

**AMITY TOWNSHIP  
BERKS COUNTY, PENNSYLVANIA**

**CHAPTER 94  
MUNICIPAL WASTELOAD MANAGEMENT  
2009 ANNUAL REPORT**

**Prepared by:**

**ARRO CONSULTING, INC.  
50 Berkshire Court, Suite 209  
Wyomissing, Pennsylvania 19610  
(610) 374-5285**

AMITY TOWNSHIP  
CHAPTER 94  
MUNICIPAL WASTELOAD MANAGEMENT  
2009 ANNUAL REPORT

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Table 1 – 2009 Plant Performance Data

Table 2 – Wastewater Treatment Facility Hydraulic Loading Data

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Table 4 – Past and Projected Treatment Plant Loadings

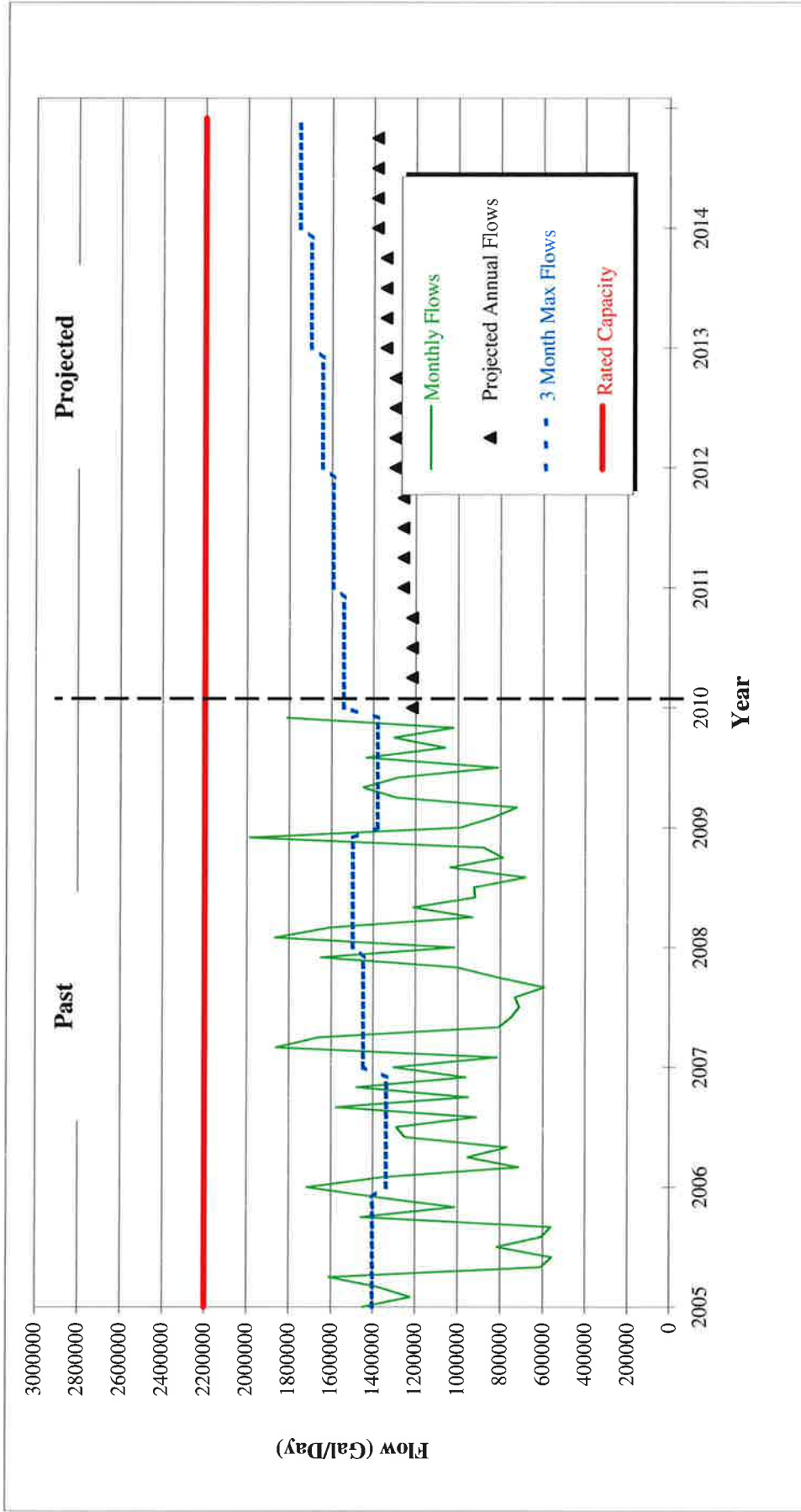
Proof of Flow Meter Calibration

Chapter 94 Report Information from Union Township

Chapter 94 Report Information from Douglass Township

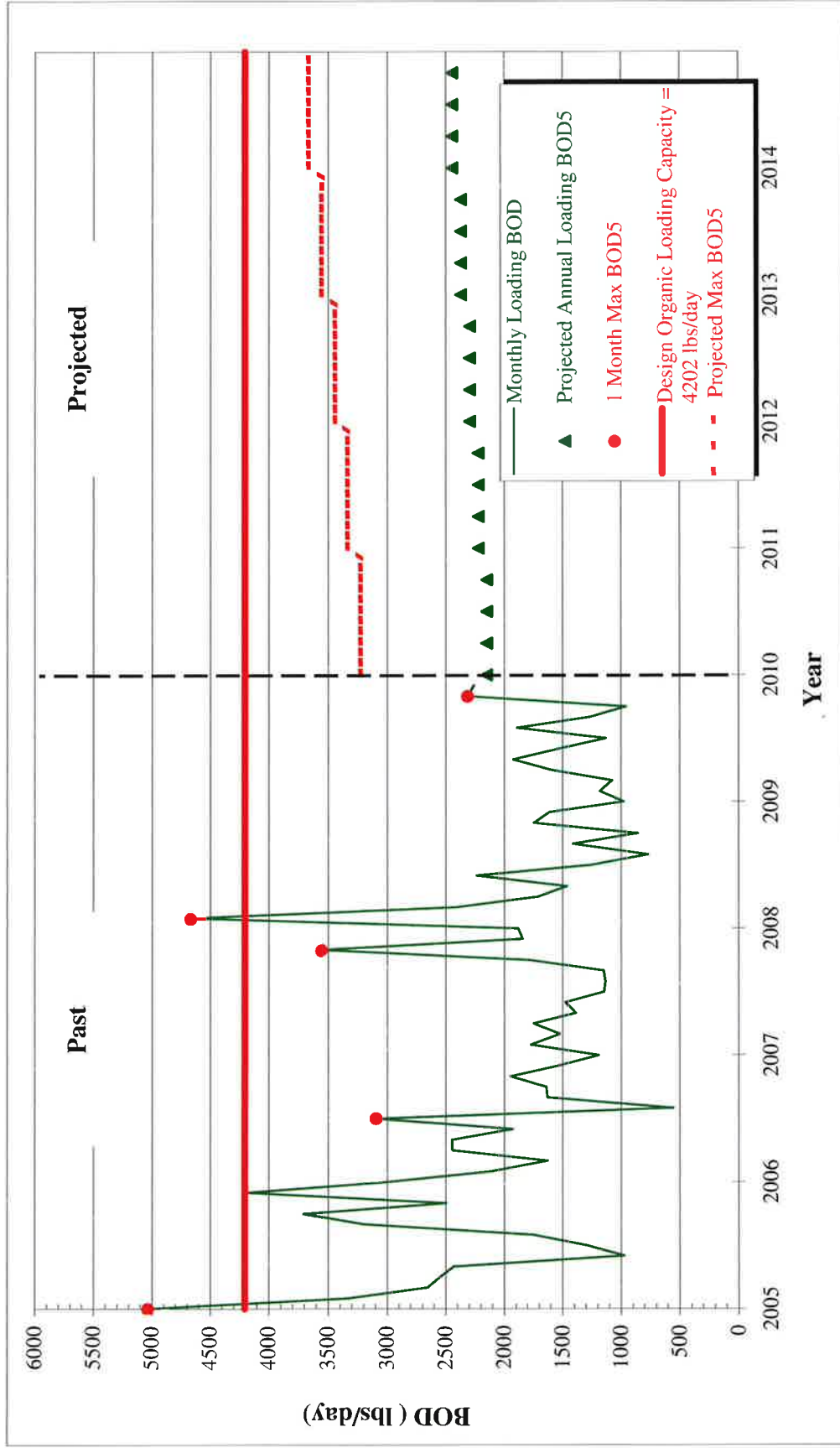
Chapter 94 Report Information from Earl Township

**Amity Township  
2009 Annual Chapter 94 Report  
HYDRAULIC LOADING**



**EXHIBIT 1**

**Amity Township  
2009 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<sub>5</sub>/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 2009 was 1,167,250 gallons. The average monthly influent loading during 2009 was 1,508.3 lbs BOD<sub>5</sub>/day. The average influent BOD<sub>5</sub> and suspended solids concentrations were 1964mg/L and 177 mg/L, respectively. The average effluent concentrations were 2.33 mg/L CBOD<sub>5</sub>, 5.0 mg/L suspended solids, and 0.508 mg/L ammonia-nitrogen. The calculated percentage removals of each were 98.6% for BOD<sub>5</sub> and 97.1% for suspended solids.

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

Flow	2.2 MGD
CBOD <sub>5</sub>	25 mg/L
Total Suspended Solids	30 mg/L
NH <sub>3</sub> N	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. Laboratory testing for the NPDES Permit Renewal was performed throughout 2009.

### Sludge Disposal

During 2009 there were 630,000 gallons of aerobically-digested sludge applied to the reed drying beds. There was 118.67 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 2009:

1. All flow meters were recalibrated once per year. Copies of calibration certificates are included in the Appendix of this report.
2. Brush was cut and removed from the inside and outside of the dike.
3. Plant generators were serviced.
4. All equipment bearings were lubricated as scheduled.
5. All gear box oil changes were made as scheduled.
6. One new motor was installed on a scum pump.
7. One waste pump was repaired.
8. A new polymer pump for the belt filter press was installed.
9. A new Winsmith Gear Reducer was installed on one final clarifier.
10. Recirculation pumps A & B were rebuilt.
11. A new pump was installed for the chlorine residual analyzer.

## 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 2005 through December 2009. The average gallons per capita per day contribution for the last five years as shown in Table 4 was 97.81. 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 1.15 to 1.37. The average ratio, 1.266, 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<sub>5</sub> per capita per day for the past five years as shown in Table 4 ranged from 0.125 to 0.264, and the average is 0.1727. The projected average annual organic load was determined by multiplying the projected population for each year by the average value of 0.1727 pounds of BOD<sub>5</sub> 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<sub>5</sub> per capita per day for the past five years ranged from 0.191 to 0.474, and the average is 0.3257. 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 1.53 to 2.45. The organic peaking factor, average five-year ratio of 1.899, was multiplied by the projected annual average BOD<sub>5</sub> loading to project the maximum monthly BOD<sub>5</sub> 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 televising work is reviewed in phases and followed by rehabilitation of those areas. Phases 1 and 2 included areas that had the oldest sewers comprised of vitrified clay pipe. Phases 3 and 4 areas will be addressed in 2010 for additional rehabilitation work. Approximately ½ of the sewer system has been televised and reviewed since the Township purchased the cleaning and televising equipment.

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 draft plan is almost completed and includes zoning changes and projections for growth areas in the Township. An evaluation of future wastewater treatment capacity needs and alternatives analysis is also included. The plan will be submitted to PaDEP for review and approval in early 2010.

F. SEWER CONNECTIONS AND EXTENSIONS

A total of 67 new connections to the Amity Sewer System were made during 2009. There were 18 connections made at Hearthstone, 27 at the Villa at Morlatton and 22 other connections.

The construction of the “Monocacy Creek Interceptor” to serve 74 EDUs that was part of the 2009 Act 537 Plan selected alternative area has been started. Construction is expected to be completed in May 2010. Connections of the existing homes along these new sewers will begin in mid-2010.

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. The Township's ongoing internal sewer line videotaping projects has revealed some defective pipes, cracked pipes and protruding lateral connections. Sewer rehabilitation work had been conducted following each Phase of the sewer televising work.

The sewage collection system is in good, serviceable condition overall and functions in a satisfactory manner. The Township sewage treatment plant staff, which also operates the collection/conveyance system, are experienced and able to respond in a timely manner should a problem arise. Township staff performs regular maintenance to manholes, pumping stations and pipes.

Since the expansion of the sewage treatment plant in 1991, there have been expansions of the collection system to serve several subdivisions. 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 and to indicate the effect that proposed development will have on existing sewer mains. The hydraulic model will continue to be calibrated and refined and will be a useful tool for determining how growth in the sewer system will effect the existing sewers.

#### Repair and Replacement

1. There were no main sewer or lateral stoppages cleared in 2009.
2. Main sewer flushing was limited to those mains flushed and cleaned prior to televising the Phase II, III, and IV areas.

The Township owns equipment for sewer maintenance, which includes a flushing vector truck, and EnviroSight Camera equipment. The sewer televising work is ongoing and continues to identify areas that will be scheduled for rehabilitation work. The 2009 Sewer Rehabilitation Program included vitrified clay pipe sewers.

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. At Pumping Station No. 2 one pump was rebuilt.
4. At Pumping Station No. 6 the exhaust fan was replaced.
5. At Pumping Station No. 7 one pump was rebuilt.

Pumping Station Annual Flows

<u>Pump Station</u>	<u>Station Capacity</u> (mgd)	<u>2009 Average Flow</u> (mgd)	<u>2009 Max. Monthly Flow</u> (mgd)	<u>Max. Monthly % of Capacity</u>
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 maintain 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 and continued in 2009.

During 2009 the Township sewer inspection equipment was used to clean and televise sewers in the Phase II, III and IV areas.

During 2009 Phase II of the sewer rehabilitation continued. The rehabilitation work was performed in Spring 2009 and included 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.

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. One industry in Amity Township currently has an industrial waste discharge permit 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  
Name

Amity Township  
Name

Operations Consultant  
Title

Charles E. Lyon  
Responsible Official


ARRO Consulting, Inc.  
Company

Township Manager  
Title

50 Berkshire Court, Suite 209  
Wyomissing, PA 19610  
Address

2004 Weavertown Road  
Douglassville, PA 19518  
Address

  
Signature of Preparer      3/24/10  
Date

  
Signature of Permittee      5/29/10  
Date

# *Appendix*

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**Amity Township Sub-Regional Wastewater Treatment Facility  
2009 Chapter 94 Report**

**Population Projections**

Year	Amity Twp.		Union Twp.		Douglas Twp.		Earl Twp.		Total Population
	EDUs	Pop Equv	EDUs	Pop Equv	EDUs	Pop Equv	EDUs	Pop Equv	
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	4,174	10,644	171	436	263	671	133	339	12,090
2010	4,254	10,848	176	449	313	798	135	344	12,439
2011	4,334	11,052	196	500	363	926	150	383	12,860
2012	4,414	11,256	226	576	413	1,053	152	388	13,273
2013	4,494	11,460	266	678	463	1,181	154	393	13,711
2014	4,574	11,664	306	780	513	1,308	156	398	14,150

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



**Table 2  
Amity Township  
HYDRAULIC LOADING DATA (GPD)  
2005 - 2009**

Month	2005	2006	2007	2008	2009
January	1,450,000	1,713,000	1,300,000	1,017,000	989,000
February	1,220,000	1,352,000	815,000	1,867,000	836,000
March	1,371,000	713,000	1,861,000	1,605,000	723,000
April	1,608,000	952,000	1,661,000	930,000	1,292,000
May	607,000	767,000	806,000	1,209,000	1,447,000
June	556,000	1,247,000	748,000	918,000	1,280,000
July	815,000	1,288,000	711,000	922,000	813,000
August	606,000	909,000	730,000	680,000	1,433,000
September	560,000	1,577,000	592,000	1,036,000	1,060,000
October	1,457,000	950,000	812,000	788,000	1,302,000
November	1,013,000	1,477,000	1,002,000	878,000	1,020,000
December	1,382,000	961,000	1,648,000	1,988,000	1,812,000
<b>Average Annual Flow (Gallons)</b>	<b>1,053,750</b>	<b>1,158,833</b>	<b>1,057,167</b>	<b>1,153,167</b>	<b>1,167,250</b>
<b>Max. 3 Month Ave. Flow (Gallons)</b>	<b>1,399,667</b>	<b>1,334,667</b>	<b>1,445,667</b>	<b>1,496,333</b>	<b>1,378,000</b>
<b>PEAKING FACTOR</b>					
Max. 3 Month Ave. Flow /					
Ave. Annual Flow	1.33	1.15	1.37	1.30	1.18
<b>Flow Peaking Factor:</b>					
<b>Average 5 Year Ratio</b>	<b>1.266</b>				

**Table 3**  
**Amity Township**  
**ORGANIC LOADING DATA (lbs BOD5/day)**  
**2005 - 2009**

Month	2005	2006	2007	2008	2009
January	5,035	3,000	1,193	1,881	975
February	3,328	2,118	1,771	4,463	1,184
March	2,654	1,629	1,524	2,412	1,078
April	2,549	2,443	1,750	1,712	1,596
May	2,432	2,445	1,387	1,462	1,924
June	970	1,926	1,477	2,236	1,531
July	1,296	3,089	1,146	1,255	1,130
August	1,748	552	1,135	771	1,889
September	3,201	1,630	1,148	1,413	1,270
October	3,702	1,641	1,778	859	955
November	2,496	1,946	3,556	1,746	2,309
December	4,179	1,532	1,841	1,612	2,259

**Average Annual BOD (lbs/day)**

2,799

1,996

1,642

1,818

1,508

**Max. 1 Month BOD5 Loading (lbs/day)**

5,035

3,089

3,556

4,463

2,309

**RATIO:**

Max. 1 Month BOD5 /

Ave. Annual BOD5

1.80

1.55

2.17

2.45

1.53

**Organic Peaking Factor:**

**Average 5 Year Ratio**

1.899

**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)
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
2009	12,090	1,167,250	1,378,000	96.5	1,508	2,309	0.125	0.191
<b>Average</b>	<b>11,438</b>	<b>1,118,033</b>		<b>97.81</b>	<b>1,953</b>		<b>0.1727</b>	<b>0.3257</b>
<b>Projected Loadings</b>								
2010	12,439	1,216,677	1,540,313	97.81	2,149	3,223	0.1727	0.3257
2011	12,860	1,257,855	1,592,445	97.81	2,221	3,332	0.1727	0.3257
2012	13,273	1,298,251	1,643,586	97.81	2,293	3,439	0.1727	0.3257
2013	13,711	1,341,093	1,697,824	97.81	2,368	3,552	0.1727	0.3257
2014	14,150	1,384,032	1,752,185	97.81	2,444	3,666	0.1727	0.3257

# ***Proof of Flow Meter Calibration***

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# LRM, Inc

Instrumentation & Disinfection Systems

## CALIBRATION CERTIFICATE

CALIBRATION DATE: December 1, 2009

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, chart recorder

### COMMENTS:

Meter checked with E & H calibrator, used for magnetic flow meters, All parameters "Passed".

No errors in log. "System OK"

The flow meter operates at the factory stated accuracy of .5% of rate.

TECHNICIAN: Ross Crawford



# LRM, Inc

## Instrumentation & Disinfection Systems CALIBRATION CERTIFICATE

CALIBRATION DATE: December 1, 2009

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 1/4" weir ( 3.604')      7.756 X H<sup>1.5</sup>

SETTINGS:	V	H		
	0	1	1.607'	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 zeroed for calibration purpose  
The flow meter operates at the factory stated accuracy of 1% of span.

### TECHNICIAN:

Ross Crawford



# LRM, Inc

Instrumentation & Disinfection Systems

## CALIBRATION CERTIFICATE

CALIBRATION DATE: December 1, 2009

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 1/4" weir ( 3.604') <sup>1.5</sup> 7.756 X H

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 zeroed at time of calibration

Flow meter operates at the factory stated accuracy of 1% of span error.

### TECHNICIAN:

Ross Crawford

***Chapter 94 Report Information From  
Union Township***

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# *Systems Design Engineering, Inc.*

Engineers • Surveyors • Planners • Construction Managers

February 24, 2010

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

Re: Chapter 94 Report for 2009  
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 2009. The Union Township Municipal Authority (UTMA) approved the Annual Chapter 94 Report for 2009 dated February, 2009 at a special meeting on February 23, 2010.

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

Respectfully submitted,

SYSTEMS DESIGN ENGINEERING, INC.

A handwritten signature in cursive script that reads '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 10-0731-0201

Projects\utma\10-0731-0201\chapter94-amity\letterARRO.2.24.10

**SANITARY SEWER COLLECTION SYSTEM**

**D.E.P. RULES AND REGULATIONS - CHAPTER 94  
UNION TOWNSHIP MUNICIPAL AUTHORITY  
OF BERKS COUNTY, PENNSYLVANIA  
2009 ANNUAL REPORT TO  
AMITY TOWNSHIP**

**FEBRUARY, 2010**

**PREPARED FOR**

**UNION TOWNSHIP MUNICIPAL AUTHORITY  
1445 E. MAIN STREET  
DOUGLASSVILLE, PA 19518**

**PREPARED BY**

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

10-0731-0201

## 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.

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Mark Matthews, Chairman  
Union Township Municipal Authority  
of Berks County, Pennsylvania

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Date

**UNION TOWNSHIP MUNICIPAL AUTHORITY  
MUNICIPAL WASTELOAD MANAGEMENT REPORT  
2009 CHAPTER 94 ANNUAL REPORT**

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**UNION TOWNSHIP MUNICIPAL AUTHORITY  
MUNICIPAL WASTELOAD MANAGEMENT REPORT  
2009 CHAPTER 94 ANNUAL REPORT**

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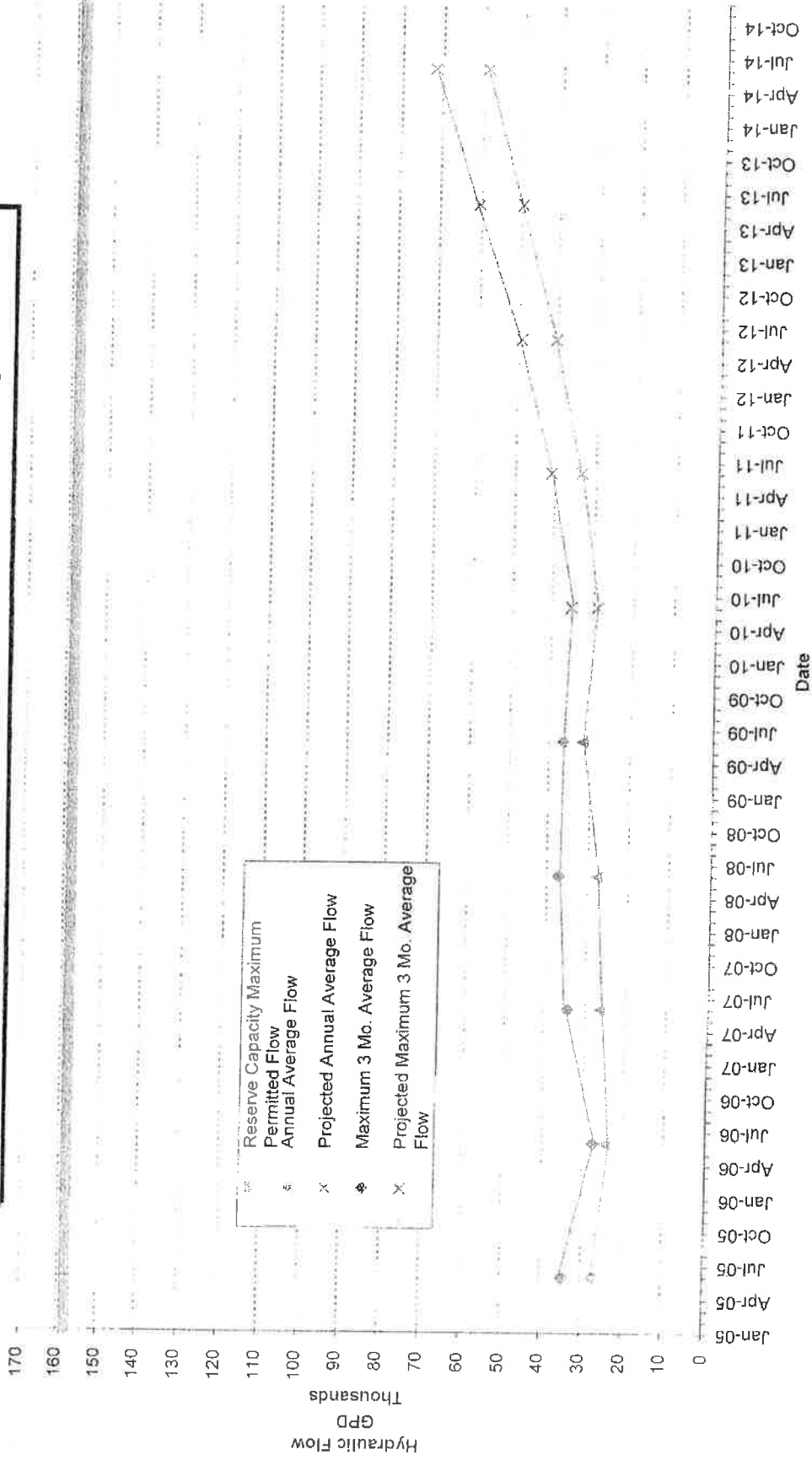
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**Union Township Municipal Authority to Amity  
Figure 1 - Hydraulic Loading Graph**



**UNION TOWNSHIP MUNICIPAL AUTHORITY  
MUNICIPAL WASTELOAD MANAGEMENT REPORT  
2009 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 no new connections made during 2009.

**HYDRAULIC LOADING TABLE AND GRAPH**

Section 94.12(a)(1)

A hydraulic loading table for 2005 to 2009 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 (2005-2009): See Figure 1.\*
- (ii) A projection of the anticipated hydraulic loading to the plant for each of the next five years (2010 – 2014): 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 27<sup>th</sup>, 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  
2009 CHAPTER 94 ANNUAL REPORT  
AVERAGE DAILY FLOWS FROM PUMP STATION NO. 3

<u>MONTH</u>	<u>DAYS IN REPORTING PERIOD</u>	<u>TOTAL DAILY FLOWS (GPD)</u>	<u>AVG. DAILY FLOWS (GPD)</u>	<u>MAX. 3- MONTH AVERAGE FLOW (GPD)</u>	<u>RAINFALL (INCHES)</u>
Year 2009 - 171 EDU's					
January	31	923,893	29,803		1.88
February	28	801,612	28,629		0.32
March	31	622,294	20,074		0.75
April	30	926,400	30,880		2.63
May	31	1,090,704	35,184		4.79
June	30	1,020,390	34,013		6.70
July	31	744,186	24,006		3.99
August	31	1,139,095	36,745		6.59
September	30	1,046,700	34,890		4.25
October	31	946,492	30,532		4.22
November	30	869,610	28,897	36,430	0.43
December	31	1,545,691	49,861		5.10
				TOTAL	41.65
Average Daily Flow (GPD)			31,992		

TABLE 1 (cont.)

UNION TOWNSHIP MUNICIPAL AUTHORITY  
 2009 CHAPTER 94 ANNUAL REPORT  
 AVERAGE DAILY FLOWS FROM PUMP STATION NO. 3

<u>MONTH</u>	<u>DAYS IN REPORTING PERIOD</u>	<u>TOTAL DAILY FLOWS (GPD)</u>	<u>AVG. DAILY FLOWS (GPD)</u>	<u>MAX. 3- MONTH AVERAGE FLOW (GPD)</u>	<u>RAINFALL (INCHES)</u>
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		<u>5.27</u>
				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  
2009 CHAPTER 94 ANNUAL REPORT  
AVERAGE DAILY FLOWS FROM PUMP STATION NO. 3

<u>MONTH</u>	<u>DAYS IN REPORTING PERIOD</u>	<u>TOTAL DAILY FLOWS (GPD)</u>	<u>AVG. DAILY FLOWS (GPD)</u>	<u>MAX. 3- MONTH AVERAGE FLOW (GPD)</u>	<u>RAINFALL (INCHES)</u>
Year 2007 - 165 EDU's					
January	31	1,195,300	<b>38,558</b>		3.62
February	28	912,160	<b>32,575</b>	<b>34,237</b>	1.82
March	31	978,900	<b>31,577</b>		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		<u>3.96</u>
				<b>TOTAL</b>	<b>42.06</b>
Average Daily Flow (GPD)			<b>26,635</b>		

\* 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**  
**2009 CHAPTER 94 ANNUAL REPORT**  
**AVERAGE DAILY FLOWS FROM PUMP STATION NO. 3**

<u>MONTH</u>	<u>DAYS IN REPORTING PERIOD</u>	<u>TOTAL DAILY FLOWS (GPD)</u>	<u>AVG. DAILY FLOWS (GPD)</u>	<u>MAXIMUM 3-MONTH AVERAGE FLOW (GPD)</u>
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	

TABLE 2

**HYDRAULIC LOADING  
UNION TOWNSHIP MUNICIPAL AUTHORITY  
2009 CHAPTER 94 ANNUAL REPORT  
QUARTERLY AVERAGE FLOWS AND ANNUAL AVERAGES  
2005 TO 2009 (GPD)**

<u>Quarter/Year</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
First	34,538	26,052	34,293	37,053	26,398
Second	28,674	21,431	29,428	25,648	33,379
Third	20,130	27,277	18,486	25,224	31,848
Fourth	<u>27,637</u>	<u>25,346</u>	<u>23,739</u>	<u>25,824</u>	<u>36,541</u>
Annual Avg. (GPD)	27,745	24,607	26,635	27,799	31,992

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  
2009 CHAPTER 94 ANNUAL REPORT  
FLOW PROJECTION FACTOR TABULATION CHART**

<u>YEAR</u>	<u>MAX 3-MONTH AVE. FLOW (GPD)</u>	<u>ANNUAL AVE. FLOW (GPD)</u>	<u>PROJECTION FACTOR</u>
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
2009	36,430	31,992	1.14
Annual Average Flow (GPD)		27,756	
Average Flow Projection Factor			1.22

The base figure of 27,756 GPD was modified by adding the flow from the number of proposed connections for 2009 to create the projected 2010 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 a limited number of connections from the Heritage Builders Subdivision would occur in 2010 and succeeding years due to the current economic conditions and connections from the W.B. Homes, Inc. development would begin in 2011-2012. Flow projections were based on the following connections per year:

<u>Year</u>	<u>Number of Projected Connections</u>
2010	5 (from Heritage and Unionville Road area)
2011	20* (10 from Heritage plus 10 from W.B. Homes, Inc.)
2012	30* (10 from Heritage plus 20 from W.B. Homes, Inc.)
2013	40* (20 from Heritage plus 20 from W.B. Homes, Inc.)
2014	40* (20 from Heritage plus 20 from W.B. Homes, Inc.)

\*The number of proposed connections in the years denoted is estimated and is dependent on many factors.

**TABLE 4**

**UNION TOWNSHIP MUNICIPAL AUTHORITY  
2009 CHAPTER 94 ANNUAL REPORT  
FLOW PROJECTION FOR 2010 TO 2014**

<u>YEAR</u>	<u>PROJECTION FACTOR</u>	<u>DAILY AVERAGE FLOW (GPD)*</u>	<u>MAX 3-MONTH AVG FLOW (GPD)**</u>
2010	1.22	28,901	35,259
2011	1.22	33,481	40,847
2012	1.22	40,351	49,228
2013	1.22	49,511	60,403
2014	1.22	58,671	71,579

\*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  
2009 CHAPTER 94 ANNUAL REPORT  
SECTION 94.12(A)(3) 2005 TO 2009  
NUMBER OF CONNECTIONS AND EDU'S**

<u>YEAR</u>	<u>TOTAL NO. OF EDU'S</u>	<u>NUMBER OF CONNECTIONS PER YEAR</u>	<u>TOTAL NO. OF CONNECTIONS</u>
2005	164*	0 Connection	148
2006	164*	0 Connection	148
2007	165*	1 Connection	149
2008	171*	6 Connections	155
2009	171*	0 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 is 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 but limited construction occurred in 2009 due to the economy. For purposes of this report, we have provided projected connections for years 2010 thru 2014, but the anticipated build out is unknown due to the current economic conditions.

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 was approved in November, 2009. It is anticipated that Planning Modules for the development will be submitted and processed in 2010. 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 =	<u>699 gpd</u>
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 submitted a request to the Union Township Municipal Authority. 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 approved the additional capacity request and a new Inter-Municipal Agreement was prepared in 2008. The Inter-Municipal Agreement has been executed but there are several items needed to finalize the Agreement including the enactment of a new Ordinance by Union Township and the UTMA will need to submit payment of the capacity reservation fees. The completion of these remaining items is anticipated to occur in the early part of 2010. 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 2010. Connections from this development would be expected to begin in 2011.

**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 January 30, 2009 and December, 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 2009 at Pump Station No. 3 was 63,573 GPD which equates to 44 gpm. The annual average daily flow to the pump station in 2009 was 31,992 gpd which equates to 22.2 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 2009 was 187 gpd per EDU. The estimated maximum daily flow per EDU in 2009 was 372 gpd per EDU. The maximum peak daily flow factor in 2009 based on the recorded flows was 2.0. 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 2010 at Pump Station No. 3, adding 5 additional EDU's @ 229 gpd per EDU is  $176 \text{ EDU's} \times 229 \text{ GPD/EDU} = 40,304 \text{ GPD} \times 2.5 = 100,760 \text{ GPD} = 70 \text{ gpm}$ . Projected Peak Hourly Flow for 2010 at Pump Station No. 3, adding 5 additional EDU's @ 229 gpd per EDU is  $176 \text{ EDU's} \times 229 \text{ GPD/EDU} = 40,304 \text{ GPD} \times 4.0 = 161,216 \text{ GPD} = 112 \text{ gpm}$ .

Maximum Daily Projected Flow for 2011 at Pump Station No. 3, adding 20 additional EDU's @ 229 gpd per EDU is  $196 \text{ EDU's} \times 229 \text{ GPD/EDU} = 44,884 \text{ GPD} \times 2.5 = 112,210 \text{ GPD} = 90 \text{ gpm}$ . Projected Peak Hourly Flow for 2011 at Pump Station No. 3, adding 20 additional EDU's @ 229 gpd per EDU is  $196 \text{ EDU's} \times 229 \text{ GPD/EDU} = 44,884 \text{ GPD} \times 4.0 = 179,536 \text{ GPD} = 125 \text{ gpm}$ .

The projected maximum daily and peak hourly flows for 2010 and 2011 are well within the capacity of the pumps.

***Chapter 94 Report Information From  
Douglass Township***

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# *Systems Design Engineering, Inc.*

Engineers • Surveyors • Planners • Construction Managers

February 11, 2010

CERTIFIED MAIL  
7009 0080 0001 5122 8991  
RETURN RECEIPT REQUESTED

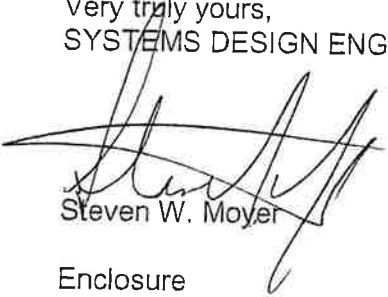
Amity Township  
Township Building  
2004 Weavertown Road  
Douglassville, PA 19518

Attn: Charles E. Lyon  
Township Manager

Dear Mr. Lyon:

We, on behalf of Douglass Township, Berks County, enclose a copy of the completed Chapter 94 Report for 2009 for Douglass Township sewage that is being treated at the Amity Township Wastewater Treatment Plant.

Very truly yours,  
SYSTEMS DESIGN ENGINEERING, INC.



Steven W. Moyer

Enclosure

cc: Douglass Township, Berks Co. w/ Encl.  
VARRO Consulting w/ Encl.  
Attn: Michael D. Sassaman  
50 Berkshire Court  
Suite 602  
Wyomissing, PA 19610  
File: 10-0428-0218

**SANITARY SEWER COLLECTION SYSTEM**

**D.E.P. RULES AND REGULATIONS - CHAPTER 94  
DOUGLASS TOWNSHIP'S ANNUAL REPORT TO  
THE TOWNSHIP OF AMITY  
2009**

**PREPARED FOR:**

**DOUGLASS TOWNSHIP  
1068 DOUGLASS DRIVE  
BOYERTOWN, PA 19512**

**PREPARED BY:**

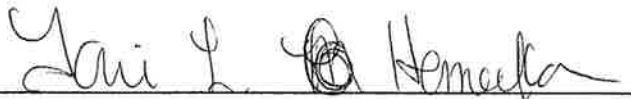
**SYSTEMS DESIGN ENGINEERING, INC.  
1032 JAMES DRIVE  
LEESPORT, PA 19533**

**10-0428-0218**

**STATEMENT OF ACCEPTANCE**

IN ACCORDANCE WITH D.E.P. RULES AND REGULATIONS, CHAPTER 94, THE  
ATTACHED REPORT WAS APPROVED TO BE SUBMITTED TO AMITY  
TOWNSHIP AT THE DOUGLASS TOWNSHIP, BERKS COUNTY MEETING OF \_\_\_\_

February 8, 2010



TOWNSHIP MANAGER  
DOUGLASS TOWNSHIP, BERKS COUNTY

DOUGLASS TOWNSHIP  
BERKS COUNTY, PENNSYLVANIA

CHAPTER 94 – MUNICIPAL WASTELOAD MANAGEMENT  
ANNUAL REPORT – 2009  
CONTRIBUTORY FLOW TO AMITY TOWNSHIP

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F.	Industrial Wasteloads .....	3
G.	Other Connections .....	3

Pursuant to P.L. 1987, Chapter 94 - Municipal Wasteload Management, Douglass Township submits the following information for compilation into the Township of Amity Sewage Treatment Plant - Chapter 94:

**A. PRESENT CONNECTION AND QUARTERLY AVERAGE DAILY FLOWS**

The number of residential, light commercial and light industrial connections from Douglass Township, Berks County served by Amity Township's Sewage Treatment Plant is approximately 249. The number of sewer EDU's from Douglass Township for 2009 was approximately 277. This number is based on a billing EDU of 12,500 gallons per quarter.

The sewage is metered at the wet well type (Duplex - submersible pumps) pumping station.

The latest quarterly meter readings were:

1st Quarter 2009	4,330,590 gallons
2nd Quarter 2009	3,958,690 gallons
3rd Quarter 2009	4,108,330 gallons
4th Quarter 2009	4,289,510 gallons

The three month max occurred in January, February, March with a total flow of 4,330,590 gallons or 48,118 gpd.

**B. NEW CONNECTIONS AND EXTENSIONS**

The system was constructed during the years 1999 and 2000. The system came on line with the first connections being May / June 2000. In year 2009, there were thirteen (13) new connections to the collection system. The total EDU's were adjusted per Douglass Township's sewer account records. At this time no new extensions are anticipated by the Township. Any new extensions will be provided by individual developers.

The following Subdivision/Land Development plan is currently in the preliminary plan stage.

1. Crable Tract 44 single family units

Presently there is one (1) development which is currently under construction. This is an active project and connections are on-going.

1. Douglass Village 302 proposed total connections (106 current connections)  
Mobile Home Park

The following subdivision/land development plans have received final plan approval and are recorded but construction has not yet begun.

1. 84 Lumber LDP 1-2 EDU's (expand lumber yard and new office building)

The following subdivision/land development plan is presently at final plan stage and will be recorded in the near future.

1. NYCE Truck Terminal (At Traprock Business Center) 2 EDU's

### **C. SEWER SYSTEM MONITORING AND MAINTENANCE**

Douglass Township employs three (3) full time people whom do all monitoring and maintenance work on the sanitary sewer. The metering equipment exists at the pumping station site. This metering equipment is checked periodically for unusual readings and preventative maintenance.

A pumping station is maintained near Old Philadelphia Pike adjacent to S.R. 0442 and the Pottstown Bypass. This station is checked daily except weekends and holidays. Inspection of the collection system is accomplished as time permits. All connections installed into the sanitary collection system are inspected as completed.

### **D. CONDITION OF SEWER COLLECTION SYSTEM**

The sanitary sewer collection system consists of approximately 4,453 linear feet of 10" PCV pipe, 19,042 linear feet of 8" PVC pipe, 2,568 linear feet of 6" pipe, 2,701 linear feet of 8" SDR 21 plastic force main, and a duplex submersible pump pumping station with valve box and metering equipment. The sewer system is in good condition. Presently the system has sufficient capacity to handle all proposed and existing flows during the next five (5) years with no areas of the system exceeding conveyance capacity due to projected flows for the next five (5) years.

### **E. PUMP STATION**

Location: Old Philadelphia Pike adjacent to S.R. 0442 and the Pottstown Bypass

Pumps To: Amity Township Municipal Authority's interceptor at Old River Road and River Bridge Road for treatment at Amity Township's wastewater treatment plant.

Pumps: Two (2) Gorman-Rupp

Specified Capacity: 349 GPM at 37.4 feet TDH each pump

The pumping station is in good operating condition and is being maintained adequately.

**F. INDUSTRIAL WASTELOADS**

There are no industrial discharges that fall within EPA pretreatment regulations draining to the pumping station.

**G. OTHER CONNECTIONS**

There is one (1) Amity Township user connected to the Douglass Township sanitary sewer collection system.

***Chapter 94 Report Information From  
Earl Township***

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# **Ebert Engineering, Inc.**

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## **Water and Wastewater Engineering**

March 9, 2010

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

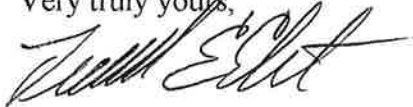
Subject: 2009 Chapter 94 Report  
Re: Earl Township  
EE, Inc. No.: 044-001

Dear Mr. Sassaman,

On behalf of Earl Township, we are transmitting the completed questionnaire for your use in completing the Amity Township Chapter 94 Report for 2009. We have also enclosed a copy of two maps the first map shows the current Earl Township Public Sanitary Sewer District and the second map identifies the parcels with the public sanitary sewer district that are either connected or planned to connect the public sanitary sewer system. We have also included a spreadsheet that summarizes the number of connections and the number of edus that are reserved for future connection.

Should you have any questions concerning this matter, please feel free to contact either this office or Earl Township directly.

Very truly yours,



Frederick E. Ebert, P.E.  
President

Enclosure

CC: Earl Township (w/enclosure and extra copy of maps)  
Dennis Smaglinski, P.E. (w/enclosure)

TRIBUTARY SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Earl Township Date: 2-25-10

**A. SEWER SYSTEM DETAILS**

- 1. Connected Population for 2009 (Number of People): 351\*
- 2. Total number of new connections in 2009: 1 Equivalent EDUs Connected: 133

Breakdown of connections:

- a. Residential 129
- b. Commercial 4
- c. Industrial 0
- d. Public 0

1 EDU = 300 GPD

3. Projected EDU Connections:

	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
	<u>135</u>	<u>150</u>	<u>152</u>	<u>154</u>	<u>156</u>

\* 133 edu(s) x 2.64 persons/household = 351 persons

4. List of Industrial Customers including average daily flow for 2009, noting any violations

<u>Industry Name</u>	<u>Location</u>	<u>2009 Average Current Flow GPD</u>	<u>Average Waste Strength mg/L BOD<sub>5</sub></u>	<u>Violations</u>
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No industrial connections

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5. Sanitary Sewer Extensions Constructed in 2009. Include main length, size and number of manholes as well as any new pump station(s).

<u>Name/Area Served</u>	<u>Sewer Extension Size</u>	<u>Length</u>	<u>Number of Manholes</u>
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No extensions to the system occurred in 2009. There was one new connection.

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**B. PROPOSED RESIDENTIAL/COMMERCIAL DEVELOPMENTS/PROJECTS**

<u>Name/Area Served</u>	<u>Proposed Units (EDUs)</u>				
	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
<u>Camp Manatawny</u>	0	13	0	0	0
<u>M46/D1*</u>	0	0	1	0	0
<u>P5A*</u>	0	0	0	1	0
<u>D3</u>	1	0	0	0	0
<u>D11</u>	1	0	0	0	0
<u>Esterly Subdivision</u>	0	2	1	1	0

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.

\* See attached map

C. PUMPING STATION INFORMATION

1. List all Pumping Stations along with their respective capacities and flows:

<u>Name/Number</u>	<u>Number Of Pumps</u>	<u>Actual 2009</u>		<u>Projected 2010</u>	
		<u>Avg. Daily Flow MGD</u>	<u>Max Daily Flow MGD</u>	<u>Avg. Daily Flow MGD</u>	<u>Max Daily Flow MGD</u>

No existing pumping stations.

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2. Pumping Station Condition:

Discuss condition of each pumping station and/or any capacity problems.

Name: Not Applicable

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Name: Not Applicable

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Name: \_\_\_\_\_  
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Name: \_\_\_\_\_  
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\_\_\_\_\_  
Name: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**D. OPERATION AND MAINTENANCE**

1. Describe routine operation and maintenance procedures:
  - a. Sewer system: The entire system is low pressure and no problems occurred during 2009.  
\_\_\_\_\_  
\_\_\_\_\_
  - b. Pump stations: Not Applicable  
\_\_\_\_\_  
\_\_\_\_\_
  - c. Meter pits: Meters read monthly and calibrated annually.  
\_\_\_\_\_  
\_\_\_\_\_

2. Known problem areas:

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.

No known problems in the collection system.

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3. List of any major maintenance, monitoring, or repair items performed during 2009 including a discussion of the condition of the sewer system. Report on any Inflow and Infiltration work performed during the past year and describe work which is planned for the future. Estimate the amount of flow which has been eliminated or needs to be eliminated.

Location

Nature of Problem

Corrective Measures Taken

No problems were identified during 2009 and no major maintenance occurred.

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

**E. INSTRUMENT CALIBRATION RECORDS**

Attach copies of calibration records for flow metering instrumentation.

**F. PREPARER**

Signed:  \_\_\_\_\_  
Typed Name: Frederick Ebert \_\_\_\_\_  
Title: Earl Township Wastewater Engineer \_\_\_\_\_  
Address: Ebert Engineering, Inc. \_\_\_\_\_  
P.O. Box 540, 4092 Skippack Pike, Suite 202 \_\_\_\_\_  
Skippack, PA 19474 \_\_\_\_\_  
Phone Number: 610-584-6701 \_\_\_\_\_