nitrite	TKN	Total N	Soluble COD
10/15/2014	1410841	0.000	1.600	0.340	1.700	0.000	1.400	0.490	1.390	-	1.143	0.694	0.141	0.360	18.000	1.370	19.370	-
10/29/2014	1410G11	0.470	1.400	**0.000**	2.100	0.000	1.400	0.490	1.820	-	1.000	0.000	-0.110	0.038	19.100	2.330	21.430	-
11/5/2014	1411245	0.000	1.500	0.510	1.700	0.000	1.600	0.330	1.840	-	0.938	1.545	0.182	0.049	19.600	2.230	21.830	-
11/30/2015	1511I93	0.000	1.000	**0.000**	0.920	0.000	0.980	0.140	0.976	-	1.020	0.000	0.087	0.148	-	-	-	36.400
12/4/2015	1512475	0.000	0.200	0.860	1.000	0.090	0.200	0.940	1.230	0.000	1.000	0.915	0.060	0.000	-	-	-	-
12/7/2015	1512557	0.350	0.750	0.100	1.200	0.180	1.100	**0.000**	1.280	1.944	0.682	-	0.000	0.000	-	-	-	20.000
12/9/2015	1512720	0.000	1.300	0.280	1.300	0.140	1.300	0.250	1.690	0.000	1.000	1.120	0.215	0.000	-	-	-	-
12/10/2015	1512848	0.000	1.400	0.130	1.500	0.000	1.300	0.250	1.470	-	1.077	0.520	0.020	0.054	-	-	-	-
12/14/2015	1512A49	0.000	1.600	0.230	1.800	0.000	1.600	0.210	1.740	-	1.000	1.095	0.017	0.040	-	-	-	34.100
12/18/2015	1512E75	0.000	1.300	**0.000**	1.100	0.000	1.300	**0.000**	1.200	-	1.000	-	0.182	0.083	-	-	-	-
12/21/2015	1512F51	0.100	1.300	0.100	1.500	0.060	1.300	0.250	1.610	1.667	1.000	0.400	0.000	0.000	-	-	-	27.000
12/22/2015	1512G28	0.000	1.500	**0.000**	1.400	0.000	1.300	0.230	1.500	-	1.154	0.000	0.071	0.020	-	-	-	-
12/23/2015	1512G79	0.000	1.200	0.110	1.300	0.020	1.200	0.220	1.440	0.000	1.000	0.500	0.008	0.000	-	-	-	-
12/28/2015	1512H40	0.120	0.980	**0.000**	1.100	0.200	0.980	**0.000**	1.180	0.600	1.000	-	0.000	0.000	-	-	-	29.400
1/4/2015	1601022	0.020	0.900	**0.000**	0.920	0.000	0.900	0.160	1.060	-	1.000	0.000	0.000	0.000	-	-	-	29.400
1/11/2015	1601485	0.000	1.000	0.280	1.200	0.290	1.100	0.350	1.740	0.000	0.909	0.800	0.067	0.000	-	-	-	27.000
1/20/2016	1601B31	0.140	0.960	0.100	1.200	0.090	0.970	0.280	1.330	1.556	0.990	0.357	0.000	0.008	-	-	-	31.700
1/25/2016	1601D30	0.000	1.300	**0.000**	1.200	0.050	1.300	0.200	1.550	0.000	1.000	0.000	0.083	0.000	-	-	-	29.400
2/1/2016	1602032	0.100	1.700	**0.000**	1.800	0.040	1.400	0.190	1.630	2.500	1.214	0.000	0.000	0.000	-	-	-	36.400
Average		0.07	1.20	0.16	1.37	0.06	1.19	0.26	1.46						18.900	1.977	20.877	30.080
Maximum		0.47	1.70	0.86	2.10	0.29	1.60	0.94	1.84						19.600	2.330	21.830	36.400
Minimum		0.00	0.20	0.00	0.92	0.00	0.20	0.00	0.98						18.000	1.370	19.370	20.000

Notes:

Bolded values were measured as 'non-detect'

Sampling found phosphorus fractions that were mathematically impossible. For this reason, the body of the report lists the 'corrected' phosphorus samples and this appendix shows the raw data.

Appendix D

West WWTF Analysis Nutrient Sampling (10/2014-02/2016)

Appendix D: West WWTF Influent Analysis Nutrient Sampling (10/2014-02/2016)

Village of Huntley, Illinois

Sampling Date	Suburban Labs Work Order No.	Influent (mg/L)																		
		Dissolved Fractions (as P) mg/L - Suburban Labs				Total Phosphorus (as P) mg/L - Suburban Labs				Analysis of Phosphorus Fractions (as percentages) - EEI					Other Constituents - Suburban Labs (mg/L)					
		Dissolved Organic Phosphorus	Dissolved Ortho-Phosphate	Dissolved Polyphosphate	Dissolved or Soluble Phosphorus	Organic Phosphorus	Ortho-Phosphate	Polyphosphate	Total Phosphorus	% of Dissolved/Total Organic	% of Dissolved/ Total Ortho	% of Dissolved/ Total Poly	% Difference for Dissolved Org+Ortho +Poly	% Difference for Total Org+Ortho +Poly	Nitrate & Nitrite	TKN	Total N	VFAs	Flocculated-Filtered COD (ffCOD)	Readily Biodegradable COD (rbCOD)
10/15/2014	1410843	0.760	2.800	**0.000**	3.800	0.560	3.000	0.650	4.21	1.36	0.93	0.00	-0.063	0.00	0.577	32.400	32.977	**0.000**	-	-
10/22/2014	1410C72	1.540	3.200	**0.000**	4.900	1.810	3.100	1.100	6.01	0.85	1.03	0.00	-0.033	0.00	**0.000**	43.400	43.400	69.000	-	-
10/29/2014	1410G12	0.600	6.400	**0.000**	7.000	4.520	6.300	0.880	11.70	0.13	1.02	0.00	0.000	0.00	0.416	63.700	64.116	**0.000**	-	-
11/5/2014	1411356	0.000	3.500	1.200	3.300	2.290	3.600	0.570	6.46	0.00	0.97	2.11	0.424	0.00	0.226	48.900	49.126	**0.000**	-	-
11/30/2015	1511I95	0.000	2.600	**0.000**	2.600	1.430	2.600	1.900	5.93	0.00	1.00	0.00	0.000	0.00	-	-	-	**0.000**	130.000	95.900
12/4/2015	1512474	0.623	3.000	0.077	3.700	2.710	3.000	0.770	6.48	0.23	1.00	0.10	0.000	0.00	-	-	-	-	-	-
12/7/2015	1512554	0.320	2.800	0.980	4.100	3.140	2.900	0.660	6.70	0.10	0.97	1.48	0.000	0.00	-	-	-	**0.000**	160.000	130.600
12/9/2015	1512721	0.780	3.200	0.320	4.300	2.320	3.300	2.100	7.72	0.34	0.97	0.15	0.000	0.00	-	-	-	-	-	-
12/14/2015	1512A51	0.430	4.000	0.970	5.400	1.170	4.000	2.400	7.57	0.37	1.00	0.40	0.000	0.00	-	-	-	96.000	190.000	153.600
12/16/2015	1512D18	0.110	4.000	0.790	4.900	1.020	4.200	1.100	6.32	0.11	0.95	0.72	0.000	0.00	-	-	-	-	-	-
12/28/2015	1512H39	0.600	2.500	**0.000**	3.100	1.330	2.500	0.960	4.79	0.45	1.00	0.00	0.000	0.00	-	-	-	**0.000**	110.000	83.000
1/4/2016	1601023	0.250	2.400	0.350	3.000	1.440	2.400	1.300	5.14	0.17	1.00	0.27	0.000	0.00	-	-	-	**0.000**	140.000	103.600
1/11/2016	1601486	0.140	2.100	0.760	3.000	1.480	2.200	0.970	4.65	0.09	0.95	0.78	0.000	0.00	-	-	-	**0.000**	100.000	70.600
1/20/2016	1601B30	0.640	2.600	0.760	4.000	1.450	2.800	1.700	5.95	0.44	0.93	0.45	0.000	0.00	-	-	-	**0.000**	100.000	63.600
1/25/2016	1601D31	0.000	2.200	0.630	2.800	0.970	2.200	1.200	4.37	0.00	1.00	0.53	0.011	0.00	-	-	-	**0.000**	95.000	53.900
2/1/2016	1602031	0.200	3.100	1.100	4.400	0.920	2.800	3.300	7.02	0.22	1.11	0.33	0.000	0.00	-	-	-	**0.000**	76.000	27.900
Average		0.44	3.15	0.50	4.02	1.79	3.18	1.35	6.31						0.305	47.100	47.405	12.692	122.333	86.967
Maximum		1.54	6.40	1.20	7.00	4.52	6.30	3.30	11.70						0.577	63.700	64.116	96.000	190.000	153.600
Minimum		0.00	2.10	0.000	2.60	0.56	2.20	0.57	4.21						0.000	32.400	32.977	0.000	76.000	27.900

Notes:
Bolded values were measured as 'non-detect'
A grab sample from Dean's was collected on 1/6/2016 and anlyzed by PDC Labs. The sample was found to have a total phosphorus content of 28 mg/L (measured as P).

Appendix D: West WWTF Effluent Analysis Nutrient Sampling (10/2014-02/2016)

Village of Huntley, Illinois

Sampling Date	Suburban Labs Work Order No.	Effluent (mg/L)																
		Dissolved Fractions (as P) mg/L - Suburban Labs				Total Phosphorus (as P) mg/L - Suburban Labs				Analysis of Phosphorus Fractions (as percentages) - EEI					Other Constituents - Suburban Labs (mg/L)			
		Dissolved Organic Phosphorus	Dissolved Ortho-Phosphate	Dissolved Polyphosphate	Dissolved or Soluble Phosphorus	Organic Phosphorus	Ortho-Phosphate	Polyphosphate	Total Phosphorus	% of Dissolved/Total Organic	% of Dissolved/ Total Ortho	% of Dissolved/ Total Poly	% Difference for Dissolved Org+Ortho +Poly	% Difference for total Org+Ortho +Poly	Nitrate & Nitrite	TKN	Total N	Soluble COD
10/15/2014	1410843	0.000	0.800	0.083	0.800	0.000	0.810	**0.000**	0.792	-	0.99	-	0.104	0.02	6.160	1.630	7.790	-
10/22/2014	1410C72	0.051	0.099	**0.000**	0.150	0.000	0.110	0.072	0.169	-	0.90	0.00	0.000	0.08	8.330	1.930	10.260	-
10/29/2014	1410G12	0.030	0.110	**0.000**	0.140	0.065	0.140	**0.000**	0.205	0.46	0.79	-	0.000	0.00	6.070	2.580	8.650	-
11/5/2014	1411356	0.028	0.042	**0.000**	0.070	0.019	0.050	**0.000**	0.069	1.47	0.84	-	0.000	0.00	6.120	1.980	8.100	-
11/30/2015	1511I95	0.000	0.500	**0.000**	0.410	0.000	0.500	**0.000**	0.375	-	1.00	-	0.220	0.33	-	-	-	34.100
12/2/2015	1512164	0.090	0.130	**0.000**	0.220	0.114	0.140	0.063	0.317	0.79	0.93	0.00	0.000	0.00	-	-	-	-
12/4/2015	1512474	0.000	0.240	**0.000**	0.097	0.000	0.220	**0.000**	0.173	-	1.09	-	1.474	0.27	-	-	-	-
12/7/2015	1512554	0.026	0.300	0.024	0.350	0.063	0.074	0.052	0.189	0.41	4.05	0.46	-0.069	0.00	-	-	-	29.400
12/9/2015	1512721	0.045	0.085	**0.000**	0.130	0.071	0.072	0.049	0.192	0.63	1.18	0.00	0.000	0.00	-	-	-	-
12/10/2015	1512851	0.054	0.071	0.051	0.180	0.860	1.700	0.000	2.560	0.06	0.04	-	-0.022	0.00	-	-	-	-
12/14/2015	1512A51	0.050	0.120	**0.000**	0.170	0.079	0.130	0.049	0.258	0.63	0.92	0.00	0.000	0.00	-	-	-	36.400
12/16/2015	1512D18	0.047	0.063	**0.000**	0.110	0.050	0.069	0.034	0.153	0.94	0.91	0.00	0.000	0.00	-	-	-	-
12/18/2015	1512E74	0.044	0.050	**0.000**	0.094	0.056	0.058	0.074	0.188	0.79	0.86	0.00	0.000	0.00	-	-	-	-
12/21/2015	1512F49	0.034	0.043	**0.000**	0.077	0.057	0.061	0.051	0.169	0.60	0.70	0.00	0.000	0.00	-	-	-	31.700
12/22/2015	1512G27	0.033	0.052	**0.000**	0.085	0.045	0.052	0.054	0.151	0.73	1.00	0.00	0.000	0.00	-	-	-	-
12/23/2015	1512G78	0.001	0.028	0.037	0.066	0.059	0.033	0.071	0.163	0.02	0.85	0.52	0.000	0.00	-	-	-	-
12/28/2015	1512H39	0.041	0.049	0.200	0.290	0.000	0.240	**0.000**	0.159	-	0.20	-	0.000	0.51	-	-	-	27.000
1/4/2016	1601023	0.020	**0.000**	0.039	0.059	0.054	0.039	0.063	0.156	0.37	0.00	0.62	0.000	0.00	-	-	-	36.400
1/11/2016	1601486	0.058	**0.000**	**0.000**	0.058	0.067	**0.000**	0.061	0.128	0.87	-	0.00	0.000	0.00	-	-	-	29.400
1/20/2016	1601B30	0.030	0.260	**0.000**	0.290	0.089	**0.000**	0.055	1.440	0.34	-	0.00	0.000	-0.90	-	-	-	36.400
2/1/2016	1602031	0.000	**0.000**	0.078	0.042	0.025	**0.000**	0.078	0.103	0.00	-	1.00	0.857	0.00	-	-	-	48.100
Average		0.03	0.14	0.02	0.19	0.08	0.21	0.04	0.39						6.670	2.030	8.700	34.322
Maximum		0.09	0.80	0.20	0.80	0.86	1.70	0.08	2.56						8.330	2.580	10.260	48.100
Minimum		0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.07						6.070	1.630	7.790	27.000

Notes:
Bolded values were measured as 'non-detect'

Appendix E

East WWTF SRT Tracking Sheets (01/2016-09/2016)

East WWTF Monthly Wastewater SRT Tracking Program - 01/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,257.0	
CLARIFIER NO. 2 =	3,318.5	x
CLARIFIER NO. 3 =	3,318.5	x
CLARIFIER NO. 4 =	3,318.5	x
CLARIFIER NO. 5 =	3,318.5	x
TOTAL (ALL CLARIFIERS) =	14,531.0	
TOTAL (ONLINE-IN USE) =	**13,274.0**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
WEST OX DITCH - ENVIREX 2-RING ORBAL =	538,597.5	x
NORTHWEST OX DITCH - ENVIREX 2-RING ORBAL =	229,652.0	
NE OX DITCH NO. 1 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
NE OX DITCH NO. 2 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	1,821,506.5	
TOTAL VOLUME (LAKESIDE TREATMENT TRAIN) =	1,053,257.0	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,591,854.5**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	330,482.0	x
DIGESTER NO. 2 =	233,183.0	x
TOTAL (ALL DIGESTERS) =	563,665.0	
TOTAL (ONLINE-IN USE) =	**563,665.0**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	W ORBAL OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	W ORBAL OX DITCH TRAIN Solids Inventory (LBS)	LAKESIDE OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	LAKESIDE OX DITCH TRAIN Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
														x	x	x	x								
1			0	1.22		0	0		0		0	0		2.0	2.0	2.0	2.5		0	0		20	0	
2			0	1.05		0	0		0		0	0		3.0	3.0	2.0	2.0		0	0		20	0	
3			0	1.15		0	0		0		0	0		2.0	3.0	3.0	3.0		0	0		20	0	
4	57,476	7,384	3,540	1.09	4	36	3,576	2,586	11,623	4,302	37,812	49,435	7,384	2.0	3.0	4.0	3.0		58,096	107,531	**30.1**	20	5,340	86,714
5			0	0.99		0	0		0		0	0		2.0	1.5	2.5	2.5		0	0		20	0	
6	43,107	10,310	3,707	1.05	5	44	3,751	2,546	11,443	4,296	37,759	49,203	10,310	2.0	2.0	3.0	3.5		63,536	112,739	**30.1**	20	5,593	65,046
7			0	0.98		0	0		0		0	0		1.5	3.0	2.0	2.0		0	0		20	0	
8	28,738	9,206	2,206	1.07	4	36	2,242	2,918	13,115	4,226	37,144	50,259	9,206	2.0	4.0	2.5	3.0		63,994	114,253	**51.0**	20	5,677	73,938
9			0	1.19		0	0		0		0	0		2.0	2.0	2.0	3.0		0	0		20	0	
10			0	1.35		0	0		0		0	0		2.0	2.0	3.0	2.5		0	0		20	0	
11	28,738	8,980	2,152	1.24	3	31	2,183	3,016	13,556	3,826	33,628	47,184	8,980	2.0	2.0	2.0	2.0		42,443	89,627	**41.1**	20	4,450	59,424
12			0	1.07		0	0		0		0	0		2.0	2.5	2.5	2.5		0	0		20	0	
13		8,022	0	1.09	8	73	73	3,160	14,203	4,036	35,474	49,677	8,022	1.5	1.0	2.0	2.0		32,470	82,148		20	4,035	60,309
14	35,923		0	1.06		0	0		0		0	0		1.0	1.0	1.5	1.5		0	0		20	0	
15		7,818	0	1.04	11	95	95	3,520	15,821	4,184	36,775	52,596	7,818	1.0	1.0	1.5	1.5		24,861	77,457		20	3,778	57,937
16			0	1.17		0	0		0		0	0		2.0	1.0	2.0	3.0		0	0		20	0	
17			0	1.06		0	0		0		0	0		2.0	3.0	3.0	3.0		0	0		20	0	
18			0	1.01		0	0		0		0	0		2.0	2.0	2.0	3.0		0	0		20	0	
19	28,738	6,214	1,489	1.02	6	51	1,540	3,546	15,938	4,282	37,636	53,574	6,124	2.0	2.0	2.0	4.0		43,111	96,685	**62.8**	20	4,783	92,296
20		7,314	0	0.91	6	45	45	3,694	16,603	3,932	34,560	51,163	7,314	2.0	2.0	2.0	3.0		41,931	93,095		20	4,609	75,565
21			0	0.95		0	0		0		0	0		2.0	1.5	2.5	2.5		0	0		20	0	
22		7,928	0	0.97	5	40	40	3,456	15,533	4,280	37,619	53,152	7,928	2.5	3.0	2.0	2.5		50,576	103,728		20	5,146	77,827
23			0	0.97		0	0		0		0	0		2.5	3.0	3.0	3.0		0	0		20	0	
24			0	0.98		0	0		0		0	0		2.0	2.5	3.5	3.0		0	0		20	0	
25		7,774	0	1.01	4	34	34	3,422	15,381	4,508	39,623	55,003	7,774	2.0	3.0	3.0	3.5		58,515	113,518		20	5,642	87,025
26	28,738		0	0.96		0	0		0		0	0		3.0	3.0	3.0	2.5		0	0		20	0	
27	43,107	9,736	3,500	0.90	1	7	3,508	3,388	15,228	4,434	38,972	54,200	9,736	2.0	1.0	1.5	2.0		38,158	92,358	**26.3**	20	4,610	56,780
28			0	0.90		0	0		0		0	0		2.0	2.0	2.0	2.0		0	0		20	0	
29	43,107	7,908	2,843	0.90	3	22	2,866	3,494	15,704	4,448	39,095	54,800	7,908	2.0	2.0	2.0	2.0		40,951	95,751	**33.4**	20	4,765	72,249
30			0	0.93		0	0		0		0	0		2.0	2.0	3.0	2.0		0	0		20	0	
31			0	0.92		0	0		0		0	0		2.0	2.5	2.0	2.0		0	0		20	0	

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Notes:

User input cells, all other cells are calculated

East WWTF Monthly Wastewater SRT (Digester) Tracking Program - 01/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1														
2														
3														
4	9.8	6.5	13.3	19.9	26.6	33.2	39.8	46.5	8.8	13.2	17.6	22.0	26.4	30.8
5														
6	13.1	8.7	12.7	19.0	25.4	31.7	38.0	44.4	8.4	12.6	16.8	21.0	25.2	29.4
7														
8	19.6	7.6	21.3	32.0	42.6	53.3	63.9	74.6	8.3	12.4	16.6	20.7	24.8	29.0
9														
10														
11	19.6	9.5	21.8	32.8	43.7	54.6	65.5	76.4	10.6	15.8	21.1	26.4	31.7	37.0
12														
13		9.3							11.7	17.5	23.3	29.1	35.0	40.8
14	15.7													
15		9.7							12.4	18.7	24.9	31.1	37.3	43.6
16														
17														
18														
19	19.6	6.1	31.6	47.3	63.1	78.9	94.7	110.5	9.8	14.7	19.7	24.6	29.5	34.4
20		7.5							10.2	15.3	20.4	25.5	30.6	35.7
21														
22		7.2							9.1	13.7	18.3	22.8	27.4	32.0
23														
24														
25		6.5							8.3	12.5	16.7	20.8	25.0	29.2
26	19.6													
27	13.1	9.9	13.4	20.1	26.9	33.6	40.3	47.0	10.2	15.3	20.4	25.5	30.6	35.7
28														
29	13.1	7.8	16.5	24.8	33.1	41.3	49.6	57.9	9.9	14.8	19.7	24.7	29.6	34.5
30														
31														

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East WWTF Monthly Wastewater SRT Tracking Program - 02/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,257.0	
CLARIFIER NO. 2 =	3,318.5	x
CLARIFIER NO. 3 =	3,318.5	x
CLARIFIER NO. 4 =	3,318.5	x
CLARIFIER NO. 5 =	3,318.5	x
TOTAL (ALL CLARIFIERS) =	14,531.0	
TOTAL (ONLINE-IN USE) =	**13,274.0**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
WEST OX DITCH - ENVIREX 2-RING ORBAL =	538,597.5	x
NORTHWEST OX DITCH - ENVIREX 2-RING ORBAL =	229,652.0	
NE OX DITCH NO. 1 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
NE OX DITCH NO. 2 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	1,821,506.5	
TOTAL VOLUME (LAKESIDE TREATMENT TRAIN) =	1,053,257.0	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,591,854.5**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	330,482.0	x
DIGESTER NO. 2 =	233,183.0	x
TOTAL (ALL DIGESTERS) =	563,665.0	
TOTAL (ONLINE-IN USE) =	**563,665.0**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	W ORBAL OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	W ORBAL OX DITCH TRAIN Solids Inventory (LBS)	LAKESIDE OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	LAKESIDE OX DITCH TRAIN Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
														x	x	x	x							
1	43,107	7,460	2,682	1.03	4	34	2,716	3,156	14,185	4,336	38,111	52,296	7,460	2.0	2.0	3.5	3.5		53,756	106,052	**39.0**	20	5,268	84,674
2	35,923	7,460	2,235	0.96	4	32	2,267	3,156	14,185	4,336	38,111	52,296	7,460	2.5	4.0	2.5	4.0		63,530	115,826	**51.1**	20	5,759	92,568
3	35,923	7,443	2,230	1.23	5	51	2,281	3,222	14,482	4,008	35,228	49,710	7,443	2.0	3.0	2.5	4.0		54,556	104,265	**45.7**	20	5,162	83,156
4			0			0	0		0		0	0							0	0		20	0	
5	107,768	4,877	4,383	1.18	4	39	4,423	3,214	14,446	4,212	37,021	51,467	4,877	2.0	3.0	3.0	4.0		45,185	96,652	**21.9**	20	4,793	117,843
6			0			0	0		0		0	0							0	0		20	0	
7			0			0	0		0		0	0							0	0		20	0	
8			0			0	0		0		0	0							0	0		20	0	
9	28,738	6,881	1,649	1.06	5	44	1,693	3,608	16,217	4,208	36,986	53,202		1.5	2.0	2.0	2.0		13,075	66,277	**39.1**	20	3,270	56,979
10	28,738	7,052	1,690	0.91	4	30	1,720	3,618	16,261	4,450	39,113	55,374	7,052	1.5	1.0	2.5	1.0		28,591	83,965	**48.8**	20	4,168	70,869
11	28,738	7,052	1,690	0.86	4	29	1,719	3,618	16,261	4,450	39,113	55,374	7,052	1.0	2.0	2.5	1.0		30,973	86,348	**50.2**	20	4,289	72,918
12	28,738	5,856	1,404	0.85	3	21	1,425	3,354	15,075	4,312	37,900	52,975	5,856	1.0	2.5	2.5	2.0		33,700	86,675	**60.8**	20	4,313	88,302
13			0			0	0		0		0	0							0	0		20	0	
14			0			0	0		0		0	0							0	0		20	0	
15			0			0	0		0		0	0							0	0		20	0	
16	28,738	7,019	1,682	0.93	8	62	1,745	3,362	15,111	4,094	35,984	51,095	7,019	3.0	2.0	1.5	3.0		43,738	94,832	**54.4**	20	4,679	79,937
17	43,107	6,961	2,503	0.82	5	34	2,537	3,092	13,897	4,362	38,339	52,237	6,961	1.0	1.0	1.0	1.0		18,764	71,001	**28.0**	20	3,516	60,559
18	107,768	6,961	6,256	0.78	5	33	6,289	3,092	13,897	4,362	38,339	52,237	6,961	1.5	1.0	1.5	1.0		23,455	75,692	**12.0**	20	3,752	64,629
19	43,107	5,375	1,932	0.90	7	52	1,985	3,116	14,005	4,150	36,476	50,481	5,375	1.5	1.0	1.5	1.0		19,730	70,212	**35.4**	20	3,458	77,145
20			0			0	0		0		0	0							0	0		20	0	
21			0			0	0		0		0	0							0	0		20	0	
22	50,292	6,617	2,775	1.61	3	40	2,816	3,890	17,484	3,918	34,437	51,921	6,617	2.5	2.0	2.5	2.5		41,463	93,384	**33.2**	20	4,629	83,880
23			0			0	0		0		0	0							0	0		20	0	
24	35,923	5,110	1,531	0.88	4	29	1,560	3,918	17,610	4,164	36,599	54,209	5,110	2.0	2.0	3.5	2.0		36,500	90,709	**58.1**	20	4,506	105,730
25	71,845	5,110	3,062	0.91	4	30	3,092	3,918	17,610	4,164	36,599	54,209	5,110	2.0	2.0	2.0	2.0		30,737	84,946	**27.5**	20	4,217	98,949
26	35,923	5,257	1,575	0.79	1	7	1,582	3,512	15,785	3,698	32,503	48,288	5,257	2.5	3.0	3.0	3.0		42,664	90,952	**57.5**	20	4,541	103,575
27			0			0	0		0		0	0							0	0		20	0	
28			0			0	0		0		0	0							0	0		20	0	
29	43,107	2,437	876	0.97	4	32	908	3,532	15,875	4,108	36,107	51,982	2,437	2.0	2.0	2.0	3.0		24,403	76,385	**84.1**	20	3,787	186,322
			0			0	0		0		0	0							0	0		20	0	
			0			0	0		0		0	0							0	0		20	0	

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Notes:

User input cells, all other cells are calculated

East WWTF Monthly Wastewater SRT (Digester) Tracking Program - 02/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	13.1	6.7	17.5	26.3	35.1	43.8	52.6	61.3	8.9	13.4	17.8	22.3	26.8	31.2
2	15.7	6.1	21.0	31.6	42.1	52.6	63.1	73.6	8.2	12.2	16.3	20.4	24.5	28.6
3	15.7	6.8	21.1	31.6	42.2	52.7	63.2	73.8	9.1	13.7	18.2	22.8	27.3	31.9
4														
5	5.2	4.8	10.7	16.1	21.4	26.8	32.2	37.5	9.8	14.7	19.6	24.5	29.4	34.3
6														
7														
8														
9	19.6	9.9	28.5	42.8	57.0	71.3	85.5	99.8	14.4	21.6	28.8	35.9	43.1	50.3
10	19.6	8.0	27.8	41.7	55.6	69.5	83.4	97.3	11.3	16.9	22.6	28.2	33.8	39.5
11	19.6	7.7	27.8	41.7	55.6	69.5	83.4	97.3	11.0	16.4	21.9	27.4	32.9	38.4
12	19.6	6.4	33.5	50.2	67.0	83.7	100.5	117.2	10.9	16.4	21.8	27.3	32.7	38.2
13														
14														
15														
16	19.6	7.1	27.9	41.9	55.9	69.9	83.8	97.8	10.0	15.1	20.1	25.1	30.1	35.2
17	13.1	9.3	18.8	28.2	37.6	47.0	56.4	65.7	13.4	20.1	26.7	33.4	40.1	46.8
18	5.2	8.7	7.5	11.3	15.0	18.8	22.5	26.3	12.5	18.8	25.1	31.3	37.6	43.9
19	13.1	7.3	24.3	36.5	48.7	60.8	73.0	85.1	13.6	20.4	27.2	34.0	40.8	47.6
20														
21														
22	11.2	6.7	16.9	25.4	33.9	42.3	50.8	59.3	10.2	15.2	20.3	25.4	30.5	35.5
23														
24	15.7	5.3	30.7	46.1	61.4	76.8	92.1	107.5	10.4	15.6	20.9	26.1	31.3	36.5
25	7.8	5.7	15.4	23.0	30.7	38.4	46.1	53.7	11.1	16.7	22.3	27.9	33.4	39.0
26	15.7	5.4	29.8	44.8	59.7	74.6	89.5	104.5	10.4	15.5	20.7	25.9	31.1	36.2
27														
28														
29	13.1	3.0	53.7	80.5	107.3	134.1	161.0	187.8	12.4	18.6	24.8	31.0	37.2	43.4

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East WWTF Monthly Wastewater SRT Tracking Program - 03/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,257.0	
CLARIFIER NO. 2 =	3,318.5	x
CLARIFIER NO. 3 =	3,318.5	x
CLARIFIER NO. 4 =	3,318.5	x
CLARIFIER NO. 5 =	3,318.5	x
TOTAL (ALL CLARIFIERS) =	14,531.0	
TOTAL (ONLINE-IN USE) =	**13,274.0**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
WEST OX DITCH - ENVIREX 2-RING ORBAL =	538,597.5	x
NORTHWEST OX DITCH - ENVIREX 2-RING ORBAL =	229,652.0	
NE OX DITCH NO. 1 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
NE OX DITCH NO. 2 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	1,821,506.5	
TOTAL VOLUME (LAKESIDE TREATMENT TRAIN) =	1,053,257.0	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,591,854.5**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	330,482.0	x
DIGESTER NO. 2 =	233,183.0	x
TOTAL (ALL DIGESTERS) =	563,665.0	
TOTAL (ONLINE-IN USE) =	**563,665.0**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	W ORBAL OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	W ORBAL OX DITCH TRAIN Solids Inventory (LBS)	LAKESIDE OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	LAKESIDE OX DITCH TRAIN Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
															x	x	x	x							
1			0			0	0		0		0	0							0	0		20	0	
2	43,107	7,028	2,527	0.94	3	23	2,550	3,374	15,165	4,344	38,181	53,346	7,028		2.5	3.0	3.5	3.0	56,535	109,881	**43.1**	20	5,471	93,333
3	28,738	7,028	1,684	0.85	3	21	1,706	3,374	15,165	4,344	38,181	53,346	7,028		2.5	2.5	2.5	2.5	47,113	100,459	**58.9**	20	5,002	85,332
4	43,107	3,495	1,256	0.85	2	14	1,271	3,168	14,239	4,016	35,298	49,537	3,495		2.0	3.0	2.5	3.0	32,673	82,210	**64.7**	20	4,096	140,534
5			0			0	0		0		0	0							0	0		20	0	
6			0			0	0		0		0	0							0	0		20	0	
7	107,768	7,102	6,383	0.94	2	16	6,399	3,416	15,354	4,244	37,302	52,656	7,102		1.5	1.0	1.0	2.0	25,853	78,509	**12.3**	20	3,910	66,009
8	107,768	7,102	6,383	0.81	2	14	6,397	3,416	15,354	4,244	37,302	52,656	7,102		1.0	2.0	1.0	2.0	28,203	80,859	**12.6**	20	4,029	68,029
9	86,214	7,212	5,186	0.99	4	33	5,219	3,310	14,877	3,762	33,066	47,943	7,212		0.5	1.5	1.0	1.5	20,459	68,402	**13.1**	20	3,387	56,312
10	71,845	7,212	4,321	0.93	4	31	4,352	3,310	14,877	3,762	33,066	47,943	7,212		1.0	1.0	1.5	1.5	22,732	70,675	**16.2**	20	3,503	58,238
11	50,292	6,951	2,915	0.87	5	36	2,952	3,092	13,897	3,154	27,722	41,619	6,951		1.0	1.0	1.0	1.0	16,745	58,365	**19.8**	20	2,882	49,714
12			0			0	0		0		0	0							0	0		20	0	
13			0			0	0		0		0	0							0	0		20	0	
14	57,476	5,023	2,408	1.08	1	9	2,417	3,304	14,850	3,294	28,952	43,803	5,023		1.0	1.5	1.0	1.5	17,228	61,031	**25.3**	20	3,043	72,628
15			0			0	0		0		0	0							0	0		20	0	
16	43,107	7,269	2,613	1.17	3	29	2,643	3,292	14,796	3,640	31,994	46,790	7,269		1.5	1.5	1.5	1.0	24,857	71,647	**27.1**	20	3,553	58,608
17	43,107	7,269	2,613	1.10	3	28	2,641	3,292	14,796	3,640	31,994	46,790	7,269		1.0	1.0	1.5	1.0	20,337	67,127	**25.4**	20	3,329	54,910
18	43,107	5,265	1,893	1.02	1	9	1,901	3,358	15,093	3,448	30,306	45,399	5,265		1.5	1.0	1.5	1.5	19,853	65,252	**34.3**	20	3,254	74,107
19			0			0	0		0		0	0							0	0		20	0	
20			0			0	0		0		0	0							0	0		20	0	
21	35,923	7,438	2,228	0.98	5	41	2,269	2,684	12,063	3,098	27,230	39,293	7,438		2.0	3.0	3.0	3.0	48,014	87,307	**38.5**	20	4,325	69,715
22	35,923	7,438	2,228	1.02	5	42	2,271	2,684	12,063	3,098	27,230	39,293	7,438		2.0	2.5	3.0	3.0	45,832	85,125	**37.5**	20	4,214	67,930
23	35,923	7,015	2,102	0.97	6	49	2,150	3,404	15,300	3,172	27,880	43,180	7,015		2.0	2.0	3.0	3.0	42,203	85,383	**39.7**	20	4,220	72,138
24	43,107	5,474	1,968	0.91	2	15	1,983	3,200		3,300	29,005	29,005	5,474		2.0	2.5	3.0	3.0	38,167	67,172	**33.9**	20	3,343	73,236
25			0			0	0		0		0	0							0	0		20	0	
26			0			0	0		0		0	0							0	0		20	0	
27			0			0	0		0		0	0							0	0		20	0	
28	35,923	5,708	1,710	1.10	5	46	1,756	3,298	14,823	3,672	32,275	47,098	5,708		1.0	1.5	1.0	1.5	19,430	66,528	**37.9**	20	3,280	68,911
29	35,923	5,708	1,710	1.07	5	44	1,755	3,298	14,823	3,672	32,275	47,098	5,708		1.0	1.5	1.5	1.0	19,430	66,528	**37.9**	20	3,282	68,942
30	35,923	6,706	2,009	0.93	6	46	2,055	3,166	14,230	3,682	32,363	46,593	6,706		1.5	1.0	1.5	1.0	21,518	68,111	**33.1**	20	3,359	60,064
31	50,292	6,706	2,813	1.11	6	56	2,868	3,166	14,230	3,682	32,363	46,593	6,706		1.0	1.5	0.5	1.0	17,214	63,807	**22.2**	20	3,135	56,049

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Notes:

User input cells, all other cells are calculated

ENGINEERING ENTERPRISES, INC.
CONULSTING ENGINEERS

East WWTF Monthly Wastewater SRT (Digester) Tracking Program - 03/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1														
2	13.1	6.0	18.6	27.9	37.2	46.5	55.8	65.1	8.6	12.9	17.2	21.5	25.8	30.1
3	19.6	6.6	27.9	41.9	55.8	69.8	83.7	97.7	9.4	14.1	18.8	23.5	28.2	32.9
4	13.1	4.0	37.4	56.1	74.8	93.5	112.2	130.9	11.5	17.2	23.0	28.7	34.4	40.2
5														
6														
7	5.2	8.5	7.4	11.0	14.7	18.4	22.1	25.8	12.0	18.0	24.0	30.1	36.1	42.1
8	5.2	8.3	7.4	11.0	14.7	18.4	22.1	25.8	11.7	17.5	23.3	29.2	35.0	40.8
9	6.5	10.0	9.1	13.6	18.1	22.7	27.2	31.7	13.9	20.8	27.8	34.7	41.6	48.6
10	7.8	9.7	10.9	16.3	21.8	27.2	32.6	38.1	13.4	20.1	26.8	33.6	40.3	47.0
11	11.2	11.3	16.1	24.2	32.2	40.3	48.4	56.4	16.3	24.5	32.6	40.8	48.9	57.1
12														
13														
14	9.8	7.8	19.5	29.3	39.0	48.8	58.6	68.3	15.5	23.2	30.9	38.6	46.4	54.1
15														
16	13.1	9.6	18.0	27.0	36.0	45.0	54.0	63.0	13.2	19.8	26.5	33.1	39.7	46.3
17	13.1	10.3	18.0	27.0	36.0	45.0	54.0	63.0	14.1	21.2	28.2	35.3	42.4	49.4
18	13.1	7.6	24.8	37.3	49.7	62.1	74.5	86.9	14.4	21.7	28.9	36.1	43.3	50.6
19														
20														
21	15.7	8.1	21.1	31.6	42.2	52.7	63.3	73.8	10.9	16.3	21.7	27.2	32.6	38.0
22	15.7	8.3	21.1	31.6	42.2	52.7	63.3	73.8	11.2	16.7	22.3	27.9	33.5	39.0
23	15.7	7.8	22.4	33.6	44.7	55.9	67.1	78.3	11.1	16.7	22.3	27.8	33.4	39.0
24	13.1	7.7	23.9	35.8	47.8	59.7	71.7	83.6	14.1	21.1	28.1	35.2	42.2	49.2
25														
26														
27														
28	15.7	8.2	27.5	41.2	55.0	68.7	82.5	96.2	14.3	21.5	28.7	35.8	43.0	50.2
29	15.7	8.2	27.5	41.2	55.0	68.7	82.5	96.2	14.3	21.5	28.6	35.8	43.0	50.1
30	15.7	9.4	23.4	35.1	46.8	58.5	70.2	81.9	14.0	21.0	28.0	35.0	42.0	49.0
31	11.2	10.1	16.7	25.1	33.4	41.8	50.1	58.5	15.0	22.5	30.0	37.5	45.0	52.5

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East WWTF Monthly Wastewater SRT Tracking Program - 04/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,257.0	
CLARIFIER NO. 2 =	3,318.5	x
CLARIFIER NO. 3 =	3,318.5	x
CLARIFIER NO. 4 =	3,318.5	x
CLARIFIER NO. 5 =	3,318.5	x
TOTAL (ALL CLARIFIERS) =	14,531.0	
TOTAL (ONLINE-IN USE) =	**13,274.0**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
WEST OX DITCH - ENVIREX 2-RING ORBAL =	538,597.5	x
NORTHWEST OX DITCH - ENVIREX 2-RING ORBAL =	229,652.0	
NE OX DITCH NO. 1 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
NE OX DITCH NO. 2 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	1,821,506.5	
TOTAL VOLUME (LAKESIDE TREATMENT TRAIN) =	1,053,257.0	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,591,854.5**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	330,482.0	x
DIGESTER NO. 2 =	233,183.0	x
TOTAL (ALL DIGESTERS) =	563,665.0	
TOTAL (ONLINE-IN USE) =	**563,665.0**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	W ORBAL OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	W ORBAL OX DITCH TRAIN Solids Inventory (LBS)	LAKESIDE OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	LAKESIDE OX DITCH TRAIN Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
														x	x	x	x							
1			0		0	0		0		0	0							0	0		20	0	
2			0		0	0		0		0	0							0	0		20	0	
3			0		0	0		0		0	0							0	0		20	0	
4	28,738	6,325	1,516	1.04	1	9	1,525	3,570	16,046	3,366	29,585	45,631	6,325	1.5	2.0	2.5	3.0	36,134	81,764	**53.6**	20	4,080	77,337
5	35,923	6,325	1,895	0.97	1	8	1,903	3,570	16,046	3,366	29,585	45,631	6,325	2.0	2.5	2.0	2.5	36,134	81,764	**43.0**	20	4,080	77,348
6	28,738	7,464	1,789	1.01	1	8	1,797	3,292	14,796	2,400	21,095	35,891	7,464	2.0	2.0	2.0	2.5	34,735	70,626	**39.3**	20	3,523	56,592
7	43,107	7,464	2,683	1.38	1	12	2,695	3,292	14,796	2,400	21,095	35,891	7,464	1.0	1.5	1.0	1.5	20,433	56,323	**20.9**	20	2,805	45,055
8	35,923	7,852	2,352	1.11	1	9	2,362	1,472	6,616	3,390	29,796	36,412	7,852	2.5	2.5	2.0	2.5	44,245	80,657	**34.2**	20	4,024	61,443
9			0		0	0			0		0	0						0	0		20	0	
10			0		0	0			0		0	0						0	0		20	0	
11			0		0	0			0		0	0						0	0		20	0	
12	43,107	7,138	2,566	1.11	3	28	2,594	3,228	14,509	3,640	31,994	46,502	7,138	1.5	1.5	1.0	1.5	24,558	71,061	**27.4**	20	3,525	59,219
13	43,107	6,013	2,162	0.89	3	22	2,184	3,276	14,724	3,616	31,783	46,507	6,013	1.5	2.0	3.0	3.0	37,897	84,404	**38.6**	20	4,198	83,710
14	43,107	6,013	2,162	0.97	3	24	2,186	3,276	14,724	3,616	31,783	46,507	6,013	0.5	1.5	1.0	1.0	15,957	62,463	**28.6**	20	3,099	61,793
15	21,554	5,949	1,069	0.95	2	16	1,085	3,304	14,850	3,560	31,290	46,141	5,949	1.0	1.0	1.0	1.0	15,758	61,898	**57.0**	20	3,079	62,059
16			0			0	0		0		0	0						0	0		20	0	
17			0			0	0		0		0	0						0	0		20	0	
18			0	0.90		0	0		0		0	0		1.5	2.5	3.0	3.0	0	0		20	0	
19	43,107	7,868	2,829	0.98	5	41	2,870	3,152	14,167	3,874	34,050	48,217	7,868	1.5	2.0	2.0	2.0	36,484	84,701	**29.5**	20	4,194	63,916
20	57,476	6,358	3,048	0.97	3	24	3,072	3,224	14,491	3,680	32,345	46,836	6,358	1.5	2.0	2.5	2.0	33,269	80,104	**26.1**	20	3,981	75,075
21	43,107	6,358	2,286	0.92	3	23	2,309	3,224	14,491	3,680	32,345	46,836	6,358	1.5	2.0	3.0	2.0	35,348	82,184	**35.6**	20	4,086	77,063
22	43,107		0			0	0		0		0	0						0	0		20	0	
23			0			0	0		0		0	0						0	0		20	0	
24			0			0	0				0	0						0	0		20	0	
25	43,107	6,819	2,452	0.92	2	15	2,467	3,312	14,886	3,710	32,609	47,495	6,819	1.0	1.5	1.5	1.5	23,991	71,486	**29.0**	20	3,559	62,579
26			0			0	0		0		0	0						0	0		20	0	
27	35,923	5,703	1,709	0.99	1	8	1,717	3,204	14,401	3,714	32,644	47,045	5,703	1.5	1.0	1.0	1.5	19,507	66,551	**38.8**	20	3,319	69,788
28	35,923	5,703	1,709	1.01	1	8	1,717	3,204	14,401	3,714	32,644	47,045	5,703	1.0	1.5	2.0	1.0	21,457	68,502	**39.9**	20	3,417	71,835
29			0			0	0		0		0	0						0	0		20	0	
30			0			0	0		0		0	0						0	0		20	0	
			0			0	0		0		0	0						0	0		20	0	

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Notes:

User input cells, all other cells are calculated

ENGINEERING ENTERPRISES, INC.
CONULSTING ENGINEERS

East WWTF Monthly Wastewater SRT (Digester) Tracking Program - 04/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1														
2														
3														
4	19.6	7.3	31.0	46.5	62.0	77.5	93.0	108.5	11.5	17.3	23.0	28.8	34.6	40.3
5	15.7	7.3	24.8	37.2	49.6	62.0	74.4	86.8	11.5	17.3	23.0	28.8	34.6	40.3
6	19.6	10.0	26.3	39.4	52.6	65.7	78.8	92.0	13.3	20.0	26.7	33.4	40.0	46.7
7	13.1	12.5	17.5	26.3	35.0	43.8	52.6	61.3	16.8	25.1	33.5	41.9	50.3	58.7
8	15.7	9.2	20.0	30.0	40.0	50.0	60.0	69.9	11.7	17.5	23.4	29.2	35.1	40.9
9														
10														
11														
12	13.1	9.5	18.3	27.5	36.6	45.8	55.0	64.1	13.3	20.0	26.7	33.3	40.0	46.7
13	13.1	6.7	21.7	32.6	43.5	54.4	65.2	76.1	11.2	16.8	22.4	28.0	33.6	39.2
14	13.1	9.1	21.7	32.6	43.5	54.4	65.2	76.1	15.2	22.8	30.3	37.9	45.5	53.1
15	26.2	9.1	44.0	65.9	87.9	109.9	131.9	153.9	15.3	22.9	30.5	38.2	45.8	53.4
16														
17														
18														
19	13.1	8.8	16.6	24.9	33.2	41.5	49.9	58.2	11.2	16.8	22.4	28.0	33.6	39.2
20	9.8	7.5	15.4	23.1	30.8	38.6	46.3	54.0	11.8	17.7	23.6	29.5	35.4	41.3
21	13.1	7.3	20.6	30.8	41.1	51.4	61.7	72.0	11.5	17.3	23.0	28.8	34.5	40.3
22	13.1													
23														
24														
25	13.1	9.0	19.2	28.8	38.4	47.9	57.5	67.1	13.2	19.8	26.4	33.0	39.6	46.2
26														
27	15.7	8.1	27.5	41.3	55.0	68.8	82.5	96.3	14.2	21.2	28.3	35.4	42.5	49.6
28	15.7	7.8	27.5	41.3	55.0	68.8	82.5	96.3	13.8	20.6	27.5	34.4	41.3	48.2
29														
30														

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East WWTF Monthly Wastewater SRT Tracking Program - 05/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,257.0	
CLARIFIER NO. 2 =	3,318.5	x
CLARIFIER NO. 3 =	3,318.5	x
CLARIFIER NO. 4 =	3,318.5	x
CLARIFIER NO. 5 =	3,318.5	x
TOTAL (ALL CLARIFIERS) =	14,531.0	
TOTAL (ONLINE-IN USE) =	**13,274.0**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
WEST OX DITCH - ENVIREX 2-RING ORBAL =	538,597.5	x
NORTHWEST OX DITCH - ENVIREX 2-RING ORBAL =	229,652.0	
NE OX DITCH NO. 1 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
NE OX DITCH NO. 2 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	1,821,506.5	
TOTAL VOLUME (LAKESIDE TREATMENT TRAIN) =	1,053,257.0	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,591,854.5**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	330,482.0	x
DIGESTER NO. 2 =	233,183.0	x
TOTAL (ALL DIGESTERS) =	563,665.0	
TOTAL (ONLINE-IN USE) =	**563,665.0**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	W ORBAL OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	W ORBAL OX DITCH TRAIN Solids Inventory (LBS)	LAKESIDE OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	LAKESIDE OX DITCH TRAIN Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
														x	x	x	x								
1			0		0	0		0		0	0							0	0		20	0			
2			0		0	0		0		0	0							0	0		20	0			
3	43,107	8,427	3,030	1.42	1	12	3,041	3,306	14,859	3,476	30,552	45,411	8,427	2.5	2.5	2.5	2.5	49,312	94,724	**31.1**	20	4,724	67,221		
4	43,107	8,038	2,890	1.26	1	10	2,900	3,546	15,938	3,728	32,767	48,705	8,038	2.0	3.0	3.0	2.5	51,182	99,887	**34.4**	20	4,984	74,345		
5	57,476	8,038	3,853	1.26	1	11	3,864	3,546	15,938	3,728	32,767	48,705	8,038	2.0	3.0	2.5	2.5	48,745	97,450	**25.2**	20	4,862	72,527		
6	50,292	6,013	2,522	1.05	2	18	2,540	3,400	15,282	3,480	30,587	45,869	6,013	1.5	2.0	2.5	2.0	31,462	77,331	**30.4**	20	3,849	76,752		
7			0			0	0		0		0	0						0	0		20	0			
8			0			0	0		0		0	0						0	0		20	0			
9			0			0	0		0		0	0						0	0		20	0			
10	57,476	7,550	3,619	1.13	1	9	3,629	3,296	14,814	3,642	32,011	46,825	7,550	1.0	1.0	1.5	1.0	20,865	67,690	**18.7**	20	3,375	53,600		
11	57,476	7,956	3,814	1.34	1	11	3,825	3,504	15,749	3,564	31,326	47,075	7,956	1.0	1.0	1.0	1.0	19,090	66,165	**17.3**	20	3,297	49,690		
12	43,107	7,956	2,860	1.19	1	10	2,870	3,504	15,749	3,564	31,326	47,075	7,956	1.0	1.0	1.0	1.0	19,090	66,165	**23.1**	20	3,298	49,709		
13			0			0	0		0		0	0						0	0		20	0			
14			0			0	0		0		0	0						0	0		20	0			
15			0			0	0		0		0	0						0	0		20	0			
16	57,476	8,263	3,961	1.18	3	30	3,990	3,166	14,230	3,390	29,796	44,026	8,263	2.0	2.5	2.0	3.0	45,863	89,889	**22.5**	20	4,465	64,789		
17			0			0	0		0		0	0						0	0		20	0			
18	57,476	4,283	2,053	1.31	4	44	2,097	3,316	14,904	3,264	28,689	43,593	4,283	2.0	3.0	3.0	3.0	34,393	77,986	**37.2**	20	3,856	107,937		
19	57,476	4,283	2,053	0.98	4	33	2,086	3,316	14,904	3,264	28,689	43,593	4,283	2.0	3.0	3.0	3.5	35,956	79,549	**38.1**	20	3,945	110,439		
20	57,476	6,781	3,250	0.91	2	15	3,266	3,252	14,616	2,954	25,964	40,580	6,781	2.0	3.0	3.0	3.0	44,364	84,944	**26.0**	20	4,232	74,834		
21			0			0	0		0		0	0						0	0		20	0			
22			0			0	0		0		0	0						0	0		20	0			
23			0			0	0		0		0	0						0	0		20	0			
24	100,583	6,813	5,715	0.96	5	40	5,755	3,580		3,304	29,040	29,040	6,813	2.0	2.0	2.0	2.0	33,531	62,571	**10.9**	20	3,088	54,355		
25	57,476	7,433	3,563	0.85	3	21	3,584	3,174	14,266	3,214	28,249	42,515	7,433	2.0	2.0	2.0	3.0	39,698	82,213	**22.9**	20	4,090	65,969		
26	28,738	4,610	1,105	1.04	0	0	1,105	3,722	16,729	3,176	27,915	44,644	4,610	1.0	1.0	2.0	2.0	19,354	63,998	**57.9**	20	3,200	83,228		
27			0			0	0		0		0	0						0	0		20	0			
28			0			0	0		0		0	0						0	0		20	0			
29			0			0	0		0		0	0						0	0		20	0			
30			0			0	0		0		0	0						0	0		20	0			
31			0			0	0		0		0	0						0	0		20	0			

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Notes:

User input cells, all other cells are calculated

ENGINEERING ENTERPRISES, INC.
CONULSTING ENGINEERS

East WWTF Monthly Wastewater SRT (Digester) Tracking Program - 05/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1														
2														
3	13.1	8.4	15.5	23.3	31.0	38.8	46.6	54.3	10.0	14.9	19.9	24.9	29.9	34.8
4	13.1	7.6	16.3	24.4	32.5	40.7	48.8	56.9	9.4	14.1	18.9	23.6	28.3	33.0
5	9.8	7.8	12.2	18.3	24.4	30.5	36.6	42.7	9.7	14.5	19.3	24.2	29.0	33.8
6	11.2	7.3	18.6	28.0	37.3	46.6	55.9	65.2	12.2	18.3	24.4	30.5	36.6	42.7
7														
8														
9														
10	9.8	10.5	13.0	19.5	26.0	32.5	39.0	45.5	13.9	20.9	27.9	34.8	41.8	48.7
11	9.8	11.3	12.3	18.5	24.7	30.8	37.0	43.1	14.3	21.4	28.5	35.6	42.8	49.9
12	13.1	11.3	16.4	24.7	32.9	41.1	49.3	57.5	14.3	21.4	28.5	35.6	42.8	49.9
13														
14														
15														
16	9.8	8.7	11.9	17.8	23.7	29.7	35.6	41.5	10.5	15.8	21.1	26.3	31.6	36.9
17														
18	9.8	5.2	22.9	34.3	45.8	57.2	68.7	80.1	12.2	18.3	24.4	30.5	36.6	42.7
19	9.8	5.1	22.9	34.3	45.8	57.2	68.7	80.1	11.9	17.9	23.8	29.8	35.7	41.7
20	9.8	7.5	14.5	21.7	28.9	36.2	43.4	50.6	11.1	16.7	22.2	27.8	33.3	38.9
21														
22														
23														
24	5.6	10.4	8.2	12.3	16.5	20.6	24.7	28.8	15.2	22.8	30.4	38.1	45.7	53.3
25	9.8	8.5	13.2	19.8	26.4	33.0	39.6	46.2	11.5	17.2	23.0	28.7	34.5	40.2
26	19.6	6.8	42.5	63.8	85.1	106.4	127.6	148.9	14.7	22.0	29.4	36.7	44.1	51.4
27														
28														
29														
30														
31														

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East WWTF Monthly Wastewater SRT Tracking Program - 06/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,257.0	
CLARIFIER NO. 2 =	3,318.5	x
CLARIFIER NO. 3 =	3,318.5	x
CLARIFIER NO. 4 =	3,318.5	x
CLARIFIER NO. 5 =	3,318.5	x
TOTAL (ALL CLARIFIERS) =	14,531.0	
TOTAL (ONLINE-IN USE) =	**13,274.0**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
WEST OX DITCH - ENVIREX 2-RING ORBAL =	538,597.5	x
NORTHWEST OX DITCH - ENVIREX 2-RING ORBAL =	229,652.0	
NE OX DITCH NO. 1 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
NE OX DITCH NO. 2 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	1,821,506.5	
TOTAL VOLUME (LAKESIDE TREATMENT TRAIN) =	1,053,257.0	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,591,854.5**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	330,482.0	x
DIGESTER NO. 2 =	233,183.0	x
TOTAL (ALL DIGESTERS) =	563,665.0	
TOTAL (ONLINE-IN USE) =	**563,665.0**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	W ORBAL OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	W ORBAL OX DITCH TRAIN Solids Inventory (LBS)	LAKESIDE OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	LAKESIDE OX DITCH TRAIN Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
														x	x	x	x								
1	57,476	7,679	3,681	1.12	2	19	3,700	3,756	16,882	3,532	31,044	47,926	7,679		1.5	1.5	1.5	1.5	27,867	75,793	**20.5**	20	3,771	58,882
2	71,845	7,679	4,601	1.00	2	17	4,618	3,756	16,882	3,532	31,044	47,926	7,679		1.5	1.5	1.5	1.5	27,867	75,793	**16.4**	20	3,773	58,914
3	43,107	7,487	2,692	0.86	3	22	2,713	3,636	16,342	3,468	30,482	46,824	7,487		2.0	3.0	3.0	3.5	52,193	99,017	**36.5**	20	4,929	78,943
4			0			0	0		0		0	0							0	0		20	0	
5			0			0	0		0		0	0							0	0		20	0	
6	71,845	5,888	3,528	0.93	7	54	3,582	3,488	15,677	3,414	30,007	45,684	5,888		1.5	2.5	3.0	3.0	38,537	84,221	**23.5**	20	4,157	84,651
7	57,476	5,888	2,822	0.86	7	50	2,873	3,488	15,677	3,414	30,007	45,684	5,888		2.0	3.0	3.0	3.0	42,391	88,075	**30.7**	20	4,353	88,654
8	50,292	7,895	3,311	0.95	3	24	3,335	3,194	14,356	2,636	23,169	37,525	7,895		1.0	1.0	3.0	3.0	34,903	72,427	**21.7**	20	3,598	54,637
9	57,476	7,895	3,784	0.78	3	20	3,804	3,194	14,356	2,636	23,169	37,525	7,895		1.0	2.0	3.0	3.0	39,266	76,790	**20.2**	20	3,820	58,014
10	57,476	3,946	1,892	1.13	2	19	1,910	3,502	15,740	2,058	18,089	33,829	3,946		2.0	3.0	3.0	3.0	27,361	61,190	**32.0**	20	3,041	92,396
11			0			0	0		0		0	0							0	0		20	0	
12			0			0	0		0		0	0							0	0		20	0	
13	71,845	4,768	2,857	0.82	5	34	2,891	3,410	15,327	1,796	15,786	31,112	4,768		0.5	1.0	1.5	1.0	10,877	41,990	**14.5**	20	2,065	51,939
14			0			0	0		0		0	0							0	0		20	0	
15			0			0	0		0		0	0							0	0		20	0	
16			0			0	0		0		0	0							0	0		20	0	
17			0			0	0		0		0	0							0	0		20	0	
18			0			0	0		0		0	0							0	0		20	0	
19			0			0	0		0		0	0							0	0		20	0	
20			0			0	0		0		0	0							0	0		20	0	
21			0			0	0		0		0	0							0	0		20	0	
22			0			0	0		0		0	0							0	0		20	0	
23			0			0	0		0		0	0							0	0		20	0	
24			0			0	0				0	0							0	0		20	0	
25			0			0	0		0		0	0							0	0		20	0	
26			0			0	0		0		0	0							0	0		20	0	
27	43,107	6,135	2,206	0.92	1	8	2,213	3,950	17,754	3,870	34,015	51,769	6,135		0.5	1.5	1.5		14,507	66,276	**29.9**	20	3,306	64,616
28	35,923	6,135	1,838	0.85	1	7	1,845	3,950	17,754	3,870	34,015	51,769	6,135		2.0	1.0	1.0		16,580	68,348	**37.0**	20	3,410	66,652
29	35,923	7,226	2,165	0.84	0	0	2,165	3,694	16,603	3,702	32,538	49,142	7,226		1.0	1.0	1.0		13,582	62,723	**29.0**	20	3,136	52,040
30	35,923	7,226	2,165	0.82	0	0	2,165	3,694	16,603	3,702	32,538	49,142	7,226		1.0	1.5	1.5		18,109	67,251	**31.1**	20	3,363	55,796
			0			0	0		0		0	0							0	0		20	0	

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Notes:

User input cells, all other cells are calculated

ENGINEERING ENTERPRISES, INC.
CONULSTING ENGINEERS

East WWTF Monthly Wastewater SRT (Digester) Tracking Program - 06/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	9.8	9.6	12.8	19.2	25.5	31.9	38.3	44.7	12.5	18.7	24.9	31.2	37.4	43.6
2	7.8	9.6	10.2	15.3	20.4	25.5	30.7	35.8	12.5	18.7	24.9	31.1	37.4	43.6
3	13.1	7.1	17.5	26.2	34.9	43.7	52.4	61.1	9.5	14.3	19.1	23.8	28.6	33.4
4														
5														
6	7.8	6.7	13.3	20.0	26.6	33.3	40.0	46.6	11.3	17.0	22.6	28.3	33.9	39.6
7	9.8	6.4	16.7	25.0	33.3	41.6	50.0	58.3	10.8	16.2	21.6	27.0	32.4	37.8
8	11.2	10.3	14.2	21.3	28.4	35.5	42.6	49.7	13.1	19.6	26.1	32.7	39.2	45.7
9	9.8	9.7	12.4	18.6	24.8	31.1	37.3	43.5	12.3	18.5	24.6	30.8	36.9	43.1
10	9.8	6.1	24.9	37.3	49.7	62.1	74.6	87.0	15.5	23.2	30.9	38.7	46.4	54.1
11														
12														
13	7.8	10.9	16.5	24.7	32.9	41.1	49.4	57.6	22.8	34.1	45.5	56.9	68.3	79.7
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27	13.1	8.7	21.3	32.0	42.6	53.3	63.9	74.6	14.2	21.3	28.4	35.5	42.7	49.8
28	15.7	8.5	25.6	38.4	51.2	63.9	76.7	89.5	13.8	20.7	27.6	34.5	41.4	48.2
29	15.7	10.8	21.7	32.6	43.4	54.3	65.1	76.0	15.0	22.5	30.0	37.5	45.0	52.5
30	15.7	10.1	21.7	32.6	43.4	54.3	65.1	76.0	14.0	21.0	28.0	35.0	41.9	48.9

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East WWTF Monthly Wastewater SRT Tracking Program - 07/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,257.0	
CLARIFIER NO. 2 =	3,318.5	x
CLARIFIER NO. 3 =	3,318.5	
CLARIFIER NO. 4 =	3,318.5	x
CLARIFIER NO. 5 =	3,318.5	x
TOTAL (ALL CLARIFIERS) =	14,531.0	
TOTAL (ONLINE-IN USE) =	**9,955.5**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
WEST OX DITCH - ENVIREX 2-RING ORBAL =	538,597.5	x
NORTHWEST OX DITCH - ENVIREX 2-RING ORBAL =	229,652.0	
NE OX DITCH NO. 1 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
NE OX DITCH NO. 2 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	1,821,506.5	
TOTAL VOLUME (LAKESIDE TREATMENT TRAIN) =	1,053,257.0	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,591,854.5**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	330,482.0	x
DIGESTER NO. 2 =	233,183.0	x
TOTAL (ALL DIGESTERS) =	563,665.0	
TOTAL (ONLINE-IN USE) =	**563,665.0**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	W ORBAL OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	W ORBAL OX DITCH TRAIN Solids Inventory (LBS)	LAKESIDE OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	LAKESIDE OX DITCH TRAIN Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
														x			x	x						
1	35,923	9,018	2,702	0.86	2	14	2,716	3,282	14,751	3,708	32,591	47,342	9,018		1.0		2.0	1.5	17,794	65,136	**24.0**	20	3,243	43,113
2			0			0	0		0		0	0							0	0		20	0	
3			0			0	0		0		0	0							0	0		20	0	
4			0			0	0		0		0	0							0	0		20	0	
5	35,923	5,084	1,523	0.87	5	36	1,559	3,260	14,652	3,702	32,538	47,191	5,084		1.5		3.0	2.5	19,110	66,300	**42.5**	20	3,279	77,327
6	35,923	8,369	2,507	0.91	4	30	2,538	3,094	13,906	3,448	30,306	44,212	8,369		2.0		2.5	3.0	27,538	71,750	**28.3**	20	3,557	50,963
7	35,923	8,369	2,507	0.98	4	33	2,540	3,094	13,906	3,448	30,306	44,212	8,369		2.0		2.0	2.5	23,866	68,078	**26.8**	20	3,371	48,301
8	35,923	6,115	1,832	0.97	0	0	1,832	3,252	14,616	3,458	30,394	45,010	6,115		2.0		2.5	2.0	19,334	64,344	**35.1**	20	3,217	63,084
9			0			0	0		0		0	0							0	0		20	0	
10			0			0	0		0		0	0							0	0		20	0	
11	35,923	9,726	2,914	0.85	4	28	2,942	3,862	17,358	4,100	36,037	53,395	9,726		1.5		1.0	1.5	17,184	70,579	**24.0**	20	3,501	43,157
12	35,923	7,816	2,342	0.84	4	28	2,370	3,504	15,749	4,226	37,144	52,893	7,816		2.0		1.0	1.0	14,966	67,860	**28.6**	20	3,365	51,622
13	43,107	7,816	2,810	0.90	4	30	2,840	3,504	15,749	4,226	37,144	52,893	7,816		1.5		1.0	1.0	13,096	65,989	**23.2**	20	3,269	50,154
14	35,923	6,190	1,855	0.87	5	36	1,891	3,468	15,587	4,210	37,003	52,591	6,190		1.5		1.0	1.0	11,310	63,901	**33.8**	20	3,159	61,191
15	28,738	6,190	1,484	0.80	5	33	1,517	3,468	15,587	4,210	37,003	52,591	6,190		1.0		1.5	1.5	12,926	65,516	**43.2**	20	3,242	62,808
16			0			0	0		0		0	0							0	0		20	0	
17			0			0	0		0		0	0							0	0		20	0	
18	28,739	6,238	1,495	0.84	1	7	1,502	3,094		4,366	38,375	38,375	6,238		1.5		1.0	2.0	14,827	53,201	**35.4**	20	2,653	50,995
19	28,739	6,238	1,495	0.87	1	7	1,502	3,094	13,906	4,366	38,375	52,281	6,238		2.0		2.0	2.5	21,416	73,697	**49.1**	20	3,678	70,689
20	28,738	6,626	1,588	0.83	5	35	1,623	3,180	14,293	4,026	35,386	49,679	6,626		2.0		1.5	1.5	16,549	66,228	**40.8**	20	3,277	59,296
21	28,738	6,626	1,588	0.89	5	37	1,625	3,180	14,293	4,026	35,386	49,679	6,626		1.5		2.0	1.5	16,549	66,228	**40.8**	20	3,274	59,255
22	57,476	7,406	3,550	1.09	3	27	3,577	2,318	10,418	3,770	33,136	43,555	7,406		2.0		1.5	1.5	17,363	60,917	**17.0**	20	3,019	48,871
23			0			0	0		0		0	0							0	0		20	0	
24			0			0	0				0	0							0	0		20	0	
25	35,923	7,716	2,312	1.24	2	21	2,332	3,104	13,951	3,892	34,208	48,160	7,716		2.0		1.5	1.5	18,034	66,194	**28.4**	20	3,289	51,109
26	35,923	7,716	2,312	1.04	2	17	2,329	3,104	13,951	3,892	34,208	48,160	7,716		1.5		1.0	1.0	12,624	60,783	**26.1**	20	3,022	46,959
27	43,107	6,825	2,454	0.98	1	8	2,462	3,180	14,293	3,984	35,017	49,310	6,825		1.0		1.0	1.0	10,076	59,385	**24.1**	20	2,961	52,021
28	43,107	6,825	2,454	0.94	1	8	2,461	3,180	14,293	3,984	35,017	49,310	6,825		1.0		1.0	1.0	10,076	59,385	**24.1**	20	2,961	52,028
29	35,923	8,090	2,424	1.07	1	9	2,433	2,788	12,531	3,682	32,363	44,894	8,090		1.0		1.0	1.0	10,973	55,867	**23.0**	20	2,784	41,268
30			0			0	0		0		0	0							0	0		20	0	
31			0			0	0		0		0	0							0	0		20	0	

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Notes:

User input cells, all other cells are calculated

ENGINEERING ENTERPRISES, INC.
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East WWTF Monthly Wastewater SRT (Digester) Tracking Program - 07/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	15.7	13.1	17.4	26.1	34.8	43.5	52.2	60.9	14.5	21.7	29.0	36.2	43.5	50.7
2														
3														
4														
5	15.7	7.3	30.9	46.3	61.7	77.2	92.6	108.0	14.3	21.5	28.7	35.8	43.0	50.2
6	15.7	11.1	18.7	28.1	37.5	46.9	56.2	65.6	13.2	19.8	26.4	33.0	39.6	46.3
7	15.7	11.7	18.7	28.1	37.5	46.9	56.2	65.6	13.9	20.9	27.9	34.9	41.8	48.8
8	15.7	8.9	25.7	38.5	51.3	64.1	77.0	89.8	14.6	21.9	29.2	36.5	43.8	51.1
9														
10														
11	15.7	13.1	16.1	24.2	32.3	40.3	48.4	56.5	13.4	20.1	26.9	33.6	40.3	47.0
12	15.7	10.9	20.1	30.1	40.2	50.2	60.2	70.3	14.0	21.0	27.9	34.9	41.9	48.9
13	13.1	11.2	16.7	25.1	33.5	41.8	50.2	58.6	14.4	21.6	28.8	35.9	43.1	50.3
14	15.7	9.2	25.3	38.0	50.7	63.4	76.0	88.7	14.9	22.3	29.8	37.2	44.6	52.1
15	19.6	9.0	31.7	47.5	63.4	79.2	95.1	110.9	14.5	21.7	29.0	36.2	43.5	50.7
16														
17														
18	19.6	11.1	31.4	47.2	62.9	78.6	94.3	110.0	17.7	26.6	35.4	44.3	53.2	62.0
19	19.6	8.0	31.4	47.2	62.9	78.6	94.3	110.0	12.8	19.2	25.6	32.0	38.3	44.7
20	19.6	9.5	29.6	44.4	59.2	74.0	88.8	103.6	14.3	21.5	28.7	35.9	43.0	50.2
21	19.6	9.5	29.6	44.4	59.2	74.0	88.8	103.6	14.4	21.5	28.7	35.9	43.1	50.2
22	9.8	11.5	13.2	19.9	26.5	33.1	39.7	46.3	15.6	23.4	31.1	38.9	46.7	54.5
23														
24														
25	15.7	11.0	20.3	30.5	40.7	50.8	61.0	71.2	14.3	21.4	28.6	35.7	42.9	50.0
26	15.7	12.0	20.3	30.5	40.7	50.8	61.0	71.2	15.6	23.3	31.1	38.9	46.7	54.4
27	13.1	10.8	19.2	28.7	38.3	47.9	57.5	67.1	15.9	23.8	31.8	39.7	47.6	55.6
28	13.1	10.8	19.2	28.7	38.3	47.9	57.5	67.1	15.9	23.8	31.7	39.7	47.6	55.6
29	15.7	13.7	19.4	29.1	38.8	48.5	58.2	67.9	16.9	25.3	33.8	42.2	50.7	59.1
30														
31														

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East WWTF Monthly Wastewater SRT Tracking Program - 08/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,257.0	
CLARIFIER NO. 2 =	3,318.5	x
CLARIFIER NO. 3 =	3,318.5	
CLARIFIER NO. 4 =	3,318.5	x
CLARIFIER NO. 5 =	3,318.5	x
TOTAL (ALL CLARIFIERS) =	14,531.0	
TOTAL (ONLINE-IN USE) =	**9,955.5**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
WEST OX DITCH - ENVIREX 2-RING ORBAL =	538,597.5	x
NORTHWEST OX DITCH - ENVIREX 2-RING ORBAL =	229,652.0	
NE OX DITCH NO. 1 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
NE OX DITCH NO. 2 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	1,821,506.5	
TOTAL VOLUME (LAKESIDE TREATMENT TRAIN) =	1,053,257.0	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,591,854.5**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	330,482.0	x
DIGESTER NO. 2 =	233,183.0	x
TOTAL (ALL DIGESTERS) =	563,665.0	
TOTAL (ONLINE-IN USE) =	**563,665.0**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	W ORBAL OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	W ORBAL OX DITCH TRAIN Solids Inventory (LBS)	LAKESIDE OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	LAKESIDE OX DITCH TRAIN Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
															x		x	x						
1	35,923	5,594	1,676	0.87	1	7	1,683	2,834	12,738	3,984	35,017	47,755	5,594		2.0		1.5	1.5	14,880	62,635	**37.2**	20	3,124	66,972
2	35,923	5,594	1,676	0.89	1	7	1,683	2,834	12,738	3,984	35,017	47,755	5,594		1.0		2.0	1.5	13,392	61,147	**36.3**	20	3,050	65,373
3	57,476	5,580	2,675	0.89	3	22	2,697	2,994	13,457	3,910	34,367	47,823	5,580		1.5		2.0	2.5	17,692	65,516	**24.3**	20	3,253	69,911
4	35,923	5,580	1,672	0.84	3	21	1,693	2,994	13,457	3,910	34,367	47,823	5,580		1.0		1.5	1.5	11,795	59,618	**35.2**	20	2,960	63,601
5	43,107	4,772	1,716	1.00	2	17	1,732	2,896	13,016	3,784	33,259	46,276	4,772		1.0		1.0	2.0	10,634	56,909	**32.9**	20	2,829	71,080
6			0			0	0		0		0	0							0	0		20	0	
7			0			0	0		0		0	0							0	0		20	0	
8	35,923	4,214	1,263	0.86	0	0	1,263	3,226	14,500	3,992	35,087	49,587	4,214		0.5		0.5	2.0	7,649	57,236	**45.3**	20	2,862	81,429
9	35,923	4,214	1,263	0.93	0	0	1,263	3,226	14,500	3,992	35,087	49,587	4,214		1.0		1.0	1.0	7,649	57,236	**45.3**	20	2,862	81,429
10	35,923	6,158	1,845	0.99	4	33	1,878	2,876	12,926	3,950	34,718	47,645	6,158		1.0		1.0	1.0	9,422	57,067	**30.4**	20	2,820	54,918
11	35,923	6,158	1,845	0.86	4	29	1,874	2,876	12,926	3,950	34,718	47,645	6,158		1.0		1.0	1.0	9,422	57,067	**30.5**	20	2,825	55,000
12	35,923	4,561	1,366	0.94	1	8	1,374	2,858	12,846	3,926	34,507	47,353	4,561		1.0		1.0	1.0	7,911	55,264	**40.2**	20	2,755	72,435
13			0			0	0		0		0	0							0	0		20	0	
14			0			0	0		0		0	0							0	0		20	0	
15	43,107	4,407	1,584	0.84	4	28	1,612	2,936	13,196	4,128	36,283	49,479	4,407		1.0		1.0	1.0	7,956	57,435	**35.6**	20	2,844	77,375
16	43,107	4,407	1,584	0.84	4	28	1,612	2,936	13,196	4,128	36,283	49,479	4,407		1.5		1.0	1.5	10,608	60,087	**37.3**	20	2,976	80,982
17	28,738	6,368	1,526	0.82	4	27	1,554	2,476	11,129	3,776	33,189	44,318	6,368		1.0		2.0	1.5	14,183	58,501	**37.7**	20	2,898	54,562
18	35,923	6,368	1,908	0.94	4	31	1,939	2,476	11,129	3,776	33,189	44,318	6,368		1.0		1.0	1.5	11,032	55,349	**28.5**	20	2,736	51,520
19	35,923	5,174	1,550	0.89	3	22	1,572	2,510	11,281	3,612	31,747	43,029	5,174		1.5		1.0	1.0	9,555	52,584	**33.4**	20	2,607	60,412
20			0			0	0		0		0	0							0	0		20	0	
21			0			0	0		0		0	0							0	0		20	0	
22	35,923	5,961	1,786	0.87	0	0	1,786	2,634	11,839	3,934	34,578	46,416	5,961		1.0		1.0	1.0	9,224	55,640	**31.2**	20	2,782	55,959
23	35,923	5,961	1,786	0.90	0	0	1,786	2,634	11,839	3,934	34,578	46,416	5,961		1.0		1.0	1.0	9,224	55,640	**31.2**	20	2,782	55,959
24	43,107	6,015	2,162	0.82	3	20	2,183	2,544	11,434	3,852	33,857	45,291	6,015		1.0		1.0	1.0	9,197	54,489	**25.0**	20	2,704	53,902
25	43,107	6,015	2,162	1.23	3	31	2,193	2,544	11,434	3,852	33,857	45,291	6,015		1.0		1.0	1.0	9,197	54,489	**24.8**	20	2,694	53,696
26	35,923	5,136	1,539	0.92	1	8	1,546	2,462	11,066	3,712	32,626	43,692	5,136		1.0		1.0	1.0	8,248	51,940	**33.6**	20	2,589	60,450
27			0			0	0		0		0	0							0	0		20	0	
28			0			0	0		0		0	0							0	0		20	0	
29	50,292	5,436	2,280	0.93	3	23	2,303	2,306	10,365	3,656	32,134	42,499	5,436		1.0		1.5	1.5	11,300	53,799	**23.4**	20	2,667	58,821
30	35,923	5,436	1,629	1.33	3	33	1,662	2,306	10,365	3,656	32,134	42,499	5,436		2.0		1.5	1.5	14,125	56,624	**34.1**	20	2,798	61,715
31	43,107	5,535	1,990	1.34	2	22	2,012	2,354	10,580	3,555	31,246	41,827	5,535		1.5		2.0	1.5	14,122	55,949	**27.8**	20	2,775	60,117

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Notes:

User input cells, all other cells are calculated

ENGINEERING ENTERPRISES, INC.
CONULSTING ENGINEERS

East WWTF Monthly Wastewater SRT (Digester) Tracking Program - 08/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
			PERCENT THICKENING						PERCENT THICKENING					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	15.7	8.4	28.0	42.1	56.1	70.1	84.1	98.2	15.0	22.6	30.1	37.6	45.1	52.7
2	15.7	8.6	28.0	42.1	56.1	70.1	84.1	98.2	15.4	23.1	30.8	38.5	46.2	53.9
3	9.8	8.1	17.6	26.4	35.2	43.9	52.7	61.5	14.4	21.7	28.9	36.1	43.3	50.6
4	15.7	8.9	28.1	42.2	56.2	70.3	84.4	98.4	15.9	23.8	31.8	39.7	47.6	55.6
5	13.1	7.9	27.4	41.1	54.8	68.5	82.2	95.9	16.6	24.9	33.2	41.5	49.9	58.2
6														
7														
8	15.7	6.9	37.2	55.9	74.5	93.1	111.7	130.3	16.4	24.6	32.9	41.1	49.3	57.5
9	15.7	6.9	37.2	55.9	74.5	93.1	111.7	130.3	16.4	24.6	32.9	41.1	49.3	57.5
10	15.7	10.3	25.5	38.2	51.0	63.7	76.4	89.2	16.7	25.0	33.3	41.7	50.0	58.3
11	15.7	10.2	25.5	38.2	51.0	63.7	76.4	89.2	16.6	25.0	33.3	41.6	49.9	58.2
12	15.7	7.8	34.4	51.6	68.8	86.0	103.2	120.4	17.1	25.6	34.1	42.7	51.2	59.7
13														
14														
15	13.1	7.3	29.7	44.5	59.3	74.2	89.0	103.8	16.5	24.8	33.1	41.3	49.6	57.9
16	13.1	7.0	29.7	44.5	59.3	74.2	89.0	103.8	15.8	23.7	31.6	39.5	47.4	55.3
17	19.6	10.3	30.8	46.2	61.6	77.0	92.4	107.8	16.2	24.3	32.4	40.6	48.7	56.8
18	15.7	10.9	24.6	37.0	49.3	61.6	73.9	86.2	17.2	25.8	34.4	43.0	51.5	60.1
19	15.7	9.3	30.3	45.5	60.7	75.8	91.0	106.1	18.0	27.0	36.1	45.1	54.1	63.1
20														
21														
22	15.7	10.1	26.3	39.5	52.6	65.8	79.0	92.1	16.9	25.3	33.8	42.2	50.7	59.1
23	15.7	10.1	26.3	39.5	52.6	65.8	79.0	92.1	16.9	25.3	33.8	42.2	50.7	59.1
24	13.1	10.5	21.7	32.6	43.5	54.3	65.2	76.1	17.4	26.1	34.8	43.5	52.2	60.8
25	13.1	10.5	21.7	32.6	43.5	54.3	65.2	76.1	17.5	26.2	34.9	43.6	52.4	61.1
26	15.7	9.3	30.6	45.8	61.1	76.4	91.7	106.9	18.2	27.2	36.3	45.4	54.5	63.5
27														
28														
29	11.2	9.6	20.6	30.9	41.2	51.5	61.9	72.2	17.6	26.4	35.3	44.1	52.9	61.7
30	15.7	9.1	28.9	43.3	57.7	72.2	86.6	101.0	16.8	25.2	33.6	42.0	50.4	58.8
31	13.1	9.4	23.6	35.4	47.2	59.1	70.9	82.7	16.9	25.4	33.9	42.3	50.8	59.3

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East WWTF Monthly Wastewater SRT Tracking Program - 09/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,257.0	
CLARIFIER NO. 2 =	3,318.5	x
CLARIFIER NO. 3 =	3,318.5	x
CLARIFIER NO. 4 =	3,318.5	x
CLARIFIER NO. 5 =	3,318.5	x
TOTAL (ALL CLARIFIERS) =	14,531.0	
TOTAL (ONLINE-IN USE) =	**13,274.0**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
WEST OX DITCH - ENVIREX 2-RING ORBAL =	538,597.5	x
NORTHWEST OX DITCH - ENVIREX 2-RING ORBAL =	229,652.0	
NE OX DITCH NO. 1 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
NE OX DITCH NO. 2 (LAKESIDE CLOSED LOOP REACTOR) =	526,628.5	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	1,821,506.5	
TOTAL VOLUME (LAKESIDE TREATMENT TRAIN) =	1,053,257.0	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,591,854.5**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	330,482.0	x
DIGESTER NO. 2 =	233,183.0	x
TOTAL (ALL DIGESTERS) =	563,665.0	
TOTAL (ONLINE-IN USE) =	**563,665.0**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	W ORBAL OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	W ORBAL OX DITCH TRAIN Solids Inventory (LBS)	LAKESIDE OX DITCH TRAIN Mixed Liquor Susp. Solids (mg/l)	LAKESIDE OX DITCH TRAIN Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
														x	x	x	x							
1	35,923	4,700	1,408	1.02	2.5	21	1,429	1,866	8,387	3,608	31,712	40,099	4,700		1.5		1.5	2.5	18,930	59,030	**41.3**	20	2,930	74,755
2	28,738	4,700	1,126	0.93	2.5	19	1,146	1,866	8,387	3,608	31,712	40,099	4,700		1.0		1.0	1.0	10,326	50,425	**44.0**	20	2,502	63,824
3			0			0	0		0		0	0							0	0		20	0	
4			0			0	0		0		0	0							0	0		20	0	
5			0			0	0		0		0	0							0	0		20	0	
6	35,923	6,444	1,931	1.00	4	33	1,964	2,498	11,228	3,840	33,751	44,979	6,444		1.0		1.0	1.0	12,782	57,760	**29.4**	20	2,855	53,115
7	35,923	5,066	1,518	1.05	0	0	1,518	2,464	11,075	3,634	31,941	43,015	5,066		1.0		1.0	1.0	10,813	53,828	**35.5**	20	2,691	63,701
8	35,923	5,066	1,518	0.98	0	0	1,518	2,464	11,075	3,634	31,941	43,015	5,066		1.0		1.0	1.0	10,813	53,828	**35.5**	20	2,691	63,701
9	35,923	5,938	1,779	0.92	3	23	1,802	2,360	10,607	3,626	31,870	42,478	5,938		1.0		1.0	1.0	11,887	54,364	**30.2**	20	2,695	54,426
10			0			0	0		0		0	0							0	0		20	0	
11			0			0	0		0		0	0							0	0		20	0	
12	35,923	5,947	1,782	0.90	1	8	1,789	2,150	9,663	3,420	30,060	39,723	5,947		2.0		2.0	1.5	21,343	61,067	**34.1**	20	3,046	61,410
13	35,923	5,947	1,782	0.61	1	5	1,787	2,150	9,663	3,420	30,060	39,723	5,947		1.5	1.5	1.5	1.5	23,284	63,007	**35.3**	20	3,145	63,415
14	35,923	5,622	1,684	0.94	6	47	1,731	2,264	10,176	3,158	27,757	37,933	5,622		1.5	1.0	1.0	2.0	20,006	57,939	**33.5**	20	2,850	60,786
15	35,923	5,622	1,684	0.84	6	42	1,727	2,264	10,176	3,158	27,757	37,933	5,622		1.5	2.0	1.5	1.5	23,643	61,576	**35.7**	20	3,037	64,763
16	35,923	5,091	1,525	0.83	5	35	1,560	2,154	9,681	3,122	27,441	37,122	5,091		1.5	2.0	1.5	2.0	23,818	60,940	**39.1**	20	3,012	70,946
17			0			0	0		0		0	0							0	0		20	0	
18			0			0	0		0		0	0							0	0		20	0	
19	35,923	6,142	1,840	0.86	2	14	1,854	2,218	9,969	3,108	27,318	37,287	6,142		1.0	1.0	1.0	1.0	15,329	52,615	**28.4**	20	2,616	51,078
20	35,923	6,142	1,840	0.82	2	14	1,854	2,218	9,969	3,108	27,318	37,287	6,142		1.0	1.0	1.0	1.0	15,329	52,615	**28.4**	20	2,617	51,091
21	35,923	6,099	1,827	0.80	3	20	1,847	2,214	9,951	3,114	27,370	37,321	6,099		1.0	1.0	1.0	1.0	15,267	52,589	**28.5**	20	2,610	51,303
22	35,923	6,099	1,827	1.05	3	26	1,853	2,214	9,951	3,114	27,370	37,321	6,099		1.5	1.0	1.5	1.0	19,084	56,405	**30.4**	20	2,794	54,930
23	35,923	4,018	1,204	0.97	3	24	1,228	2,216	9,960	2,942	25,859	35,819	4,018		1.0	1.0	1.0	1.0	11,534	47,352	**38.6**	20	2,343	69,929
24			0			0	0		0		0	0							0	0		20	0	
25			0			0	0		0		0	0							0	0		20	0	
26	35,923	4,619	1,384	0.93	6	46	1,430	2,024	9,097	2,972	26,122	35,219	4,619		2.0	2.0	1.5	1.5	22,014	57,233	**40.0**	20	2,815	73,081
27	35,923	4,619	1,384	0.84	6	42	1,426	2,024	9,097	2,972	26,122	35,219	4,619		1.5	2.0	1.5	1.0	18,869	54,088	**37.9**	20	2,662	69,115
28	35,923	4,564	1,367	0.92	2	15	1,383	2,188	9,834	2,892	25,419	35,253	4,564		1.5	2.0	1.5	2.0	21,622	56,876	**41.1**	20	2,828	74,306
29	35,923	4,118	1,234	0.80	1	7	1,240	2,410	10,832	3,004	26,403	37,235	4,188		1.5	3.0	1.5	2.0	23,836	61,072	**49.2**	20	3,047	88,717
30	35,923	4,118	1,234	0.85	1	7	1,241	2,410	10,832	3,004	26,403	37,235	4,188		1.0	2.0	1.0	1.5	16,387	53,623	**43.2**	20	2,674	77,861
			0			0	0		0		0	0							0	0		20	0	

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Notes:

User input cells, all other cells are calculated

ENGINEERING ENTERPRISES, INC.
CONULSTING ENGINEERS

East WWTF Monthly Wastewater SRT (Digester) Tracking Program - 09/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	15.7	7.5	33.4	50.1	66.8	83.5	100.2	116.8	16.0	24.1	32.1	40.1	48.1	56.2
2	19.6	8.8	41.7	62.6	83.5	104.3	125.2	146.1	18.8	28.2	37.6	47.0	56.4	65.8
3														
4														
5														
6	15.7	10.6	24.3	36.5	48.7	60.9	73.0	85.2	16.5	24.7	32.9	41.2	49.4	57.6
7	15.7	8.8	31.0	46.5	61.9	77.4	92.9	108.4	17.5	26.2	34.9	43.7	52.4	61.1
8	15.7	8.8	31.0	46.5	61.9	77.4	92.9	108.4	17.5	26.2	34.9	43.7	52.4	61.1
9	15.7	10.4	26.4	39.6	52.8	66.1	79.3	92.5	17.4	26.2	34.9	43.6	52.3	61.0
10														
11														
12	15.7	9.2	26.4	39.6	52.8	66.0	79.2	92.3	15.4	23.2	30.9	38.6	46.3	54.0
13	15.7	8.9	26.4	39.6	52.8	66.0	79.2	92.3	14.9	22.4	29.9	37.4	44.8	52.3
14	15.7	9.3	27.9	41.9	55.8	69.8	83.7	97.7	16.5	24.7	33.0	41.2	49.5	57.7
15	15.7	8.7	27.9	41.9	55.8	69.8	83.7	97.7	15.5	23.2	31.0	38.7	46.4	54.2
16	15.7	7.9	30.8	46.2	61.6	77.1	92.5	107.9	15.6	23.4	31.2	39.0	46.8	54.6
17														
18														
19	15.7	11.0	25.5	38.3	51.1	63.9	76.6	89.4	18.0	27.0	35.9	44.9	53.9	62.9
20	15.7	11.0	25.5	38.3	51.1	63.9	76.6	89.4	18.0	26.9	35.9	44.9	53.9	62.9
21	15.7	11.0	25.7	38.6	51.5	64.3	77.2	90.0	18.0	27.0	36.0	45.0	54.0	63.1
22	15.7	10.3	25.7	38.6	51.5	64.3	77.2	90.0	16.8	25.2	33.6	42.1	50.5	58.9
23	15.7	8.1	39.1	58.6	78.1	97.6	117.2	136.7	20.1	30.1	40.1	50.2	60.2	70.2
24														
25														
26	15.7	7.7	34.0	51.0	67.9	84.9	101.9	118.9	16.7	25.0	33.4	41.7	50.1	58.4
27	15.7	8.2	34.0	51.0	67.9	84.9	101.9	118.9	17.7	26.5	35.3	44.1	53.0	61.8
28	15.7	7.6	34.4	51.6	68.8	85.9	103.1	120.3	16.6	24.9	33.2	41.6	49.9	58.2
29	15.7	6.4	38.1	57.2	76.2	95.3	114.3	133.4	15.4	23.1	30.9	38.6	46.3	54.0
30	15.7	7.2	38.1	57.2	76.2	95.3	114.3	133.4	17.6	26.4	35.2	43.9	52.7	61.5

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Appendix F

East WWTF DO Tracking Sheets (02/2016-09/2016)

East WWTF Monthly Wastewater DO Tracking Program - 02/2016

Village of Huntley, IL

	West (Envirex)		Northeast (Lakeside)		Northwest (Envirex)	
	Inner Ring DO	Outer Ring DO	North Ditch DO	South Ditch DO	Inner Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/L)	(mg/L)	(mg/l)	(mg/L)	(mg/L)
1						
2						
3	7.14	1.39	3.15	5.37		
4	6.90	1.10	0.65	5.30		
5	6.90	0.70	0.57	5.30		
6						
7						
8	4.90	0.90	0.30	2.60		
9						
10	6.80	0.60	1.40	5.40		
11						
12	7.50	0.60	1.70	5.40		
13						
14						
15						
16	5.50	0.70	1.40	3.00		
17	4.50	0.80	1.34	4.50		
18						
19	1.70	0.70	0.47	4.90		
20						
21						
22	4.90	0.60	0.23	3.20		
23						
24	5.20	0.87	1.50	3.60		
25						
26	7.70	0.90	1.10	4.50		
27						
28						
29	6.50	0.80	0.40	2.40		
Monthly Average	5.86	0.82	1.09	4.27	-	-
Maximum	7.70	1.39	3.15	5.40	-	-
Minimum	1.70	0.60	0.23	2.40	-	-

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Notes:

The Northwest Oxidation Ditch was not in use during the time of sampling

East WWTF Monthly Wastewater DO Tracking Program - 03/2016

Village of Huntley, IL

	West (Envirex)		Northeast (Lakeside)		Northwest (Envirex)	
	Inner Ring DO	Outer Ring DO	North Ditch DO	South Ditch DO	Inner Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/L)	(mg/L)	(mg/l)	(mg/L)	(mg/L)
1						
2	7.97	0.85	0.39	3.55		
3						
4	8.75	1.25	0.31	3.85		
5						
6						
7	7.13	0.53	0.39	2.96		
8						
9	5.99	0.34	1.58	2.15		
10						
11	6.25	0.52	1.00	4.50		
12						
13						
14	4.92	0.42	1.35	3.03		
15						
16	5.98	0.78	1.98	4.15		
17						
18	6.61	0.58	0.48	4.58		
19						
20						
21	5.23	0.63	0.34	2.66		
22						
23	6.36	0.86	1.26	3.69		
24	7.60	1.58	1.25	3.90		
25						
26						
27						
28	6.52	0.62	1.30	4.08		
29						
30	5.12	0.61	0.34	3.10		
31						
Overall Average	6.49	0.74	0.92	3.55	-	-
Maximum	8.75	1.58	1.98	4.58	-	-
Minimum	4.92	0.34	0.31	2.15	-	-

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Notes:

The Northwest Oxidation Ditch was not in use during the time of sampling

East WWTF Monthly Wastewater DO Tracking Program - 04/2016

Village of Huntley, IL

	West (Envirex)		Northeast (Lakeside)		Northwest (Envirex)	
	Inner Ring DO	Outer Ring DO	North Ditch DO	South Ditch DO	Inner Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/L)	(mg/L)	(mg/l)	(mg/L)	(mg/L)
1	5.88	0.49	0.69	5.08		
2						
3						
4	4.18	0.61	0.48	3.54		
5						
6	4.25	0.75	1.26	2.60		
7						
8	5.45	0.68	1.11	4.25		
9						
10						
11	4.00	0.96	1.41	2.54		
12						
13	4.65	0.76	0.42	2.25		
14						
15	5.62	0.62	0.54	4.22		
16						
17						
18	2.42	0.64	0.60	1.45		
19						
20	4.25	0.68	1.06	1.74		
21						
22	5.02	0.97	1.50	3.93		
23						
24						
25	3.36	0.53	1.58	2.91		
26						
27	3.26	0.71	0.54	3.48		
28						
29	5.38	0.71	0.61	4.13		
30						
Overall Average	4.44	0.70	0.91	3.24	-	-
Maximum	5.88	0.97	1.58	5.08	-	-
Minimum	2.42	0.49	0.42	1.45	-	-

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Notes:

The Northwest Oxidation Ditch was not in use during the time of sampling

East WWTF Monthly Wastewater DO Tracking Program - 05/2016

Village of Huntley, IL

	West (Envirex)		Northeast (Lakeside)		Northwest (Envirex)	
	Inner Ring DO	Outer Ring DO	North Ditch DO	South Ditch DO	Inner Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/L)	(mg/L)	(mg/l)	(mg/L)	(mg/L)
1	4.39	0.83	0.57	4.30		
2						
3						
4	4.00	0.64	1.40	1.61		
5						
6	4.43	0.60	1.01	3.80		
7						
8						
9	3.05	0.61	1.47	2.91		
10						
11	3.69	0.80	0.46	3.63		
12						
13	3.49	0.71	0.61	3.52		
14						
15						
16	3.05	0.44	0.36	2.25		
17						
18	3.07	0.34	0.90	2.40		
19						
20	4.01	0.62	1.00	3.80		
21						
22						
23						
24	2.10	0.18	0.60	1.35		
25	0.87	0.16	0.12	0.85		
26	1.99	0.14	0.12	1.99		
27						
28						
29						
30						
31	0.78	0.19	0.17	0.30		
Overall Average	2.99	0.48	0.68	2.52	-	-
Maximum	4.43	0.83	1.47	4.30	-	-
Minimum	0.78	0.14	0.12	0.30	-	-

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Notes:

The Northwest Oxidation Ditch was not in use during the time of sampling

East WWTF Monthly Wastewater DO Tracking Program - 06/2016

Village of Huntley, IL

	West (Envirex)		Northeast (Lakeside)		Northwest (Envirex)	
	Inner Ring DO	Outer Ring DO	North Ditch DO	South Ditch DO	Inner Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/L)	(mg/L)	(mg/l)	(mg/L)	(mg/L)
1	0.18	0.16	0.14	0.90		
2						
3	2.55	0.25	2.14	2.79		
4						
5						
6	4.00	0.36	0.85	2.58		
7						
8	4.35	0.50	1.60	3.80		
9						
10	4.25	0.35	2.77	4.30		
11						
12						
13	3.14	0.27	1.60	4.05		
14						
15	3.59	0.18	4.40	4.14		
16						
17	3.74	0.14	2.22	4.01		
18						
19						
20	3.49	0.19	2.11	3.88		
21	3.72	0.28	0.60	2.20		
22	3.33	0.20	0.90	1.89		
23						
24	4.34	0.33	1.15	2.20		
25						
26						
27	4.00	0.31	1.17	1.79		
28						
29	5.20	0.51	1.50	3.16		
30						
Overall Average	3.56	0.29	1.65	2.98	-	-
Maximum	5.20	0.51	4.40	4.30	-	-
Minimum	0.18	0.14	0.14	0.90	-	-

G:\Public\Huntley\2015\HU1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\DO Tracking\[East Plant D.O. For Report Appendices.xlsx]June 16

Notes:

The Northwest Oxidation Ditch was not in use during the time of sampling

East WWTF Monthly Wastewater DO Tracking Program - 07/2016

Village of Huntley, IL

	West (Envirex)		Northeast (Lakeside)		Northwest (Envirex)	
	Inner Ring DO	Outer Ring DO	North Ditch DO	South Ditch DO	Inner Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/L)	(mg/L)	(mg/l)	(mg/L)	(mg/L)
1	4.41	0.71	2.40	2.21		
2						
3						
4						
5	4.30	0.95	0.78	2.30		
6	4.35	0.36	0.70	2.25		
7						
8	3.69	0.39	0.85	1.17		
9						
10						
11	4.00	0.28	0.60	1.50		
12	3.21	0.40	0.65	1.38		
13						
14						
15	3.11	0.28	0.72	1.43		
16						
17						
18	4.38	0.36	0.80	1.50		
19						
20	4.23	0.40	0.65	1.73		
21						
22	4.00	0.32	0.84	2.05		
23						
24						
25	3.90	0.34	1.80	2.10		
26						
27	3.72	0.31	1.32	2.06		
28						
29	3.80	0.34	0.89	1.45		
30						
31						
Overall Average	3.93	0.42	1.00	1.78	-	-
Maximum	4.41	0.95	2.40	2.30	-	-
Minimum	3.11	0.28	0.60	1.17	-	-

G:\Public\Huntley\2015\HU1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\DO Tracking\[East Plant D.O. For Report Appendices.xlsx]July 16

Notes:

The Northwest Oxidation Ditch was not in use during the time of sampling

East WWTF Monthly Wastewater DO Tracking Program - 08/2016

Village of Huntley, IL

	West (Envirex)		Northeast (Lakeside)		Northwest (Envirex)	
	Inner Ring DO	Outer Ring DO	North Ditch DO	South Ditch DO	Inner Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/L)	(mg/L)	(mg/l)	(mg/L)	(mg/L)
1	4.05	0.35	0.75	1.82		
2						
3	4.15	0.22	0.75	1.54		
4						
5	3.80	0.30	0.75	1.65		
6						
7						
8	4.38	0.30	1.15	2.19		
9						
10	3.74	0.30	0.89	1.79		
11						
12	3.21	0.32	0.98	1.41		
13						
14						
15	3.48	0.34	1.07	1.64		
16						
17	3.70	0.44	0.83	1.15		
18						
19	3.75	0.44	0.83	1.17		
20						
21						
22	3.43	0.31	1.10	2.33		
23						
24	3.47	0.29	2.98	2.34		
25						
26	3.68	0.31	1.13	2.26		
27						
28						
29	3.81	0.35	0.75	1.80		
30						
31	3.96	0.43	0.95	2.35		
Overall Average	3.76	0.34	1.07	1.82	-	-
Maximum	4.38	0.44	2.98	2.35	-	-
Minimum	3.21	0.22	0.75	1.15	-	-

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Notes:

The Northwest Oxidation Ditch was not in use during the time of sampling

East WWTF Monthly Wastewater DO Tracking Program - 09/2016

Village of Huntley, IL

	West (Envirex)		Northeast (Lakeside)		Northwest (Envirex)	
	Inner Ring DO	Outer Ring DO	North Ditch DO	South Ditch DO	Inner Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/L)	(mg/L)	(mg/l)	(mg/L)	(mg/L)
1						
2	3.18	0.58	0.87	2.73		
3						
4						
5						
6	4.00	0.45	1.28	2.70		
7	4.22	0.39	1.20	2.20		
8				2.46		
9	4.10	0.41	1.24			
10						
11						
12	4.85	0.60	0.55	3.15		
13						
14	4.95	0.24	1.10	3.36		
15						
16	3.85	0.50	1.30	2.30		
17						
18						
19	4.43	0.19	1.24	2.76		
20						
21	4.24	0.17	3.00	2.48		
22						
23	4.30	0.24	2.55	2.55		
24						
25						
26	4.49	0.45	2.76	3.15		
27	5.00	0.47	2.10	3.40		
28						
29						
30						
31						
Overall Average	4.30	0.39	1.60	2.77	-	-
Maximum	5.00	0.60	3.00	3.40	-	-
Minimum	3.18	0.17	0.55	2.20	-	-

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Notes:

The Northwest Oxidation Ditch was not in use during the time of sampling

Appendix G

West WWTF SRT Tracking Sheets (01/2016-09/2016)

West WWTF Monthly Wastewater SRT Tracking Program - 01/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,963	
CLARIFIER NO. 2 =	1,963	
CLARIFIER NO. 3 =	1,963	
CLARIFIER NO. 4 =	1,963	
CLARIFIER NO. 5 =	5,675	
CLARIFIER NO. 6 =	5,675	x
TOTAL (ALL CLARIFIERS) =	19,202	
TOTAL (ONLINE-IN USE) =	**5,675**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
OX DITCH NO. 1 (NORTHERN) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 2 (MIDDLE) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 3 (SOUTHERN) - ENVIREX 2-RING ORBAL =	1,537,995	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	3,901,839	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,537,995**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	123,429	x
DIGESTER NO. 2 =	123,429	x
DIGESTER NO. 3 =	123,429	x
DIGESTER NO. 4 =	123,429	x
TOTAL (ALL DIGESTERS) =	493,714	
TOTAL (ONLINE-IN USE) =	**493,714**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	OX DITCH 1 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 1 Solids Inventory (LBS)	OX DITCH 2 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 2 Solids Inventory (LBS)	OX DITCH 3 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 3 Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER NO. 6 Sludge Blanket (feet) x	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
1			0			0	0.0		0		0		0	0									0	0		20	0	
2			0			0	0		0		0		0	0									0	0		20	0	
3			0			0	0		0		0		0	0									0	0		20	0	
4			0			0	0		0		0		0	0									0	0		20	0	
5			0			0	0		0		0		0	0									0	0		20	0	
6	77,000	12,046	7,736	1.24	4	41	7,777		0		0	6,586	84,528	84,528	12,046							3.5	7,467	91,996	**11.8**	20	4,558	45,374
7	72,000	12,046	7,233	1.22	4	41	7,274		0		0	6,586	84,528	84,528	12,046							3.0	6,401	90,929	**12.5**	20	4,506	44,850
8	52,000	14,562	6,315	1.40	2	23	6,339		0		0	6,038	77,495	77,495	14,562							3.0	7,738	85,233	**13.4**	20	4,238	34,898
9			0			0	0		0		0		0	0									0	0		20	0	
10			0			0	0		0		0		0	0									0	0		20	0	
11			0			0	0		0		0		0	0									0	0		20	0	
12	54,000	14,562	6,558	1.18	2	20	6,578		0		0	6,038	77,495	77,495	14,562							3.0	7,738	85,233	**13.0**	20	4,242	34,928
13	69,000	12,182	7,010	1.23	3	31	7,041		0		0	6,524	83,733	83,733	12,182							3.0	6,473	90,206	**12.8**	20	4,480	44,091
14			0			0	0		0		0		0	0									0	0		20	0	
15	49,000	8,266	3,378	1.26	1	11	3,388		0		0	6,472	83,065	83,065	8,266							2.5	3,660	86,725	**25.6**	20	4,326	62,748
16			0			0	0		0		0		0	0									0	0		20	0	
17			0			0	0		0		0		0	0									0	0		20	0	
18			0			0	0		0		0		0	0									0	0		20	0	
19	62,000	12,324	6,372	1.21	2	20	6,393		0		0	6,746	86,582	86,582	12,324							3.0	6,548	93,130	**14.6**	20	4,636	45,108
20			0			0	0		0		0		0	0									0	0		20	0	
21	61,000	12,324	6,270	1.19	2	20	6,290		0		0	6,746	86,582	86,582	12,324							2.5	5,457	92,039	**14.6**	20	4,582	44,581
22	57,000	12,282	5,839	1.24	4	41	5,880		0		0	6,346	81,448	81,448	12,282							2.5	5,438	86,887	**14.8**	20	4,303	42,008
23			0			0	0		0		0		0	0									0	0		20	0	
24			0			0	0		0		0		0	0									0	0		20	0	
25	39,000	13,626	4,432	1.14	5	48	4,480		0		0	6,222	79,857	79,857	13,626							3.0	7,240	87,097	**19.4**	20	4,307	37,903
26			0			0	0		0		0		0	0									0	0		20	0	
27	45,000	13,308	4,994	1.18	4	39	5,034		0		0	6,172	79,215	79,215	13,308							2.5	5,893	85,108	**16.9**	20	4,216	37,986
28			0			0	0		0		0		0	0									0	0		20	0	
29			0			0	0		0		0		0	0									0	0		20	0	
30			0			0	0		0		0		0	0									0	0		20	0	
31			0			0	0		0		0		0	0									0	0		20	0	

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Notes:

User input cells, all other cells are calculated

West WWTF Monthly Wastewater SRT (Digester) Tracking Program - 01/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1														
2														
3														
4														
5														
6	6.4	10.9	5.3	8.0	10.6	13.3	16.0	18.6	9.0	13.5	18.1	22.6	27.1	31.6
7	6.9	11.0	5.7	8.5	11.4	14.2	17.1	19.9	9.1	13.7	18.3	22.8	27.4	32.0
8	9.5	14.1	6.5	9.8	13.0	16.3	19.6	22.8	9.7	14.6	19.4	24.3	29.1	34.0
9														
10														
11														
12	9.1	14.1	6.3	9.4	12.6	15.7	18.8	22.0	9.7	14.6	19.4	24.3	29.1	34.0
13	7.2	11.2	5.9	8.8	11.7	14.7	17.6	20.6	9.2	13.8	18.4	23.0	27.6	32.2
14														
15	10.1	7.9	12.2	18.3	24.4	30.5	36.6	42.7	9.5	14.3	19.0	23.8	28.6	33.3
16														
17														
18														
19	8.0	10.9	6.5	9.7	12.9	16.2	19.4	22.6	8.9	13.3	17.8	22.2	26.6	31.1
20														
21	8.1	11.1	6.6	9.9	13.1	16.4	19.7	23.0	9.0	13.5	18.0	22.5	27.0	31.5
22	8.7	11.8	7.1	10.6	14.1	17.6	21.2	24.7	9.6	14.4	19.1	23.9	28.7	33.5
23														
24														
25	12.7	13.0	9.3	13.9	18.6	23.2	27.9	32.5	9.6	14.3	19.1	23.9	28.7	33.5
26														
27	11.0	13.0	8.2	12.4	16.5	20.6	24.7	28.9	9.8	14.6	19.5	24.4	29.3	34.2
28														
29														

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West WWTF Monthly Wastewater SRT Tracking Program - 02/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,963	
CLARIFIER NO. 2 =	1,963	
CLARIFIER NO. 3 =	1,963	
CLARIFIER NO. 4 =	1,963	
CLARIFIER NO. 5 =	5,675	
CLARIFIER NO. 6 =	5,675	x
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TOTAL (ONLINE-IN USE) =	**5,675**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
OX DITCH NO. 1 (NORTHERN) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 2 (MIDDLE) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 3 (SOUTHERN) - ENVIREX 2-RING ORBAL =	1,537,995	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	3,901,839	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,537,995**	

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DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	123,429	x
DIGESTER NO. 2 =	123,429	x
DIGESTER NO. 3 =	123,429	x
DIGESTER NO. 4 =	123,429	x
TOTAL (ALL DIGESTERS) =	493,714	
TOTAL (ONLINE-IN USE) =	**493,714**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	OX DITCH 1 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 1 Solids Inventory (LBS)	OX DITCH 2 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 2 Solids Inventory (LBS)	OX DITCH 3 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 3 Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER NO. 6 Sludge Blanket (feet) x	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
1	57,000	13,512	6,423	1.21	1	10	6,433.4		0		0	6,700	85,992	85,992	13,512						3.0	7,180	93,171	**14.5**	20	4,648	41,250
2	60,000	13,512	6,761	1.40	1	12	6,773		0		0	6,700	85,992	85,992	13,512						3.0	7,180	93,171	**13.8**	20	4,647	41,236
3	48,000	16,306	6,528	1.21	1	10	6,538		0		0	5,990	76,879	76,879	16,306						3.0	8,664	85,543	**13.1**	20	4,267	31,377
4	61,000	16,306	8,296	1.22	1	10	8,306		0		0	5,990	76,879	76,879	16,306						2.5	7,220	84,099	**10.1**	20	4,195	30,846
5	60,000	13,084	6,547	1.12	6	56	6,603		0		0	6,344	81,423	81,423	13,084						2.0	4,635	86,057	**13.0**	20	4,247	38,919
6			0			0	0		0		0		0	0								0	0		20	0	
7			0			0	0		0		0		0	0								0	0		20	0	
8	66,000	12,474	6,866	1.18	4	39	6,906		0		0	6,270	80,473	80,473	12,474						2.5	5,523	85,996	**12.5**	20	4,260	40,953
9	50,000	12,474	5,202	1.11	4	37	5,239		0		0	6,270	80,473	80,473	12,474						3.0	6,628	87,101	**16.6**	20	4,318	41,506
10	74,000	10,330	6,375	1.10	3	28	6,403		0		0	6,298	80,832	80,832	10,330						3.0	5,489	86,321	**13.5**	20	4,289	49,779
11	46,000	10,330	3,963	1.13	3	28	3,991		0		0	6,298	80,832	80,832	10,330						3.0	5,489	86,321	**21.6**	20	4,288	49,770
12	39,000	13,594	4,422	1.04	3	26	4,448		0		0	5,768	74,030	74,030	13,594						2.5	6,019	80,049	**18.0**	20	3,976	35,074
13			0			0	0		0		0		0	0								0	0		20	0	
14			0			0	0		0		0		0	0								0	0		20	0	
15			0			0	0		0		0		0	0								0	0		20	0	
16	60,000	12,258	6,134	1.08	4	36	6,170		0		0	5,976	76,699	76,699	12,258						2.0	4,342	81,042	**13.1**	20	4,016	39,284
17	60,000	6,592	3,299	1.07	9	80	3,379		0		0	6,244	80,139	80,139	6,592						2.0	2,335	82,474	**24.4**	20	4,043	73,547
18	61,000	6,592	3,354	1.14	9	86	3,439		0		0	6,244	80,139	80,139	6,592						3.0	3,503	83,642	**24.3**	20	4,097	74,513
19	67,000	10,758	6,011	1.29	7	75	6,087		0		0	5,856	75,159	75,159	10,758						2.5	4,764	79,923	**13.1**	20	3,921	43,700
20			0			0	0		0		0		0	0								0	0		20	0	
21			0			0	0		0		0		0	0								0	0		20	0	
22	63,000	6,150	3,231	1.15	9	86	3,318		0		0	5,954	76,417	76,417	6,150						3.5	3,812	80,229	**24.2**	20	3,925	76,527
23	65,000	6,150	3,334	0.96	9	72	3,406		0		0	5,954	76,417	76,417	6,150						2.5	2,723	79,140	**23.2**	20	3,885	75,743
24	60,000	9,746	4,877	1.16	4	39	4,916		0		0	5,646	72,464	72,464	9,746						2.5	4,315	76,779	**15.6**	20	3,800	46,754
25	61,000	9,746	4,958	1.09	4	36	4,995		0		0	5,654	72,567	72,567	9,746						3.0	5,179	77,745	**15.6**	20	3,851	47,377
26	73,000	6,352	3,867	1.11	5	46	3,914		0		0	5,068	65,046	65,046	6,532						1.0	1,157	66,203	**16.9**	20	3,264	61,610
27			0			0	0		0		0		0	0								0	0		20	0	
28			0			0	0		0		0		0	0								0	0		20	0	
29	60,000	8,370	4,188	1.16	1	10	4,198		0		0	4,954	63,582	63,582	8,370						3.0	4,447	68,030	**16.2**	20	3,392	48,589
			0			0	0		0		0		0	0								0	0		20	0	
			0			0	0		0		0		0	0								0	0		20	0	

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Notes:

User input cells, all other cells are calculated

West WWTF Monthly Wastewater SRT (Digester) Tracking Program - 02/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	8.7	12.0	6.4	9.6	12.8	16.0	19.2	22.4	8.9	13.3	17.7	22.1	26.6	31.0
2	8.2	12.0	6.1	9.1	12.2	15.2	18.3	21.3	8.9	13.3	17.7	22.2	26.6	31.0
3	10.3	15.7	6.3	9.5	12.6	15.8	18.9	22.1	9.6	14.5	19.3	24.1	28.9	33.8
4	8.1	16.0	5.0	7.4	9.9	12.4	14.9	17.4	9.8	14.7	19.6	24.5	29.4	34.4
5	8.2	12.7	6.3	9.4	12.6	15.7	18.9	22.0	9.7	14.5	19.4	24.2	29.1	33.9
6														
7														
8	7.5	12.1	6.0	9.0	12.0	15.0	18.0	21.0	9.7	14.5	19.3	24.2	29.0	33.8
9	9.9	11.9	7.9	11.9	15.8	19.8	23.7	27.7	9.5	14.3	19.1	23.8	28.6	33.4
10	6.7	9.9	6.5	9.7	12.9	16.1	19.4	22.6	9.6	14.4	19.2	24.0	28.8	33.6
11	10.7	9.9	10.4	15.6	20.8	26.0	31.2	36.4	9.6	14.4	19.2	24.0	28.8	33.6
12	12.7	14.1	9.3	14.0	18.6	23.3	27.9	32.6	10.4	15.5	20.7	25.9	31.1	36.2
13														
14														
15														
16	8.2	12.6	6.7	10.1	13.4	16.8	20.1	23.5	10.3	15.4	20.5	25.6	30.8	35.9
17	8.2	6.7	12.5	18.7	25.0	31.2	37.4	43.7	10.2	15.3	20.4	25.5	30.6	35.6
18	8.1	6.6	12.3	18.4	24.6	30.7	36.8	43.0	10.1	15.1	20.1	25.1	30.2	35.2
19	7.4	11.3	6.8	10.3	13.7	17.1	20.5	24.0	10.5	15.8	21.0	26.3	31.5	36.8
20														
21														
22	7.8	6.5	12.7	19.1	25.5	31.9	38.2	44.6	10.5	15.7	21.0	26.2	31.5	36.7
23	7.6	6.5	12.4	18.5	24.7	30.9	37.1	43.2	10.6	15.9	21.2	26.5	31.8	37.1
24	8.2	10.6	8.4	12.7	16.9	21.1	25.3	29.6	10.8	16.3	21.7	27.1	32.5	37.9
25	8.1	10.4	8.3	12.5	16.6	20.8	24.9	29.1	10.7	16.0	21.4	26.7	32.1	37.4
26	6.8	8.0	10.6	16.0	21.3	26.6	31.9	37.3	12.6	18.9	25.2	31.5	37.8	44.2
27														
28														
29	8.2	10.2	9.8	14.7	19.7	24.6	29.5	34.4	12.1	18.2	24.3	30.3	36.4	42.5

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West WWTF Monthly Wastewater SRT Tracking Program - 03/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,963	
CLARIFIER NO. 2 =	1,963	
CLARIFIER NO. 3 =	1,963	
CLARIFIER NO. 4 =	1,963	
CLARIFIER NO. 5 =	5,675	
CLARIFIER NO. 6 =	5,675	x
TOTAL (ALL CLARIFIERS) =	19,202	
TOTAL (ONLINE-IN USE) =	**5,675**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
OX DITCH NO. 1 (NORTHERN) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 2 (MIDDLE) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 3 (SOUTHERN) - ENVIREX 2-RING ORBAL =	1,537,995	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	3,901,839	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,537,995**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	123,429	x
DIGESTER NO. 2 =	123,429	x
DIGESTER NO. 3 =	123,429	x
DIGESTER NO. 4 =	123,429	x
TOTAL (ALL DIGESTERS) =	493,714	
TOTAL (ONLINE-IN USE) =	**493,714**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	OX DITCH 1 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 1 Solids Inventory (LBS)	OX DITCH 2 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 2 Solids Inventory (LBS)	OX DITCH 3 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 3 Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER NO. 6 Sludge Blanket (feet) x	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
1	61,000	8,370	4,258	1.15	1	10	4,267.7		0		0	4,954	63,582	63,582	8,370						2.0	2,965	66,547	**15.6**	20	3,318	47,529
2	64,000	10,026	5,351	1.11	0	0	5,351		0		0	4,842	62,145	62,145	10,026						2.5	4,439	66,584	**12.4**	20	3,329	39,815
3	41,000	10,026	3,428	1.05	0	0	3,428		0		0	4,842	62,145	62,145	10,026						1.5	2,664	64,809	**18.9**	20	3,240	38,753
4	59,000	9,622	4,735	1.04	3	26	4,761		0		0	4,344	55,753	55,753	9,622						1.5	2,556	58,310	**12.2**	20	2,889	36,007
5			0			0	0		0		0		0	0								0	0		20	0	
6			0			0	0		0		0		0	0								0	0		20	0	
7	67,000	13,466	7,525	1.14	3	29	7,553		0		0	4,616	59,244	59,244	13,466						2.0	4,770	64,015	**8.5**	20	3,172	28,246
8	40,000	13,466	4,492	1.16	3	29	4,521		0		0	4,616	59,244	59,244	13,466						2.0	4,770	64,015	**14.2**	20	3,172	28,242
9	60,000	6,866	3,436	1.15	1	10	3,445		0		0	4,462	57,268	57,268	6,866						2.0	2,432	59,700	**17.3**	20	2,975	51,961
10	21,000	6,866	1,203	1.18	1	10	1,212		0		0	4,462	57,268	57,268	6,866						2.5	3,040	60,308	**49.7**	20	3,006	52,488
11	47,000	9,638	3,778	1.15	4	38	3,816		0		0	4,458	57,217	57,217	9,638						2.0	3,414	60,631	**15.9**	20	2,993	37,237
12			0			0	0		0		0		0	0								0	0		20	0	
13			0			0	0		0		0		0	0								0	0		20	0	
14			0			0	0		0		0		0	0								0	0		20	0	
15	54,000	21,544	9,703	1.29	2	22	9,724		0		0	3,376	43,330	43,330	21,544						2.0	7,632	50,961	**5.2**	20	2,527	14,062
16	50,000	6,586	2,746	1.31	3	33	2,779		0		0	3,320	42,611	42,611	6,586						2.0	2,333	44,944	**16.2**	20	2,214	40,315
17	52,000	6,586	2,856	1.10	3	28	2,884		0		0	3,320	42,611	42,611	6,586						2.5	2,916	45,527	**15.8**	20	2,249	40,942
18	50,000	6,810	2,840	1.17	2	20	2,859		0		0	4,438	56,960	56,960	6,810						2.0	2,412	59,372	**20.8**	20	2,949	51,925
19			0			0	0		0		0		0	0								0	0		20	0	
20			0			0	0		0		0		0	0								0	0		20	0	
21	56,000	8,800	4,110	1.18	1	10	4,120		0		0	4,562	58,551	58,551	8,800						2.0	3,117	61,669	**15.0**	20	3,074	41,879
22	66,000	8,800	4,844	1.19	1	10	4,854		0		0	4,562	58,551	58,551	8,800						3.0	4,676	63,227	**13.0**	20	3,151	42,940
23	55,000	12,768	5,857	1.23	2	21	5,877		0		0	4,122	52,904	52,904	12,768						2.0	4,523	57,427	**9.8**	20	2,851	26,772
24	51,000	6,906	2,937	1.38	4	46	2,983		0		0	3,278	42,072	42,072	6,906						2.0	2,446	44,518	**14.9**	20	2,180	37,848
25			0			0	0		0		0		0	0								0	0		20	0	
26			0			0	0		0		0		0	0								0	0		20	0	
27			0			0	0		0		0		0	0								0	0		20	0	
28	52,000	10,650	4,619	1.15	1	10	4,628		0		0	4,386	56,292	56,292	10,650						2.5	4,716	61,008	**13.2**	20	3,041	34,235
29	54,000	10,650	4,796	1.14	1	10	4,806		0		0	4,386	56,292	56,292	10,650						2.0	3,773	60,065	**12.5**	20	2,994	33,705
30	52,000	2,630	1,141	1.23	2	21	1,161		0		0	3,740	48,001	48,001	2,630						3.0	1,397	49,399	**42.5**	20	2,449	111,671
31	50,000	2,630	1,097	1.25	2	21	1,118		0		0	3,740	48,001	48,001	2,630						2.0	932	48,933	**43.8**	20	2,426	110,594

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West WWTF Monthly Wastewater SRT (Digester) Tracking Program - 03/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
			PERCENT THICKENING						PERCENT THICKENING					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	8.1	10.4	9.7	14.5	19.3	24.2	29.0	33.8	12.4	18.6	24.8	31.0	37.2	43.4
2	7.7	12.4	7.7	11.5	15.4	19.2	23.1	26.9	12.4	18.6	24.7	30.9	37.1	43.3
3	12.0	12.7	12.0	18.0	24.0	30.0	36.0	42.0	12.7	19.1	25.4	31.8	38.1	44.5
4	8.4	13.7	8.7	13.0	17.4	21.7	26.1	30.4	14.3	21.4	28.5	35.6	42.8	49.9
5														
6														
7	7.4	17.5	5.5	8.2	10.9	13.7	16.4	19.2	13.0	19.5	26.0	32.5	38.9	45.4
8	12.3	17.5	9.2	13.7	18.3	22.9	27.5	32.1	13.0	19.5	26.0	32.5	38.9	45.4
9	8.2	9.5	12.0	18.0	24.0	30.0	36.0	41.9	13.8	20.8	27.7	34.6	41.5	48.4
10	23.5	9.4	34.2	51.4	68.5	85.6	102.7	119.8	13.7	20.5	27.4	34.2	41.1	47.9
11	10.5	13.3	10.9	16.3	21.8	27.2	32.7	38.1	13.8	20.6	27.5	34.4	41.3	48.1
12														
13														
14														
15	9.1	35.1	4.2	6.4	8.5	10.6	12.7	14.9	16.3	24.4	32.6	40.7	48.9	57.0
16	9.9	12.2	15.0	22.5	30.0	37.5	45.0	52.5	18.6	27.9	37.2	46.5	55.8	65.1
17	9.5	12.1	14.4	21.6	28.8	36.0	43.2	50.5	18.3	27.5	36.6	45.8	54.9	64.1
18	9.9	9.5	14.5	21.7	29.0	36.2	43.5	50.7	14.0	20.9	27.9	34.9	41.9	48.9
19														
20														
21	8.8	11.8	10.0	15.0	20.0	25.0	30.1	35.1	13.4	20.1	26.8	33.5	40.2	46.9
22	7.5	11.5	8.5	12.8	17.0	21.3	25.5	29.8	13.1	19.6	26.1	32.7	39.2	45.7
23	9.0	18.4	7.0	10.5	14.1	17.6	21.1	24.6	14.4	21.7	28.9	36.1	43.3	50.6
24	9.7	13.0	14.0	21.0	28.0	35.0	42.1	49.1	18.9	28.3	37.8	47.2	56.7	66.1
25														
26														
27														
28	9.5	14.4	8.9	13.4	17.8	22.3	26.7	31.2	13.5	20.3	27.1	33.9	40.6	47.4
29	9.1	14.6	8.6	12.9	17.2	21.5	25.8	30.0	13.8	20.6	27.5	34.4	41.3	48.1
30	9.5	4.4	36.1	54.2	72.2	90.3	108.3	126.4	16.8	25.2	33.6	42.0	50.4	58.8
31	9.9	4.5	37.5	56.3	75.1	93.9	112.6	131.4	17.0	25.5	33.9	42.4	50.9	59.4

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West WWTF Monthly Wastewater SRT Tracking Program - 04/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,963	
CLARIFIER NO. 2 =	1,963	
CLARIFIER NO. 3 =	1,963	
CLARIFIER NO. 4 =	1,963	
CLARIFIER NO. 5 =	5,675	
CLARIFIER NO. 6 =	5,675	x
TOTAL (ALL CLARIFIERS) =	19,202	
TOTAL (ONLINE-IN USE) =	**5,675**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
OX DITCH NO. 1 (NORTHERN) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 2 (MIDDLE) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 3 (SOUTHERN) - ENVIREX 2-RING ORBAL =	1,537,995	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	3,901,839	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,537,995**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	123,429	x
DIGESTER NO. 2 =	123,429	x
DIGESTER NO. 3 =	123,429	x
DIGESTER NO. 4 =	123,429	x
TOTAL (ALL DIGESTERS) =	493,714	
TOTAL (ONLINE-IN USE) =	**493,714**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	OX DITCH 1 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 1 Solids Inventory (LBS)	OX DITCH 2 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 2 Solids Inventory (LBS)	OX DITCH 3 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 3 Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER NO. 6 Sludge Blanket (feet) x	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
1	49,000	6,584	2,691	1.25	2	21	2,711.5		0		0	4,176	53,597	53,597	6,584						3.0	3,498	57,096	**21.1**	20	2,834	51,610
2			0			0	0		0		0		0	0								0	0		20	0	
3			0			0	0		0		0		0	0								0	0		20	0	
4	49,000	6,260	2,558	1.24	3	31	2,589		0		0	4,156	53,340	53,340	6,260						2.5	2,772	56,112	**21.7**	20	2,775	53,145
5	48,000	6,260	2,506	1.31	3	33	2,539		0		0	4,156	53,340	53,340	6,260						2.5	2,772	56,112	**22.1**	20	2,773	53,111
6	51,000	7,112	3,025	1.47	0	0	3,025		0		0	3,938	50,543	50,543	7,112						2.0	2,519	53,062	**17.5**	20	2,653	44,730
7	62,000	7,112	3,677	1.27	0	0	3,677		0		0	3,938	50,543	50,543	7,112						2.0	2,519	53,062	**14.4**	20	2,653	44,730
8	63,000	6,104	3,207	1.25	2	21	3,228		0		0	3,814	48,951	48,951	6,104						2.0	2,162	51,113	**15.8**	20	2,535	49,793
9			0			0	0		0		0		0	0								0	0		20	0	
10			0			0	0		0		0		0	0								0	0		20	0	
11	55,000	7,694	3,529	1.16	2	19	3,549		0		0	3,788	48,617	48,617	7,694						2.0	2,725	51,343	**14.5**	20	2,548	39,705
12	52,000	7,694	3,337	1.17	2	20	3,356		0		0	3,788	48,617	48,617	7,694						2.5	3,407	52,024	**15.5**	20	2,582	40,233
13	28,000	6,226	1,454	1.19	1	10	1,464		0		0	3,734	47,924	47,924	6,226						2.0	2,205	50,130	**34.2**	20	2,497	48,080
14	57,000	6,226	2,960	1.23	1	10	2,970		0		0	3,734	47,924	47,924	6,226						2.0	2,205	50,130	**16.9**	20	2,496	48,074
15	36,000	6,312	1,895	1.15	3	29	1,924		0		0	3,904	50,106	50,106	6,312						2.5	2,795	52,901	**27.5**	20	2,616	49,699
16			0			0	0		0		0		0	0								0	0		20	0	
17			0			0	0		0		0		0	0								0	0		20	0	
18	75,000	6,276	3,926	1.16	2	19	3,945		0		0	4,046	51,929	51,929	6,276						2.0	2,223	54,152	**13.7**	20	2,688	51,359
19	58,000	6,276	3,036	1.10	2	18	3,054		0		0	4,046	51,929	51,929	6,276						2.0	2,223	54,152	**17.7**	20	2,689	51,378
20			0			0	0		0		0		0	0								0	0		20	0	
21	61,000	6,808	3,464	1.16	1	10	3,473		0		0	3,712	47,642	47,642	6,808						2.5	3,015	50,656	**14.6**	20	2,523	44,438
22	44,000	7,328	2,689	1.16	3	29	2,718		0		0	3,838	49,259	49,259	7,328						2.0	2,596	51,855	**19.1**	20	2,564	41,949
23			0			0	0		0		0		0	0								0	0		20	0	
24			0			0	0		0		0		0	0								0	0		20	0	
25			0			0	0		0		0		0	0								0	0		20	0	
26	73,000	5,796	3,529	1.26	1	11	3,539		0		0	3,940	50,568	50,568	5,796						2.0	2,053	52,621	**14.9**	20	2,621	54,213
27	64,000	10,130	5,407	1.32	1	11	5,418		0		0	3,962	50,851	50,851	10,130						2.5	4,486	55,336	**10.2**	20	2,756	32,619
28	52,000	10,130	4,393	1.31	1	11	4,404		0		0	3,962	50,851	50,851	10,130						2.0	3,588	54,439	**12.4**	20	2,711	32,089
29	61,000	5,384	2,739	1.22	2	20	2,759		0		0	3,626	46,538	46,538	5,384						1.5	1,430	47,969	**17.4**	20	2,378	52,961
30			0			0	0		0		0		0	0								0	0		20	0	
			0			0	0		0		0		0	0								0	0		20	0	

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Notes:

User input cells, all other cells are calculated

West WWTF Monthly Wastewater SRT (Digester) Tracking Program - 04/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	10.1	9.6	15.3	23.0	30.6	38.3	45.9	53.6	14.5	21.8	29.1	36.3	43.6	50.9
2														
3														
4	10.1	9.3	16.1	24.1	32.2	40.2	48.3	56.3	14.8	22.3	29.7	37.1	44.5	51.9
5	10.3	9.3	16.4	24.6	32.9	41.1	49.3	57.5	14.8	22.3	29.7	37.1	44.5	52.0
6	9.7	11.0	13.6	20.4	27.2	34.0	40.8	47.6	15.5	23.3	31.0	38.8	46.6	54.3
7	8.0	11.0	11.2	16.8	22.4	28.0	33.6	39.2	15.5	23.3	31.0	38.8	46.6	54.3
8	7.8	9.9	12.8	19.3	25.7	32.1	38.5	44.9	16.2	24.4	32.5	40.6	48.7	56.9
9														
10														
11	9.0	12.4	11.7	17.5	23.3	29.2	35.0	40.8	16.2	24.2	32.3	40.4	48.5	56.6
12	9.5	12.3	12.3	18.5	24.7	30.9	37.0	43.2	15.9	23.9	31.9	39.9	47.8	55.8
13	17.6	10.3	28.3	42.5	56.6	70.8	85.0	99.1	16.5	24.7	33.0	41.2	49.5	57.7
14	8.7	10.3	13.9	20.9	27.8	34.8	41.7	48.7	16.5	24.7	33.0	41.2	49.5	57.7
15	13.7	9.9	21.7	32.6	43.5	54.3	65.2	76.0	15.7	23.6	31.5	39.3	47.2	55.1
16														
17														
18	6.6	9.6	10.5	15.7	21.0	26.2	31.5	36.7	15.3	23.0	30.6	38.3	46.0	53.6
19	8.5	9.6	13.6	20.3	27.1	33.9	40.7	47.5	15.3	23.0	30.6	38.3	45.9	53.6
20														
21	8.1	11.1	11.9	17.8	23.8	29.7	35.7	41.6	16.3	24.5	32.6	40.8	49.0	57.1
22	11.2	11.8	15.3	23.0	30.6	38.3	45.9	53.6	16.1	24.1	32.1	40.2	48.2	56.2
23														
24														
25														
26	6.8	9.1	11.7	17.5	23.3	29.2	35.0	40.8	15.7	23.6	31.4	39.3	47.1	55.0
27	7.7	15.1	7.6	11.4	15.2	19.0	22.8	26.7	14.9	22.4	29.9	37.4	44.8	52.3
28	9.5	15.4	9.4	14.1	18.7	23.4	28.1	32.8	15.2	22.8	30.4	38.0	45.6	53.2
29	8.1	9.3	15.0	22.5	30.1	37.6	45.1	52.6	17.3	26.0	34.6	43.3	51.9	60.6
30														

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West WWTF Monthly Wastewater SRT Tracking Program - 06/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,963	
CLARIFIER NO. 2 =	1,963	
CLARIFIER NO. 3 =	1,963	
CLARIFIER NO. 4 =	1,963	
CLARIFIER NO. 5 =	5,675	
CLARIFIER NO. 6 =	5,675	x
TOTAL (ALL CLARIFIERS) =	19,202	
TOTAL (ONLINE-IN USE) =	**5,675**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
OX DITCH NO. 1 (NORTHERN) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 2 (MIDDLE) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 3 (SOUTHERN) - ENVIREX 2-RING ORBAL =	1,537,995	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	3,901,839	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,537,995**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	123,429	x
DIGESTER NO. 2 =	123,429	x
DIGESTER NO. 3 =	123,429	x
DIGESTER NO. 4 =	123,429	x
TOTAL (ALL DIGESTERS) =	493,714	
TOTAL (ONLINE-IN USE) =	**493,714**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	OX DITCH 1 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 1 Solids Inventory (LBS)	OX DITCH 2 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 2 Solids Inventory (LBS)	OX DITCH 3 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 3 Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER NO. 6 Sludge Blanket (feet) x	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
1	49,000	6,544	2,674	1.11	1	9	2,683.5		0		0	3,792	48,669	48,669	6,544						2.0	2,318	50,987	**19.0**	20	2,540	46,541
2	50,000	6,544	2,729	1.01	1	8	2,737		0		0	3,792	48,669	48,669	6,544						1.5	1,739	50,407	**18.4**	20	2,512	46,026
3			0			0	0		0		0		0	0								0	0		20	0	
4			0			0	0		0		0		0	0								0	0		20	0	
5			0			0	0		0		0		0	0								0	0		20	0	
6	69,000	5,606	3,226	1.02	2	17	3,243		0		0	3,480	44,664	44,664	5,606						2.0	1,986	46,650	**14.4**	20	2,315	49,525
7	47,000	5,606	2,197	1.16	2	19	2,217		0		0	3,480	44,664	44,664	5,606						2.0	1,986	46,650	**21.0**	20	2,313	49,475
8	51,000	9,682	4,118	1.23	1	10	4,128		0		0	3,516	45,126	45,126	9,682						2.5	4,287	49,413	**12.0**	20	2,460	30,470
9	54,000	9,682	4,360	1.05	1	9	4,369		0		0	3,516	45,126	45,126	9,682						3.0	5,145	50,271	**11.5**	20	2,505	31,020
10	73,000	5,146	3,133	1.12	0	0	3,133		0		0	3,488	44,767	44,767	5,146						2.5	2,279	47,046	**15.0**	20	2,352	54,809
11			0			0	0		0		0		0	0								0	0		20	0	
12			0			0	0		0		0		0	0								0	0		20	0	
13			0			0	0		0		0		0	0								0	0		20	0	
14	82,000	10,880	7,441	1.24	2	21	7,461		0		0	3,708	47,591	47,591	10,880						2.0	3,854	51,445	**6.9**	20	2,552	28,120
15			0			0	0		0		0		0	0								0	0		20	0	
16	64,000	8,280	4,420	1.24	1	10	4,430		0		0	3,550	45,563	45,563	8,280						2.0	2,933	48,496	**10.9**	20	2,414	34,964
17	40,000	5,676	1,894	1.21	1	10	1,904		0		0	3,728	47,847	47,847	5,676						2.0	2,011	49,858	**26.2**	20	2,483	52,449
18			0			0	0		0		0		0	0								0	0		20	0	
19			0			0	0		0		0		0	0								0	0		20	0	
20	70,000	5,398	3,151	1.26	2	21	3,172		0		0	4,028	51,698	51,698	5,398						2.0	1,912	53,610	**16.9**	20	2,659	59,074
21	59,000	5,398	2,656	1.20	2	20	2,676		0		0	4,028	51,698	51,698	5,398						2.0	1,912	53,610	**20.0**	20	2,660	59,096
22	52,000	6,086	2,639	1.26	2	21	2,660		0		0	3,666	47,052	47,052	6,086						2.0	2,156	49,207	**18.5**	20	2,439	48,059
23	56,000	6,086	2,842	1.26	2	21	2,863		0		0	3,666	47,052	47,052	6,086						2.0	2,156	49,207	**17.2**	20	2,439	48,059
24	53,000	5,910	2,612	1.30	0	0	2,612		0		0	3,830	49,156	49,156	5,910						2.0	2,094	51,250	**19.6**	20	2,562	51,989
25			0			0	0		0		0		0	0								0	0		20	0	
26			0			0	0		0		0		0	0								0	0		20	0	
27	57,000	7,832	3,723	1.26	3	32	3,755		0		0	3,740	48,001	48,001	7,832						2.5	3,468	51,469	**13.7**	20	2,542	38,916
28	47,000	7,832	3,070	1.26	3	32	3,102		0		0	3,740	48,001	48,001	7,832						2.0	2,774	50,776	**16.4**	20	2,507	38,385
29	45,000	5,534	2,077	1.17	1	10	2,087		0		0	3,560	45,691	45,691	5,534						2.0	1,960	47,651	**22.8**	20	2,373	51,411
30	54,000	5,534	2,492	1.24	1	10	2,503		0		0	3,560	45,691	45,691	5,534						1.5	1,470	47,161	**18.8**	20	2,348	50,868
			0			0	0		0		0		0	0								0	0		20	0	

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Notes:

User input cells, all other cells are calculated

West WWTF Monthly Wastewater SRT (Digester) Tracking Program - 06/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	10.1	10.6	15.4	23.1	30.8	38.5	46.2	53.9	16.2	24.3	32.4	40.5	48.6	56.7
2	9.9	10.7	15.1	22.6	30.2	37.7	45.3	52.8	16.4	24.6	32.8	41.0	49.2	57.4
3														
4														
5														
6	7.2	10.0	12.8	19.1	25.5	31.9	38.3	44.7	17.8	26.7	35.6	44.5	53.3	62.2
7	10.5	10.0	18.7	28.1	37.5	46.8	56.2	65.6	17.8	26.7	35.6	44.5	53.4	62.3
8	9.7	16.2	10.0	15.0	20.0	25.0	30.0	35.0	16.7	25.1	33.5	41.8	50.2	58.6
9	9.1	15.9	9.4	14.2	18.9	23.6	28.3	33.1	16.4	24.7	32.9	41.1	49.3	57.5
10	6.8	9.0	13.1	19.7	26.3	32.9	39.4	46.0	17.5	26.3	35.0	43.8	52.5	61.3
11														
12														
13														
14	6.0	17.6	5.5	8.3	11.1	13.8	16.6	19.4	16.1	24.2	32.3	40.3	48.4	56.5
15														
16	7.7	14.1	9.3	14.0	18.6	23.3	28.0	32.6	17.1	25.6	34.1	42.6	51.2	59.7
17	12.3	9.4	21.7	32.6	43.5	54.4	65.2	76.1	16.6	24.9	33.2	41.5	49.8	58.0
18														
19														
20	7.1	8.4	13.1	19.6	26.1	32.7	39.2	45.7	15.5	23.2	31.0	38.7	46.4	54.2
21	8.4	8.4	15.5	23.3	31.0	38.8	46.5	54.3	15.5	23.2	31.0	38.7	46.4	54.2
22	9.5	10.3	15.6	23.4	31.2	39.0	46.8	54.6	16.9	25.3	33.8	42.2	50.6	59.1
23	8.8	10.3	14.5	21.7	29.0	36.2	43.5	50.7	16.9	25.3	33.8	42.2	50.6	59.1
24	9.3	9.5	15.8	23.6	31.5	39.4	47.3	55.2	16.1	24.1	32.1	40.2	48.2	56.2
25														
26														
27	8.7	12.7	11.1	16.6	22.1	27.6	33.2	38.7	16.2	24.3	32.4	40.5	48.6	56.7
28	10.5	12.9	13.4	20.1	26.8	33.5	40.2	46.9	16.4	24.6	32.8	41.1	49.3	57.5
29	11.0	9.6	19.8	29.7	39.7	49.6	59.5	69.4	17.4	26.0	34.7	43.4	52.1	60.7
30	9.1	9.7	16.5	24.8	33.0	41.3	49.6	57.8	17.5	26.3	35.1	43.8	52.6	61.4

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West WWTF Monthly Wastewater SRT Tracking Program - 07/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,963	
CLARIFIER NO. 2 =	1,963	
CLARIFIER NO. 3 =	1,963	
CLARIFIER NO. 4 =	1,963	
CLARIFIER NO. 5 =	5,675	
CLARIFIER NO. 6 =	5,675	x
TOTAL (ALL CLARIFIERS) =	19,202	
TOTAL (ONLINE-IN USE) =	**5,675**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
OX DITCH NO. 1 (NORTHERN) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 2 (MIDDLE) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 3 (SOUTHERN) - ENVIREX 2-RING ORBAL =	1,537,995	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	3,901,839	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,537,995**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	123,429	x
DIGESTER NO. 2 =	123,429	x
DIGESTER NO. 3 =	123,429	x
DIGESTER NO. 4 =	123,429	x
TOTAL (ALL DIGESTERS) =	493,714	
TOTAL (ONLINE-IN USE) =	**493,714**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	OX DITCH 1 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 1 Solids Inventory (LBS)	OX DITCH 2 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 2 Solids Inventory (LBS)	OX DITCH 3 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 3 Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER NO. 6 Sludge Blanket (feet) x	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
1	54,000	4,924	2,218	1.21	2	20	2,237.8		0		0	3,514	45,101	45,101	4,924						1.5	1,308	46,409	**20.7**	20	2,300	56,014
2			0			0	0		0		0		0	0								0	0		20	0	
3			0			0	0		0		0		0	0								0	0		20	0	
4			0			0	0		0		0		0	0								0	0		20	0	
5	57,000	9,464	4,499	1.32	1	11	4,510		0		0	4,186	53,726	53,726	9,464						2.0	3,352	57,078	**12.7**	20	2,843	36,018
6	48,000	13,534	5,418	1.31	3	33	5,451		0		0	3,878	49,772	49,772	13,534						2.0	4,794	54,567	**10.0**	20	2,696	23,881
7	51,000	13,534	5,757	1.24	3	31	5,788		0		0	3,878	49,772	49,772	13,534						1.5	3,596	53,368	**9.2**	20	2,637	23,366
8	68,000	5,838	3,311	1.32	2	22	3,333		0		0	3,676	47,180	47,180	5,838						2.0	2,068	49,248	**14.8**	20	2,440	50,122
9			0			0	0		0		0		0	0								0	0		20	0	
10			0			0	0		0		0		0	0								0	0		20	0	
11	56,000	6,652	3,107	1.32	3	33	3,140		0		0	3,838	49,259	49,259	6,652						2.0	2,356	51,615	**16.4**	20	2,548	45,924
12	76,000	6,652	4,216	1.29	3	32	4,249		0		0	3,838	49,259	49,259	6,652						2.0	2,356	51,615	**12.1**	20	2,548	45,937
13	53,000	6,188	2,735	1.14	3	29	2,764		0		0	3,718	47,719	47,719	6,188						1.5	1,644	49,363	**17.9**	20	2,440	47,272
14			0			0	0		0		0		0	0							1.5	0	0		20	0	
15	50,000	5,916	2,467	1.01	2	17	2,484		0		0	3,750	48,130	48,130	5,916						2.0	2,096	50,225	**20.2**	20	2,494	50,556
16			0			0	0		0		0		0	0								0	0		20	0	
17			0			0	0		0		0		0	0								0	0		20	0	
18	54,000	6,026	2,714	1.22	2	20	2,734		0		0	3,896	50,003	50,003	6,026						2.0	2,135	52,138	**19.1**	20	2,587	51,467
19	52,000	6,026	2,613	1.21	2	20	2,634		0		0	3,896	50,003	50,003	6,026						2.0	2,135	52,138	**19.8**	20	2,587	51,470
20			0			0	0		0		0		0	0								0	0		20	0	
21	32,000	3,644	973	1.34	2	22	995		0		0	3,000	38,504	38,504	3,644						2.0	1,291	39,795	**40.0**	20	1,967	64,736
22	55,000	6,832	3,134	1.19	3	30	3,164		0		0	3,920	50,312	50,312	6,832						2.0	2,420	52,732	**16.7**	20	2,607	45,750
23			0			0	0		0		0		0	0								0	0		20	0	
24			0			0	0		0		0		0	0								0	0		20	0	
25	56,000	6,540	3,054	1.38	3	35	3,089		0		0	3,748	48,104	48,104	6,540						2.5	2,896	51,000	**16.5**	20	2,515	46,118
26	51,000	6,540	2,782	1.14	3	29	2,810		0		0	3,748	48,104	48,104	6,540						2.0	2,317	50,421	**17.9**	20	2,493	45,698
27	64,000	6,794	3,626	1.37	1	11	3,638		0		0	3,668	47,077	47,077	6,794						2.0	2,407	49,484	**13.6**	20	2,463	43,464
28	65,000	6,794	3,683	1.20	1	10	3,693		0		0	3,668	47,077	47,077	6,794						2.0	2,407	49,484	**13.4**	20	2,464	43,489
29	66,000	5,162	2,841	1.30	2	22	2,863		0		0	3,348	42,970	42,970	5,162						2.0	1,829	44,799	**15.6**	20	2,218	51,526
30			0			0	0		0		0		0	0								0	0		20	0	
31			0			0	0		0		0		0	0								0	0		20	0	

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Notes:

User input cells, all other cells are calculated

West WWTF Monthly Wastewater SRT (Digester) Tracking Program - 07/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	9.1	8.8	18.6	27.9	37.1	46.4	55.7	65.0	17.9	26.9	35.8	44.8	53.7	62.7
2														
3														
4														
5	8.7	13.7	9.2	13.7	18.3	22.9	27.5	32.0	14.5	21.7	29.0	36.2	43.5	50.7
6	10.3	20.7	7.6	11.4	15.2	19.0	22.8	26.6	15.3	22.9	30.6	38.2	45.8	53.5
7	9.7	21.1	7.2	10.7	14.3	17.9	21.5	25.0	15.6	23.4	31.2	39.0	46.8	54.6
8	7.3	9.9	12.4	18.7	24.9	31.1	37.3	43.5	16.9	25.3	33.7	42.2	50.6	59.1
9														
10														
11	8.8	10.8	13.3	19.9	26.5	33.1	39.8	46.4	16.2	24.2	32.3	40.4	48.5	56.6
12	6.5	10.7	9.8	14.6	19.5	24.4	29.3	34.2	16.2	24.2	32.3	40.4	48.5	56.5
13	9.3	10.4	15.1	22.6	30.1	37.6	45.2	52.7	16.9	25.3	33.8	42.2	50.6	59.1
14														
15	9.9	9.8	16.7	25.0	33.4	41.7	50.1	58.4	16.5	24.8	33.0	41.3	49.5	57.8
16														
17														
18	9.1	9.6	15.2	22.8	30.3	37.9	45.5	53.1	15.9	23.9	31.8	39.8	47.8	55.7
19	9.5	9.6	15.8	23.6	31.5	39.4	47.3	55.1	15.9	23.9	31.8	39.8	47.8	55.7
20														
21	15.4	7.6	42.3	63.5	84.7	105.8	127.0	148.2	20.9	31.4	41.9	52.3	62.8	73.3
22	9.0	10.8	13.1	19.7	26.3	32.8	39.4	46.0	15.8	23.7	31.6	39.5	47.4	55.3
23														
24														
25	8.8	10.7	13.5	20.2	27.0	33.7	40.4	47.2	16.4	24.6	32.7	40.9	49.1	57.3
26	9.7	10.8	14.8	22.2	29.6	37.0	44.4	51.8	16.5	24.8	33.0	41.3	49.6	57.8
27	7.7	11.4	11.4	17.0	22.7	28.4	34.1	39.7	16.7	25.1	33.4	41.8	50.2	58.5
28	7.6	11.4	11.2	16.8	22.4	27.9	33.5	39.1	16.7	25.1	33.4	41.8	50.1	58.5
29	7.5	9.6	14.5	21.7	29.0	36.2	43.5	50.7	18.6	27.8	37.1	46.4	55.7	65.0
30														
31														

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West WWTF Monthly Wastewater SRT Tracking Program - 08/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,963	
CLARIFIER NO. 2 =	1,963	
CLARIFIER NO. 3 =	1,963	
CLARIFIER NO. 4 =	1,963	
CLARIFIER NO. 5 =	5,675	
CLARIFIER NO. 6 =	5,675	x
TOTAL (ALL CLARIFIERS) =	19,202	
TOTAL (ONLINE-IN USE) =	**5,675**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
OX DITCH NO. 1 (NORTHERN) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 2 (MIDDLE) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 3 (SOUTHERN) - ENVIREX 2-RING ORBAL =	1,537,995	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	3,901,839	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,537,995**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	123,429	x
DIGESTER NO. 2 =	123,429	x
DIGESTER NO. 3 =	123,429	x
DIGESTER NO. 4 =	123,429	x
TOTAL (ALL DIGESTERS) =	493,714	
TOTAL (ONLINE-IN USE) =	**493,714**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	OX DITCH 1 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 1 Solids Inventory (LBS)	OX DITCH 2 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 2 Solids Inventory (LBS)	OX DITCH 3 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 3 Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER NO. 6 Sludge Blanket (feet) x	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
1	50,000	7,830	3,265	1.35	2	23	3,287.6		0		0	2,966	38,067	38,067	7,830						3.0	4,161	42,228	**12.8**	20	2,089	31,988
2	75,000	7,830	4,898	1.35	2	23	4,920		0		0	2,966	38,067	38,067	7,830						2.5	3,467	41,534	**8.4**	20	2,054	31,457
3	72,000	6,960	4,179	1.26	5	53	4,232		0		0	3,038	38,991	38,991	6,960						2.0	2,465	41,457	**9.8**	20	2,020	34,805
4	64,000	6,960	3,715	1.39	5	58	3,773		0		0	3,038	38,991	38,991	6,960						2.0	2,465	41,457	**11.0**	20	2,015	34,712
5	50,000	6,954	2,900	1.30	5	54	2,954		0		0	3,036	38,966	38,966	6,954						2.0	2,463	41,429	**14.0**	20	2,017	34,782
6			0			0	0		0		0		0	0								0	0		20	0	
7			0			0	0		0		0		0	0								0	0		20	0	
8	53,000	7,200	3,183	1.35	1	11	3,194		0		0	3,456	44,356	44,356	7,200						2.0	2,551	46,907	**14.7**	20	2,334	38,870
9	49,000	7,200	2,942	1.19	1	10	2,952		0		0	3,456	44,356	44,356	7,200						3.0	3,826	48,182	**16.3**	20	2,399	39,954
10	49,000	5,696	2,328	1.29	2	22	2,349		0		0	3,616	46,410	46,410	5,696						2.5	2,522	48,932	**20.8**	20	2,425	51,049
11	51,000	5,696	2,423	1.23	2	21	2,443		0		0	3,616	46,410	46,410	5,696						2.0	2,018	48,428	**19.8**	20	2,401	50,539
12	54,000	5,130	2,310	1.22	3	31	2,341		0		0	3,602	46,230	46,230	5,130						2.0	1,817	48,047	**20.5**	20	2,372	55,437
13			0			0	0		0		0		0	0								0	0		20	0	
14			0			0	0		0		0		0	0								0	0		20	0	
15	56,000	6,878	3,212	1.27	2	21	3,233		0		0	3,528	45,280	45,280	6,878						2.5	3,046	48,326	**14.9**	20	2,395	41,754
16	54,000	6,878	3,098	1.26	2	21	3,119		0		0	3,528	45,280	45,280	6,878						2.0	2,436	47,717	**15.3**	20	2,365	41,226
17	50,000	5,896	2,459	1.27	2	21	2,480		0		0	3,546	45,511	45,511	5,896						2.5	2,611	48,122	**19.4**	20	2,385	48,501
18			0			0	0		0		0		0	0								0	0		20	0	
19	52,000	6,426	2,787	1.29	2	22	2,808		0		0	3,744	48,053	48,053	6,426						2.0	2,276	50,329	**17.9**	20	2,495	46,553
20			0			0	0		0		0		0	0								0	0		20	0	
21			0			0	0		0		0		0	0								0	0		20	0	
22	56,000	6,836	3,193	1.23	1	10	3,203		0		0	3,750	48,130	48,130	6,836						2.5	3,027	51,157	**16.0**	20	2,548	44,685
23	50,000	6,836	2,851	1.07	1	9	2,860		0		0	3,750	48,130	48,130	6,836						2.0	2,422	50,551	**17.7**	20	2,519	44,177
24	54,000	6,032	2,717	1.43	3	36	2,752		0		0	3,818	49,002	49,002	6,032						2.0	2,137	51,139	**18.6**	20	2,521	50,116
25	51,000	6,032	2,566	1.12	3	28	2,594		0		0	3,818	49,002	49,002	6,032						2.0	2,137	51,139	**19.7**	20	2,529	50,270
26	52,000	6,232	2,703	0.99	1	8	2,711		0		0	3,590	46,076	46,076	6,232						2.0	2,208	48,284	**17.8**	20	2,406	46,291
27			0			0	0		0		0		0	0								0	0		20	0	
28			0			0	0		0		0		0	0								0	0		20	0	
29	54,000	8,432	3,797	1.40	2	23	3,821		0		0	3,564	45,742	45,742	8,432						2.0	2,987	48,729	**12.8**	20	2,413	34,315
30	55,000	8,432	3,868	1.06	2	18	3,885		0		0	3,564	45,742	45,742	8,432						2.5	3,734	49,476	**12.7**	20	2,456	34,926
31	51,000	6,144	2,613	1.03	2	17	2,630		0		0	3,600	46,204	46,204	6,144						3.0	3,265	49,469	**18.8**	20	2,456	47,936

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Notes:

User input cells, all other cells are calculated

West WWTF Monthly Wastewater SRT (Digester) Tracking Program - 08/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
			PERCENT THICKENING						PERCENT THICKENING					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	9.9	15.4	12.6	18.9	25.2	31.5	37.8	44.1	19.7	29.6	39.4	49.3	59.1	69.0
2	6.6	15.7	8.4	12.6	16.8	21.0	25.2	29.4	20.0	30.1	40.1	50.1	60.1	70.2
3	6.9	14.2	9.9	14.8	19.7	24.6	29.6	34.5	20.4	30.6	40.8	51.0	61.1	71.3
4	7.7	14.2	11.1	16.6	22.2	27.7	33.3	38.8	20.4	30.7	40.9	51.1	61.3	71.5
5	9.9	14.2	14.2	21.3	28.4	35.5	42.6	49.7	20.4	30.6	40.8	51.0	61.2	71.4
6														
7														
8	9.3	12.7	12.9	19.4	25.9	32.3	38.8	45.3	17.6	26.5	35.3	44.1	52.9	61.7
9	10.1	12.4	14.0	21.0	28.0	35.0	42.0	49.0	17.2	25.7	34.3	42.9	51.5	60.1
10	10.1	9.7	17.7	26.5	35.4	44.2	53.1	61.9	17.0	25.5	34.0	42.4	50.9	59.4
11	9.7	9.8	17.0	25.5	34.0	42.5	51.0	59.5	17.2	25.7	34.3	42.9	51.5	60.0
12	9.1	8.9	17.8	26.7	35.6	44.6	53.5	62.4	17.4	26.0	34.7	43.4	52.1	60.8
13														
14														
15	8.8	11.8	12.8	19.2	25.6	32.0	38.5	44.9	17.2	25.8	34.4	43.0	51.6	60.2
16	9.1	12.0	13.3	19.9	26.6	33.2	39.9	46.5	17.4	26.1	34.8	43.5	52.2	60.9
17	9.9	10.2	16.7	25.1	33.5	41.9	50.2	58.6	17.3	25.9	34.5	43.2	51.8	60.4
18														
19	9.5	10.6	14.8	22.2	29.6	36.9	44.3	51.7	16.5	24.8	33.0	41.3	49.5	57.8
20														
21														
22	8.8	11.0	12.9	19.3	25.8	32.2	38.7	45.1	16.2	24.2	32.3	40.4	48.5	56.6
23	9.9	11.2	14.4	21.7	28.9	36.1	43.3	50.6	16.3	24.5	32.7	40.9	49.0	57.2
24	9.1	9.9	15.2	22.7	30.3	37.9	45.5	53.1	16.3	24.5	32.7	40.8	49.0	57.2
25	9.7	9.8	16.0	24.1	32.1	40.1	48.1	56.2	16.3	24.4	32.6	40.7	48.8	57.0
26	9.5	10.7	15.2	22.9	30.5	38.1	45.7	53.3	17.1	25.7	34.2	42.8	51.3	59.9
27														
28														
29	9.1	14.4	10.8	16.3	21.7	27.1	32.5	38.0	17.1	25.6	34.1	42.7	51.2	59.7
30	9.0	14.1	10.6	16.0	21.3	26.6	31.9	37.3	16.8	25.1	33.5	41.9	50.3	58.7
31	9.7	10.3	15.8	23.6	31.5	39.4	47.3	55.1	16.8	25.1	33.5	41.9	50.3	58.7

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West WWTF Monthly Wastewater SRT Tracking Program - 09/2016

Village of Huntley, IL

CLARIFIERS	SURFACE AREA(FT^2)	ONLINE*
CLARIFIER NO. 1 =	1,963	
CLARIFIER NO. 2 =	1,963	
CLARIFIER NO. 3 =	1,963	
CLARIFIER NO. 4 =	1,963	
CLARIFIER NO. 5 =	5,675	
CLARIFIER NO. 6 =	5,675	x
TOTAL (ALL CLARIFIERS) =	19,202	
TOTAL (ONLINE-IN USE) =	**5,675**	

***Type "x" in the green cell(s) to designate the corresponding Clarifier as In Use for the current month.**

OXIDATION DITCHES	VOLUME (GAL)	ONLINE*
OX DITCH NO. 1 (NORTHERN) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 2 (MIDDLE) - ENVIREX 3-RING ORBAL =	1,181,922	
OX DITCH NO. 3 (SOUTHERN) - ENVIREX 2-RING ORBAL =	1,537,995	x
TOTAL VOLUME (ALL OXIDATION DITCHES) =	3,901,839	
TOTAL OXIDATION DITCHES VOLUME (ONLINE-IN USE) =	**1,537,995**	

***Type "x" in the green cell(s) to designate the corresponding Oxidation Ditch as In Use for the current month.**

DIGESTERS	VOLUME (GAL)	ONLINE*
DIGESTER NO. 1 =	123,429	x
DIGESTER NO. 2 =	123,429	x
DIGESTER NO. 3 =	123,429	x
DIGESTER NO. 4 =	123,429	x
TOTAL (ALL DIGESTERS) =	493,714	
TOTAL (ONLINE-IN USE) =	**493,714**	

***Type "x" in the green cell(s) to designate the corresponding Digester as In Use for the current month.**

DATE	WAS FLOW RATE (GAL)	WASTE SLUDGE CONC (RAS - mg/l)	**WASTE SOLIDS (LBS)**	EFFLUENT FLOW (MGD)	EFF. S. SOL. SOLIDS (mg/l)	EFF. SOLIDS LOST (LBS)	**TOTAL SOLIDS WASTED (LBS)**	OX DITCH 1 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 1 Solids Inventory (LBS)	OX DITCH 2 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 2 Solids Inventory (LBS)	OX DITCH 3 Mixed Liquor Susp. Sol. (mg/l)	OX DITCH 3 Solids Inventory (LBS)	TOTAL OX DITCHES Solids Inventory (LBS)	RAS SOLIDS CONC. (mg/l)	CLARIFIER NO. 1 Sludge Blanket (feet)	CLARIFIER NO. 2 Sludge Blanket (feet)	CLARIFIER NO. 3 Sludge Blanket (feet)	CLARIFIER NO. 4 Sludge Blanket (feet)	CLARIFIER NO. 5 Sludge Blanket (feet)	CLARIFIER NO. 6 Sludge Blanket (feet) x	CLARIFIER Solids Inventory (LBS)	TOTAL SOLIDS INVENTORY (LBS)	**SRT (DAYS)**	TARGET SRT (DAYS)	SOLIDS TO WASTE (LBS)	TARGET WASTE RATE (GPD)
1	51,000	6,144	2,613	1.13	2	19	2,632.1		0		0	3,600	46,204	46,204	6,144						2.0	2,176	48,381	**18.4**	20	2,400	46,841
2	56,000	6,216	2,903	1.03	2	17	2,920		0		0	3,704	47,539	47,539	6,216						2.5	2,752	50,292	**17.2**	20	2,497	48,174
3			0			0	0		0		0		0	0								0	0		20	0	
4			0			0	0		0		0		0	0								0	0		20	0	
5			0			0	0		0		0		0	0								0	0		20	0	
6	64,000	6,880	3,672	1.11	4	37	3,709		0		0	3,906	50,132	50,132	6,880						2.0	2,437	52,569	**14.2**	20	2,591	45,163
7	49,000	13,918	5,688	1.03	1	9	5,696		0		0	3,640	46,718	46,718	13,918						2.0	4,930	51,648	**9.1**	20	2,574	22,174
8	50,000	13,918	5,804	0.86	1	7	5,811		0		0	3,640	46,718	46,718	13,918						2.0	4,930	51,648	**8.9**	20	2,575	22,186
9	65,000	6,344	3,439	0.93	4	31	3,470		0		0	3,724	47,796	47,796	6,344						1.5	1,685	49,481	**14.3**	20	2,443	46,175
10			0			0	0		0		0		0	0								0	0		20	0	
11			0			0	0		0		0		0	0								0	0		20	0	
12	52,000	6,664	2,890	0.53	3	13	2,903		0		0	3,810	48,900	48,900	6,664						2.5	2,951	51,850	**17.9**	20	2,579	46,410
13			0			0	0		0		0		0	0								0	0		20	0	
14	44,000	15,146	5,558	0.86	1	7	5,565		0		0	1,922	24,668	24,668	15,146						4.0	10,731	35,399	**6.4**	20	1,763	13,955
15	50,000	15,146	6,316	1.01	1	8	6,324		0		0	1,922	24,668	24,668	15,146						2.5	6,707	31,375	**5.0**	20	1,560	12,352
16	49,000	7,118	2,909	0.91	2	15	2,924		0		0	4,126	52,955	52,955	7,118						2.5	3,152	56,107	**19.2**	20	2,790	47,000
17			0			0	0		0		0		0	0								0	0		20	0	
18			0			0	0		0		0		0	0								0	0		20	0	
19	51,000	8,670	3,688	0.88	4	29	3,717		0		0	4,004	51,390	51,390	8,670						3.0	4,607	55,996	**15.1**	20	2,770	38,313
20	51,000	8,670	3,688	0.92	4	31	3,718		0		0	4,004	51,390	51,390	8,670						2.0	3,071	54,461	**14.6**	20	2,692	37,236
21	50,000	6,474	2,700	1.11	4	37	2,737		0		0	3,838	49,259	49,259	6,474						2.0	2,293	51,552	**18.8**	20	2,541	47,054
22	52,000	6,474	2,808	0.98	4	33	2,840		0		0	3,838	49,259	49,259	6,474						2.0	2,293	51,552	**18.1**	20	2,545	47,133
23	50,000	6,008	2,505	1.03	3	26	2,531		0		0	3,716	47,693	47,693	6,008						2.0	2,128	49,822	**19.7**	20	2,465	49,201
24			0			0	0		0		0		0	0								0	0		20	0	
25			0			0	0		0		0		0	0								0	0		20	0	
26	52,000	5,888	2,554	0.94	4	31	2,585		0		0	3,784	48,566	48,566	5,888						1.5	1,564	50,130	**19.4**	20	2,475	50,406
27	50,000	5,888	2,455	0.96	4	32	2,487		0		0	3,784	48,566	48,566	5,888						2.5	2,607	51,173	**20.6**	20	2,527	51,453
28	52,000	6,202	2,690	0.94	2	16	2,705		0		0	3,940	50,568	50,568	6,202						3.0	3,295	53,864	**19.9**	20	2,678	51,766
29	51,000	6,202	2,638	0.98	2	16	2,654		0		0	3,940	50,568	50,568	6,202						1.5	1,648	52,216	**19.7**	20	2,594	50,159
30	68,000	6,130	3,476	0.93	2	15	3,492		0		0	3,890	49,926	49,926	6,130						2.5	2,714	52,641	**15.1**	20	2,617	51,181
			0			0	0		0		0		0	0								0	0		20	0	

G:\Public\Huntley\2015\HD1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\SRT Tracking\For Report\[West WWTF SRT.xls]September 16

Notes:

User input cells, all other cells are calculated

West WWTF Monthly Wastewater SRT (Digester) Tracking Program - 09/2016

Village of Huntley, IL

DATE	DIGESTER STORAGE TIME - NO THICKENING		DIGESTER STORAGE TIME - THICKENING (USING *ACTUAL* WASTE RATE)						DIGESTER STORAGE TIME - THICKENING (USING *TARGET* WASTE RATE)					
	ACTUAL WASTE RATE (DAYS)	TARGET WASTE RATE (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)	PERCENT THICKENING 1% (DAYS)	1.5% (DAYS)	2% (DAYS)	2.5% (DAYS)	3% (DAYS)	3.5% (DAYS)
1	9.7	10.5	15.8	23.6	31.5	39.4	47.3	55.1	17.2	25.7	34.3	42.9	51.5	60.0
2	8.8	10.2	14.2	21.3	28.4	35.5	42.5	49.6	16.5	24.7	33.0	41.2	49.5	57.7
3														
4														
5														
6	7.7	10.9	11.2	16.8	22.4	28.0	33.6	39.2	15.9	23.8	31.8	39.7	47.7	55.6
7	10.1	22.3	7.2	10.9	14.5	18.1	21.7	25.3	16.0	24.0	32.0	40.0	48.0	56.0
8	9.9	22.3	7.1	10.6	14.2	17.7	21.3	24.8	16.0	24.0	32.0	40.0	48.0	56.0
9	7.6	10.7	12.0	18.0	23.9	29.9	35.9	41.9	16.9	25.3	33.7	42.1	50.6	59.0
10														
11														
12	9.5	10.6	14.2	21.4	28.5	35.6	42.7	49.9	16.0	23.9	31.9	39.9	47.9	55.9
13														
14	11.2	35.4	7.4	11.1	14.8	18.5	22.2	25.9	23.4	35.0	46.7	58.4	70.1	81.8
15	9.9	40.0	6.5	9.8	13.0	16.3	19.6	22.8	26.4	39.6	52.8	66.0	79.2	92.4
16	10.1	10.5	14.2	21.2	28.3	35.4	42.5	49.5	14.8	22.1	29.5	36.9	44.3	51.7
17														
18														
19	9.7	12.9	11.2	16.7	22.3	27.9	33.5	39.1	14.9	22.3	29.7	37.2	44.6	52.0
20	9.7	13.3	11.2	16.7	22.3	27.9	33.5	39.1	15.3	22.9	30.6	38.2	45.9	53.5
21	9.9	10.5	15.3	22.9	30.5	38.1	45.8	53.4	16.2	24.3	32.4	40.5	48.6	56.7
22	9.5	10.5	14.7	22.0	29.3	36.7	44.0	51.3	16.2	24.3	32.4	40.4	48.5	56.6
23	9.9	10.0	16.4	24.7	32.9	41.1	49.3	57.5	16.7	25.1	33.4	41.8	50.1	58.5
24														
25														
26	9.5	9.8	16.1	24.2	32.3	40.3	48.4	56.4	16.6	25.0	33.3	41.6	49.9	58.2
27	9.9	9.6	16.8	25.2	33.5	41.9	50.3	58.7	16.3	24.4	32.6	40.7	48.9	57.0
28	9.5	9.5	15.3	23.0	30.6	38.3	45.9	53.6	15.4	23.1	30.8	38.4	46.1	53.8
29	9.7	9.8	15.6	23.4	31.2	39.0	46.8	54.6	15.9	23.8	31.7	39.7	47.6	55.5
30	7.3	9.6	11.8	17.8	23.7	29.6	35.5	41.5	15.7	23.6	31.5	39.3	47.2	55.1

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Appendix H

West WWTF DO Tracking Sheets (02/2016-09/2016)

West WWTF Monthly Wastewater DO Tracking Program - 02/2016

Village of Huntley, IL

	Southern Oxidation Ditch - No. 3		Middle Oxidation Ditch - No. 2			Northern Oxidation Ditch - No. 1		
	Inner Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/l)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
1								
2								
3								
4								
5	2.05	0.55						
6								
7								
8	2.15	0.23						
9								
10	2.05	0.22						
11								
12	1.84	0.87						
13								
14								
15								
16	2.12	0.22						
17	1.94	0.63						
18								
19	1.76	0.78						
20								
21								
22	1.84	0.75						
23								
24	1.76	0.22						
25								
26	2.02	0.53						
27								
28								
29	2.08	0.61						
Monthly Average	1.96	0.51	-	-	-	-	-	-
Maximum	2.15	0.87	-	-	-	-	-	-
Minimum	1.76	0.22	-	-	-	-	-	-

G:\Public\Huntley\2015\HU1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\DO Tracking\[West Plant D.O. For Report Appendices.xlsx]February 16

Notes:

- The Middle Oxidation Ditch (No. 2) was not in use during the time of sampling
- The Northern Oxidation Ditch (No. 1) was not in use during the time of sampling

West WWTF Monthly Wastewater DO Tracking Program - 03/2016

Village of Huntley, IL

	Southern Oxidation Ditch - No. 3		Middle Oxidation Ditch - No. 2			Northern Oxidation Ditch - No. 1		
	Inner Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/l)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
1								
2	2.20	0.23						
3								
4	2.05	0.40						
5								
6								
7	2.16	0.23						
8								
9	2.12	0.24						
10								
11	1.95	0.53						
12								
13								
14	1.90	0.22						
15								
16	1.88	0.21						
17								
18	1.75	0.26						
19								
20								
21	1.94	0.22						
22								
23	2.15	0.22						
24	1.98	0.96						
25								
26								
27								
28	2.07	0.68						
29								
30	1.97	0.22						
31								
Monthly Average	2.01	0.36	-	-	-	-	-	-
Maximum	2.20	0.96	-	-	-	-	-	-
Minimum	1.75	0.21	-	-	-	-	-	-

G:\Public\Huntley\2015\IHU1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\DO Tracking\[West Plant D.O. For Report Appendices.xlsx]March 16

Notes:

- The Middle Oxidation Ditch (No. 2) was not in use during the time of sampling
- The Northern Oxidation Ditch (No. 1) was not in use during the time of sampling

West WWTF Monthly Wastewater DO Tracking Program - 04/2016

Village of Huntley, IL

	Southern Oxidation Ditch - No. 3		Middle Oxidation Ditch - No. 2			Northern Oxidation Ditch - No. 1		
	Inner Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/l)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
1	1.79	0.79						
2								
3								
4	1.75	0.23						
5	1.95	0.73						
6	1.99	0.92						
7	2.15	0.22						
8	1.92	0.29						
9								
10								
11	1.74	0.49						
12	1.84	0.73						
13	2.00	0.69						
14	1.99	0.21						
15	1.88	0.71						
16								
17								
18	1.99	0.33						
19	1.94	0.55						
20	1.91	0.74						
21	2.05	0.45						
22	1.94	0.44						
23								
24								
25	1.81	0.53						
26	1.88	0.48						
27	2.03	0.21						
28	2.11	0.21						
29	1.96	0.56						
30								
Monthly Average	1.93	0.50	-	-	-	-	-	-
Maximum	2.15	0.92	-	-	-	-	-	-
Minimum	1.74	0.21	-	-	-	-	-	-

G:\Public\Huntley\2015\HU1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\DO Tracking\[West Plant D.O. For Report Appendices.xlsx]April 16

Notes:

- The Middle Oxidation Ditch (No. 2) was not in use during the time of sampling
- The Northern Oxidation Ditch (No. 1) was not in use during the time of sampling

West WWTF Monthly Wastewater DO Tracking Program - 05/2016

Village of Huntley, IL

	Southern Oxidation Ditch - No. 3		Middle Oxidation Ditch - No. 2			Northern Oxidation Ditch - No. 1		
	Inner Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/l)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
1								
2	1.96	0.22						
3	1.81	0.65						
4	1.88	0.71						
5	1.86	0.21						
6	2.04	0.72						
7								
8								
9	1.96	0.55						
10	2.07	0.20						
11	1.95	0.69						
12	2.10	0.20						
13	2.07	0.39						
14								
15								
16	1.93	0.21						
17	1.95	0.54						
18	1.99	0.21						
19	1.86	0.68						
20	1.95	0.20						
21								
22								
23	1.86	0.42						
24	2.02	0.19						
25	2.06	0.19						
26	2.09	0.22						
27	1.99	0.35						
28								
29								
30								
31	2.00	0.37						
Monthly Average	1.97	0.39	-	-	-	-	-	-
Maximum	2.10	0.72	-	-	-	-	-	-
Minimum	1.81	0.19	-	-	-	-	-	-

G:\Public\Huntley\2015\HU1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\DO Tracking\[West Plant D.O. For Report Appendices.xlsx]May 2016

Notes:

- The Middle Oxidation Ditch (No. 2) was not in use during the time of sampling
- The Northern Oxidation Ditch (No. 1) was not in use during the time of sampling

West WWTF Monthly Wastewater DO Tracking Program - 06/2016

Village of Huntley, IL

	Southern Oxidation Ditch - No. 3		Middle Oxidation Ditch - No. 2			Northern Oxidation Ditch - No. 1		
	Inner Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/l)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
1	2.02	0.22						
2	2.06	0.19						
3	1.99	0.20						
4								
5								
6	1.98	0.93						
7	2.00	0.18						
8	1.95	0.19						
9	2.01	0.19						
10	2.01	0.52						
11								
12								
13	2.07	0.21						
14	1.93	0.61						
15	2.04	0.18						
16	1.99	0.21						
17	2.01	0.48						
18								
19								
20	2.00	0.18						
21	1.92	0.23						
22	1.86	0.18						
23	1.83	0.31						
24	1.87	0.23						
25								
26								
27	1.99	0.28						
28	1.96	0.84						
29	1.93	0.19						
30	1.89	0.61						
Monthly Average	1.97	0.33	-	-	-	-	-	-
Maximum	2.07	0.93	-	-	-	-	-	-
Minimum	1.83	0.18	-	-	-	-	-	-

G:\Public\Huntley\2015\HU1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\DO Tracking\[West Plant D.O. For Report Appendices.xlsx]June 2016

Notes:

- The Middle Oxidation Ditch (No. 2) was not in use during the time of sampling
- The Northern Oxidation Ditch (No. 1) was not in use during the time of sampling

West WWTF Monthly Wastewater DO Tracking Program - 07/2016

Village of Huntley, IL

	Southern Oxidation Ditch - No. 3		Middle Oxidation Ditch - No. 2			Northern Oxidation Ditch - No. 1		
	Inner Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/l)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
1								
2								
3								
4								
5	1.94	0.27						
6	1.98	0.21						
7	2.01	0.26						
8	2.01	0.38						
9								
10								
11	2.02	0.59						
12	1.92	0.88						
13	1.96	0.19						
14	2.03	0.65						
15	1.93	0.64						
16								
17								
18	1.98	0.57						
19	1.94	0.55						
20	2.03	0.45						
21	1.94	0.95						
22	1.93	0.52						
23								
24								
25	2.00	0.44						
26	1.71	0.38						
27	1.69	0.57						
28	2.01	0.59						
29	1.77	0.55						
30								
31								
Monthly Average	1.94	0.51	-	-	-	-	-	-
Maximum	2.03	0.95	-	-	-	-	-	-
Minimum	1.69	0.19	-	-	-	-	-	-

G:\Public\Huntley\2015\HU1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\DO Tracking\[West Plant D.O. For Report Appendices.xlsx]July 2016

Notes:

- The Middle Oxidation Ditch (No. 2) was not in use during the time of sampling
- The Northern Oxidation Ditch (No. 1) was not in use during the time of sampling

West WWTF Monthly Wastewater DO Tracking Program - 08/2016

Village of Huntley, IL

	Southern Oxidation Ditch - No. 3		Middle Oxidation Ditch - No. 2			Northern Oxidation Ditch - No. 1		
	Inner Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/l)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
1	1.99	0.26						
2	1.82	0.45						
3	1.67	0.63						
4	1.48	0.89						
5	1.40	0.73						
6								
7								
8	1.99	0.60						
9	2.03	0.68						
10	2.05	0.73						
11	2.01	0.17						
12	2.01	0.63						
13								
14								
15	1.85	0.19						
16	2.03	0.30						
17	2.01	0.17						
18	2.07	0.18						
19	2.03	0.17						
20								
21								
22	1.91	0.32						
23	1.94	0.35						
24	2.04	0.19						
25	1.84	0.50						
26	1.97	0.40						
27								
28								
29	1.82	0.31						
30	1.94	0.44						
31	1.82	0.48						
Monthly Average	1.90	0.42	-	-	-	-	-	-
Maximum	2.07	0.89	-	-	-	-	-	-
Minimum	1.40	0.17	-	-	-	-	-	-

G:\Public\Huntley\2015\HU1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\DO Tracking\[West Plant D.O. For Report Appendices.xlsx]August 2016

Notes:

- The Middle Oxidation Ditch (No. 2) was not in use during the time of sampling
- The Northern Oxidation Ditch (No. 1) was not in use during the time of sampling

West WWTF Monthly Wastewater DO Tracking Program - 09/2016

Village of Huntley, IL

	Southern Oxidation Ditch - No. 3		Middle Oxidation Ditch - No. 2			Northern Oxidation Ditch - No. 1		
	Inner Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO	Inner Ring DO	Middle Ring DO	Outer Ring DO
DATE	(mg/L)	(mg/l)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
1	2.09	0.18						
2	2.00	0.17						
3								
4								
5								
6	1.89	0.46						
7	1.98	0.47						
8	1.93	0.54						
9	2.02	0.49						
10								
11								
12	1.80	0.19						
13	1.81	0.67						
14	1.89	0.18						
15	1.88	0.37						
16	1.43	0.31						
17								
18								
19	1.95	0.42						
20	1.23	0.30						
21	1.69	0.48						
22	1.98	0.40						
23	1.24	0.33						
24								
25								
26	1.06	0.27						
27	1.37	0.35						
28	1.84	0.45						
29	1.89	0.49						
30	1.87	0.43						
Monthly Average	1.75	0.38	-	-	-	-	-	-
Maximum	2.09	0.67	-	-	-	-	-	-
Minimum	1.06	0.17	-	-	-	-	-	-

G:\Public\Huntley\2015\HU1501 2016 Wastewater System Planning Documents\01B - Phosphorus Discharge Optimization Plan\Eng\DO Tracking\[West Plant D.O. For Report Appendices.xlsx]September 2016

Notes:

- The Middle Oxidation Ditch (No. 2) was not in use during the time of sampling
- The Northern Oxidation Ditch (No. 1) was not in use during the time of sampling