

Variable Sheet for Cover Letter

1. Today's Date 12/12/2012
2. Facility Name: Antioch WWTP
3. Contact: Lawrence M. Hanson, Mayor
4. Street Address: 874 Main St.
5. City, State, Zip; Antioch, IL 60002
6. NPDES Number: IL0020354
7. Salutation: Honorable Lawrence M. Hanson
8. Date of Inspection: 01/13/2012
9. Inspectors Name: Antwan Williams



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

PAT QUINN, GOVERNOR

JOHN J. KIM, INTERIM DIRECTOR

MEMORANDUM

DATE: December 12, 2012

TO: File

FROM: Antwan Williams

SUBJECT: Antioch WWTP
NPDES Permit #IL0020354

Attached is a copy of a Compliance Evaluation Inspection Report for Antioch WWTP. The inspection was conducted January 13, 2012. The operation and maintenance of this facility, as well as the self monitoring program is generally in satisfactory condition. This facility has been shown to be in substantial compliance with their NPDES Permit effluent limits.

CC: DWPC/FOS/RU
DWPC/CAS
AW



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PAT QUINN, GOVERNOR

JOHN J. KIM, INTERIM DIRECTOR

FIELD REPORT

Facility Name: Antioch WWTP
NPDES Permit No.: IL0020354
Inspection Date: January 13, 2012
Inspected By: Antwan Williams
Interviewed: Jason Treat
Senior Operator

GENERAL INFORMATION

Responsible Officials:

The Mayor of Antioch is Lawrence M. Hanson. The operator in charge of this facility is John Swedo of Baxter & Woodman. He can be reached at 847/543-1661. The plant number is 847/ 395-2740. The cell phone is 847/561-8817. The mailing address is 874 Main Street, Antioch, IL 60002.

Plant Location:

The plant is located NW of the main business district at 796 Holbeck Drive. The legal location is the NW quarter of Section 08, Township 46N, Range 10E, Lake County. The entrance is located on the corner of Depot St. and Holbeck Drive.

Receiving Waters:

The receiving stream is Sequoit Creek, which is classified as a general use stream. Sequoit Creek is tributary to Lake Marie, which in turn connects to the entire Chain-O-Lakes and ultimately discharges to the Fox River. The seven-day -10 year low flow at the point of discharge is 0.13 cfs. This stream has been rated "D" under the Agency's Biological Stream Characterization (BSC) program. While Sequoit Creek is not found on the 2006 Illinois 303(d) list, Lake Marie is. Impairments include aesthetic quality and fish consumption. Historically, Sequoit Creek's entry point into Lake Marie has been the location of significant algae blooms.

Permitted Capacity:

See attached pages 2 and 3 of the NPDES Permit.

COLLECTION SYSTEM

Area Served:

The Antioch WWTP serves the portion of the Village located within the Antioch FPA, which is an area of about three square miles. The area includes several commercial and industrial users in the Village and the Village has an approved Pretreatment Program. The sewage collection system consists of separate sewer lines. Despite a history of heavy infiltration, there are no documented combined sewers. The collection system is maintained by a cooperative effort between the WWTP personnel and the Village Water Department. Attached is an updated list of lift stations tributary and significant industrial users to this facility.

Type of System:

Provide system details such as percent combined and separate, location of combined sewer areas and system age.
The village has a separate sewer system.

System Problems:

The village is aware that I/I exists within their boundaries.

The subject facility had a Silver Violation during the months of April and May 2011 due to an issue with their contract laboratory. They have since switched to a new contract laboratory. See the attached report dated September 12, 2011 for more information concerning this matter.

The subject facility is currently using alum for phosphorus removal, however they have hired Hawkins, Inc. (3100 East Hennepin Avenue, Minneapolis, MN 55413, www.hawkinsinc.com, Ray Pierce, Senior Water Treatment Specialist, 612-617-8616 or 763-360-5462, ray.pierce@hawkinsinc.com) to conduct some testing to determine if ferric chloride will work better.

Lift Stations:

The List of Lift Stations is attached.

Industrial Users:

Kay-Home Products is a CIU within the village; however the subject IU doesn't discharge their process waste into the sewer system. The process waste is hauled out by a waste hauler.

Pickard China is considered an SIU due to the fact that they have a pretreatment system, not because they have a significant amount of process waste entering the village's collection system. Pickard China makes china such as bowls, cups, plates, etc. The process waste goes into a 300 gallon settling tank for at least 48 hours. Then the effluent from that tank goes into another 300 gallon settling tank for at least 48 hours. After that

the effluent is discharged through a final filter before it goes to the sanitary sewer collection system. The Senior Operator contacts the manager of Pickard China once every quarter to collect samples from the discharge of the pretreatment system to determine if it meets pretreatment permit limits that the subject IU holds with the village.

WASTEWATER TREATMENT PLANT

Raw Sewage:

Raw sewage appeared to have a normal grayish color and a normal odor.

Bypass/Excess Flow Treatment:

The plant doesn't have any bypass provisions or conditions, or any excess flow treatment.

Screening:

The village has a Lakeside Raptor Screen which is a fine mesh screen that washes, compacts, collects, and disposes of the screenings. The screenings are then hauled offsite by Waste Management to a landfill. The volume of screenings generated is approximately 2 yards per week.

Raw Sewage Pumping:

See attached lift station list.

Influent Flow Measurement:

The village has an area velocity meter which measures the width of the channel, the depth of the water, and the velocity of the flow. From that information the area velocity meter calculates the flow. The subject facility had the velocity meter calibrated in September, 2011 by L.A.I.

Secondary Treatment:

There are 3 aeration basins with a total volume of 1.44 MG. The aeration basins are a part of the Biological Nutrient Removal (BNR) system. The aeration basins carry a MLSS of about 2500 to 3000 mg/l. The RAS is kept at about 5000 to 6000 mg/l. The DO levels are kept at no less than 2 mg/l. The aeration tanks are designed to hold sludge for approximately 10 to 20 days. The subject facility holds their sludge for approximately 20 days. The village is in the process of acquiring the OPT 10 program to assist with maintaining the desired levels of their process control rationale.

Blowers:

The subject facility has 7 brand new positive displacement blowers manufactured by Kaeser. There are three blowers for the aeration basins, and four blowers for the aerobic digesters.

Effluent Flow Measurement:

The subject facility has an ultrasonic meter that is situated in a Parshall Flume which measures the effluent. The ultrasonic meter was last calibrated in September, 2011 by L.A.I.

Effluent Disinfection:

The subject facility has a Trojan UV 3000+ system with two banks, one bank is a back up. There are five modules per bank with 8 bulbs per module. The system is run automatically with alarms installed in case of system failure.

SLUDGE HANDLING

Sludge Permit:

Sludge is being land applied under permit 2009-SC-1784 which expires January 31, 2014. This permit allows for 500 dry tons a year of sludge to be to be land applied to agricultural lands. The permit disallows land application on ice and snow covered grounds. According to records an application for renal was not received until December 8, 2008.

NPDES PERMIT COMPLIANCE

Permit Verification:

Permit verification was satisfactory. The permit is current and all discharges are included.

Facility Site Review:

During the time of the inspection Alum is being used for phosphorus removal. The chemical tank holds 2,500 gallons. The secondary containment area surrounding it has at least a 2500 gallon capacity. The tank is filled by Hawkins, Inc. When the tank is being filled an operator has to unlock the door to the chemical room and open the inlet valves to the tank. The tank has a site gauge on it to determine when the tank is full. The subject facility is in the process of determining a spill prevention plan for filling the tank.

The aerobic digesters were operating satisfactorily.

During the time of the inspection all improvements to the units and buildings were complete and the effluent looked clear.

Records and Reports:

A review of records and reports showed that the permittee has been in compliance with Standard Condition 10 (Monitoring and records) of the NPDES Permit requirements.

Flow Measurement:

Effluent and excess flow measurement appears to meet the NPDES Permit requirements.

Self-Monitoring Program & Laboratory:

All samples, analysis, and calculations are conducted by the Senior Operator and the other two operators on staff. Samples for CBOD₅ are collected and analyzed three days a week. They are analyzed using an YSI DO meter. Samples for TSS are collected and analyzed three days a week. They are analyzed using a glass fiber filter connected to a vacuum pump. The residual that is left on the filter is dried for 1 hour in the drying oven. Then the sample is weighed and the results are calculated and entered into the bench sheets. Samples for pH are grabbed and analyzed three days a week. They are analyzed using a bench top meter. The meter is first calibrated using known pH standards then the sample is tested for the pH value. Samples for DO are grabbed and analyzed three days a week. They are analyzed using permanently installed DO meter located in the effluent channel. The DO is also double checked with the portable YSI DO meter. Samples for Fecal Coliform are grabbed and analyzed three days a week from March thru November. They are analyzed by first sterilizing the glassware using an autoclave. Next the sample is poured into the filter connected to a vacuum pump. Then the sample is put into a dry incubator at 45 degrees Celsius for twenty-four hours. Then the colonies are counted and input into the bench sheets. Samples for Total Nitrogen, Copper, and Silver are collected one day a week and sent to Suburban Labs for analyzing. Samples for Phosphorus are collected and analyzed three days a week. They are analyzed using a HACH (Test in Tube (TNT)) Kit. The sample is poured into the HACH Kit and shook then allowed to settle for an hour. After that the kit is put into a Spectrometer to determine the amount of Phosphorus in the kit. Then the value from the Spectrometer is entered on the bench sheet. Samples for Ammonia Nitrogen are tested and analyzed three days a week. The analysis is conducted by using another HACH TNT kit. The sample is poured into the HACH Kit and shook then allowed to settle for fifteen minutes. Then the kit is put into the Spectrometer to determine the amount of Ammonia Nitrogen in the kit. Then the value from the Spectrometer is entered into the bench sheet. The scale for the TSS, the BOD meter, and the Portable DO meter have been calibrated by Certified Balance & Scale Corporation January 2011.

All results from data collected are recorded on bench sheets. Each bench sheet is compiled into a monthly excel spreadsheet by the Senior Operator. The Senior Operator completes the DMRs from the results of the spreadsheet. Due to the Agency not updating the eDMR system to meet the new parameters consequently the subject facility can't submit the eDMR form online.

Effluent:

The effluent appeared clear at the time of the inspection.

Operation and Maintenance:

During the time of the inspection the subject facility has appeared to be in compliance with Standard Condition 5 of the NPDES Permit (proper operation and maintenance) since the construction of the new plant is complete. Process control including MLSS testing and microscopic analysis is conducted three days a week.

Sludge Disposal:

Synagro is the contractor responsible for land application. No problems were noted. Based on analysis data, the parameter with lowest site life is Copper at 52 years.

SUMMARY

The operation and maintenance of this facility, as well as the self monitoring program is generally in satisfactory condition. This facility has been shown to be in substantial compliance with their NPDES Permit effluent limits.

Attachments:

3560-3 form
DMR Summary
Plant Flow Diagram
List of Lift Stations
Explanation of Silver Violation

MAYOR
Lawrence M. Hanson

CLERK
Candi L. Rowe



ALDERMEN
Dennis B. Crosby
Mary C. Dominiak
Jay Jozwiak
Scott A. Pierce
Ted P. Poulos
George C. Sakas

December 12, 2011

Mr. Leon Acierto
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590
Attention To: WC-15J

**Subject: Village of Antioch- Silver Violation for April and May 2011
Permit #IL0020354**

Dear Mr. Acierto,

This letter summarizes the conversation we had on Wednesday November 23, 2011, in regards to silver violations at the Village of Antioch WWTF for April and May of 2011.

The treatment facility contracts the silver testing to an outside lab. Within this time period, insufficiencies were being discovered regarding this lab. In addition to these silver violations, we were having trouble with the total nitrogen reporting, and the samples sent for Pre-Treatment. I've attached a letter from June, sent to Mr. Roger Callaway regarding the total nitrogen reporting; highlighting the problems with this outside lab.

April's result for the silver was sent to us via e-mail in early May. The Treatment Facility staff quickly realized that a reporting violation had occurred. We were quite concerned, because we had asked the outside lab if an elevated reading is seen during the weekly testing they were to contact us. They failed to do this; and we started seeking another lab to do our analysis. At the end of May, we sent in silver analysis to the outside lab in question, and the new one. The results from the new lab came back as non-detectable, and we had similar results since then. The results from the existing lab were much higher. We wanted to know why this was. We were told by the new lab that their detection limit was much lower, and hence more accurate than the other lab.

As for May's silver total pounds per day violation, I made a simple math error in calculating the pounds. The correct calculation would have shown that we were within limits. Since then, we have created spreadsheets that calculate the formulas. In addition, IL EPA has reinstated the electronic DMR system this fall. This system will not allow submitted data, if this type of error is detected.

MAYOR

Lawrence M. Hanson

C. CLERK

Candi L. Rowe



Dennis B. Crosby
Mary C. Dominiak
Jay Jozwiak
Scott A. Pierce
Ted P. Poulos
George C. Sakas

Lastly, I was quite perplexed in the handling of this issue. Normally, a letter is sent from IEPA, and there's a time frame for responding to a violation. The call from you came unexpectedly without any prior notice that we were to respond to a violation. The Village of Antioch WWTF takes great pride in reporting and adhering to the guidelines set forth by the IL EPA and U.S. EPA. There is sufficient evidence of this, including the letter sent to Mr. Callaway in June. I would hope that in the future we will get the opportunity to respond to any issue prior to it being forwarded to your office.

We apologize for any inconvenience this may have caused. Should you have any questions or need any additional information, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jason Treat".

Jason Treat,
Supervisor of Wastewater Operations
796 Holbeck Drive
Antioch, IL 60002
Phone: 847-395-2599
Email: jtreat@antioch.il.gov

Cc: Mr. Roger Callaway, IL EPA
Mr. James Keim, Village of Antioch

wrence M. Hanson

Candi L. Rowe



Dennis B. Crosby
Mary C. Dominiak
Jay Jozwiak
Scott A. Pierce
Ted P. Poulos
George C. Sakas

Mr. Roger Callaway
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

**Subject: Village of Antioch – Total Nitrogen Reporting
Permit # IL0020354**

Dear Mr. Callaway,

This letter summarizes the conversation we had on Thursday June 23, 2011, regarding the reporting of Total Nitrogen as per requirements of the NPDES Permit (Permit # IL0020354) for the Village of Antioch WWTP.

Our NPDES permit requires monitoring and reporting for Total Nitrogen of the final effluent once/week from a composite sample. We have inadvertently reported Total Kjeldahl Nitrogen (TKN) instead of Total Nitrogen on the Discharge Monitoring Reports. The information we incorrectly reported was thought to be Total Nitrogen, based on communication with the outside lab that performed the analysis. We recently changed outside lab services, and after that discovered the error. The new lab is reporting Total Nitrogen, and in fact breaks down the formula for obtaining Total Nitrogen on the analysis reports.

We apologize for any inconvenience this may have caused. Should you have any questions or need any additional information, please feel free to contact me.

Sincerely,

Jason Treat
Senior Operator

Village of Antioch Wastewater Treatment Facility
874 Main Street
Antioch, Illinois 60002

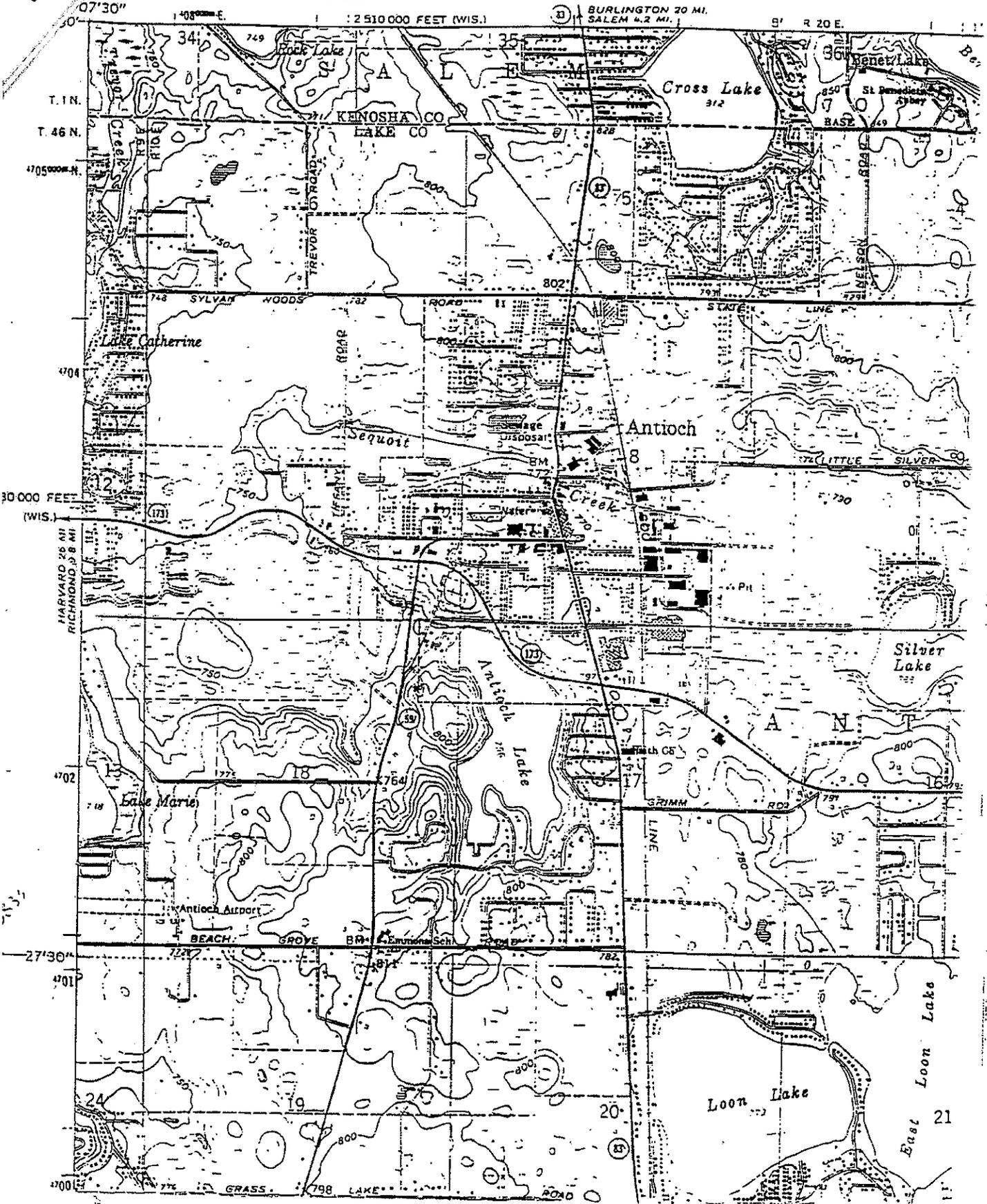
874 Main Street Antioch, IL 60002 phone: (847) 395-1000 fax: (847) 395-1920 www.antioch.il.gov

ANTIOCH LIFT STATIONS

	LOCATION	GPM
1	Corner of Depot St. and Hillside Ave.	500
2	701 Lake Street	750
3	1091 Hillside Ave.	650
4	966 Rt. 59 (Jewel)	200
5	Route 173 @ upper Grade School	100
6	1160 Mystic Cove Dr.	105
7	440 Fillweber Ct.	60
8	350 Route 173 (Comfort Inn)	120
9	118 Route 173 (Raymond Chevrolet)	250
10	Depot Street @ Rail Road Tracks	600
11	Depot Street @ Windmill Creek	500
12	1067 Autumn Drive (Pine Hills)	150
13	141 Bridgewood Dr. Oakwood Knolls	40
14	110 Timber Lane (Oakwood Knolls)	40
15	Antioch Manor. (Corner of Joren and Donin Drive)	325
16	Heron Harbor (Corner of Bowles Rd and Inverness Ct.	180
17	Tiffany Farms (Corner of Tiffany Farms Rd and Indian Trail Rd)	410
18	JT's Road house (41220 North Rt. 83)	225

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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SALEM 4.2 MI.

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(WIS.)

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701

700

GRASS

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Loon Lake

East Loon Lake

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DMR SUMMARY

FACILITY: ANTIOCH VILLAGE OF
 IL NUMBER: IL0020354
 OUTFALL: 0010

DATE	INFL FLOW		EFF FLOW		pH		TSS		CBOD		BOD		AMMONIA		CHLORINE		FECAL		NO Discharge
	AVE	MAX	AVE	MAX	MIN	MAX	INF	AVE	MAX	INF	AVE	MAX	AVE	MAX	AVE	MAX	DO		
1/31/2011	1.054	1.871	1.198	1.388	7	8	208	2	4	2	3	148	0.4	2.3			6		
2/28/2011	1.757	4.049	1.792	4.522	7	8	174	6	19	3	5	171	0.2	0.8			6		
3/31/2011	2.235	3.564	2.19	4.221	7	8	143	4	9	2	4	126	0.2	2	42	7			
4/30/2011	2.445	4.681	2.43	5.237	7	8	166	6	15	4	7	136	0	0.055	52	7			
5/31/2011	2.089	3.543	1.993	3.114	7	8	159	5	12	3	12	150	0.1	0.2	12	8			
6/30/2011	1.485	2.25	1.426	2.193	7	8	200	3	6	2	4	145	0.1	0.1	12	9			
7/31/2011	1.591	5.283	1.518	7.225	7.36	7.92	203	3	5	2	3	187	0.05	0.082	0	95	6.4		
8/31/2011	1.552	2.236	1.309	1.865	7	8	146	2	4	2	3	136	0.04	0.074	0	36	6		
10/31/2011	1.269	1.643	1.219	1.51	8	8	157	3	5	2	3	164	0.1	0.2	31	7			
11/30/2011	1.609	3.36	1.517	3.003	7	8	170	3	4	2	2	165	0.06	0.4	48	6			
12/31/2011	1.512	2.2	1.464	1.956	8	9	182	3	5	3	4	162	0.03	0.11		6			

NO.	DATE	REVISION

DESIGNED BY: P.A.T.
 DRAWN BY: J.C.C.
 CHECKED BY: F.X.T.
 APPROVED BY: J.J.S.

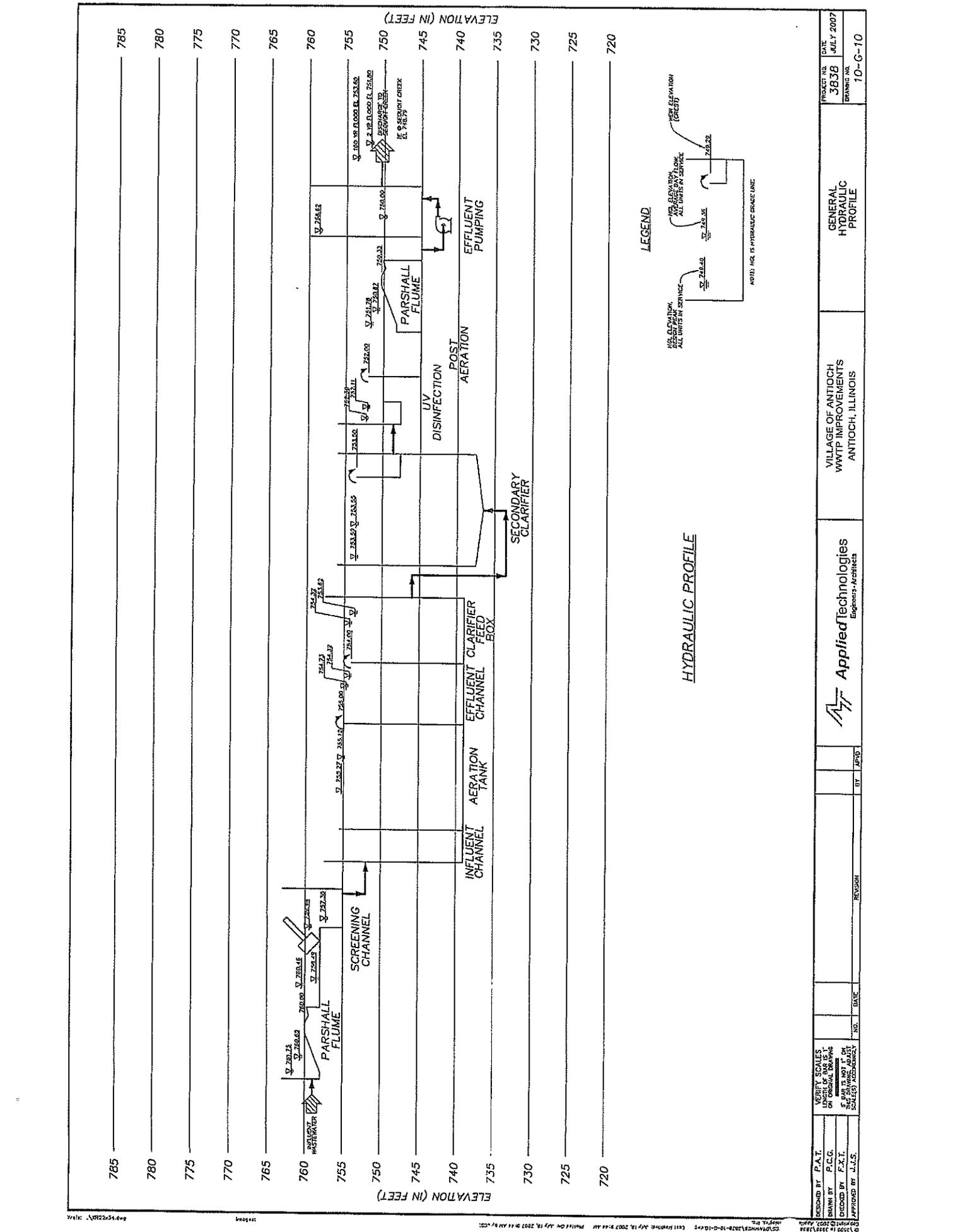
VERIFICATION SCALES
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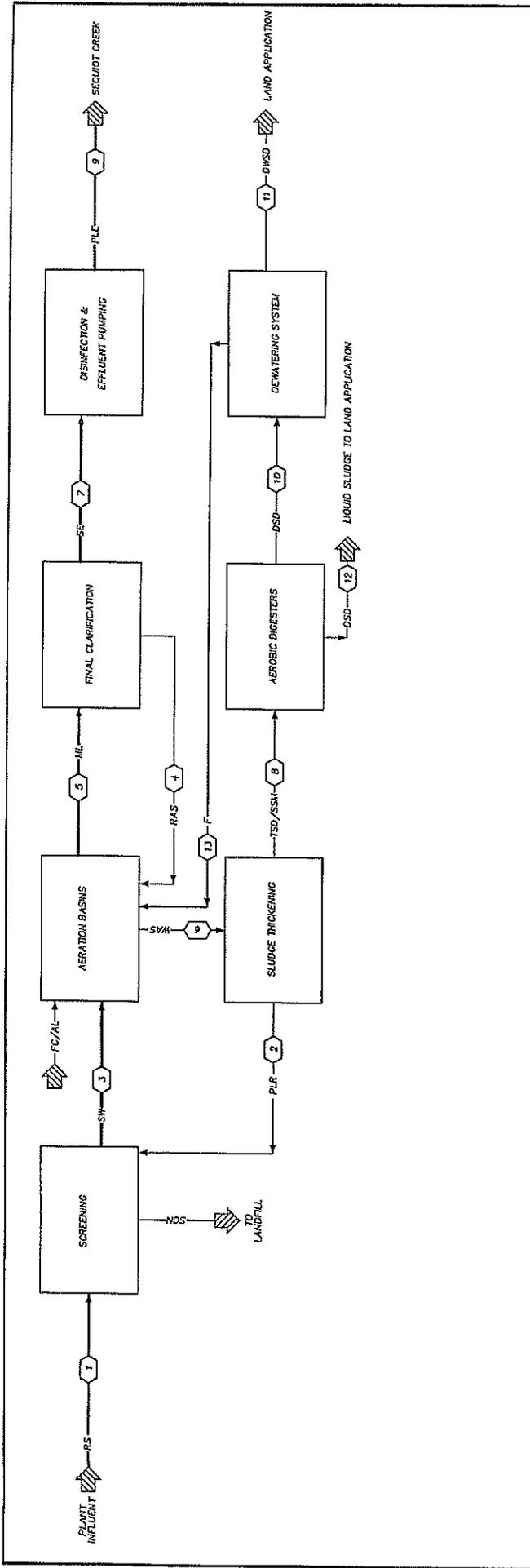
VILLAGE OF ANTOIOCH
 WWTP IMPROVEMENTS
 ANTOIOCH, ILLINOIS

Applied Technologies
 Engineers - Architects

GENERAL HYDRAULIC PROFILE

PROJECT NO. 3838
 DATE: JULY 2007
 DRAWING NO. 10-G-10





VILLAGE OF ANTIOCH WWTWP MATERIAL BALANCE

NO.	DESCRIPTION	FLOW RATE (MGD)			DOO (LB/DAY)			SSZ (LB/DAY)			MSW (LB/DAY)			TSS (LB/DAY)			TOTAL-P (LB/DAY)																		
		DESIGN AVERAGE	DESIGN PEAK DAY	DESIGN PLANT CAPACITY	DESIGN AVERAGE	DESIGN PEAK DAY	DESIGN PLANT CAPACITY	DESIGN AVERAGE	DESIGN PEAK DAY	DESIGN PLANT CAPACITY	DESIGN AVERAGE	DESIGN PEAK DAY	DESIGN PLANT CAPACITY	DESIGN AVERAGE	DESIGN PEAK DAY	DESIGN PLANT CAPACITY	DESIGN AVERAGE	DESIGN PEAK DAY	DESIGN PLANT CAPACITY																
1.	RAW WATER IN	1.41	2.00	2.58	5.26	9.38	10.22	553	1033	1072	183	314	381	360	384	1072	240	345	345	5	15	10	14	41	25	25	10	31	37	37	103	225	332		
2.	PLANT WASTE	0.28	0.28	0.28	0.28	0.28	0.28	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	
3.	CONDENSED WASTEWATER	1.89	2.28	2.84	5.56	9.48	10.71	2943	3128	4422	2516	3381	4245	7311	10500	10500	245	360	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	
4.	RETURN ACTIVATED SLUDGE	0.28	1.09	1.87	3.70	1.87	1.87	71359	71359	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024	23024
5.	ADDED LOGS	1.87	3.37	4.71	9.35	11.45	11.45	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71
6.	WASTE ACTIVATED SLUDGE	0.14	0.14	0.14	0.14	0.14	0.14	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
7.	SEPARATORY EFFLUENT	1.85	2.14	2.72	5.42	9.34	9.34	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
8.	THICKENED DREDGED SLUDGE / SECONDARY SS	0.14	0.14	0.14	0.14	0.14	0.14	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
9.	PLANT EFFLUENT	1.41	2.00	2.58	5.26	9.38	10.22	553	1033	1072	183	314	381	360	384	1072	240	345	345	5	15	10	14	41	25	25	10	31	37	37	103	225	332	332	
10.	PLANT EFFLUENT (TO DRY POND)	0.01	0.01	0.02	0.02	0.02	0.02	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
11.	DEWATERED DREDGED SLUDGE	0.091	0.091	0.091	0.091	0.091	0.091	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
12.	SEQUOIA CREEK (DRAINAGE)	0.00	0.01	0.01	0.01	0.01	0.01	15	31	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
13.	RECYCLED WATER	0.00	0.01	0.01	0.01	0.01	0.01	15	31	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

DESIGNED BY: G.J.T.
 DRAWN BY: J.C.S.
 CHECKED BY: F.X.T.
 APPROVED BY: J.L.S.

VERIFICATION SCALE:
 1" = 10' HORIZONTAL
 1" = 10' VERTICAL
 ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED

Applied Technologies
 Engineers - Architects

VILLAGE OF ANTIOCH
 WWTWP IMPROVEMENTS
 ANTIOCH, ILLINOIS

GENERAL
 FLOW DIAGRAM AND
 MATERIAL BALANCE

PROJECT NO.: 38.38
 DRAWING NO.: 10-G-11

DATE: JULY 2007

DMR Summary

Facility: ANTIOCH VILLAGE OF
Outfall: 0010
NPDES No: IL0020354

Phos Ave Phos Max

Date

1/31/2011	0.7	1.5
2/28/2011	0.7	1
3/31/2011	0.9	1.4
4/30/2011	0.9	1.4
5/31/2011	1	1.3
6/30/2011	1	1.4
7/31/2011	0.88	1.29
8/31/2011	0.6	1
10/31/2011	0.9	1.2
11/30/2011	0.9	1.1
12/31/2011	0.76	1.21

To see all the details that are visible on the screen, use the "Print" link next to the map.

