AMITY TOWNSHIP
BERKS COUNTY, PENNSYLVANIA

CHAPTER 94
MUNICIPAL WASTELOAD MANAGEMENT
2008 ANNUAL REPORT

Prepared by:

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AMITY TOWNSHIP
CHAPTER 94
MUNICIPAL WASTELOAD MANAGEMENT
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Amity Township
2008 Annual Chapter 94 Report
HYDRAULIC LOADING

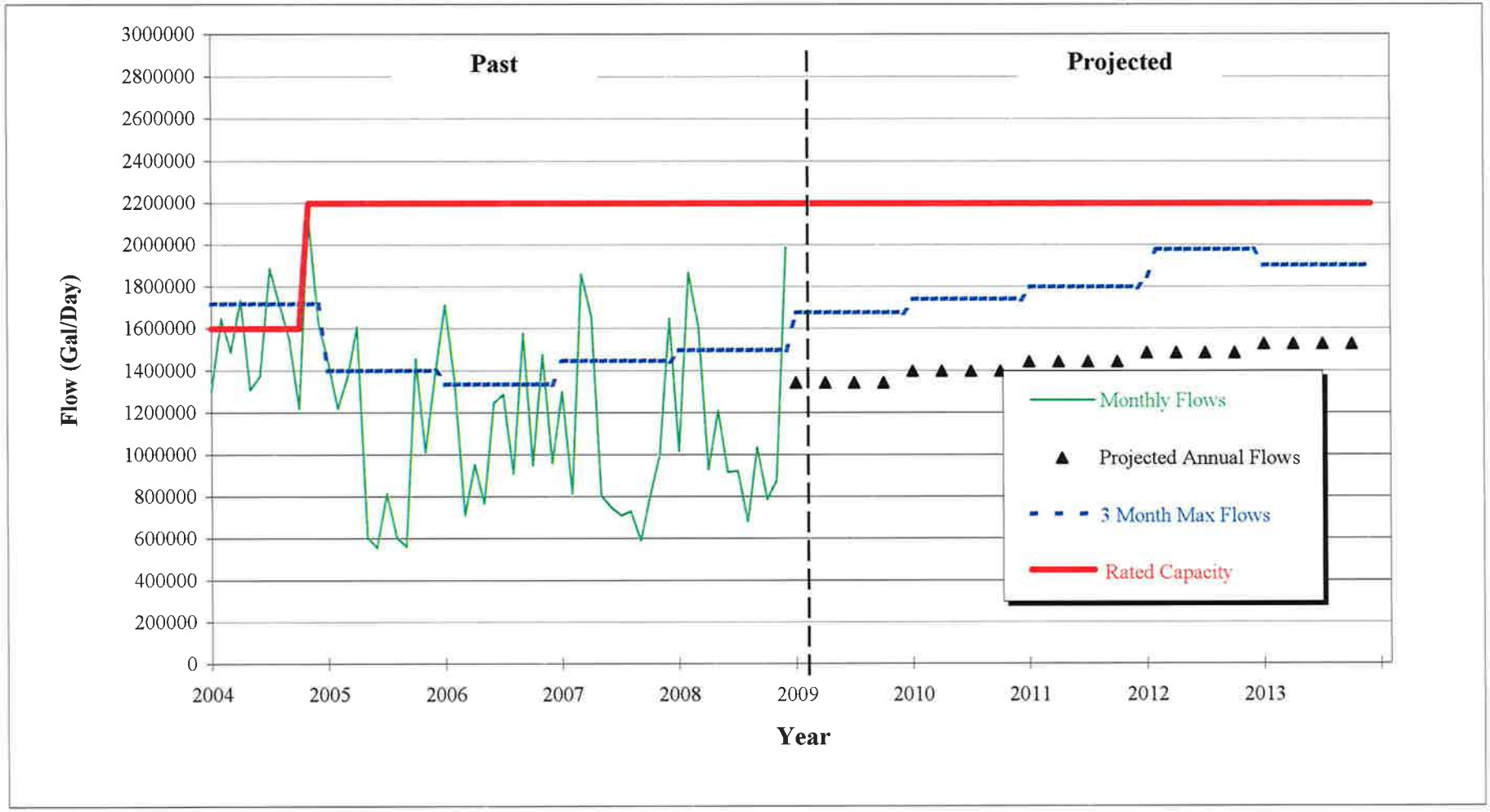


EXHIBIT 1

Amity Township
2008 Annual Chapter 94 Report
ORGANIC LOADING

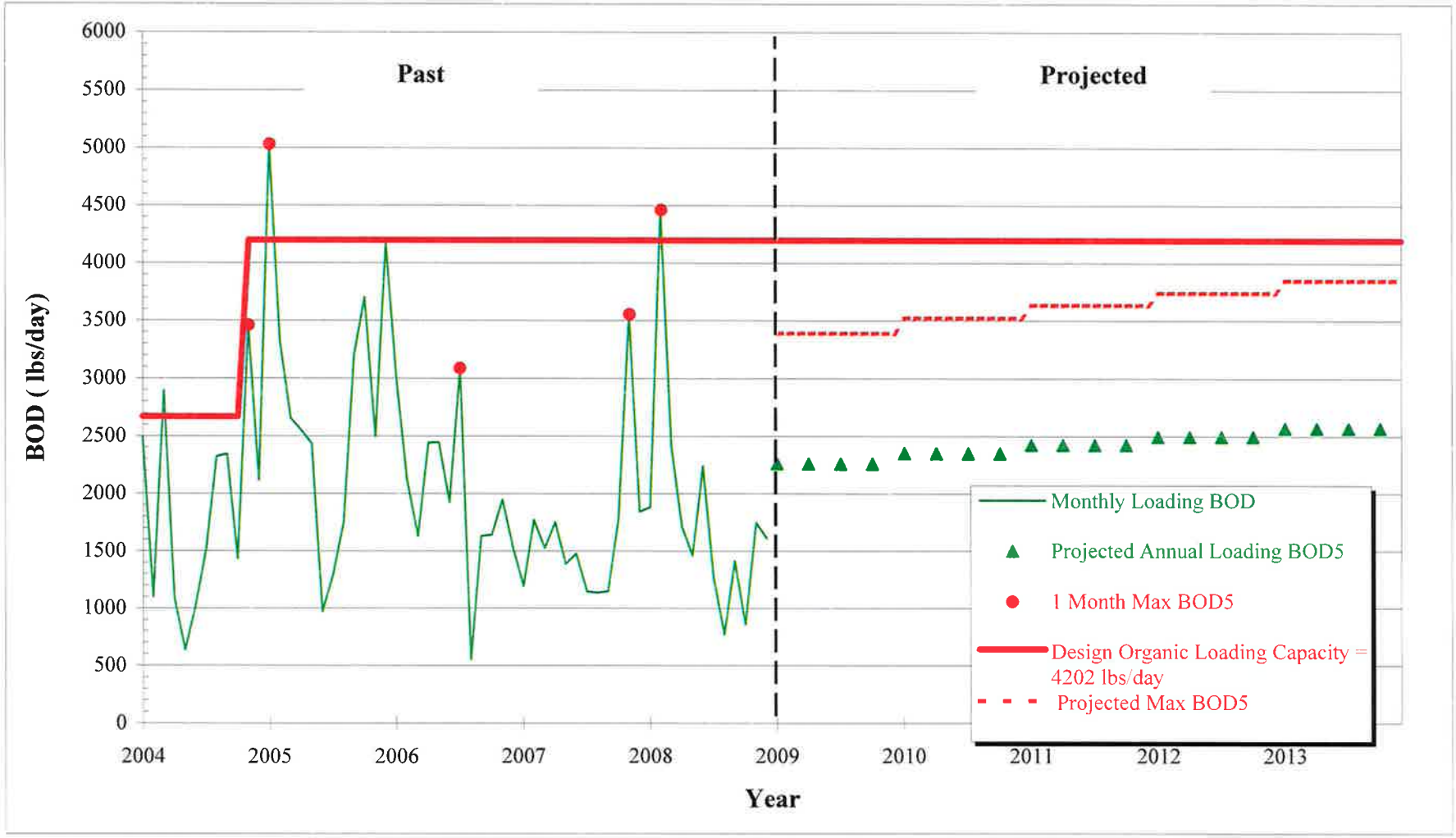


EXHIBIT 2

C. TREATMENT PLANT DESCRIPTION

The Amity wastewater treatment plant was expanded in 2003 and the expanded NPDES Permit was finalized in November 2004. The wastewater treatment plant is currently permitted to effectively treat an annual average daily flow of 2.2 MGD of wastewater flow. The current permitted organic capacity is 4,202 pounds of $CBOD_5$/day. Wastewater treatment is accomplished through the use of biological and physical processes. The basic unit processes are raw sewage, screenings removal, grit removal, biological treatment using an oxidation ditch activated sludge process with sedimentation, chlorination disinfection, sludge digestion, and sludge removal. The digested sludge may be applied into the reed drying beds, dewatered on the belt filter press, or hauled away in liquid form for further treatment and disposal. Dewatered sludge is landfilled for disposal. Disposal of the final dewatered reed bed sludge product will occur once every five to seven years.

Laboratory tests are performed routinely by the plant operators in order to control treatment processes and to determine plant operating efficiency. The results of these tests are recorded on a weekly and monthly log. One copy is forwarded to PaDEP and one copy should be forwarded and reviewed by the Consulting Engineer. The average daily flow through the treatment plant during 2008 was 1,153,167 gallons. The average monthly influent loading during 2008 was 1,818.3 lbs BOD_5/day. The average influent BOD_5 and suspended solids concentrations were 198 mg/L and 368 mg/L, respectively. The average effluent concentrations were 2.36 mg/L $CBOD_5$, 6.2 mg/L suspended solids, and 0.291 mg/L ammonia-nitrogen. The calculated percentage removals of each were 98.7% for BOD_5 and 97.5% for suspended solids.

A revised NPDES Permit was issued and became effective on November 16, 2005, for the Amity Township wastewater treatment facility. The permitted monthly average discharge limitations are as follows:

Flow	2.2 MGD
$CBOD_5$	25 mg/L
Total Suspended Solids	30 mg/L
NH_3N	12 mg/L (11/1 to 4/30)
Total Dissolved Solids	1,000 mg/L
Fecal Coliform (5/1 to 9/30)	200/100 ml
Fecal Coliform (10/1 to 4/30)	10,000/100 ml
Dissolved Oxygen	5.0 mg/L (minimum at all times)

The permit expires on November 30, 2010.

Sludge Disposal

During 2008 there were 711,600 gallons of aerobically-digested sludge applied to the reed drying beds. There was 137.2 dry tons of dewatered sludge hauled to the Pioneer Crossing Landfill in Birdsboro, Pennsylvania, for disposal.

Wastewater Treatment Plant

The mechanical equipment is inspected daily. Maintenance performed is logged. The following maintenance and improvements were made at the treatment plant during 2008:

1. All flow meters were recalibrated once per year. Copies of calibration certificates are included in the Appendix of this report.
2. All settling tanks were drained, cleaned and inspected. Repairs and painting were done as needed.
3. Brush was cut and removed from the inside and outside of the dike.
4. Plant generators were serviced.
5. All equipment bearings were lubricated as scheduled.
6. All gear box oil changes were made as scheduled.
7. The oxidation ditch rotating mechanical aerators were repaired as follows:
    a. Three aerators' gear boxes were replaced.
    b. Two aerators motors were replaced.
8. Two return activated sludge pumps were rebuilt.
9. A 60' X 80' pole barn was constructed. Presently the building houses all the trucks including the Vactor flushing truck and the televising truck. The plan is to also use the building as a maintenance garage.

D. DISCUSSION OF HYDRAULIC AND ORGANIC LOADING PROJECTIONS

The hydraulic and organic loading projections were based on population projections developed by the tributary municipalities and ARRO Consulting, Inc. Data from the 2000 U.S. Census was also used to update current population figures. The projections of Earl Township, Union Township, and

Douglass Township population growth included in their respective Chapter 94 report submissions have been taken into account. Table 4, which is included in the Appendix, shows the hydraulic and organic projections for the next five years for the entire wastewater treatment facility, which includes data from the contributing municipalities.

The hydraulic loading for the past five years was plotted. The average daily flow for each month and the annual average daily flow are shown in Table 2 for each year from January 2004 through December 2008. The average gallons per capita per day contribution for the last five years as shown in Table 4 was 109.62. This value times the projected population was used to determine the projected annual average daily flows. The highest average daily flows for three consecutive months for each of the past five years were averaged to determine the maximum three-month average daily flow for each year. The ratio of maximum three-month average daily flow to annual average daily flow was determined. For the past five years the ratio ranged from 1.09 to 1.37. The average ratio, 1.248, was used to project the maximum three-month average daily flows. The projections indicate an overload condition is not expected to occur within the next five years. Infiltration/Inflow control is still needed to maintain plant flows below the design capacity.

The organic loading graph was developed by plotting the average daily organic load for each month for each of the past five years. The average pounds of BOD_5 per capita per day for the past five years as shown in Table 4 ranged from 0.144 to 0.264, and the average is 0.1845. The projected average annual organic load was determined by multiplying the projected population for each year by the average value of 0.1845 pounds of BOD_5 per capita per day. The maximum monthly loading for each of the past years was also used to project the maximum monthly loading in a similar manner. The peak pounds of BOD_5 per capita per day for the past five years ranged from 0.277 to 0.474, and the average is 0.3555. The ratio of maximum monthly organic loading to annual average organic loading for each of the last five years was determined. The ratio ranged from 1.55 to 2.45. The organic peaking factor, average five-year ratio of 1.964, was multiplied by the projected annual average BOD_5 loading to project the maximum monthly BOD_5 loading. The projections indicate an overload condition is not expected to occur within the next five years.

Both the hydraulic and organic five-year projections include the connections projected for all contributing municipalities as noted in their Chapter 94 Report information.

E. PLANS TO REDUCE OVERLOAD CONDITIONS

Amity Township completed a wastewater treatment plant expansion project and rerating of the permitted capacity in 2004. The Township has purchased a televising truck and equipment to implement a system-wide infiltration/inflow remediation project to reduce peak flows. The Township has also initiated discussions with the neighboring townships to determine future capacity needs. The Township is discussing looking into whether a plant expansion is necessary or if control of connections will be required.

Amity Township is in the process of updating their Act 537 Sewage Facility Plan. The Task Activity Report was submitted to PaDEP and approved. Each of the tributary sewer systems was asked for future capacity needs and they all responded. The plan will include a study to look at future treatment capacity needs. When completed the plan will be submitted to PaDEP for review and approval.

F. SEWER CONNECTIONS AND EXTENSIONS

A total of 50 new connections to the Amity Sewer System were made during 2008. There were 35 single-family residential connections and 15 non-residential connections.

Developments and Sewer Extensions

Hearthstone –

Schlouch, Inc. constructed an 8" main sewer from existing Township MH 65 for a length about 700 feet and three manholes. There were two laterals constructed. The sewer is going to remain private. It serves 2 large assisted living type buildings. 19 EDUs were allocated for this 78-room facility.

Villa at Morlattan –

The connection to the township sewer system was made by inserting a wye in the line just outside MH WW1 on Rt. 422 East. A 6" PVC lateral with two cleanouts was constructed to connect to one assisted living building. The length of the lateral is about 150 feet. There were 24 new EDUs allocated for this facility.

The design of a proposed "Monocacy Creek Interceptor" to serve 74 EDUs that were part of the Act

537 Plan selected alternative area has been completed. Construction is expected to begin in 2009 when all rights-of-way are finalized.

G. SEWER SYSTEM MONITORING, MAINTENANCE, REPAIR, AND REHABILITATION

Sewer System

The Amity Township sewage collection system consists of approximately 75 miles of gravity sewer line, ranging in size from 8 inches to 30 inches. The original system was built in the mid-1970s to serve a development of several hundred lots known as Amity Gardens.

The portion of the sewage collection system serving Amity Gardens consists of approximately 12 miles of 8- and 10-inch sewer line, predominately constructed of vitrified clay pipe in five-foot sections. This older portion of the sewage system is clay pipe and experiences some infiltration/inflow problems. Internal sewer line videotaping projects have revealed defective pipes, cracked pipes, separated joints, deflected joints, and protruding lateral connections. Specification for sewer rehabilitation work has been prepared and as each Phase of the system is televised that Phase is repaired externally and internally.

The sewage collection system is in good, serviceable condition overall and functions in a satisfactory manner. The Township sewage treatment plant staff, which also operate the collection/conveyance system, are experienced and able to respond in a timely manner should a problem arise. Township staff perform regular maintenance to manholes, including concrete patching and tar coating.

Since the expansion of the sewage treatment plant in 1991, there have been major expansions of the collection system to serve several large subdivisions that have reserved capacity in advance. The 2004 report included a copy of the Amity Township sewer index map, which showed the existing sewerage system and developments. The overall plan is being updated currently and a new copy will be submitted to DEP when completed.

Amity Township had ARRO Consulting build a computerized hydraulic model of the sewer system to evaluate the capacities of sewer lines and determine the effects of proposed development and infiltration/inflow repair work. The hydraulic model can be used to identify areas of the sewer system that are at or near capacity. These areas will be the first to be addressed under the

Infiltration/Inflow program. The hydraulic model will continue to be calibrated and refined and will be a useful tool for the sewer system.

Repair and Replacement

1. There were no main sewer or lateral stoppages cleared in 2008.
2. Main sewer flushing was limited to those mains flushed and cleaned prior to televising the Phase II area.

The Township owns equipment for sewer maintenance, which includes a flushing, vactor truck, and Envirosight Camera equipment. The sewer televising work is ongoing and continues to identify areas that will be scheduled for rehabilitation work.

The 2008 Sewer Rehabilitation Program included vitrified clay pipe sewers located in Aspen Court, Glenwood Drive, Griffith Drive South, Lake Drive, Magnolia Court, Russel Avenue, Willowwood Court, the right-of-way perpendicular to Lake Drive and the right-of-way parallel to Russel Avenue. 35 manhole sections were found to be in poor condition. The following repairs were made by two contractors as follows:

Wexcon

1. Four excavations and pipe replacements were made.
2. One wye connection was replaced.
3. 1275 feet of 8" VCP was replaced using 10" PVC sewer pipe. The replacement started from the end of the concrete bridge on Lake Drive between MH 63 and MH 64 and from MH 64 to MH 77 starting on Lake Drive and continuing on the right-of-way perpendicular to Lake Drive.

Utility Services Group

1. 1700 feet of 8" VCP sewers were cleaned and televised.
2. 340 joints were air-tested and 40 joints were grouted.
3. 5 laterals were televised and 5 laterals were grouted.
4. Sectional liners were installed in 2, 3 and 5-foot lengths restoring broken pipe structural integrity at 25 locations.

Sewage Pumping Stations

There are eight pumping stations in the Amity Township sewerage system. All of the stations are in good physical condition and are operating satisfactorily.

1. All eight pumping stations had their generators serviced including oil changes by Township maintenance people.
2. At each station pumps are checked tested and lubricated by Township personnel.
3. Pumping Station No. 2 is being upgraded;
    a. The old influent line was plugged and abandoned. A new influent line directs flow to the concrete wetwell.
    b. An older pumping station wetwell was demolished and the new wetwell is being equipped with a second high capacity pump. The capacity is unchanged.
    c. A manhole with screening equipment was built prior to the wetwell so screenings can be removed before pumping.
4. Pumping Station No. 4 had one pump rebuilt.

Pumping Station Annual Flows

Pump Station	Station Capacity (mgd)	2008 Average Flow (mgd)	2008 Max. Monthly Flow (mgd)	Max. Monthly % of Capacity
No. 1 – Amityville	0.504	0.035	0.046	9.13
No. 2 – Amity Gardens	2.160	0.467	0.498	23.10
No. 3 – Route 422 South	2.020	0.401	0.490	24.26
No. 4 – Monocacy Station	1.613	0.234	0.305	18.91
No. 5 – Manatawnny Creek	0.979	0.036	0.040	4.09
No. 6 – Cider Mill	0.461	0.024	0.032	6.94
No. 7 – Rosecliff	0.403	0.030	0.042	10.42
No. 8 – Sunset Knoll	0.374	0.002	0.044	11.76

1) Pump data taken from annual pump station run time tables provided by system superintendent. Pumping rates have not been field verified.
2) Pump Station No. 5 discharges into the same force main as Pump Station No. 1.
3) The lower capacity values result for Pump Stations No. 1 and No. 5 when both stations are operating simultaneously.
4) The capacity of Pump Station No. 3 was increased by installing a new forcemain.

Operation and maintenance of the sewer systems is carried out by municipal public works personnel. Amity treatment plant personnel do inspect the contributing municipalities meter stations on a periodic basis. Treatment plant personnel also assist in maintaining the Amity Township pump stations. When a new property connection is made, a plumbing inspector for the respective municipality inspects the new installation, and construction observation and testing of all new sewer mains is performed.

H. CONDITION OF THE SEWER SYSTEM

The Amity Township sewer system has some infiltration/inflow problems in the older clay pipe areas. The Township is concentrating its efforts to identifying and rehabilitating those areas. The township purchased cleaning and televising equipment in 2006 and began an Inflow Identification Program in early 2007. A sewer rehabilitation program was implemented in 2008.

During 2008 the Township sewer inspection equipment was used to clean and televise sewers in the Phase II area

During 2008 Phase II of the sewer rehabilitation continued. The Township prepared DVD video recordings, photographs and individual manhole section reports. Using the recordings and reports ARRO prepared specifications for bidding repairs of the Phase II area. The rehabilitation work is scheduled for Spring 2009 and includes the following:

1. Root treatment of eleven main sewer manhole sections and ten laterals.
2. Cleaning of 2,000 feet of 8" main sewers and installation of fourteen 2', 3' and 5' sectional liners.
3. Air testing and grouting of eleven joints.
4. Cleaning, televising and grouting 34 leaking laterals.
5. There are two manhole sections that are recommended to be replaced.

The Phase II area encompasses Pennsylvania Avenue, Monocacy Road, Monocacy Creek Road, Hillview Road, Galahad Lane, Main Street Alley, Main Street, Limekiln Road, Route 422 West, Route 422 East, Thalia Lane, Hilty's Lane, and Pumping Station No. 4 Driveway.

Information related to the condition of each municipality's respective collection systems and pump stations is found in their respective reports in the Appendix.

I. INDUSTRIAL WASTE REPORT

There are no significant industrial dischargers in the Amity sewer system or any of the tributary systems. The commercial and light industrial dischargers are monitored, and communications between them and the Township are ongoing. Two industries in Amity Township currently have industrial waste discharge permits and monitoring requirements, but no problems are experienced.

Amity Township stopped accepting trucked-in leachate from landfills in 2005 due to problems with effluent total dissolved solids concentrations from the leachate treatment.

J. SIGNATURES

Report Prepared By	Permittee
Michael D. Sassaman	Amity Township
Name	Name
Operations Consultant	Charles E. Lyon
Title	Responsible Official
ARRO Consulting, Inc.	Township Manager
Company	Title
50 Berkshire Court, Suite 209 Wyomissing, PA 19610	2004 Weavertown Road Douglassville, PA 19518
Address	Address
Michael D. Sassaman 3/10/09	3/12/09
Signature of Preparer Date	Signature of Permittee Date

Appendix

Amity Township Sub-Regional Wastewater Treatment Facility
2008 Chapter 94 Report
Population Projections

Year	Amity Twp. EDUs	Amity Twp. Pop Equv	Union Twp EDUs	Union Twp Pop Equv	Douglas Twp. EDUs	Douglas Twp. Pop Equv	Earl Twp. EDUs	Earl Twp. Pop Equv	Total Population
2001	3,350	8,543	167	426	120	306	0	0	9,274
2002	3,450	8,798	169	431	140	357	0	0	9,585
2003	3,548	9,047	169	431	146	372	0	0	9,851
2004	3,628	9,251	169	431	147	375	50	128	10,185
2005	3,754	9,573	169	431	174	444	68	173	10,621
2006	3,900	9,945	167	426	197	502	116	296	11,169
2007	3,979	10,146	165	421	217	553	122	311	11,432
2008	4,107	10,473	171	436	250	638	131	334	11,880
2009	4,187	10,677	186	474	290	740	140	357	12,248
2010	4,267	10,881	226	576	330	842	170	434	12,732
2011	4,347	11,085	266	678	370	944	171	436	13,143
2012	4,427	11,289	306	780	400	1,020	172	439	13,528
2013	4,507	11,493	346	882	430	1,097	173	441	13,913

Population equivalent calculated at 2.55 persons per EDU per 2000 Berks County census data.

Table 1
Amity Township
2008 PLANT PERFORMANCE SUMMARY

Month	Ave. Flow (gal/day)	BOD5 Daily Load (lbs/day)	BOD5 Influent (mg/l)	CBOD5 Effluent (mg/l)	CBOD5 Percent Removal	Suspended Solids Influent (mg/l)	Suspended Solids Effluent (mg/l)	Suspended Solids Percent Removal	Ammonia-Nitrogen Effluent (mg/l)
January	1,017,000	1,880.8	241	2.22	99.1	755	6.0	99.2	0.622
February	1,867,000	4,463.0	195	2.25	98.8	946	7.5	99.2	0.675
March	1,605,000	2,411.6	172	2.00	98.8	911	7.2	99.2	0.178
April	930,000	1,711.6	249	2.88	98.8	297	8.5	97.1	0.100
May	1,209,000	1,461.5	183	2.00	98.9	214	8.8	95.9	0.113
June	918,000	2,236.4	299	2.75	99.1	351	7.0	98.0	0.213
July	922,000	1,255.4	178	2.90	98.4	150	4.5	97.0	0.140
August	680,000	770.7	149	2.38	98.4	165	5.9	96.4	0.113
September	1,036,000	1,413.0	229	2.78	98.8	193	6.2	96.8	0.100
October	788,000	858.6	143	2.00	98.6	164	5.3	96.8	0.144
November	878,000	1,745.5	229	2.13	99.1	175	4.0	97.7	0.100
December	1,988,000	1,612.3	111	2.10	98.1	101	3.3	96.7	1.000
Annual Average	**1,153,167**	**1,818.3**	**198**	**2.36**	**98.7**	**368**	**6.2**	**97.5**	**0.291**
Max. 3 Month Average	**1,496,333**								
Max. Month		**4,463.0**							
Rated Monthly Capacity	**2,200,000**	**4,202**							

Table 2
Amity Township
HYDRAULIC LOADING DATA (GPD)
2004 - 2008

Month	2004	2005	2006	2007	2008
January	1,305,000	1,450,000	1,713,000	1,300,000	1,017,000
February	1,647,000	1,220,000	1,352,000	815,000	1,867,000
March	1,489,000	1,371,000	713,000	1,861,000	1,605,000
April	1,736,000	1,608,000	952,000	1,661,000	930,000
May	1,310,000	607,000	767,000	806,000	1,209,000
June	1,375,000	556,000	1,247,000	748,000	918,000
July	1,888,000	815,000	1,288,000	711,000	922,000
August	1,720,000	606,000	909,000	730,000	680,000
September	1,550,000	560,000	1,577,000	592,000	1,036,000
October	1,220,000	1,457,000	950,000	812,000	788,000
November	2,143,000	1,013,000	1,477,000	1,002,000	878,000
December	1,632,000	1,382,000	961,000	1,648,000	1,988,000
Average Annual Flow (Gallons)	**1,584,583**	**1,053,750**	**1,158,833**	**1,057,167**	**1,153,167**
Max. 3 Month Ave. Flow (Gallons)	**1,719,333**	**1,399,667**	**1,334,667**	**1,445,667**	**1,496,333**
PEAKING FACTOR					
Max. 3 Month Ave. Flow / Ave. Annual Flow	**1.09**	**1.33**	**1.15**	**1.37**	**1.30**

Flow Peaking Factor: Average 5 Year Ratio	**1.248**

Table 3
Amity Township
ORGANIC LOADING DATA (lbs BOD5/day)
2004 - 2008

Month	2004	2005	2006	2007	2008
January	2,488	5,035	3,000	1,193	1,881
February	1,097	3,328	2,118	1,771	4,463
March	2,893	2,654	1,629	1,524	2,412
April	1,084	2,549	2,443	1,750	1,712
May	637	2,432	2,445	1,387	1,462
June	1,017	970	1,926	1,477	2,236
July	1,517	1,296	3,089	1,146	1,255
August	2,324	1,748	552	1,135	771
September	2,344	3,201	1,630	1,148	1,413
October	1,435	3,702	1,641	1,778	859
November	3,463	2,496	1,946	3,556	1,746
December	2,117	4,179	1,532	1,841	1,612
Average Annual BOD (lbs/day)	**1,868**	**2,799**	**1,996**	**1,642**	**1,818**
Max. 1 Month BOD5 Loading (lbs/day)	**3,463**	**5,035**	**3,089**	**3,556**	**4,463**
RATIO: Max. 1 Month BOD5 / Ave. Annual BOD5	**1.85**	**1.80**	**1.55**	**2.17**	**2.45**
Organic Peaking Factor: Average 5 Year Ratio	**1.964**				

Table 4
Amity Township
PAST AND PROJECTED TREATMENT PLANT LOADINGS

Year	Connected Population	Average Total Flow (gal.)	Max. 3 Month Ave. Flow (gal.)	Per Capita Flow (gpcd)	Average Total BOD5 (lbs/day)	Max. Month BOD5 (lbs/d)	Per Capita BOD5 (lbs/day)	Max. Per Capita BOD5 (lbs/day)
2004	10,185	1,584,583	1,719,333	155.6	1,868	3,463	0.183	0.340
2005	10,621	1,053,750	1,399,667	99.2	2,799	5,035	0.264	0.474
2006	11,169	1,158,833	1,334,667	103.8	1,996	3,089	0.179	0.277
2007	11,432	1,057,167	1,445,667	92.5	1,642	3,556	0.144	0.311
2008	11,880	1,153,167	1,496,333	97.1	1,818	4,463	0.153	0.376
Average	**11,057**	**1,201,500**		**109.62**	**2,025**		**0.1845**	**0.3555**
Projected Loadings								
2009	12,248	1,342,603	1,675,568	109.62	2,259	3,389	0.1845	0.3555
2010	12,732	1,395,658	1,741,781	109.62	2,349	3,523	0.1845	0.3555
2011	13,143	1,440,711	1,798,007	109.62	2,424	3,637	0.1845	0.3555
2012	13,528	1,482,914	1,850,677	109.62	2,495	3,743	0.1845	0.3555
2013	13,913	1,525,117	1,903,346	109.62	2,566	3,850	0.1845	0.3555

Proof of Flow Meter Calibration

LRM, Inc

Instrumentation & Disinfection Systems

CALIBRATION CERTIFICATE

CALIBRATION DATE: January 4, 2008

OWNER: Amity Township Subregional Wastewater Treatment
120 Old Philadelphia Pike
Douglasville, PA 19518

LOOP DESIGNATION: Effluent Flow Right Upper

MANUFACTURER/ MODEL NO./SERIAL NO.:
Endress & Hauser / Prosonic 861 /

HEAD PRODUCER: 43 ¼" weir (3.604') $7.756 \times H^{1.5}$

SETTINGS:

V	H		
0	1	1.612'	Zero
0	6	5	20 mA span
1	5,6,7	1000	Tortalizer pulse
2	0	3	manual curve

CHANGE SETTINGS: No Change

LOOP INSTRUMENTATION: Chlor. system control, Plant Computer

COMMENTS:
Flow head 0f 2 ¼" equal to .5 MGD
The flow meter operates at the factory stated accuracy of 1% of span.

TECHNICIAN:
Ross Crawford

RECEIVED
MAR 05 2008
ARRO

215 N. Main Street · Souderton, PA 18964 · 215-721-4840 · Fax 215-721-4923

LRM, Inc

Instrumentation & Disinfection Systems

CALIBRATION CERTIFICATE

CALIBRATION DATE: January 4, 2008

OWNER: Amity Township Subregional Wastewater Treatment
120 Old Philadelphia Pike
Douglasville, PA 19518

LOOP DESIGNATION: Influent

MANUFACTURER/ MODEL NO./SERIAL NO.:
Endress & Hauser / Promag 53 /64035F16000

HEAD PRODUCER: EMF, Magnetic Flow Meter

SETTINGS: 20 mA = 10 MGD

CHANGE SETTINGS: No Change

LOOP INSTRUMENTATION: Plant Computer

COMMENTS:
The flow meter operates at the factory stated accuracy of .5% of rate.
Totalizer check at 1.5 MGD rate 1100 gal/62 seconds
No errors in log. "System OK"

TECHNICIAN:
Ross Crawford

215 N. Main Street · Souderton, PA 18964 · 215-721-4840 · Fax 215-721-4923

LRM, Inc

Instrumentation & Disinfection Systems

CALIBRATION CERTIFICATE

CALIBRATION DATE: January 4, 2008

OWNER: Amity Township Subregional Wastewater Treatment
120 Old Philadelphia Pike
Douglasville, PA 19518

LOOP DESIGNATION: Lagoon Flow

MANUFACTURER/ MODEL NO./SERIAL NO.:
Endress & Hauser / FMU 861

FOUND SETTINGS:	V	H	
	0	1	4.62' zero
	0	6	20 mA = 1000 gpm
	1	5, 6, 7	Counting Factor

COMMENTS:
No Flow to Lagoon
Gallons = 194469 X 1000

TECHNICIAN:
Ross Crawford

215 N. Main Street · Souderton, PA 18964 · 215-721-4840 · Fax 215-721-4923

LRM, Inc

Instrumentation & Disinfection Systems

CALIBRATION CERTIFICATE

CALIBRATION DATE: January 10, 2006

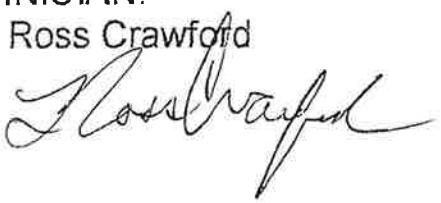
OWNER: Amity Township Subregional Wastewater Treatment
120 Old Philadelphia Pike
Douglasville, PA 19518

LOOP DESIGNATION: Chlorine Control

MANUFACTURER/ MODEL NO./SERIAL NO.:
Hydro / Omni Valve

COMMENTS: Check valve position linearization
Return to flow paced operation
Dosage = 1

TECHNICIAN:
Ross Crawford



215 N. Main Street · Souderton, PA 18964 · 215-721-4840 · Fax 215-721-4923

LRM, Inc

Instrumentation & Disinfection Systems

CALIBRATION CERTIFICATE

CALIBRATION DATE: January 4, 2008

OWNER: Amity Township Subregional Wastewater Treatment
120 Old Philadelphia Pike
Douglasville, PA 19518

LOOP DESIGNATION: Effluent Flow Left (Lower)

MANUFACTURER/ MODEL NO./SERIAL NO.:
Endress & Hauser / Prosonic 861 /

HEAD PRODUCER: 43 ¼" weir (3.604') $7.756 \times H^{1.5}$

SETTINGS:

V	H		
0	1	1.598'	Zero
0	6	5	20 mA span
1	5,6,7	1000	Tortalizer pulse
2	0	3	manual curve
3	1	41	Sig
3	2	31	Sig/noise

CHANGE SETTINGS: No Change

LOOP INSTRUMENTATION: Chlor. system control, Plant Computer

COMMENTS:
Flow head of 2 ¼" equal to .5 MGD
Flow meter operates at the factory stated accuracy of 1% of span error.

TECHNICIAN:
Ross Crawford

Ross Crawford

215 N. Main Street · Souderton, PA 18964 · 215-721-4840 · Fax 215-721-4923

LRM, Inc

Instrumentation & Disinfection Systems

CALIBRATION CERTIFICATE

CALIBRATION DATE: January 4, 2008

OWNER: Amity Township Subregional Wastewater Treatment
120 Old Philadelphia Pike
Douglasville, PA 19518

LOOP DESIGNATION: Lagoon Level

MANUFACTURER/ MODEL NO./SERIAL NO.:
Endress & Hauser / FMU 861

FOUND SETTINGS:	V	H		
	0	1	9.9' (119")	zero
	0	2	7.25' (87")	Span (measured level)

COMMENTS:
The instrument correctly measured 65" of water in the wet well. Note that there are 10" of water in the lagoon below the wet well bottom that the instrument can not see.

TECHNICIAN:
Ross Crawford

215 N. Main Street · Souderton, PA 18964 · 215-721-4840 · Fax 215-721-4923

Chapter 94 Report Information From Union Township

SDE

Systems Design Engineering, Inc.
Engineers • Surveyors • Planners • Construction Managers

February 25, 2009

Michael D. Sassaman
ARRO Consulting,Inc.
50 Berkshire Court
Suite 209
Wyomissing, PA 19610

Re: Chapter 94 Report for 2008
Union Township Municipal Authority
Connections served by Amity Township

Dear Mr. Sassaman:

On behalf of the Union Township Municipal Authority, enclosed please find two (2) copies of the annual Chapter 94 Report for 2008 along with two (2) copies of the Tributary Sewer System Questionnaire Form as requested in your letter dated January 8, 2009. The Union Township Municipal Authority (UTMA) approved the Annual Chapter 94 Report for 2008 dated February, 2009 at their February 24, 2009 meeting.

Should you have any questions or need additional information, please do not hesitate to contact us.

Respectfully submitted,

SYSTEMS DESIGN ENGINEERING, INC.

Keith R. Showalter

Keith R. Showalter, P.E.

Enclosures

cc: Union Township Municipal Authority w/Enclosure
Union Township Board of Supervisors w/Enclosure
Amity Township w/ Enclosure
Attn: Charles E. Lyon, Township Manager
2004 Weavertown Road
Douglassville, PA 19518
Mark H. Koch, Esq., UTMA Solicitor
File 08-0731-0201

Projects\utma\09-0731-0201\chapter94-amity\letterARRO.2.25.09

SANITARY SEWER COLLECTION SYSTEM

D.E.P. RULES AND REGULATIONS - CHAPTER 94
UNION TOWNSHIP MUNICIPAL AUTHORITY'S
2008 ANNUAL REPORT TO
AMITY TOWNSHIP

FEBRUARY, 2009

PREPARED FOR

UNION TOWNSHIP MUNICIPAL AUTHORITY
177 CENTER ROAD
DOUGLASSVILLE, PA 19518

PREPARED BY

SYSTEMS DESIGN ENGINEERING, INC.
1032 JAMES DRIVE
LEESPORT, PA 19533

09-0731-0201

STATEMENT OF ACCEPTANCE

In accordance with D.E.P. Rules and Regulations, the attached report was approved to be submitted to Amity Township for inclusion within their Chapter 94 Report to be submitted to D.E.P.

Mark Matthews, Chairman
Union Township Municipal Authority

2/24/09
Date

UNION TOWNSHIP MUNICIPAL AUTHORITY
MUNICIPAL WASTELOAD MANAGEMENT REPORT
2008 CHAPTER 94 ANNUAL REPORT

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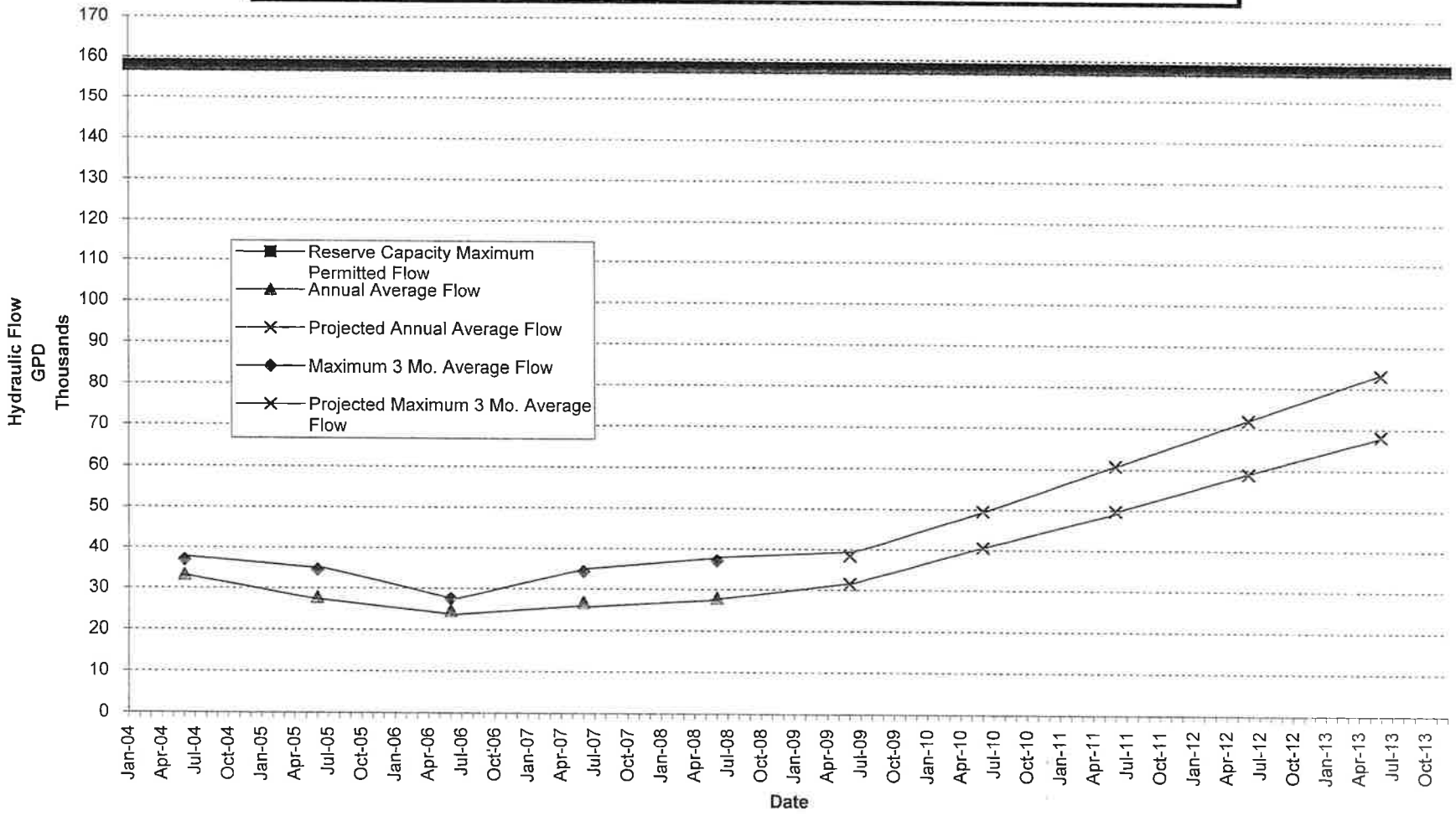
2008 CHAPTER 94 ANNUAL REPORT

LIST OF FIGURES AND TABLES

FIGURES

TABLES

Union Township Municipal Authority to Amity
Figure 1 - Hydraulic Loading Graph



UNION TOWNSHIP MUNICIPAL AUTHORITY
MUNICIPAL WASTELOAD MANAGEMENT REPORT
2008 CHAPTER 94 ANNUAL REPORT

INTRODUCTION

The Union Township Municipal Authority operates sanitary sewer collection and conveyance lines in Union Township. The system connects and discharges to the Amity Township Wastewater Treatment Plant. The Union Township sewer system was put into service in August 1979. Currently, there are 171 EDU's and 155 connections on the system. There were six (6) new connections made during 2008.

HYDRAULIC LOADING TABLE AND GRAPH

Section 94.12(a)(1)

A hydraulic loading table for 2004 to 2008 is provided, see Tables 1 and 2:

Hydraulic loading projection factors and projections are discussed in Section 94.12(a)(3), see Tables 3 and 4.

A hydraulic loading graph (Figure 1) is attached hereto showing the following:

(i) Hydraulic loading from Union Township to the plant plotted from average daily flows for each quarter of the past five years (2004-2008): See Figure 1.*

(ii) A projection of the anticipated hydraulic loading to the plant for each of the next five years (2009 – 2013): See Figure 1.

(iii) A projection of the peak loading to the plant for each of the next five years: See Figure 1.

In May of 1999, Authority Personnel removed the old inline component for the original Magmeter, replaced this component with a short section of pipe and had the flow meter recalibrated on May 27th, 1999. Since that time there has been a significant decrease in the recorded flows. Due to a significant rainfall event in June, 2006, there was flood damage to the flow meter and it was replaced with a new Polysonics Transit Time flow meter.

* Although monthly figures have been used to calculate average daily flows, the quarterly average daily flows have been calculated and utilized for Flow Projection data in Tables 2 and 3 in order to remain consistent with past reports.

TABLE 1

UNION TOWNSHIP MUNICIPAL AUTHORITY
2008 CHAPTER 94 ANNUAL REPORT
AVERAGE DAILY FLOWS FROM PUMP STATION NO. 3

MONTH	DAYS IN REPORTING PERIOD	TOTAL DAILY FLOWS (GPD)	AVG. DAILY FLOWS (GPD)	MAX. 3-MONTH AVERAGE FLOW (GPD)	RAINFALL (INCHES)
Year 2008 - 171 EDU's					
January	31	1,195,300	**38,722**		0.86
February	29	912,160	**28,476**	**37,053**	5.22
March	31	978,900	**43,961**		4.13
April	30	1,020,600	23,333		2.53
May	31	1,076,600	26,681		3.87
June	30	774,300	26,930		2.27
July	31	403,200	26,042		5.30
August	40*	665,000	17,330		1.15
September	20**	438,900	32,300		6.28
October	31	621,700	20,042		1.75
November	30	138,900	25,300		2.4
December	31	829,900	32,129		5.27
				TOTAL	41.03
Average Daily Flow (GPD)			**27,799**		

* The flow recorded for August, 2008 is from 8/1/08 to 9/10/08 since no reading was taken at the end of August. There was an electrical service problem with the meter during this period. Average is based on 40 days.

** The flow recorded for September, 2008 is from 9/10/08 to 9/30/08. Average is based on 20 days.

TABLE 1 (cont.)

UNION TOWNSHIP MUNICIPAL AUTHORITY
2008 CHAPTER 94 ANNUAL REPORT
AVERAGE DAILY FLOWS FROM PUMP STATION NO. 3

MONTH	DAYS IN REPORTING PERIOD	TOTAL DAILY FLOWS (GPD)	AVG. DAILY FLOWS (GPD)	MAX. 3-MONTH AVERAGE FLOW (GPD)	RAINFALL (INCHES)
Year 2007 - 165 EDU's					
January	31	1,195,300	**38,558**		3.62
February	28	912,160	**32,575**	**34,237**	1.82
March	31	978,900	**31,577**		4.28
April	30	1,020,600	34,020		7.99
May	31	1,076,600	34,729		2.17
June	40*	774,300	19,358		4.88
July	21**	403,200	19,200		0.91
August	31	665,000	21,452		4.42
September	30	438,900	14,630		0.49
October	31	621,700	20,054		5.73
November	10***	138,900	13,890		1.79
December	26****	829,900	31,919		3.96
				TOTAL	42.06
Average Daily Flow (GPD)			**26,635**		

* The flow recorded for June, 2007 is from 6/1/07 to 7/10/07 since no reading was taken at the end of June. Average is based on 40 days.
** The flow recorded for July, 2007 is from 7/10/07 to 7/31/07. Average is based on 21 days.
*** There was a problem found with the flow meter on 11/10/07. The flow meter was out of Service from 11/10/07 to 12/5/07. The Average for November is based on 10 days.
**** The flow meter was repaired and placed back in operation on 12/5/07. The Average for December is based on 26 days from 12/5/07 to 12/31/07.

TABLE 1 (cont.)

UNION TOWNSHIP MUNICIPAL AUTHORITY
2008 CHAPTER 94 ANNUAL REPORT
AVERAGE DAILY FLOWS FROM PUMP STATION NO. 3

MONTH	DAYS IN REPORTING PERIOD	TOTAL DAILY FLOWS (GPD)	AVG. DAILY FLOWS (GPD)	MAXIMUM 3-MONTH AVERAGE FLOW (GPD)
Year 2006 - 164 EDU's				
January	31	774,600	24,987	
February	28	851,400	30,407	
March	31	705,600	22,761	
April	30	625,300	20,843	
May	31	757,500	24,435	
June	20*	353,100	17,655**	
July	31*	--	--	
August	31*	--	--	
September	30	818,300	**27,277**	
October	31	687,500	**22,177**	**27,516**
November	30	992,500	**33,093**	
December	31	643,800	20,768	
Average Daily Flow (GPD)			**24,607**	
Year 2005 - 164 EDU's				
January	31	1,259,685	**40,635**	
February	28	947,660	**33,845**	**34,538**
March	31	903,185	**29,135**	
April	30***	1,214,280	40,476	
May	31	747,534	24,114	
June	30	642,990	21,433	
July	31	732,809	23,639	
August	31	611,413	19,723	
September	30	510,810	17,027	
October	31	1,015,188	32,748	
November	30	774,510	25,817	
December	31	754,695	24,345	
Average Daily Flow (GPD)			**27,745**	

* The flow meter was damaged in late June, 2006 due a storm and flood event. The flow meter was replaced with a new Polysonics DCT6088 Transit Time Flowmeter in August, 2006. The new flow meter was adjusted and calibrated by a factory trained technician, and it was placed into full operation in September, 2006.

** The flow recorded for June, 2006 is from 6/1/06 to 6/20/06. Average is based on 20 days.

*** Due to malfunctioning meter, meter was calibrated and reset to zero on 4/18/05

TABLE 1 (cont.)

UNION TOWNSHIP MUNICIPAL AUTHORITY
2008 CHAPTER 94 ANNUAL REPORT
AVERAGE DAILY FLOWS FROM PUMP STATION NO. 3

MONTH	DAYS IN REPORTING PERIOD	TOTAL DAILY FLOWS (GPD)	AVG. DAILY FLOWS (GPD)	MAXIMUM 3-MONTH AVERAGE FLOW (GPD)
Year 2004 - 164 EDU's				
January	31	916,112	29,552	
February	29	1,002,675	34,575	
March	31	885,670	28,570	
April	30	1,062,150	35,405	
May	31	865,675	27,925	
June	30	825,060	27,502	
July	31	1,337,805	**43,155**	
August	31	987,722	**31,862**	**36,951**
September	30	1,075,110	**35,837**	
October	31	968,130	31,230	
November	30	970,710	32,357	
December	31	1,265,637	40,827	
Average Daily Flow (GPD)			**33,233**	

TABLE 2

HYDRAULIC LOADING
UNION TOWNSHIP MUNICIPAL AUTHORITY
2008 CHAPTER 94 ANNUAL REPORT
QUARTERLY AVERAGE FLOWS AND ANNUAL AVERAGES
2004 TO 2008 (GPD)

Quarter/Year	2004	2005	2006	2007	2008
First	30,899	34,538	26,052	34,293	37,053
Second	30,277	28,674	21,431	29,428	25,648
Third	36,951	20,130	27,277	18,486	25,224
Fourth	34,805	27,637	25,346	23,739	25,824
Annual Avg. (GPD)	33,233	27,745	24,607	26,635	27,799

ORGANIC LOADING TABLE AND GRAPH

Section 94.12 (a)(2)

No discussion regarding organic loading will be provided since Union Township's sanitary sewer system consists of a collection and conveyance system to the Amity Wastewater Treatment Plant. The Chapter 94 Report for Amity should address the organic loading and projected organic loading for the Wastewater Treatment Plant.

HYDRAULIC AND ORGANIC PROJECTIONS

Section 94.12(a)(3)

The following hydraulic loading projection factors and projections have been calculated as stated in PA DEP's Chapter 94 Annual Report Requirements and Checklist as quoted below:

"Flow Projection Factor – Divide the maximum 3-month average flow by the annual average flow for each year of the past five years. Then do an average of these five values, or take the average that is best representative of flow conditions. For example, if a major infiltration/inflow reduction project was completed two years ago, average only the past two years' values. Now multiply this result (flow projection factor) times each of the five year projected annual average flows to determine the projected maximum 3-month average flows.

All of the data, including monthly flows for the past five years, yearly averages, 3-month maximum flows, projection factors and projected flows should be tabulated so that we can check your calculations.

Graphs should show monthly data points for the past five years. Hydraulic graphs should include 3-month maximum flows, both past and projected. Put your annual average points in the middle of the spaces between year lines for ease of interpretation."

See Tables 3 and 4 for hydraulic projection factors and hydraulic projections for 2009 to 2013. Please see Section 94.12(a)(6) for discussion of future sewer extensions and proposed projects. Please note organic loading projections are not discussed as stated in Section 94.12(a)(2). Provided in Table 5 are the number of connections in the past five (5) years and total number of connections and EDU's within the Authority's system.

TABLE 3

UNION TOWNSHIP MUNICIPAL AUTHORITY
2008 CHAPTER 94 ANNUAL REPORT
FLOW PROJECTION FACTOR TABULATION CHART

YEAR	MAX 3-MONTH AVE. FLOW (GPD)	ANNUAL AVE. FLOW (GPD)	PROJECTION FACTOR
2004	36,951	33,233	1.11
2005	34,538	27,745	1.24
2006	27,516	24,607	1.12
2007	34,237	26,635	1.29
2008	37,053	27,799	1.33
Annual Average Flow (GPD)			1.22
Average Flow Projection Factor		28,004	

The base figure of 28,004 GPD was modified by adding the flow from the number of proposed connections for 2008 to create the projected 2009 flow. Then each year thereafter, the previous years calculated projected flow was modified by adding the flow from the number of proposed connections for that year. The flow per connection utilized in the calculations was 229 gpd/EDU or connection. It is anticipated that more connections from the Heritage Builders Subdivision would occur in 2009 and succeeding years, and connections from the W.B. Homes, Inc. development would begin in 2010. Flow projections were based on the following connections per year:

Year	Number of Projected Connections
2009	15 (from Heritage)
2010	40* (20 from Heritage plus 20 from W.B. Homes, Inc.)
2011	40* (20 from Heritage plus 20 from W.B. Homes, Inc.)
2012	40* (20 from Heritage plus 20 from W.B. Homes, Inc.)
2013	40* (20 from Heritage plus 20 from W.B. Homes, Inc.)

*The number of proposed connections in the years denoted could increase if additional capacity from Amity is available and secured for the Vistas at Riverside development.

TABLE 4

UNION TOWNSHIP MUNICIPAL AUTHORITY
2008 CHAPTER 94 ANNUAL REPORT
FLOW PROJECTION FOR 2009 TO 2013

YEAR	PROJECTION FACTOR	DAILY AVERAGE FLOW (GPD)*	MAX 3-MONTH AVG FLOW (GPD)**
2009	1.22	31,439	38,356
2010	1.22	40,599	49,531
2011	1.22	49,759	60,706
2012	1.22	58,919	71,881
2013	1.22	68,079	83,056

*On Figure 1 - Projected Annual Average Daily Flows.

**On Figure 1 - Projected Maximum 3-Month Average Daily Flows.

See the previous discussion following Table 2 concerning how the projected flows were calculated.

TABLE 5

UNION TOWNSHIP MUNICIPAL AUTHORITY
2008 CHAPTER 94 ANNUAL REPORT
SECTION 94.12(A)(3) 2004 TO 2008
NUMBER OF CONNECTIONS AND EDU'S

YEAR	TOTAL NO. OF EDU'S	NUMBER OF CONNECTIONS PER YEAR	TOTAL NO. OF CONNECTIONS
2004	164*	0 Connection	148
2005	164*	0 Connection	148
2006	164*	0 Connection	148
2007	165*	1 Connection	149
2008	171*	6 Connections	155

* Note: Represents the estimated Equivalent Dwelling Units of Residential, Commercial and Industrial connections based on formulas used for billing purposes

REDUCING OR ELIMINATING EXISTING OR PROJECTED OVERLOAD CONDITIONS

Section 94.12(a)(4)

In January 1996, the Municipal Authority adopted an Ordinance to give the Authority the power to enforce corrective action of illegal connections. The Ordinance was created from the results of an Infiltration and Inflow (I & I) study performed at the end of 1995 whereby many illegal connections to the sanitary sewer system were discovered. All illegal connections were corrected as of 2001.

Analysis of the sewage flow correlated with rain data to evaluate I & I reduction is ongoing. All manholes have been fitted with inserts, with the exception of those located within the cartway of 724 where the height of the insert would pose traffic hazards. The correction process to raise house lateral vents that may be taking in rainwater run-off above grade is ongoing. To date, approximately 80% of all affected residences have been corrected.

INDUSTRIAL WASTES

Section 94.12(a)(5)

There are no industries in Union Township which discharge industrial wastes into their system and to the Amity Township Wastewater Treatment Plant.

SEWER EXTENSIONS AND PROPOSED PROJECTS

Section 94.12(a)(6)

New Connections: There were six (6) new sewer connections within the Authority's service area during 2008.

Sewer Extensions and Proposed Projects: Final Plans for Heritage Building Group, Inc. were recorded in August, 2006 for a residential subdivision known as Union Greene Subdivision that proposes 137 single family residential lots (137 EDU's). The request for a Sewage Planning Module Exemption for a total estimated sewage flow of 41,100 gallons per day was approved by DEP letter dated May 24, 2004. The location of this subdivision has been indicated on the plot plan included with this report. Construction of this development started in October, 2006 and is still on-going. A model home was built on Lot #62 and was connected in 2007. Six (6) new connections were made in 2008. To date, a total of seven (7) lots have been connected. Several other lots are under construction. For purposes of this report, we have provided projected connections for years 2009 thru 2013, but the anticipated build out is unknown.

Sketch Plans were previously submitted in 2004 and 2005 for the Donovan Tract also known as the Vistas at Riverside from W.B. Homes Inc. proposing 2 different scenarios (one being a Single Family Detached Cluster development and one being an Age Restricted development). In addition, Preliminary Plans were submitted in 2005 for the Vistas at Countryside Subdivision from W.B. Homes Inc. proposing 37 Single Family Residential Lots. A Preliminary Plan for a combined project known as the "Vistas at Riverside and Countryside" was submitted in December, 2006 by W.B. Homes, Inc. proposing an age restricted residential development with 271 total age restricted units plus approximately 20,000 square feet of commercial/retail area

along with a Club House Community Center. The location of this subdivision has been indicated on the plot plan included with this report. A Conditional Use for this latest preliminary plan was approved by Union Township and the preliminary plan is still in process. It is anticipated that Planning Modules for the development will be submitted and processed in 2009. The projected total potential need for the "Vistas at Riverside and Countryside" development is as follows:

Age Restricted Units	271 Units @ 180 gpd/unit =	48,780 gpd
Club House	3 E.D.U.'s @ 233 gpd/EDU =	3,961 gpd
Commercial Development	17 E.D.U.'s @ 233 gpd/EDU =	699 gpd
	Total Estimated Sewage Flow	53,440 gpd
	Total EDU's Required (53,440/233)	230 E.D.U.'s

W.B. Homes, Inc. has already purchased 48 EDU's from the Union Township Municipal Authority's reserve capacity into the Amity Treatment Plant. Therefore, an additional 182 EDU's are estimated to be needed to provide sanitary sewer service to the entire development. W.B. Homes has also submitted a request to the Union Township Municipal Authority that is currently under review for consideration in the estimated flow per age restricted unit since they typically generate less sewage flow than a single family residential unit. Due to current limitations of the amount of sewage that Amity can accept from the Union Township Municipal Authority, additional capacity is needed to serve this entire site. The Union Township Municipal Authority submitted a capacity request to Amity Township in November, 2006 for a total of 325 additional EDU's that would include the EDU's needed for the "Vistas at Riverside and Countryside" development along with other future potential needs within Union Township. Amity Township has approved the additional capacity request and a new Inter-Municipal Agreement was prepared and executed in 2008. The UTMA will need to submit payment of the capacity reservation fees. As indicated in the new Inter-Municipal Agreement, the capacity reserved for the UTMA will increase from its current capacity of 83,585 gallons per day to 158,010 gallons per day. For purposes of this report, no EDU's from the Vistas at Riverside development are projected to occur in 2009. Connections from this development would be expected to begin in 2010.

SEWER SYSTEM MONITORING, MAINTENANCE, REPAIRS AND REHABILITATION

Section 94.12(a)(7)

There is a continuous sanitary sewer system maintenance repair and rehabilitation program for the Union Township Municipal Authority collection and conveyance system. The Authority's maintenance superintendent monitors the collection and conveyance system including one pump station on a daily basis. The Authority's maintenance superintendent is experienced and has the ability to purchase most replacement equipment and supplies and initiate their installation.

In most emergency situations, the Authority work force is capable of carrying out repair duties. However, if the Authority's crew is unable to handle a situation, various contractors can be contacted and are available to respond to the problems. All emergencies are corrected as soon as possible. Please refer to Section 94.12(a)(4) and 94.12(a)(9) for additional discussion concerning the sanitary sewer system.

In 2003 and 2004, the Authority Engineer inspected properties throughout the Authority's sewer system with respect to outstanding sewer vent problems (low vent caps, missing vent caps, etc.) and all problems found were corrected. The Authority Engineer along with the Union Township Code Enforcement Officer will perform follow-up inspections as needed. Notices of Violation will be sent out as problems are found.

In 2004, the Authority Engineer along with the Authority's Maintenance Superintendent investigated potential sewer line problems in the sanitary sewer right-of-way area of Hillside Lane. Television inspection of this line was performed in 2004 and several recommended repair locations were identified. Pine trees along with other structures (i.e. pools, decks, sheds, etc.) are located within the existing sanitary sewer right-of-way. In 2005, the Authority met with the respective property owners in this area to discuss resolving the issue of trees being within the right-of-way. The pine trees within the sanitary sewer right-of-way were cut down and removed in 2006. The sewer line was re-televised in October, 2007 to verify the condition of the sewer line. It is anticipated that several minor point lining and dig-up type repairs to the sanitary sewer line in the Hillside Lane area will be performed in 2008.

CONDITION OF THE SEWER SYSTEM

Section 94.12(a)(8)

The Union Township Municipal Authority sanitary sewer collection and conveyance system is in good serviceable condition and functions in a satisfactory manner. Experienced system personnel are able to successfully respond if an occasional problem would arise, and access to the Authority Engineers is authorized on a continuing basis.

SEWAGE PUMPING STATIONS

The pumping station received maintenance on a regular basis. A test of the alarm system at the station is run daily. An off-site stand-by generator is run once a week to simulate a power failure. Lubrication of the equipment, cleaning of control panels, and cleaning of stations are among regular maintenance activities that are performed to reduce potential problems and malfunctions.

There is one (1) pump station within the Authority's collection and conveyance system.

1. Pump Station No. 3 is equipped with two (2) 10 horsepower, 312 gpm submersible pumps. This station receives flow from the north side of the Schuylkill River in Union Township via gravity collection lines.

A heavy rainfall and storm event occurred on June 23, 2006 and there was much flooding in the Berks County area due to the storm. During the course of the storm event, the Authority's flow meter was damaged due to water and became inoperative. A new flow meter (Polysonics Model DCT6088) and chart recorder (Honeywell Model DR4500) was installed in August, 2006 and placed into operation on August 29, 2006. The flow meter was calibrated on December 5, 2007 and January 30, 2009. Copies of the Meter Calibration and Service Reports are included in Appendix B. Per the new Inter-Municipal Agreement with Amity executed in December, 2008, the flow meter will need to be calibrated semi-annually or at least 2 times per year.

Design capacity of each pump within Pump Station No. 3 is 312 gpm. The actual maximum recorded flow for 2008 at Pump Station No. 3 was 63,000 GPD which equates to 43.75 gpm. The annual average daily flow to the pump station in 2008 was 27,799 gpd which equates to 19.3 gpm. A total of 171 EDU's are currently connected to the system that flow to the pump station. The estimated average daily flow per EDU in 2008 was 163 gpd per EDU. The estimated maximum daily flow per EDU in 2008 was 368 gpd per EDU. The maximum peak daily flow factor in 2008 based on the recorded flows was 2.3. For projected peak daily flow conditions in future years a peaking factor of 2.5 will be used. For projected peak hourly flow conditions in future years a peaking factor of 4.0 will be used.

Maximum Daily Projected Flow for 2009 at Pump Station No. 3, adding 15 additional EDU's @ 229 gpd per EDU is 186 EDU's X 229 GPD/EDU = 42,594 GPD X 2.5 = 106,485 GPD = 74 gpm. Projected Peak Hourly Flow for 2009 at Pump Station No. 3, adding 15 additional EDU's @ 229 gpd per EDU is 186 EDU's X 229 GPD/EDU = 42,594 GPD X 4.0 = 170,376 GPD = 118 gpm.

Maximum Daily Projected Flow for 2010 at Pump Station No. 3, adding 40 additional EDU's @ 229 gpd per EDU is 226 EDU's X 229 GPD/EDU = 51,754 GPD X 2.5 = 129,385 GPD = 90 gpm. Projected Peak Hourly Flow for 2009 at Pump Station No. 3, adding 40 additional EDU's @ 229 gpd per EDU is 226 EDU's X 229 GPD/EDU = 51,754 GPD X 4.0 = 207,016 GPD = 144 gpm.

The projected maximum daily and peak hourly flows for 2009 and 2010 are well within the capacity of the pumps.

APPENDIX "A"

2008 FLOW METER READINGS FROM

PUMP STATION NO. 3

METERED FLOWS FOR UNION TOWNSHIP - AMITY TOWNSHIP SIDE FROM 1/1/08 TO 12/31/08

Week	Time Duration (Days)	Rain (Inches)	Meter (Gal.) Reading	Gallon/ Duration	Gallon/ Day	GPD/ EDU
01/01/08			12,197,800			
to 01/10/08	10	0.1	12,608,000	410,200	41,020	248.61
01/10/08			12,608,000			
to 01/20/08	10	0.67	12,959,780	351,780	35,178	213.20
01/20/08			12,959,780			
to 01/31/08	11	0.09	13,298,200	338,420	30,765	186.46
01/31/08			13,298,200			
to 02/10/08	10	1.54	13,538,200	240,000	24,000	145.45
02/10/08			13,538,200			
to 02/20/08	10	3.25	13,868,300	330,100	33,010	200.06
02/20/08			13,868,300			
to 02/29/08	9	0.43	14,124,000	255,700	28,411	172.19
02/29/08			14,124,000			
to 03/10/08	10	2.57	14,589,500	465,500	46,550	282.12
03/10/08			14,589,500			
to 03/20/08	10	1.43	15,078,000	488,500	48,850	296.06
03/20/08			15,078,000			
to 03/31/08	11	0.13	15,486,800	408,800	37,164	225.23

Footnotes:

(1) 167 EDU's connected - based on average number of home connections and commercial and institutional billings.

(2) EDU's adjusted per water meter readings for non-residential users.

(3) Rainfall data is based on information reported for Pottstown, PA available from Penn State University.

METERED FLOWS FOR UNION TOWNSHIP - AMITY TOWNSHIP SIDE
FROM 1/1/08 TO 12/31/08

Week	Time Duration (Days)	Rain (Inches)	Meter (Gal.) Reading	Gallon/ Duration	Gallon/ Day	GPD/ EDU
03/31/08			15,486,800			
to 04/10/08	10	0.29	15,784,800	298,000	29,800	180.61
04/10/08			15,784,800			
to 04/20/08	10	0.78	15,954,800	170,000	17,000	103.03
04/20/08			15,954,800			
to 04/30/08	10	1.46	16,186,800	232,000	23,200	140.61
04/30/08			16,186,800			
to 05/10/08	10	1.32	16,431,600	244,800	24,480	148.36
05/10/08			16,431,600			
to 05/20/08	10	2.16	16,739,500	307,900	30,790	186.61
05/20/08			16,739,500			
to 05/31/08	10	0.39	17,013,900	274,400	27,440	166.30
05/31/08			17,013,900			
to 06/10/08	10	1.41	17,383,600	369,700	36,970	224.06
06/10/08			17,383,600			
to 06/20/08	10	0.79	17,630,000	246,400	24,640	149.33
06/20/08			17,630,000			
to 06/30/08	10	0.07	17,821,800	191,800	19,180	116.24

Footnotes:

(1) 167 EDU's connected - based on average number of home connections and commercial and institutional billings.

(2) EDU's adjusted per water meter readings for non-residential users.

(3) Rainfall data is based on information reported for Pottstown, PA available from Penn State University.

METERED FLOWS FOR UNION TOWNSHIP - AMITY TOWNSHIP SIDE FROM 1/1/08 TO 12/31/08

Week	Time Duration (Days)	Rain (Inches)	Meter (Gal.) Reading	Gallon/ Duration	Gallon/ Day	GPD/ EDU
06/30/08			17,821,800			
to 07/10/08	10	0.29	18,053,700	231,900	23,190	138.86
07/10/08			18,053,700			
to 07/20/08	10	1.22	18,302,000	248,300	24,830	148.68
07/20/08			18,302,000			
to 07/31/08	11	1.18	18,629,100	327,100	29,736	178.06
07/31/08						
to 08/31/08	31	1.15	No Readings Available- Electric Service Problems @ Pit			
07/31/08			18,629,100			
to 09/10/08	40	4.84	19,322,300	693,200	17,330	103.77
09/10/08			19,322,300			
to 09/20/08	10	0.9	19,593,600	271,300	27,130	162.46
09/20/08			19,593,600			
to 09/30/08	10	1.69	19,968,300	374,700	37,470	224.37
09/30/08			19,968,300			
to 10/10/08	10	0.1	20,115,200	146,900	14,690	87.96
10/10/08			20,115,200			
to 10/20/08	10	0	20,299,700	184,500	18,450	110.48
10/20/08			20,299,700			
to 10/31/08	11	1.65	20,589,600	289,900	26,355	157.81

Footnotes:

(1) 167 EDU's connected - based on average number of home connections and commercial and institutional billings.

(2) EDU's adjusted per water meter readings for non-residential users.

(3) Rainfall data is based on information reported for Pottstown, PA available from Penn State University.

METERED FLOWS FOR UNION TOWNSHIP - AMITY TOWNSHIP SIDE
FROM 1/1/08 TO 12/31/08

Week	Time Duration (Days)	Rain (Inches)	Meter (Gal.) Reading	Gallon/ Duration	Gallon/ Day	GPD/ EDU
10/31/08			20,589,600			
to 11/10/08	10	0.25	20,899,600	310,000	31,000	185.63
11/10/08			20,899,600			
to 11/20/08	10	1.41	21,117,800	218,200	21,820	130.66
11/20/08			21,117,800			
to 11/30/08	10	0.74	21,348,600	230,800	23,080	138.20
11/30/08			21,348,600			
to 12/10/08	10	0.07	21,978,600	630,000	63,000	377.25
12/10/08			21,978,600			
to 12/20/08	10	4.48	22,115,700	137,100	13,710	82.10
12/20/08			22,115,700			
to 12/31/08	11	0.72	22,344,600	228,900	20,809	124.61

Footnotes:

(1) 167 EDU's connected - based on average number of home connections and commercial and institutional billings.

(2) EDU's adjusted per water meter readings for non-residential users.

(3) Rainfall data is based on information reported for Pottstown, PA available from Penn State University.

APPENDIX "B"

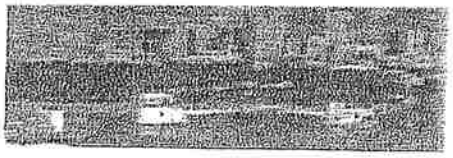
2008 FLOW METER CALIBRATION

AND SERVICE REPORT

EDWARDS ENVIRONMENTAL SERVICES

P.O. Box 333
Richlandtown, Pa. 18955

Phone : 215-529-4439
Fax : 215-529-4439



Union Township Municipal Authority
177 Center Road
Douglassville, Pa. 19518
Attn: Accounts Payable

December 5, 2007
RE: Vbl. Eric Bock
Service /Cal.
Dec. 5, 2007

(INVOICE ONLY)

Qty.(1) Service & Travel Time to check out Transit-Time Flowmeter which stopped reading flow due to loss of signal. Signal Strength was at 3.5% and signal cut off was set @ 5% and the flowmeter was not reading flow when the pump was running. I removed the signal cut off & the flowmeter again began to read flow. The problem was found in the metering pit. The Sonic Coupling compound that helps transmit the signal to the transmitter had dryed out. I removed and cleaded both Transducers & the PVC piping and applied new coupling to the transducers & remounted the transducers to the piping. The length of PVC piping in the metering pit should be extended to allow enough room for mounting the transducers. At present the transducers are very tight to the PVC flanges. We would recommend a longer length of PVC piping be installed to allow for better placement & mounting of the transducers in the metering pit. All input parameters were checked & Zero was again checked as well as the 4-20 mA output to the recorder @ 4 mA, 12 mA And 20 mA set @ 0-500 GPM to the DR4500 recorder. The pumps were again run and both Flowmeter and Recorder are again functional. Signal strength improved by 96.5% after the new coupling was applied to Transducers & piping.

(1)	Service & Travel Time	225.00
(1)	Mileage 81 @ .65	52.65
(1)	10823-0005 Coupling Compund	19.35
	*Invoice Total	$297.00

Payment should be sent to:

EDWARDS ENVIRONMENTAL SERVICES
P.O. Box 333
Richlandtown, Pa. 18955-0333

Sincerely,

Edwards Environmental
Services

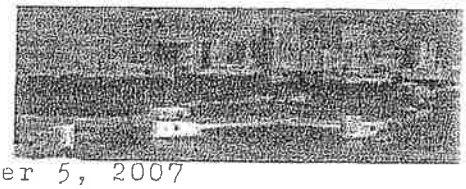
Terms: Net 30 Days from date of service Dec. 6, 2007.
Penalty 1½% per month if payment is late.
File: UNION TWP. Amity Pump Station /Service/Cal. Check.
DCT6088 Flowmeter /Range 0-500 GPM PVC/ 5.761" (Z)
DR4500 Recorder S/N 0501Y56548200001 Cal.0-500 GPM.

YOU FLOW IT.... WE SHOW IT

EDWARDS ENVIRONMENTAL SERVICES

P.O. Box 333
Richlandtown, Pa. 18955

Phone : 215-529-4439
Fax : 215-529-4439



Union Township Municipal Authority
177 Center Road
Douglassville, Pa. 19518
ATTN: Mr. Eric Bock

December 5, 2007
RE: DCT6088 Data Input
S/N B05IB021
(INPUT DATA)

(Input Parameters Menu)
*See Page 3-4 In Instrucion Manual Menu #.

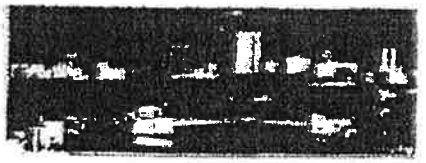
(02) Main Display GPM & Totalizer
*Keep Flowmeter in this Menu when in operation.
03 Display Negative Totalizer
04 Signal Strenth/Low Signal Cutoff
10 Pipe O.D. = 6.625"
11 Wall Thickness 0.432"
12 Pipe I.D. = 5.761"
13 Pipe Material PVC Sch. 80
14 Pipe Sound Speed 7388.45 FPS
16 Liner Material None
17 Liner Thickness 0.000
20 Fluid Type (Water)
21 Fluid Sound Speed 4.863.33 FPS
22 Fluid Viscosity 1.130 CST
23 Transducer Type (Std.)
24 Transducer Mounting (Z) Method
25 Transducer Spacing (2.14")
*Mount Transducers on Oposite side of piping
30 Flow Units = Gallons
31 Max Flow Range = 1000 Gallons
32 Min Flow Range = 0 Gallons
33 Damping 4
34 Low Flow Cutoff 90 Gallons
35 Low Signal Cutoff 5%
36 Totalizer Units (Gallons)
37 Totalizer Multiplier RX = 100 Gallons
38 Net Totalizer (Off)
39 Positive Totalizer (On) *(Use Menu 02)(113693)
40 Negative Totalizer (On)
41 To Reset Totalizers
50 Calibration Menu Set up with No Flow 0.0 Ok!
51 Zero Set, Flow Stopped Zero Ok!
52 Scale Factor Set at .95
57 Current Loop Span = 20 mA = 500 GPM
To Model DR4500 Recorder 100% = 500 GPM, 16292
With Totalizer Off /Use DCT6088 Totalizer!
90 Signal Strenth On Arrival 3.5% /New Sil-G=100%
Pipe =(PVC.)O.D.=6.625",0.432'Wall,I.D.5.761".

Ref: Flow Direction ---------->
Red Transducer 2.14" Blue Transducer
Directions mount transducers (2.14") Appart on oposite sides of piping using the coupling compound under each of the transducers.
If Flow can be stopped use Menu 50 to set zero.
*Go to Menu 90 to Check Signal Strength in %
Note that Cut-Offs are set at 90 Gallons or 5%, Signal Strength.

EDWARDS ENVIRONMENTAL SERVICES

P.O. Box 333
Richlandtown, Pa. 18955

Phone : 215-529-4439
Fax : 215-529-4439



Union Township Municipal Authority
177 Center Road
Douglassville, Pa. 19518
Accounts Payable

January 30, 2009
RE: Vbl. Eric Bock
Service Call
Jan. 29, 2009
Amity Metering
DCT/DR4500 Service

(INVOICE ONLY)

Qty. (2)	Ink Cartridge 6/PKG Green	35.00	70.00
Qty. (1)	Ink Cartridge 6/PKG Red 02	35.00	35.00
	Shipping & Handling Pa.	3.45	3.45
	Material Sub Total		108.45

Qty. (1) Service & Travel Time to Check Out and calibrate a Model DCT6088 Flowmeter and a DR4500 Recorder @ the Amity Metering Station. On arrival both Flowmeter and Recorder were in good working order. Check all input paramters on the DCT6088 and the DR4500 Recorder. Both Flowmeter and Recorder were installed and put in service on August 28, 2006. The DR4500 Span was set at 20 mA = 500 GPM. The Pen arm required alignment and the chart advance required adjustment. These units replaced the old UFM91 & DR4500 which went under water in the flood of 2006.

Service & Travel Time	300.00
Mileage 87 @ .65	56.55
*Invoice Total	$ 465.00

Payment should be sent to:

EDWARDS ENVIRONMENTAL SERVICES
P.O. Box 333
Richlandtown, Pa. 18955-0333

Sincerely,

Edwards Environmental
Services

Terms: Net 30 Days from date of service January 30, 2009.
Penalty 1½% per month if payment is late.

File: Amity Flowmetering Station /Service Jan. 30, 2009.
Service: DCT6088 Flowmeter & DR4500 Recorder.
The flowmeters are within ±2% accuarcy full span and the recorders are within 5% accuracy full span.

TRIBUTARY SEWER SYSTEM QUESTIONNAIRE

Municipality Name: UNION TOWNSHIP MUNICIPAL AUTHORITY **Date:** 2/24/09

A. SEWER SYSTEM DETAILS

1. Connected Population (# of People)

	Projected				
Present 2008	2009	2010	2011	2012	2013
443	482	585	689	792	896

2. Connected EDUs

	Projected				
Present 2008	2009	2010	2011	2012	2013
171	186	226	266	306	346

1 EDU = 233 GPD

3. Total length of pipe in sewer system: 13,658 feet (actual or estimated)

4. Range of pipe sizes:

   a. Laterals: 6 inches (actual or estimated)

   b. Sewer mains

      (1) Smallest: 8 inches (actual or estimated)

      (2) Largest: 12 inches (actual or estimated) [70 Feet Long Influent Line to P.S. #3]

5. Total number of manholes: 51 (actual or estimated)

6. Construction material:

   a. Pipes: PVC; DIP; AC

   b. Manholes: PRECAST CONCRETE

7. Combined sewers: N/A

a. Location: _____

b. Percent of total system: _____

8. Major Interceptors: N/A

Interceptor Name	Length (feet)	Pipe Diameter (inches) Maximum	Minimum	Estimated Service Population

9. Collection System Capacity Problems:

If existing or proposed flows exceed the limiting section capacity at any time, explain proposed and ongoing efforts to correct the potential overload for each instance. Estimate the probable success of these efforts in eliminating the overload condition. Use additional sheets if necessary.

No known capacity problems.

B. SANITARY SEWER EXTENSIONS (2008 ONLY)*

Name/Area Served	Sewer Extension Size	Sewer Extension Length	DEP Permit No.	Housing Units Served – EDUs (Actual/Estimated) 2008	2009	2010	2011	2012	2013
** HERITAGE / UNION GREENE SUBDIVISION	8"		–	7	15	20	20	20	20

*Attach plans of sanitary sewer system detailing additions made in 2008.

C. **PROPOSED HOUSING DEVELOPMENTS**

Name/Area Served	Permits Obtained (Yes/No)	DEP Permit No.	Proposed Housing Units (EDUs) 2009	2010	2011	2012	2013
W.B. HOMES, INC. – VISTAS @ RIVERSIDE	NO		–	20	20	20	20

** NOTE: SANITARY SEWER LINES INSTALLED TO DATE FOR HERITAGE / UNION GREENE SUBDIVISION HAVE BEEN TESTED AND INSPECTED. THE SEWER LINES HAVE NOT BEEN DEDICATED OR TAKEN OVER BY UNION TOWNSHIP MUNICIPAL AUTHORITY.

D. PUMPING STATIONS AND COLLECTION SYSTEM

1. Description

Name/Number	Location	Capacity (gpd) Existing	Capacity (gpd) Ultimate	Metered (Yes/No)	Force Main Length (Feet)	Force Main Size (Inches)	Estimated Service Population
PUMP STATION #3	S.R. 0724	449,280	-	YES	1,700	6"	443

2. Pumping Station Flows

	Present 2008	Projected Peak Flows (gpd)* 2009	2010	2011	2012	2013
Name: P.S. #3	37,053	38,356	49,351	60,706	71,881	83,056
Name:						
Name:						
Name:						
Name:						
Name:						

* PROJECTED PEAK FLOWS LISTED ARE MAXIMUM 3-MONTH AVERAGE FLOW. REFER TO FULL REPORT FOR ADDITIONAL INFORMATION. THE PROJECTED PEAK DAILY FLOW FOR 2009 BASED ON A FLOW OF 229 GPD PER EDU AND A PEAKING FACTOR OF 2.5 IS 106,485 GPD. FOR 2010, THE PROJECTED PEAK DAILY FLOW IS 114,500 GPD.

3. Pumping Station Condition

Discuss condition, maintenance, and repair of each pumping station.

Name: P.S. #3 IS IN GOOD CONDITION; MAINTENANCE IS PERFORMED ON A REGULAR BASIS; ALARM SYSTEM IS TESTED DAILY; A TRAILER MOUNTED PORTABLE GENERATOR IS USED FOR BACK-UP POWER

Name: SUPPLY

Name:

Name:

Name:

Name:

4. Pumping Station Capacity Problems

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and ongoing efforts to correct the potential overload for each instance. Estimate the probable success of these efforts in eliminating the potential overload condition. Use additional sheets if necessary.

NO KNOWN CAPACITY PROBLEMS.

5. Sewer System Maintenance or Repairs

Describe any maintenance or repair work that was performed in the past year that would reduce infiltration/inflow or flows. Include infiltration/inflow reduction figures if available.

NO REPAIR WORK WAS PERFORMED IN 2008.

6. Sewer System Flows

Attach a table of flows recorded at your main sewer meter located at the point of connection. Include the average daily flow for each month and maximum daily flow for each month if available.

REFER TO FULL BOUND REPORT FOR COMPLETE INFORMATION.

E. METER PITS

Name/Number	Location	Size/Type*	Sensor**	Estimated Connected Population
	P.S. #3	6" PIPE	DIGITAL CORRELATION TRANSIT TIME	443

* i.e., weir, flume, pipe, etc.
** i.e., float, bubbler, ultrasonic, etc.

F. INDUSTRIAL FLOWS

Industry Name	SIC Code	Location	2008 Average Current Flow GPD	Metered (Yes/No)	Average Waste Strength mg/L BOD_5
N/A					

G. OPERATION AND MAINTENANCE

1. Describe routine operation and maintenance procedures:

   a. Sewer system: TELEVISING IS PERFORMED AS NEEDED. IF PROBLEMS ARISE, REPAIRS ARE RECOMMENDED AND COMPLETED.

   b. Pump stations: P.S. # 3 IS CHECKED ON A DAILY BASIS; PUMPS ARE LUBRICATED PER MANUFACTURER'S RECOMMENDATIONS

   c. Meter pits: THE FLOW METER IS CALIBRATED BY A FACTORY CERTIFIED TECHNICIAN. THIS WILL BE DONE 2 TIMES PER YEAR IN ACCORDANCE WITH NEW INTER-MUNICIPAL AGREEMENT

2. Known problem areas:

	Location	Nature of Problem	Corrective Measures Taken
*	HILLSIDE DRIVE R/W	CRACKS IN SEWER PIPE	CURED-IN-PLACE POINT LINING REPAIRS AND/OR DIG-UP REPAIRS

i.e., surcharging, line blockage, etc.

* TREES WITHIN RIGHT-OF-WAY WERE PREVIOUSLY CUT AND REMOVED. LINE WAS RE-TELEVISED IN 2007. REPAIR WORK TO BE SCHEDULED IN 2009.

H. **PREPARER**

Signed: Keith R. Showalter

Typed Name: KEITH R. SHOWALTER

Title: UNION TOWNSHIP MUNICIPAL AUTHORITY ENGINEER

Address: SYSTEMS DESIGN ENGINEERING, INC.
1032 JAMES DRIVE
LEESPORT, PA 19533

Phone Number: (610) 916-8500

NOTE: A map must be included which shows the following: all sewer extensions constructed in the past calendar year, sewer extensions approved or exempted in the past calendar year, in accordance with Act 537, but not yet constructed, and all known proposed projects which require public sewers but are in the preliminary planning stages.

Chapter 94 Report Information From Douglass Township

(to be forwarded upon receipt)

Chapter 94 Report Information From Earl Township

ENTECH

4 South Fourth Street	P.O. Box 32	Reading, PA 19603	Entech Engineering, Inc.
ph: 610.373.6667	fx: 610.373.7537	www.entecheng.com	Principals: Scott M. Carl, Sr. Daniel J. Castellani, PE Michael J. Daschbach, PE Jeffrey C. Euclide, PE David H. Feick Matthew S. Lloyd Robert J. Weir, PE

January 30, 2009

Entech No. 4153.04

Mr. Michael Sassaman
The ARRO Group, Inc.
50 Berkshire Court
Suite 209
Wyomissing, PA 19610

Re: Amity Township
2008 Chapter 94 Municipal Wasteload Report
Manatawny Area Public Sewer District
Earl Township, Berks County, Pennsylvania

Mr. Sassaman:

On behalf of Earl Township, we are delivering to you three complete copies of Earl Township's Tributary Sewer System Questionnaire for operating year 2008. To accommodate your binding preference, they are unbound. One copy of the Report is being sent to Amity Township, care of Mr. Lyon.

If you have any questions regarding our submission, please feel free to contact me.

Very truly yours,

Curtis Tran
Engineering Designer

Enclosures

cc: Charles Lyon, Amity Township (w/enclosure)
Earl Township Supervisors (w/enclosure)
Terry Parish, Paul R. Ober and Associates (w/enclosure)
Jeff Euclide, Entech Engineering, Inc.

Via: UPS Ground

TRIBUTARY SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Earl Township Manatawny Area Public Sewer District Date: January 2009

A. SEWER SYSTEM DETAILS

1. Connected Population (# of People) **Uncounted**

	Projected				
Present 2008	2009	2010	2011	2012	2013

2. Connected EDUs

	Projected				
Present 2008	2009	2010	2011	2012	2013
131	140	170	171	172	173

1 EDU = 147 GPD

3. Total length of pipe in sewer system: 17,400 feet (actual or estimated)

4. Range of pipe sizes:

   a. Laterals: 1-1/4 – 6 inches (actual or estimated)

   b. Sewer mains

      (1) Smallest: 2 inches (actual or estimated)

      (2) Largest: 8 inches (actual or estimated)

5. Total number of manholes: 30 (actual or estimated)

6. Construction material:

   a. Pipes: HDPE, PVC

   b. Manholes: Precast Concrete

7. Combined sewers:

   a. Location: N/A

   b. Percent of total system: N/A

8. Major Interceptors:

Interceptor Name	Length (feet)	Pipe Diameter (inches) Maximum	Pipe Diameter (inches) Minimum	Estimated Service Population
N/A				

9. Collection System Capacity Problems:

If existing or proposed flows exceed the limiting section capacity at any time, explain proposed and ongoing efforts to correct the potential overload for each instance. Estimate the probable success of these efforts in eliminating the overload condition. Use additional sheets if necessary.

N/A

B. SANITARY SEWER EXTENSIONS (2008 ONLY)*

Name/Area Served	Sewer Extension Size	Sewer Extension Length	DEP Permit No.	Housing Units Served – EDUs (Actual/Estimated) 2008	2009	2010	2011	2012	2013
N/A									

*Attach plans of sanitary sewer system detailing additions made in 2008.

C. PROPOSED HOUSING DEVELOPMENTS

Name/Area Served	Permits Obtained (Yes/No)	DEP Permit No.	Proposed Housing Units (EDUs) 2009	2010	2011	2012	2013
N/A							

D. PUMPING STATIONS AND COLLECTION SYSTEM

1. Description

Name/Number	Location	Capacity (gpd) Existing	Capacity (gpd) Ultimate	Metered (Yes/No)	Force Main Length (Feet)	Force Main Size (Inches)	Estimated Service Population
N/A							

2. Pumping Station Flows

	Present 2008	Projected Peak Flows (gpd) 2009	2010	2011	2012	2013
Name: N/A						
Name:						
Name:						
Name:						
Name:						
Name:						

3. Pumping Station Condition

Discuss condition, maintenance, and repair of each pumping station.

Name: N/A

Name:

Name:

Name:

Name:

Name:

4. Pumping Station Capacity Problems

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and ongoing efforts to correct the potential overload for each instance. Estimate the probable success of these efforts in eliminating the potential overload condition. Use additional sheets if necessary.

N/A

5. Sewer System Maintenance or Repairs

Describe any maintenance or repair work that was performed in the past year that would reduce infiltration/inflow or flows. Include infiltration/inflow reduction figures if available.

N/A

6. Sewer System Flows

Attach a table of flows recorded at your main sewer meter located at the point of connection. Include the average daily flow for each month and maximum daily flow for each month if available.

E. METER PITS

Name/Number	Location	Size/Type*	Sensor**	Estimated Connected Population
C8223 AA	Boyertown Pike (SR0562) Shore Avenue	8" Flume	Ultrasonic	N/A

*see attached Quarterly Service Reports

* i.e., weir, flume, pipe, etc.
** i.e., float, bubbler, ultrasonic, etc.

F. INDUSTRIAL FLOWS

Industry Name	SIC Code	Location	2008 Average Current Flow GPD	Metered (Yes/No)	Average Waste Strength mg/L BOD_5
N/A					

G. OPERATION AND MAINTENANCE

1. Describe routine operation and maintenance procedures:

   a. Sewer system: Supply Conditioning Station

   b. Pump stations: N/A

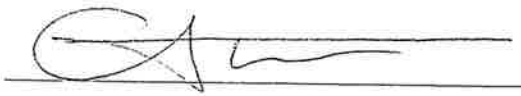
   c. Meter pits: Quarterly Calibration and Cleaning

2. Known problem areas:

Location	Nature of Problem	Corrective Measures Taken
N/A		

i.e., surcharging, line blockage, etc.

H. PREPARER

Signed: 

Typed Name: Curtis Tran

Title: Engineering Designer

Address: PO Box 32

Reading, PA 19603

Phone Number: 610-373-6667

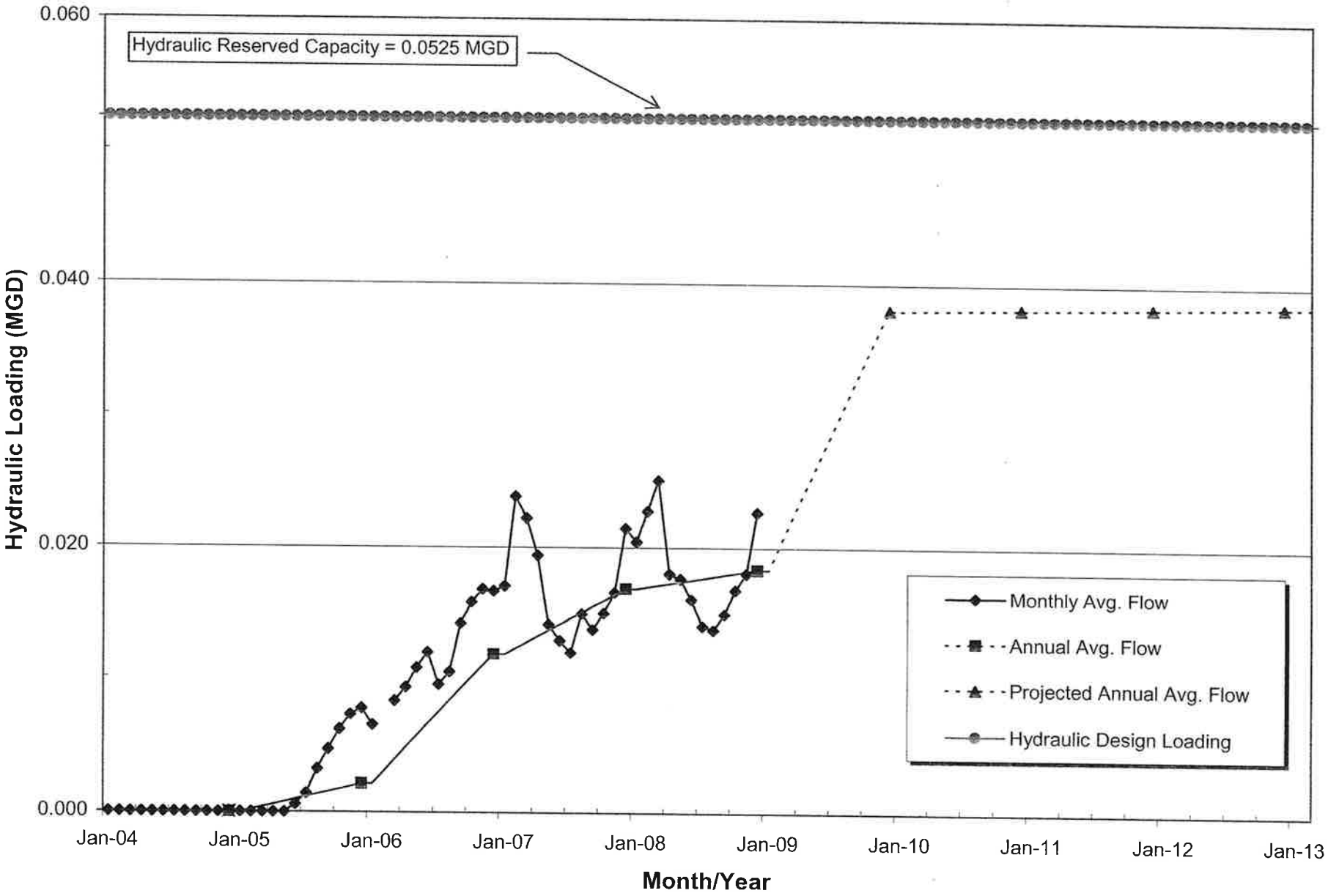
NOTE: A map must be included which shows the following: all sewer extensions constructed in the past calendar year, sewer extensions approved or exempted in the past calendar year, in accordance with Act 537, but not yet constructed, and all known proposed projects which require public sewers but are in the preliminary planning stages.

TABLE 1-1
Hydraulic Loading Data
Earl Township
Berks County
Manatawny Creek Area Sanitary Sewer System

MONTH	MONTHLY AVERAGE WASTEWATER FLOWS (MGD)					PROJECTED WASTEWATER FLOWS (MGD)				
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
January	-	-	0.0064	0.0171	0.0204					
February	-	-	- (2)	0.0238	0.0227					
March	-	-	0.0083	0.0222	0.0251					
April	-	-	0.0093	0.0194	0.0181					
May	-	-	0.0108	0.0141	0.0177					
June	-	0.0006	0.0120	0.0129	0.0161					
July	-	0.0014	0.0095	0.0120	0.0141					
August	-	0.0032	0.0105	0.0150	0.0137					
September	-	0.0046	0.0142	0.0137	0.0150					
October	-	0.0061	0.0159	0.0150	0.0168					
November	-	0.0072	0.0169	0.0166	0.0181					
December	-	0.0077	0.0167	0.0214	0.0226					
ANNUAL AVERAGE	-	0.0044	0.0119	0.0169	0.0184	0.0380	0.0382	0.0383	0.0385	0.0386
NUMBER OF CONNECTIONS	-	68	116	122 (4)	125	134	135	136	137	138
NUMBER OF EDU's	-	74 (1)	122	128	131	140	170 (5)	171	172	173
ESTIMATED FLOW per CONNECTION (GPD)	-	115	143 (3)	139	147	147	147	147	147	147

Design Average Annual flow = 52,500 gpd
(1) Two connections (Tiki Bar and Burgoon Bungalows) contain duplex grinder pumps which have a purchaed sewer capacity of 4 EDU's each.
(2) The flowmeter was initially calibrated on 2/23/06. Prior monthly flows from 6/05 to 1/06 were based upon totalizer readings and connected EDUs.
(3) Considering the growing number of connections, estimated flow per connection for 2006 was based upon flow data from October 2006 to December 2006 and approximately 115 connections during that period
(4) 8 Connections were made throughout 2007. (Note: 2 properties were disconnected completely from the system)
(5) Increase in 30 EDU's based upon potential connection to Camp Manatawny

Figure 1.1
Hydraulic Loading
Earl Township
Manatawny Creek Area Sanitary Sewer System



W.G. MALDEN, INC.
P.O. BOX 99, NARVON, PA 17555
PHONE: (717) 768-0800 FAX: (717) 768-0802

SERVICE REPORT

MIKE ESHBACH
EARL TOWNSHIP
19 SCHOOLHOUSE ROAD
BOYERTOWN, PA 19512

SERVICE DATE: 2/11/2008
METER#: C8223 AA
LOCATION: WASTEWATER DISCHARGE
SERIAL #: 10376/04-95931-001
MANUFACTURER: EASTECH/BRISTOL BABCOCK
RECORDER: DR4200
TRANSMITTER: 2210
PRIMARY: 8" PALMER BOWLUS
MAXIMUM CAPACITY: 400 GPM
SERVICE CONTRACT: QUARTERLY

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** 0, 50 & 100%
ERROR: 0% **CORRECTED ACCURACY:** ±1%

TOTALIZER CALIBRATION **CHECKED AT:** 0, 25, 50 & 100%
ERROR: 0% **CORRECTED ACCURACY:** ± 1/2%

TRANSMITTER CALIBRATION
SIMULATED HEAD RISES AND FLOW MEASUEMENTS
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: CLEANED FLUME AND APPROACH. LEFT EQUIPMENT OPERATING PROPERLY.

SERVICE REPRESENTATIVE Jerry Lowry IV **PERSON SEEN:** KEYS AT SITE
copies: Curt Tran - ENTECH ENGINEERING

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SERVICE REPORT

MIKE ESHBACH
EARL TOWNSHIP
19 SCHOOLHOUSE ROAD
BOYERTOWN, PA 19512

SERVICE DATE: 5/16/2008
METER#: C8223 AA
LOCATION: WASTEWATER DISCHARGE
SERIAL #: 10376/04-95931-001
MANUFACTURER: EASTECH/BRISTOL BABCOCK
RECORDER: DR4200
TRANSMITTER: 2210
PRIMARY: 8" PALMER BOWLUS
MAXIMUM CAPACITY: 400 GPM
SERVICE CONTRACT: QUARTERLY

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** 0, 50 & 100%
ERROR: 0% **CORRECTED ACCURACY:** ±1%

TOTALIZER CALIBRATION **CHECKED AT:** 0, 25, 50 & 100%
ERROR: 0% **CORRECTED ACCURACY:** ± 1/2%

TRANSMITTER CALIBRATION
SIMULATED HEAD RISES AND FLOW MEASUEMENTS
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: CLEANED FLUME AND APPROACH. LEFT EQUIPMENT OPERATING PROPERLY.

SERVICE REPRESENTATIVE: Jerry Lawrey **PERSON SEEN:** KEYS AT SITE
copies: CURT TRAN-ENTECH ENGINEERING

COPY

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SERVICE REPORT

MIKE ESHBACH
EARL TOWNSHIP
19 SCHOOLHOUSE ROAD

BOYERTOWN, PA 19512

SERVICE DATE: 8/5/2008
METER#: C8223 AA
LOCATION: WASTEWATER DISCHARGE
SERIAL #: 10376/04-95931-001
MANUFACTURER: EASTECH/BRISTOL BABCOCK
RECORDER: DR4200
TRANSMITTER: 2210
PRIMARY: 8" PALMER BOWLUS
MAXIMUM CAPACITY: 400 GPM
SERVICE CONTRACT: QUARTERLY

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** 0, 50 & 100%
ERROR: 0% **CORRECTED ACCURACY:** ±1%

TOTALIZER CALIBRATION **CHECKED AT:** *0, 25, 50 & 100%*
ERROR: 0% **CORRECTED ACCURACY:** ± 1/2%

TRANSMITTER CALIBRATION
SIMULATED HEAD RISES AND FLOW MEASUEMENTS
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: CLEANED FLUME AND APPROACH. LEFT EQUIPMENT OPERATING PROPERLY.

SERVICE REPRESENTATIVE: Jerry Lawyer **PERSON SEEN:** KEYS AT SITE
copies: CURT TRAN-ENTECH ENGINEERING

COPY

W.G. MALDEN
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SERVICE REPORT

MIKE ESHBACH
EARL TOWNSHIP
19 SCHOOLHOUSE ROAD
BOYERTOWN, PA 19512

SERVICE DATE: 11/6/2008
METER#: C8223 AA
LOCATION: WASTEWATER DISCHARGE
SERIAL #: 10376/04-95931-001
MANUFACTURER: EASTECH/BRISTOL BABCOCK
RECORDER: DR4200
TRANSMITTER: 2210
PRIMARY: 8" PALMER BOWLUS
MAXIMUM CAPACITY: 400 GPM
SERVICE CONTRACT: QUARTERLY

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** 0, 50 & 100%
ERROR: 0% **CORRECTED ACCURACY:** ±1%

TOTALIZER CALIBRATION **CHECKED AT:** 0, 25, 50 & 100%
ERROR: 0% **CORRECTED ACCURACY:** ± 1/2%

TRANSMITTER CALIBRATION
SIMULATED HEAD RISES AND FLOW MEASUEMENTS
ERROR: +1% **CORRECTED ACCURACY:** ± 1%

COMMENTS: CLEANED FLUME AND APPROACH. LEFT EQUIPMENT OPERATING PROPERLY. ALSO INSTALLED SOFTWARE FOR METER DOWNLOADS. FOUND NO DIAL TONE AT METER AND NO MODEM IN COMPUTER. PHONE COMPANY WAS NOTIFIED. WE WILL RETURN FOR TRAINING.

SERVICE REPRESENTATIVE: D.S. & D.D.
copies: CURT TRAN-ENTECH ENGINEERING

PERSON SEEN: MICHELLE/MIKE

FAXED 11.7.08