
EXHIBIT E1

**CHAPTER 94 REPORT FOR 2015 -
EAST END WASTE WATER TREATMENT FACILITY**

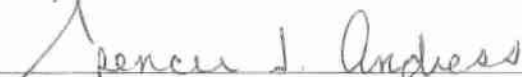
**Chapter 94
Municipal Wasteload Management
Annual Report**

**2015 Annual Report
New Garden Township Sewer Authority
East End Waste Water Treatment Facility
Chester County**

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2015 MUNICIPAL WASTELOAD MANAGEMENT REPORT

EAST END WASTE WATER TREATMENT FACILITY
 NEW GARDEN TOWNSHIP
 CHESTER COUNTY, PENNSYLVANIA

MARCH 2016

1. INTRODUCTION

This report has been prepared for calendar year 2015, in accordance with the provisions of Chapter 94, Title 25 of the Pennsylvania Code and supplemental requirements issued by PADEP. The East End Waste Water Treatment Facility (East End WWTF), located in New Garden Township, Chester County, Pennsylvania, is a lagoon treatment/spray irrigation facility which was designed to be constructed in phases; see the process diagram at **Appendix 1**. The original Water Quality Management Permit No. 1596417 (WQM Permit) identified a total of three phases which have now been completed. Phase 3, the sixth spray zone (Zone 6) was placed in service in the spring of 2006. The spray irrigation fields are divided into six zones, each of which originally was determined to have a nominal reclamation capacity of 50,000 gpd. A WQM Permit (Amendment #1) was issued on July 10, 2013. The WQM Permit provides for an increase of 0.024 MGD in total spray field capacity and a resulting total system capacity of 0.3240 MGD. The WQM Permit also includes approval to construct a second storage lagoon with a capacity of 14.33 MG along with upgrades to the treatment lagoons. The New Garden Township Board of Supervisors and Sewer Authority members will determine the timing of constructing the second storage lagoon now that the WQM Permit has been renewed.

The current permit effluent parameters and discharge limits are shown below:

PERMIT EFFLUENT PARAMETERS

Parameter	Average Monthly	12-Month Rolling Average	Instantaneous Maximum
Flow (gpd)	324,000		
CBOD ₅	25 mg/l		50 mg/l
Suspended Solids*	45 mg/l	30 mg/l	90 mg/l
Total Nitrogen** 5/1 to 11/30	22 mg/l		44 mg/l
Total Nitrogen** 12/1 to 4/30	Monitor/Report		Monitor/Report
Fecal Coliform	200/100 ml as geometric average		
pH	Within limits of 6.0 to 9.0 standard units at all times		

*The 12-month rolling average for the parameter Total Suspended Solids shall not exceed 30 mg/l. The calculated value shall be reported on the monthly Discharge Monitoring Reports. The calculations shall include the current monthly average value added to the previous eleven monthly averages then divided by twelve.

**Total Nitrogen = Total Kjeldahl Nitrogen + Nitrite (NO₂) = Nitrate (NO₃).

Historical Information

The East End WWTF is a lined lagoon treatment process followed by a lined storage lagoon with the treated effluent being land applied through spray irrigation. The system was first placed in service in 1998. The major components of the system include: 1) an influent screen, 2) aerated lagoon #1 which contains a volume of 5.053 million gallons, 3) aerated lagoon #2 which contains a volume of 5.039 million gallons and 4) a storage lagoon that contains a volume of 21.73 MG. There are a total of six active spray zones. Each spray zone contains 9.0 acres devoted to active irrigation (54 wet acres). There are two turbine pumps used to pump the treated effluent to the spray zones. One of the effluent pumps was repaired in 2007 and the other one repaired in 2009.

The East End WWTF began receiving sewage on August 18, 1998 at the completion of construction and after approval was granted by the Pennsylvania Department of Environmental Protection (DEP). Because of the large volume of the treatment lagoons, several months elapsed between the time that sewage began entering the system and treated effluent began filling the storage lagoon. Discharge of the treated effluent to the spray fields commenced in 1999.

Waste water is collected within the service area by a network of gravity sewer lines and conveyed to strategically located pump stations. The terminus of the collection system is the Main Influent Pump Station located behind the New Garden Shopping Center. The Main Pump Station force main is connected directly to the headworks of the plant at the screen building. A small pump station serving the residential subdivision named The Preserve at New Garden pumps directly into the same force main used by the Main Pump Station. In 2001 a new pump station located at the intersection of Bucktoe Road and Sharp Road (the Bucktoe Road Pump Station) was put into service. This station also pumps directly into the same force main used by the Main Pump Station. No intermediate pumping takes place. *There are no portions of the East End sewer service area owned or operated by entities other than New Garden Township.*

In 2002 two new pump stations serving the Hartefeld residential subdivision were put into service. The Pyles Mountain Lane (H1) Pump Station pumps into the gravity collection system serving the Shinnecock Hill section of the subdivision. This gravity collection system then terminates in the Birkdale Circle (H3) Pump Station (Shinnecock Hill) which then pumps directly to a gravity sewer main which flows to the Bucktoe Road Pump Station (Sharp Road). The Birkdale Circle (H3) Pump Station (Shinnecock Hill) was placed in service in 2002. In 2005 the Portmarnock Drive (H2) Pump Station was placed in service. The discharge from H2 flows through a force main to a point of connection with the gravity collection system in Portmarnock Drive and on to H3 as described above.

In 2005 the Hartefeld Drive Pump Station (H4) discharge was redirected from the South End Waste Water Treatment Facility to the East End WWTF. As a result, all sewage from within the Hartefeld Subdivision, including the Hartefeld Golf Course Clubhouse, is now treated in the East End WWTF.

According to the East End WWTF operator, and available records, during calendar year 2007 the East End WWTF has been operating well with no major problems and the effluent parameter limits have been maintained with a few exceptions. Routine maintenance of all equipment was performed as scheduled. The small chlorine feed pump was replaced, spray heads were replaced as needed due to crop harvesting damage, one of the turbine pumps was overhauled and several aerators were repaired and/or replaced.

In 2008 the motors on two aerators were replaced, the grit screw malfunctioned and was repaired and a slug of grease fouled the screen which was cleaned and put back in service.

In 2009, malfunctioning spray heads were replaced, aerators serviced, the influent screen repaired and a spray pump repaired.

In 2010 spray heads were replaced and spray risers repaired, the chlorine pump and piping was replaced and/or repaired and the effluent screen was repaired.

In 2010 the influent Lake Side screen was serviced and the fittings and brushes replaced. The equipment in the screen room was wire brushed and painted.

The spray fields are maintained regularly. The grass is harvested and removed regularly throughout the growing season, weeds are controlled and the soil is aerated periodically. There are only minor problems with soil erosion periodically. In August 2010 the spray fields were fertilized following the recommendations in the Crop Management Plan.

In 2011 spray heads were replaced and spray risers repaired, aerators were serviced and repaired, the effluent screen was replaced, the effluent flow meter was replaced and other routine maintenance was performed.

In 2012 the force main to the spray field was repaired, spray heads were serviced and repaired, aerators were serviced and repaired, couplings were serviced and repaired and other routine maintenance was performed.

In 2013 spray heads were serviced and repaired, aerators were serviced and repaired, couplings were serviced and repaired and other routine maintenance was performed. In addition, the autodialer at the WWTF was replaced.

In 2014 spray heads were serviced and repaired, aerators were serviced and repaired, couplings were serviced and repaired and other routine maintenance was performed. In addition, the influent screen at the WWTF was repaired. The spray fields were fertilized and treated following the recommendations in the Crop Management Plan.

Current Year

According to the Facility Operator, and available records, during calendar year 2015 the East End Waste Water Treatment Facility operated well without any significant problems. No influent parameter limits (hydraulic) were exceeded in 2015. There were two reported effluent parameter limits that were exceeded in 2015. One exceedance was related to nitrogen and one was related to pH.

In 2015 spray heads were serviced and repaired, aerators were serviced and repaired, couplings were serviced and repaired and other routine maintenance was performed. In addition, the influent screen at the WWTF was again repaired. The spray fields were fertilized and treated following the recommendations in the Crop Management Plan.

is also shown in **Table 1**. The Annual Average Influent Hydraulic Load (Flow) and the 3-Month Maximum Influent Hydraulic Load (Flow) did not exceed the Annual Average Influent Hydraulic Load (Flow) permitted capacity of 0.3240 MGD. The flow projection factor (average of the ratio of the 3-Month Maximum Influent Hydraulic Load (Flow) to the Annual Average Influent Hydraulic Load (Flow)) for the last five years is 1.11 and for 2015 is 1.18 as shown in **Table 1**. The monthly and the yearly Average Annual Influent Hydraulic Load (Flow) to the treatment plant for the years 2011 through 2015 are shown in **Table 1** and graphically in **Figure 1** along with the projected Average Annual Influent Hydraulic Load (Flow) for the next five years. The 3-Month Maximum Influent Hydraulic Load (Flow) for the period 2011 through 2015 is also shown in **Table 1**.

Table 1 - East End WWTF						
2011 – 2015 Hydraulic Loading (Flow)						Rainfall
	(MGD)					(inches)
Month	2011	2012	2013	2014	2015	2015
January	0.1786	0.2229	0.2209	0.2219	0.1941	4.86
February	0.1959	0.2059	0.2172	0.2372	0.1980	1.70
March	0.2239	0.1918	0.2305	0.2226	0.2216	4.23
April	0.2060	0.1951	0.2254	0.2408	0.1931	2.98
May	0.1953	0.1907	0.2219	0.2541	0.2033	0.63
June	0.1824	0.1862	0.2486	0.2069	0.2075	9.43
July	0.1753	0.1688	0.2317	0.1739	0.1913	4.10
August	0.2033	0.1728	0.2199	0.1796	0.1750	1.70
September	0.2359	0.1960	0.2087	0.1892	0.1171*	3.25
October	0.2131	0.2177	0.2176	0.1795	0.1293*	5.75
November	0.2136	0.2149	0.2115	0.1995	0.1281*	2.18
December	0.2290	0.2254	0.2342	0.2406	0.1408*	6.10
Annual Average (AA)	0.2043	0.1990	0.2240	0.2122	0.1749	3.91
3-Month Max. Average	0.2209	0.2193	0.2341	0.2392	0.2060	
Ratio (3-Month Max to AA ratio)	1.08	1.10	1.05	1.13	1.18	
5-Year Average Hydraulic Ratio =	1.09	1.09	1.10	1.11	1.11	

*The influent flow meter was not functioning properly during this period. Repairs were being made and the meter recalibrated.

The annual average permitted capacity is 0.3240 MGD.

Since this is a lagoon treatment system there is no “max month” or “peak daily” hydraulic capacity limit contained in the permit. The Hydraulic Design Capacity is 0.3240 MGD.

The Organic Design Capacity stated in the permit is 1,081 pounds per day.

The current year average daily hydraulic loading (flow) is 0.1749 MGD compared to the permitted capacity of 0.3240 MGD. The current year flow is 54% of the permitted flow.

There were no times during the current year when the hydraulic loading (flow) for three consecutive months exceeded the Hydraulic Design Capacity of the waste water treatment facility – no hydraulic overload.

Since there is no existing hydraulic overload the need for a Corrective Action Plan (CAP) and Connection Management Plan (CMP) is not triggered.

Since the East End WWTF is a lagoon system there is significant buffering/flow equalization capacity in the first lagoon. Consequently, when an occasional high flow event is experienced the volume capacity of the first lagoon mitigates any potential adverse impact. Similarly, the treatment process and quality of the effluent are not adversely impacted.

Prior to construction of the East End WWTF, a portion of the raw sewage flow from the East End Service Area was treated in the Kennett Borough Waste Water Treatment Facility (Kennett WWTF) and a portion in the Avondale Borough Waste Water Treatment Facility (Avondale WWTF). Upon completion and commissioning of the East End WWTF, all of the flow which had been treated in the Kennett Borough WWTF was then directed to the East End WWTF. A portion of the flow originating in the village of Toughkenamon continues to be treated in the Avondale Borough WWTF while the balance is treated in the East End WWTF. Flow from a section of the Toughkenamon collection system can be directed either to the Avondale Borough WWTF or to the East End WWTF.

New Garden Township, through the terms of a written agreement dated March 10, 1991 which was amended in writing by instrument dated July 1, 2000, maintains 0.100 MGD of allocated and available capacity in the Kennett Borough WWTF. Planning approval was received from the DEP to activate the connection to the Kennett Borough WWTF. In 2005 construction of a new interconnection between the East End WWTF **treated effluent storage lagoon** and a force main to the Kennett Borough collection system was completed (4/27/05 #1505404). This interconnection enables treated effluent from the East End WWTF to be processed for disposal in the Kennett Borough WWTF. Flow through the facilities commenced on October 4, 2005 and continued throughout the remainder of 2005. The average daily flow discharged to the Kennett Borough WWTF during 2005 was 0.066498 MG. The average daily flow sent to the Kennett Borough WWTF in 2006 was 0.068373 MG for the period 1/1/06 through 3/7/06. No flow was sent to the Kennett Borough WWTF for the balance of 2006, 2007 or 2008. The average daily flow sent to the Kennett Borough WWTF in 2009 was 0.079652 MG and during 2010 it was 0.0100; which occurred during a three month period. No flow was sent to the Kennett Borough WWTF in 2011, 2012 or 2013. The average daily flow sent to the Kennett Borough WWTF in 2014 was 0.0810 MG for the period 2/21/14 through 5/27/14. No flow was sent to the Kennett Borough WWTF in 2015.

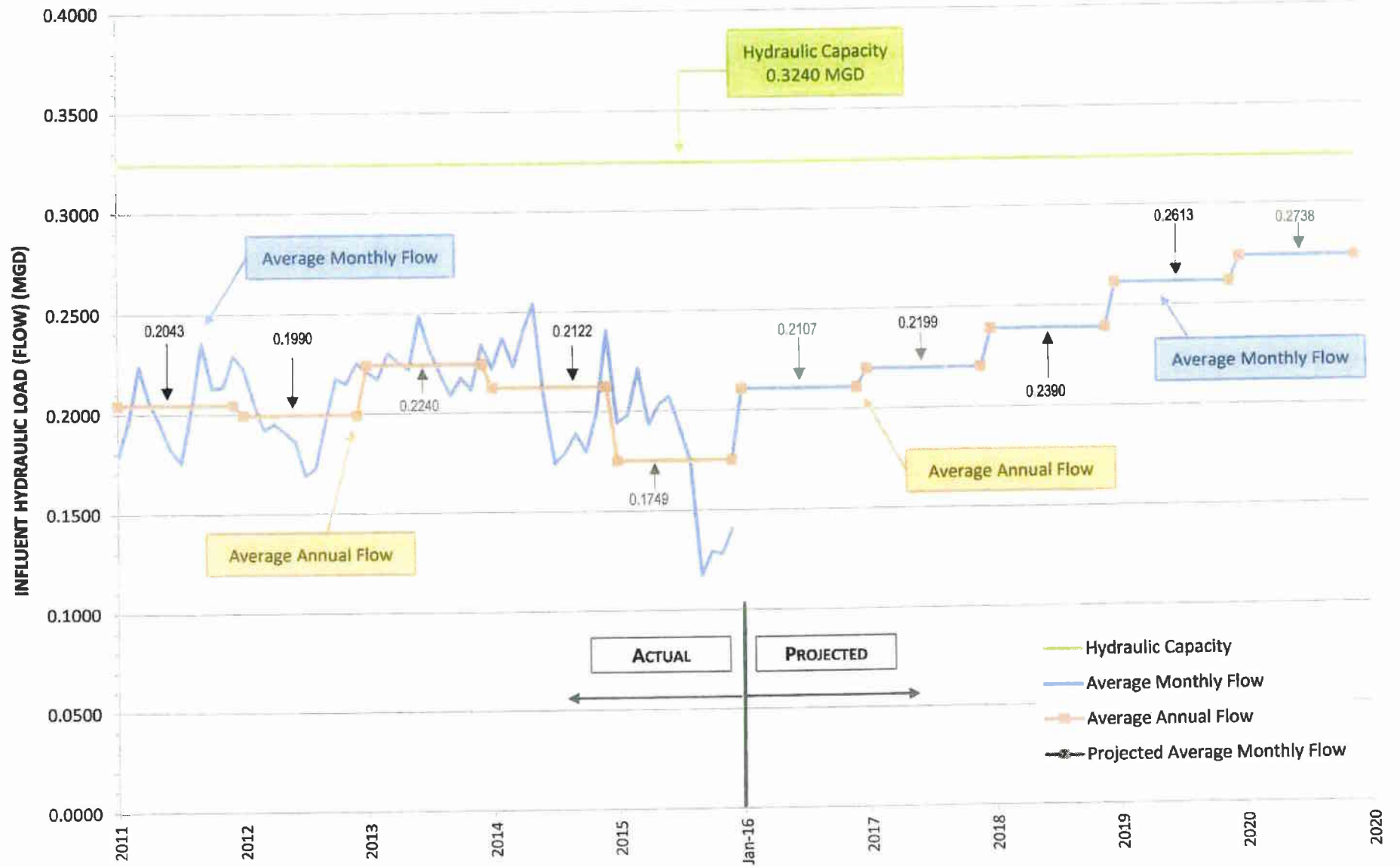
Under the terms of the Agreement, and a Kennett Borough issued Waste Water Contribution Permit dated July 19, 2006 which is reviewed annually, reissued on December 31, 2010 and reissued on July 1, 2012 for a three-year period, New Garden Township is also permitted to send **raw sewage** to the Kennett Borough WWTF in addition to treated effluent. The current permit renewal is being processed by the Borough. Planning approval to activate this connection, which is separate from the treated effluent storage lagoon connection, was included with approval of the East End Sewage Facilities Base Plan Update on July 24, 1998. A flow meter and additional valves are required to be installed at the East End WWTF influent pump station before **raw sewage** can be directed to the Kennett Borough WWTF (12/20/05 #1505423). It is expected this work will commence when there is a demonstrated need for more capacity.

Planning is underway to support approval to divert raw sewage from the Bucktoe Road Pump Station to the Kennett Borough WWTF as well. The Bucktoe Road diversion will provide a means by which to provide sewage treatment capacity to the southern section of the East End Sewer Service Area as growth is experienced in that area of the Township.

Similarly, New Garden Township maintains 0.2180 MGD per day of allocated capacity in the Avondale Borough WWTF through the terms of a written Agreement dated May 23, 2006 which replaced the prior agreement with the Borough of Avondale dated October 31, 1968. The current Agreement also provides for an increase of 0.045 MGD in capacity to New Garden Township. The Borough notified the Township by letter dated September 27, 2012 that an additional 0.045 MGD of capacity has been allocated to the Township for its exclusive use. A Sewage Facilities Base Plan Revision Update, prepared by the Borough of Avondale, which describes the allocation of flow to the Borough of Avondale and New Garden Township, was approved by the DEP on March 9, 2001.

The point is that some flow from the Toughkenamon area of New Garden Township that was directed to the Avondale Borough WWTF for treatment prior to the East End WWTF being placed in service in August of 1998 is now being treated in the East End WWTF. Once Avondale resolves certain issues with the DEP and the actual amount of functional and available capacity in the Avondale Borough WWTF is established, then, the flow from the Toughkenamon area may be redirected from the East End WWTF back to Avondale WWTF for treatment thereby increasing available capacity in the East End WWTF.

FIGURE 1
EAST END WWTF WATER QUALITY MANAGEMENT PERMIT NO. 1596417
HYDRAULIC LOAD (FLOW)



Current Influent Organic Load (Pounds)

The Annual Average Daily Influent Organic Load (Pounds) for 2015 was 543 lbs/day and the Peak Month Average Daily Influent Organic Load (Pounds) was 852 lbs/day based on data shown in **Table 2**. The Annual Average Daily Influent Organic Load (Pounds) was less than the design Annual Average Daily Influent Organic Load (Pounds) of 1,081 lbs/day.

Table 2 - East End WWTF				
2015 Organic Loading Sampling Data				
	A	B	C = A x B x 8.34	
Date of Sample	BOD₅ (mg/l)	Flow (MGD)	Daily BOD₅ (lbs/day)	Monthly Average (lbs/day)
01/06/15	237	0.1712	338	
01/13/15	259	0.1807	390	
01/20/15	174	0.1768	257	
01/27/15	278	0.1962	455	360
02/03/15	224	0.2037	381	
02/10/15	227	0.1750	331	
02/19/15	340	0.1839	521	
02/27/15	326	0.2021	549	446
03/05/15	247	0.2264	466	
03/13/15	202	0.2535	427	
03/19/15	202	0.1835	309	
03/25/15	430	0.2101	753	489
04/08/15	354	0.1737	513	
04/16/15	309	0.1834	473	
04/22/15	299	0.2051	511	499
05/07/15	363	0.1977	599	
05/15/15	429	0.2005	717	
05/21/15	352	0.1867	548	
05/28/15	322	0.2389	642	626
06/11/15	718	0.1969	1179	
06/18/15	382	0.1891	602	
06/26/15	312	0.2182	568	783
07/01/15	325	0.2120	575	
07/17/15	262	0.1596	349	
07/21/15	248	0.1945	402	442

Date of Sample	BOD ₅ (mg/l)	Flow (MGD)	Daily BOD ₅ (lbs/day)	Monthly Average (lbs/day)
08/05/15	458	0.1806	690	
08/12/15	372	0.1867	579	
08/21/15	357	0.1319	393	
08/28/15	1095	0.1913	1747	852
09/03/15	505	0.1174	494	
09/10/15	483	0.1188	479	
09/24/15	493	0.1357	558	510
10/02/15	407	0.1777	603	
10/09/15	297	0.1420	352	
10/15/15	408	0.1108	377	
10/23/15	508	0.1209	512	461
11/05/15	458	0.1177	450	
11/13/15	748	0.1156	721	585
12/01/15	420	0.1613	565	
12/09/15	367	0.1344	411	
12/15/15	498	0.1135	471	
12/23/15	256	0.2064	441	
12/28/15	307	0.1615	414	460

The Average Monthly Influent Organic Load (Pounds) for each month during the last five years along with the 5-Year Average Annual Influent Organic Load (Pounds) and Peak Month Average Daily Organic Load (Pounds) are presented in **Table 3**. **Figure 2** presents the 5-Year Average Annual Influent Organic Load (Pounds) for the past five years and projected for the next five years graphically.

Influent BOD₅ is not required to be analyzed and reported as part of the WQM Permit for the facility. However, Chapter 94 of Title 25 of the Pennsylvania Code requires the Annual Wasteload Management Report include a discussion of and projections for the organic load using BOD₅ influent data.

It should be noted that influent BOD₅ samples were taken throughout 2008. Beginning in 2008, the organic loading was computed using the BOD₅ sample result (concentration) and the hydraulic loading (flow) on the same day the samples were taken. *During those months when more than one sample was taken, the individual daily computed loading results are averaged for the entire month. The average is then reported as the BOD₅ load (lbs/day) for that month.*

Table 3 - East End WWTF					
2011 – 2015 Organic Loading					
(LBS/DAY)					
Month	2011	2012	2013	2014	2015
January	576	457	665	361	360
February	558	515	494	494	446
March	472	580	493	313	489
April	595	538	561	530	499
May	359	258	450	751	626
June	335	678	579	322	783
July	222	546	445	506	442
August	465	499	602	594	852
September	421	592	336	242	510
October	394	611	364	466	461
November	208	485	662	519	585
December	474	322	567	730	460
Annual Average (AA)	423	507	518	486	543
Maximum Month	595	678	665	751	852
Ratio (Max Month to AA Ratio)*	1.77	1.34	1.28	1.55	1.57
5-Year Average Organic Ratio =	1.49	1.48	1.46	1.47	1.43

*While the hydraulic loading “peaking factor” is determined using the 3-Month Max to AA ratio, the organic loading “peaking factor” is determined using the Maximum Month (i.e., the single highest monthly average in the calendar year) to AA ratio.

The influent organic load projection factor (the ratio of the Peak Month Average Daily Influent Organic Load (Pounds) to the Annual Average Daily Influent Organic Load (Pounds) for the last five years is 1.43. The Peak Month Average Daily Influent Organic Load (Pounds) for years 2011 through 2015 is also shown in **Table 3**.

Based on BOD₅ sampling and analysis conducted routinely throughout 2005, 2006, 2007 and 2008, a determination was made that the average BOD₅ concentration of the influent sewage ranges from 325 mg/l to 395 mg/l. The original design assumed the strength of the influent BOD₅ would be 220 mg/l. The strength of the raw waste water and its impact on the operation of the treatment lagoons was addressed in the WQM permit renewal package of materials approved

February 25, 2008. This analysis assumed an influent BOD₅ of 400 mg/l. Because the treatment lagoons are designed to process 0.5 MGD, the calculations show there is no adverse impact on treating the higher strength waste. The obvious consequence is that the maximum treatment capacity will be less than 0.5 MGD, as originally permitted, until modifications are made to the treatment lagoons. The renewed and amended permit provides for such modifications (additional aeration and baffles) which address the strength of the influent BOD₅.

There were no months during the current year when the monthly average influent organic load exceeded the permitted organic design capacity of the WWTF.

There were no months during the current year when the monthly average influent BOD₅ value was considered an anomaly.

The influent sample taken on August 28, 2015 and analyzed for BOD₅ is considered an anomaly. The monthly organic load without this one sample included is 554 lbs/day compared to 852 lbs/day with it included.

Since there is no existing organic overload, the need for a Corrective Action Plan (CAP) and Connection Management Plan (CMP) is not triggered.

Starting in late 2011, the influent BOD₅ sampling frequency was increased to at least twice per month.

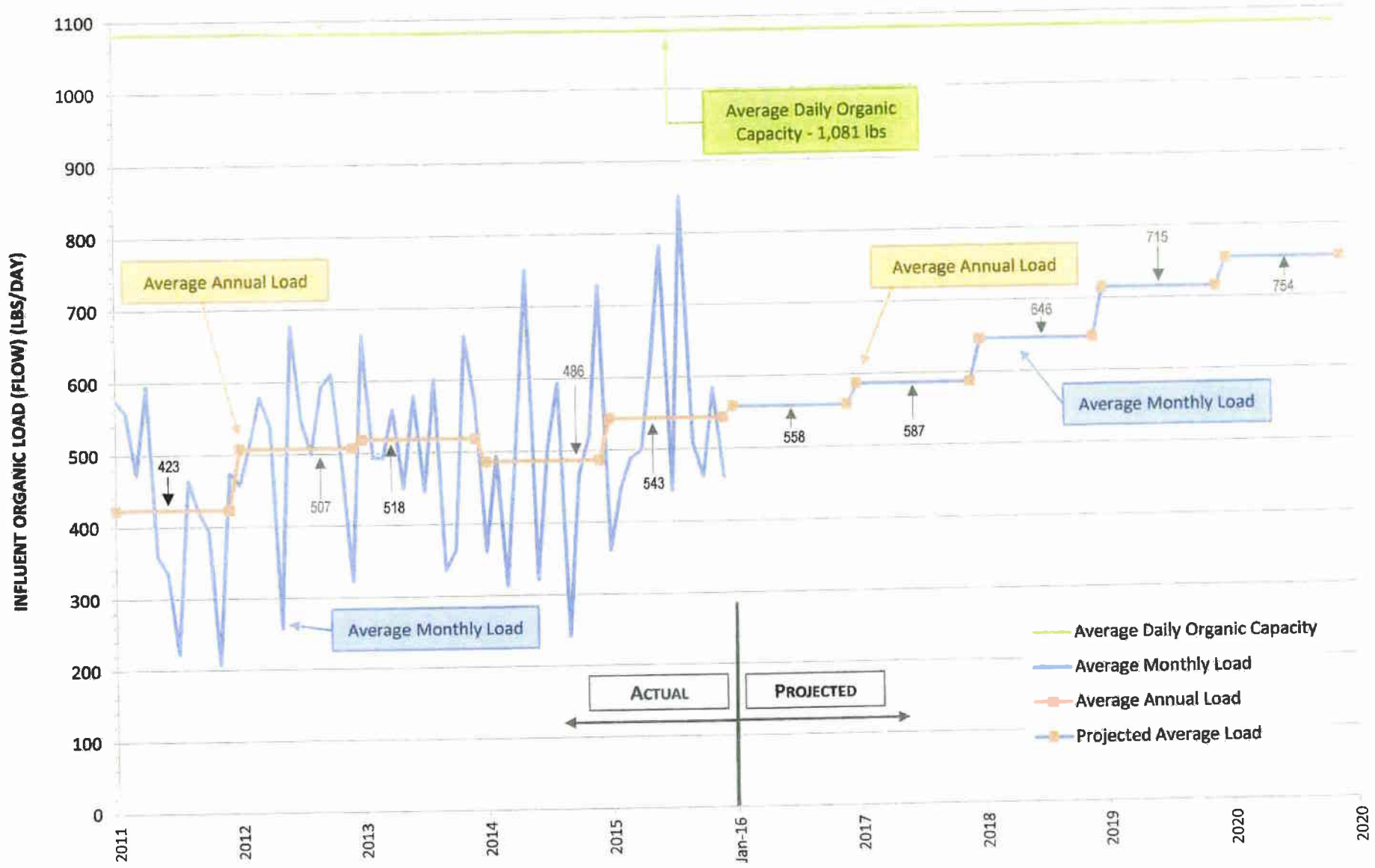
The influent samples taken are 24-hour composite and flow proportioned. Among other constituents, the samples are analyzed for BOD₅. Periodically, influent samples are also analyzed for CBOD₅ for general information purposes and to build a data base of information for possible future use.

The influent samples are taken at the influent screen before sewage enters the treatment process.

No hauled-in septage is processed at the East End WWTF.

The daily influent organic loading is calculated using the 24-hour composite BOD₅ concentration and the hydraulic loading (flow) for the same period. The daily influent organic loading results are then averaged for the month to determine the monthly average influent organic loading (pounds).

FIGURE 2
EAST END WWTF WATER QUALITY MANAGEMENT PERMIT NO. 1596417
ORGANIC LOAD (BOD₅)



3. 5-YEAR ORGANIC AND HYDRAULIC LOADING PROJECTIONS

For 2015 the Annual Average Daily Influent Organic Load (Pounds) and the Peak Month Average Daily Influent Organic Load (Pounds) are presented in **Table 3**. The calculated Annual Average Daily Influent Organic Load (Pounds) to the East End WWTF in the year 2015 was 543 lbs/day which does not exceed the current organic permitted capacity of 1,081 lbs/day. The Peak Month Average Daily Influent Organic Load (Pounds) in the year 2015 was 852 lbs/day which is less than the currently permitted organic capacity of 1,081 lbs/day.

The Department of Environmental Protection now requires that, in addition to preparing the Municipal Wasteload Management Report pursuant to the provisions contained in Chapter 94 of Title 25 of the Pennsylvania Code, an analysis of *Adjusted* Annual Average Influent Hydraulic Load (Flow) and *Adjusted* 3-Month Maximum Influent Hydraulic Load (Flow) be included in the annual report in conjunction with Hydraulic Load projections.

For 2015 the Annual Average Influent Hydraulic Load (Flow) and the 3-Month Maximum Influent Hydraulic Load (Flow) are presented in **Table 1**. The calculated Annual Average Influent Hydraulic Load (Flow) to the WWTF in the year 2015 is 0.1749 MGD which does not exceed the current permitted capacity of 0.3240 MGD. The 3-Month Maximum Influent Hydraulic Load (Flow) in the year 2015 is 0.2060 MGD which does not exceed the currently permitted Annual Average Influent Hydraulic Load (Flow) of 0.3240 MGD.

Projected Influent Organic Load (Pounds)

Anticipated sewage flows from future connections within the East End Sewer Service Area are identified and listed in **Appendix 5, 5A and 5B**. The anticipated flows in **Appendix 5, 5A and 5B** were derived from several sources including: approved subdivision/land development plans, subdivision/land development plans under review, previously purchased capacity and written notices of pending interest. Footnotes included with **Appendix 5, 5A and 5B** clarify the status of the various entries.

The Annual Average Daily Influent Organic Load (Pounds) for each year shown in **Table 4** was computed using the current report year's annual average organic load, as shown in **Appendix 6**, and adding the projected BOD₅ load from proposed EDUs for 2016 as the starting point. Each successive year was computed using the prior year computed BOD₅ load and adding the projected BOD₅ load for that year as shown in **Appendix 7**.

The population associated with the total number of connected residential EDUs is 3,235 persons based on 1,011 connected residential units with an average occupancy of 3.2 persons per dwelling unit as explained in **Appendix 3**.

The Annual Average Daily Influent Organic Load (Pounds) is presented in **Table 4**. The Annual Average Daily Influent Organic Load (Pounds) to the WWTF in the year 2020 is projected to be 754 lbs/day which does not exceed the current permitted organic capacity of 1,081 lbs/day. The Annual Average Daily Influent Organic Load (Pounds) in 2020, factored by the 5-Year Rolling Average Annual Daily Influent Organic Load (Pounds) Peak Factor, results in the Peak Month Average Daily Influent Organic Load (Pounds). The Peak Month Average Daily Influent Organic Load (Pounds) in the year 2020 is projected to be 1,078 lbs/day which is less than the current permitted organic capacity of 1,081 lbs/day.

Table 4 - East End WWTF		
2016 – 2020 Organic Loading Projections (LBS/DAY)		
Year	Annual Average BOD₅ Loading Projections¹ (lbs/day)	Maximum Monthly BOD₅ Loading Projections² (lbs/day)
2016	558	798
2017	587	839
2018	646	924
2019	715	1,022
2020	754	1,078

¹AA Projections = (Report year’s AA loadings) + (loadings from proposed EDUs)

²Max Month Projections = (AA projection) x (5-year Average Organic Ratio)

Projected Influent Hydraulic Load (Flow)

Table 5 presents the basic information needed in conjunction with computing the *Adjusted* Annual Average Influent Hydraulic Load (Flow). **Table 6** presents the computations associated with arriving at the Five Year *Adjusted* Average Annual Flow which is 0.2060 MGD.

The *Adjusted* Annual Average Influent Hydraulic Load (Flow) to the WWTF in the year 2020 is projected to be 0.2738 MGD, as shown in **Table 7**, which does not exceed the current permitted hydraulic capacity of 0.3240 MGD. The *Adjusted* Annual Average Influent Hydraulic Load (Flow) in 2020, factored by the Five Year Rolling Average Influent Hydraulic Load (Flow) Peak Factor, results in the *Adjusted* 3-Month Maximum Influent Hydraulic Load (Flow). The *Adjusted* 3-Month Maximum Influent Hydraulic Load (Flow) in the year 2020 is projected to be 0.3039 MGD, as shown in **Table 7**, which is less than the current permitted hydraulic capacity of 0.3240 MGD.

Table 5 - East End WWTF			
2011 – 2015 Connected EDUs and Flow			
Year	#of EDUs Connected (Added)	gpd/EDU	New Flow (MGD)
2011	31	184	0.0057
2012	7	179	0.0013
2013	1	201	0.0002
2014	25	186	0.0047
2015	0	153	0.0000

The projected Annual Average Influent Hydraulic Load (Flow) for the years 2016 through 2020 is based on a number of factors, which include: the buildout of existing approved projects, projects currently undergoing review and approval, New Garden Township Municipal Use, failing septic systems and individual new connections. A detailed list of connections and anticipated flows is included as **Appendix 5, 5A and 5B**. The flow for each subdivision, and other uses, is based on an estimated number of units to be completed each year and the application of an appropriate average daily flow to each unit type. In summary, the Township is using the following flow allocations for general planning purposes for the listed uses: conventional single family dwellings = 200 GPD; single family age qualified dwellings = 150 GPD; schools = 7.0 GPD/capita and various non-residential uses as described in the notes which are part of **Appendix 5, 5A and 5B**.

Table 6 - East End WWTF								
2011 – 2015 <i>Adjusted</i> Annual Average Flow								
Year	AA Flow in MGD	All projected connected (provide flows approved in planning modules or exemptions in MGD – include any connected projects that did not require planning)					Adjusted AA Flow	
		2011	2012	2013	2014	2015		
2011	0.2043		0.0013	0.0002	0.0047	0.0000	0.2105	
2012	0.1990			0.0002	0.0047	0.0000	0.2039	
2013	0.2240				0.0047	0.0000	0.2287	
2014	0.2122					0.0000	0.2122	
2015	0.1749						0.1749	
Total	1.0144						Total	1.0302
5 Yr. Average	0.2029						5 Yr. Adj Avg	0.2060

2016 – 2020 <i>Adjusted</i> Projected Annual Average Flow					
Year	Previous Year's Annual Average Flow ¹	New EDUs	Increased Flow ² (MGD)	Projected Annual Average Flow ³ (MGD)	Projected Max Month Flow ⁴ (MGD)
2016	0.2060	31.0	0.0047	0.2107	0.2339
2017	0.2107	60.0	0.0092	0.2199	0.2441
2018	0.2199	124.5	0.0190	0.2390	0.2653
2019	0.2390	145.7	0.0223	0.2613	0.2900
2020	0.2613	82.1	0.0126	0.2738	0.3039

¹ The first year's projections starts with the 5-year **adjusted** annual average.

² Increased Flow = (New EDUs x gpd/EDU) / 1,000,000

³ Projected Annual Average Flow = Previous Year's AA Flow + Increased Flow

⁴ Projected Max Month = Projected Annual Average Flow x 5-year average hydraulic ratio.

4. SEWER EXTENSIONS

During 2002 there was only one extension of the East End collection system. This extension involved constructing approximately 700' of 8" gravity main in Cedar Springs Road from the manhole serving the Liberty Knoll apartments to the Cedar Woods apartment complex

During 2003 there was only one extension of the East End collection system. This extension involved constructing approximately 700' of 8" and 1700' of 10" gravity main in Bucktoe Road from the Brittingham Subdivision internal collection system to a manhole at the intersection of Bucktoe Road and Sharp Road.

During 2004 there were no extensions to the collection system.

During 2005 the Bucktoe Road gravity collection system was extended to the west approximately 1,240 feet with 8" gravity sewer main. In addition, a 4" force main was constructed between the end of the gravity main in Bucktoe Road to The Gardens Phase II (Courtyard) Subdivision on Newark Road; a distance of 4,565 feet.

During 2005 the Portmarnock Drive (H2) Pump Station was placed in service in conjunction with construction of the final phase of the Hartefeld Subdivision and associated collection system.

Also, in 2005, 2006, 2007, 2008 and 2009 construction of the Candlewyck Subdivision internal collection system continued. The subdivision is now complete.

The initial phase of The Gardens Phase II (Courtyard) Subdivision collection system was started in 2005 and continued in 2006, 2007, 2008 and 2009. The subdivision is now complete.

During 2006 there were no new sewer main extensions constructed, however, construction of the force main from the Gardens Phase II (Courtyards) Subdivision [started in 2005] was completed in 2006. Similarly, the collection system within the Portmarnock section of the Hartefeld Subdivision [started in 2005] was completed. Also, construction of the final phase of the Candlewyck Subdivision was started in 2005 to include the final section of the collection system which will include 13 homes served by individual grinder pumps [09/18/02 WQM #1502405] owned and maintained by the homeowners. The Candlewyck subdivision was completed in late 2009. Construction of a small (10 lot) subdivision named Pemberton Valley Estates was started in 2007, to include its collection system; construction continued in 2008 and was completed in 2009.

One extension to the collection system was completed in 2012. A small diameter force main was extended from a manhole in Chambers Road south along the west side of Chambers Road to serve five single family homes with failing septic systems. The manhole discharges to the Chambers Road pump station. However, as subdivisions that were started some time ago continued to be built, their respective internal collection systems were expanded based on prior approvals for the projects.

One new sewer extension was completed in 2013. The Department approved a sewage planning module for the Bowling Green facility on Newark Road. The approval provides for building a pump station on the Bowling Green property and constructing a force main from the pump station along Newark Road and then terminating in a manhole in Newark Road just north of its intersection with Baltimore Pike. This work was completed in 2013. The approval also resulted in the on-site package treatment plant utilizing stream discharge being taken out of service and removed.

No extensions to the collection system were completed in 2014.

No extensions to the collection system were completed in 2015.

*No new sewer extensions were approved or exempted in 2015 in accordance with the provisions of the Sewage Facilities Act. All known projects that are in the preliminary planning stage will be tracked and the necessary approvals will be obtained with respect to new collection system extensions. A map showing such projects is included as **Map 1**. A list, Map 1 Index, which includes projects in various stages of planning, is included along with **Map 1** for reference.*

5. PROGRAM FOR SANITARY SEWER MONITORING, MAINTENANCE AND REPAIR

There are no sewer mains in the system that are greater than 10" in diameter. Presently, no direct metering of the collection system is in place except for the Rail Road Line and the Route 41 Line. Metering of the collection system, using portable meters, is performed periodically as part of routine monitoring and remediation as needed. The Township is considering the cost and need for adding metering within the collection system at strategic locations in order to meet the PADEP requirements. A contract with Keystone Engineering Group to install data loggers and associated equipment to monitor flow at each pump station and four other locations was approved in February 2011. Installation of the equipment is complete. Metering is to be added to the Main Pump station which is the only pump station that is currently not metered.

The East End Sewer District Map included in this report as **Appendix 2** depicts the collection lines, pump stations and force mains for the collection system, among other things.

The overall condition of the sewage collection and conveyance system remains good based on information obtained during extensive televising of the lines, visual inspections and operational indicators. These inspections have been ongoing throughout 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014 and 2015 as needed. Phase IV of the Infiltration & Inflow (I & I) evaluation was started in 2007 and continues as resources permit. Routine inspections and maintenance of the collection and conveyances facilities and systems were conducted throughout 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014 and 2015. A copy of each flow meter calibration report is included as **Appendix 8**.

While the collection system serving the Toughkenamon area of the Township was constructed in the 1970 and 1971 time frame, it was found during inspections to be in good condition overall. There were several specific situations identified during televising of the lines in 2000 and 2001 that required attention. These deficiencies have subsequently been addressed or continue to be addressed; however, it will take some time to complete this rehabilitation work.

The East End portion of the collection system was constructed in the 1991 and 1992 time frame and was found during inspections to be in very good condition overall. Again, there were several specific situations identified during televising of the lines in 2000 and 2001 that required attention. These deficiencies have subsequently been addressed or continue to be addressed; however, it will take some time to complete this rehabilitation work.

Both the Toughkenamon and East End collection and conveyance systems were designed, constructed and paid for by the New Garden Township Sewer Authority. Ongoing maintenance is the responsibility of the Sewer Authority.

The high groundwater levels in 2003/2004 and 2010/2011 brought to light higher than expected levels of infiltration. Consequently, the firm of URS Corporation was engaged to complete an I & I study of the East End collection system as well as Toughkenamon area collection system. The initial phase of these studies has been completed. Additional work is ongoing along with repairs being made at the same time. This work will continue as resources permit.

Over the years, there have been several extensions to the collection system to serve specific subdivisions and shopping centers. The most significant extensions are: the Bancroft Woods Subdivision, The Preserve at New Garden Subdivision, Buena Vista Subdivision, Pemberton Road existing residences, New Garden Shopping Center, New Garden Plaza Shopping Center, New Garden Town Square Shopping Center, Liberty Knoll apartments, Cedar Woods apartments, Brittingham Subdivision and the Gardens Phase II (Courtyards) Subdivision. Also the northern sections (F, H, I & J) of the Hartefeld Subdivision have now been constructed as was the Candlewyck subdivision. With the exception of the New Garden Shopping Center, the New Garden Plaza Shopping Center and Liberty Knoll apartments, each of the other extensions were completed in 1992/1993 and are in very good condition overall. The New Garden Shopping Center and New Garden Plaza Shopping Center are older (1979 and 1991 respectively) but their collection systems are relatively small and are in good condition overall. However, grease buildup from a fast food restaurant has caused problems from time-to-time. Similarly, the Liberty Knoll apartment collection system is relatively small and weir testing has not shown any problems. During 2001 and 2002 much of the collection systems within the shopping centers were televised with only minor problems noted.

The New Garden Township Sewer Authority constructed and owns the Pemberton Road extension and previously accepted dedication of the Bancroft Woods and Buena Vista collection systems. The Sewer Authority accepted dedication of The Preserve at New Garden Pump Station collection system and the Bucktoe Road Pump Station collection system in December 2001. It has not been the practice of the Sewer Authority in the past, however, to request or accept dedication of the collection systems serving the shopping centers. Normally, dedication of collection systems occurs as part of the road dedication process.

The force main constructed in Newark Road to serve the Bowling Green facility was dedicated to the Sewer Authority in 2013.

The current monitoring program to track the condition of the collection systems includes such things as visual inspection of manholes and manhole covers, monitoring flows in sections of the system on a rotating schedule, periodically televising sections of the system, periodic random inspection of structures connected to the system to look for illegal connection of roof drains, sump pumps, floor drains and the like and regularly scheduled pumping and cleaning of the pump stations. Also, Township contract personnel are present whenever a connection is made to the collection system.

In 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014 and 2015, careful tracking, correlation and analysis of water meter readings and sewer meter readings at points throughout the service area which correspond to geographic areas served by pump stations and areas served only by gravity mains was ongoing. While still being perfected, the data analysis has proven to be very valuable in tracking flow and determining if problems may be developing within clearly defined geographic areas based on the correlation of water and sewer data.

One of the outcomes of the analysis is the ability to list residential, commercial, mixed and industrial connections served by each of the pump stations. The average daily flow associated with each type of use, as shown in this report, is well within a reasonable range.

Maintenance, repair and rehabilitation of the collection system involves a combination of taking corrective action whenever a problem is found in the collection system and performing routine maintenance and replacement on a scheduled basis; which has included excavating sections of the lines and replacing damaged pipe and joints.

There are no known portions of the collection system where capacity is being exceeded or is expected to be exceeded in the next five years.

To date, there have been no blockages within the collection system and no corrective actions or repairs have been needed.

There are no sewer mains that are greater than 10" in diameter.

6. CONDITION OF THE SEWER SYSTEM

The plant operator conducts daily inspections of the effluent pumps and all mechanical equipment at the East End Waste Water Treatment Facility. There were no major repairs undertaken at the East End Waste Water Treatment Facility in 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014 and 2015. Routine maintenance of the aerators was performed during 2008, 2009, 2010, 2011, 2012, 2013, 2014 and in 2015. Annually, a number of spray risers and heads must be repaired and/or replaced as a result of damage sustained during harvesting of the hay crop. Seeding and aerating the spray fields is performed as needed whenever field conditions dictate. A Crop Management Plan is included as **Appendix 9**. Also included this year (2016) is a plan to address the early stage of soil compaction noted during a recent evaluation prepared by a soils consultant at the request of the Township.

There are no portions of the system where significant (non-routine) rehabilitation or cleaning is needed or underway in order to maintain the integrity of the system. The system has not experienced bypassing, combined sewer overflows, sanitary sewer overflows or excessive infiltration. There are ongoing efforts to monitor the system, identify sources of infiltration and inflow and make repairs when needed as described in Section 5. above.

Certain areas tributary to the Chambers Road pump station which exhibit infiltration and inflow problems, mainly inflow, have been identified for study in order to find the source(s) of the problem. Monitoring of the "G" Line and Chambers Road gravity sewer is ongoing. Some repairs to manholes on the "G" Line have been completed and the infiltration and inflow has been reduced. Monitoring continues and more repairs are likely.

Available existing and future capacity in the collection and conveyance system is adequate. No areas have been identified for replacement or upgrade to meet future demand in the foreseeable future. The sewer system is comprised of an area in and around Toughkenamon that was

constructed in the late 1960s and early 1970s. This infrastructure is made primarily of vitrified clay/terracotta pipe. In addition, the majority of the system throughout the East End was built in the late 1980s and early 1990s. The material used in this part of the system is predominantly PVC. To date there has been no evidence of these sewers not having adequate capacity to properly convey existing flow nor have any areas been identified that would require upgrading or replacement to meet foreseeable future flow. Whenever new development is proposed the downstream infrastructure is re-evaluated to determine its capacity and ability to meet the demand.

There are no sections of the system where surcharging occurs.

There are no sections of the system where sanitary sewer overflows have occurred.

7. SEWAGE PUMP STATIONS

The sewage collection and conveyance system for the East End WWTF consists of gravity sewers and nine pump stations. The nine pump stations are:

- 1) the Main Influent Pump Station [05/23/02 #1596417]
- 2) the Chambers Road Pump Station [03/06/89 #1588457]
- 3) the Bancroft Woods Pump Station [12/13/94 #1594415]
- 4) the Preserve at New Garden Pump Station [08/25/98 #1598415]
- 5) the Bucktoe Road Pump Station (Sharp Road) [01/01/01 #1500425]
- 6) the Pyles Mountain Lane Pump Station (H1) [05/15/01 #1501407]
- 7) the Birkdale Circle Pump Station (Shinnecock Hill) (H3) [05/15/01 #1501407]
- 8) the Portmarnock Drive Pump Station (H2) [05/15/01 #1501407]
- 9) the Hartefeld Drive Pump Station (H4) [07/11/97 #1597406 and 05/25/05 #1505403]

The Main Influent Pump Station was built in 1998 and the Chambers Road Pump Station was built in 1992 and both are owned by the New Garden Township Sewer Authority.

Dedication of the Bancroft Woods Pump Station was accepted by the New Garden Township Sewer Authority in 1998.

Dedication of the Preserve at New Garden Pump Station was accepted by the New Garden Township Sewer Authority on December 11, 2001.

Dedication of the Bucktoe Road Pump Station was accepted by the New Garden Township Sewer Authority on December 11, 2001. Note: this pump station has also been referred to as the Sharp Road Pump Station from time-to-time.

The Pyles Mountain Lane (H1), Birkdale Circle (H3) and Portmarnock Drive (H2) Pump Stations which serve the Hartefeld Subdivision are currently owned and operated by the Township.

On September 27, 2005 the discharge from Hartefeld Drive (H4) Pump Station was redirected from the South End (Somerset Lake/Shangri-La) WWTF to the East End WWTF [05/25/05 WQM#1505403]. This was accomplished by construction of a 6" force main between the Hartefeld Drive (H4) Pump Station and a gravity manhole in Section J of the Hartefeld Subdivision at Turnberry Drive a distance of approximately 2,159 feet. Hartefeld Drive (H4) Pump Station serves the Hartefeld Subdivision Sections A, B and C, the Hartefeld Golf Course Clubhouse and Hartefeld Swim Club.

In conjunction with redirecting the flow from Hartefeld Drive (H4) Pump Station, a short section of 8" gravity sewer main in Turnberry Drive in Hartefeld Section J was reconfigured in order to avoid double pumping the Hartefeld Drive (H4) Pump Station discharge [05/25/05 WQM#1505403]. The gravity sewer main reconfiguration resulted in the flow being conveyed by gravity to the Bucktoe Road Pump Station rather than flowing through the Birkdale Circle (H3) Pump Station.

There are nine pump stations currently within the East End Sewer Service Area that are owned and/or maintained by the New Garden Township Sewer Authority and operated and/or maintained by the New Garden Township Board of Supervisors. They are: the Main Influent Pump Station, the Chambers Road Pump Station, the Bancroft Woods Pump Station, the Preserve at New Garden Pump Station, the Bucktoe Road Pump Station, the Pyles Mountain Lane (H1) Pump Station, the Portmarnock Drive (H2) Pump Station, the Birkdale Circle (H3) Pump Station and the Hartefeld Drive (H4) Pump Station.

Refer to the following chart for performance data for each pump station. The chart includes additional information that is valuable in characterizing the customers served by each pump station, and the actual performance, rather than only design parameters.

Pump Station Name	Number of Pumps	Permitted Capacities		Present Flows		Projected Flows
		AA Permitted Capacity (gpd)	Hydraulic Design Capacity (excluding capacity of backup pump) (gpm)	Annual Average Flows (gpd)	Peak Instantaneous (or Peak Hourly Flow) (gpm)	2-Year Projected Maximum ¹ Flow (gpd)
Main	2	1,728,000	1200	112,626	157	245,674
Chambers	2	360,000	250	50,917	83	141,610
Bancroft	2	180,000	125	14,216	21	49,642
Preserve	2	180,000	125	11,357	14	22,737
Bucktoe	2	864,000	600	77,160	88	132,446
Hartefeld 1	2	54,720	38	5,920	7	11,331
Hartefeld 2	2	63,360	44	5,184	7	11,747
Hartefeld 3	2	197,280	137	19,740	24	38,217
Hartefeld 4	2	374,400	260	22,602	29	45,995

¹To determine the 2-year projected maximum flows: 1) Determine the projected 2-year AA flow to the pump station based on proposed connections; 2) Determine the peaking factor for the pump station by using the peak instantaneous flow to AA ratio; 3) Calculate the 2-year projected peak flow by multiplying AA flow by the peak to AA ratio.

All pump stations in the system, *except* for the Main Pump Station, are currently metered and the meters calibrated annually; copies of the calibration reports are included as **Appendix 8**. Each pump station is equipped with an autodialer. All emergency power generators are serviced and maintained by Township contract personnel. The plant operator exercises the generator once per week in addition to the preventative maintenance service.

There were no major repairs to any of the pump stations in 2015.

The **Main Influent Pump Station** was constructed as part of the East End Waste Water Treatment Facility and placed in service in August of 1998; permit number 1596417. This station is in very good condition and is working well. There have been no major repairs or problems with the station other than replacing one pump motor which experienced a problem in 2002 and a second motor replacement in 2007. In 2008, Pump #2 was out of service for about six weeks for repairs. This station is the terminus for the original East End Collection system and connects directly with the treatment plant headworks where the influent flow meter is located. This pump station is owned by the New Garden Township Sewer Authority and maintained by New Garden Township. Information from the DEP document titled "Sewage Pumping Station Guidance" was used in the design of the pump station and calculating the performance criteria of each pump selected for use in the pump station. *The capacity of this pump station is not expected to be exceeded in the next two years.*

The **Chambers Road Pump Station** was constructed as part of the “G” line extension to the East End Collection System and was placed in service in 1992; permit number 1588457. This station is a combination well/dry well and is in very good condition and working well. There have been no major problems with the station although one of the pumps was rebuilt in 2000, a check valve was replaced in 2002 and a pump motor was replaced in 2006. This station accepts flow from the “G” line which is an interceptor that connects a portion of the Toughkenamon collection system to the Chambers Road pump station. This station also collects flow from the Bancroft Woods Subdivision and several other individual connections nearby. The Chambers Road pump station discharges to a gravity sewer line in Baltimore Pike which flows to the East End Waste Water Treatment Facility. This pump station is owned by the New Garden Township Sewer Authority and maintained by New Garden Township. Pump #2 was out of service for four months in 2006 for repair. In 2008 it was determined that the stand-by generator was not functioning properly and needs to be replaced. A new emergency generator was installed in 2010. In 2009 one of the pumps was taken out of service for repair. In 2010 Pump #1 was repaired. A new pump will be ordered as a spare. In 2013, a new sump pump was installed in the drywell and groundwater pump was replaced. Information from the DEP document titled “Sewage Pumping Station Guidance” was used in the design of the pump station and calculating the performance criteria of each pump selected for use in the pump station. *The capacity of this pump station is not expected to be exceeded in the next two years.*

The **Bancroft Woods Pump Station** is located within the Bancroft Woods Subdivision and serves one section of the development which contains 51 lots; the balance of the subdivision is served by gravity sewers. The Bancroft Woods pump station also accepts flow from a gravity sewer line in Pemberton Road. A new subdivision, Hawks Glen located on the north side of Pemberton Road, will connect to the gravity sewer main in Crest View Drive which flows to the Bancroft Woods Pump Station. *The pump station will be upgraded in order to handle the Hawks Glen flow.* The engineering details are currently being finalized. A Water Quality Management Permit application will be prepared and submitted in conjunction with the upgrade. Construction is anticipated to be completed by the end of 2016. The station discharges to a section of the subdivision which is served by gravity sewers which then flows down Bancroft Road to the Chambers Road Pump Station. The station was placed in service in 1995; permit number 1594415. Since this station is relatively new, it is in reasonably good condition and working satisfactorily. There have been no major repairs or problems with the station. However, in 2003 Pump #2’s seal failed and the pump was repaired and re-installed. Pump #1 was out of service for one month in 2006 for repair. During a period in 2012, the station was running on one pump; Pump #2 was out of service. In 2013, both pumps, the rails, floats, elbows and cables were replaced. This pump station is owned by the New Garden Township Sewer Authority and maintained by New Garden Township. Information from the DEP document titled “Sewage Pumping Station Guidance” was used in the design of the pump station and calculating the performance criteria of each pump selected for use in the pump station. *The capacity of this pump station is not expected to be exceeded in the next two years.*

The **Preserve at New Garden Pump Station** is located within The Preserve at New Garden Subdivision and serves the entire subdivision which contains 66 lots. The internal collection system for the subdivision contains gravity sewer lines which terminate at the pump station. The pump station discharges through a 4” line which connects to the influent force main entering the

headworks of the treatment facility. In addition to the 4" force main, a separate 8" force main was installed between the valve pit near the pump station and the valve pit at the treatment facility which connects to the influent force main entering the headworks. The 8" line was constructed in anticipation of needing additional conveyance capacity associated with future flows from the Bucktoe drainage area. The station was placed in service in 1999; permit number 1598415. Since this station is relatively new, it is in good condition and working well. There have been no major repairs or problems with the station. This pump station is owned by the New Garden Township Sewer Authority and maintained by New Garden Township. Pump #1 was out of service for one month and then four months in 2006 for repairs. In 2012, Pump #1 was out of service for two months. In 2013, Pump #1 was out of service for three weeks and was replaced. Information from the DEP document titled "Sewage Pumping Station Guidance" was used in the design of the pump station and calculating the performance criteria of each pump selected for use in the pump station. *The capacity of this pump station is not expected to be exceeded in the next two years.*

The Bucktoe Road Pump Station and force main were permitted on February 1, 2001, permit number 1500425. This pump station conveys sewage from the Bucktoe Creek area of the Township for treatment at the East End Waste Water Treatment Facility to include two major subdivisions, Candlewyck and Hartefeld, in addition to several planned smaller subdivisions and the Bucktoe Road corridor. Construction of the pump station was begun in early 2001 and completed in November 2001. Since this station is relatively new, it is in very good condition and working well. There have been no major repairs or problems with the station. However, in 2012 one float was replaced. This pump station is owned by the New Garden Township Sewer Authority and maintained by New Garden Township. Information from the DEP document titled "Sewage Pumping Station Guidance" was used in the design of the pump station and calculating the performance criteria of each pump selected for use in the pump station. *The capacity of this pump station is not expected to be exceeded in the next two years.*

The Pyles Mountain Lane (H1) Pump Station and force main were permitted on May 15, 2001, permit number 1501407. This pump station conveys sewage from the Pyles Mountain section (48 lots) of the Hartefeld Subdivision to the gravity collection system serving the Shinnecock Hill section of the Hartefeld Subdivision which then flows by gravity directly to the Bucktoe Road Pump Station. Construction of this pump station was completed in early 2002. Since this station is relatively new, it is in good condition and working well. There have been no major repairs or problems with the station. A flow meter was installed in 2003. The impeller on Pump #1 was replaced. In 2012, the flow meter was out of service for a period but has now been replaced. This pump station is owned by the New Garden Township Sewer Authority and maintained by New Garden Township. Information from the DEP document titled "Sewage Pumping Station Guidance" was used in the design of the pump station and calculating the performance criteria of each pump selected for use in the pump station. *The capacity of this pump station is not expected to be exceeded in the next two years.*

The Portmarnock Drive (H2) Pump Station was permitted in 2001, permit number 1501407. This pump station conveys flow from the Portmarnock section (30 lots) of the Hartefeld Subdivision to the Birkdale Circle (H3) Pump Station. This pump station was constructed and placed in service in 2005. Since this station is relatively new, it is in good condition and working well. There have been no major repairs or problems with the station. However, in 2012 the

pump junction box was replaced. This pump station is owned by the New Garden Township Sewer Authority and maintained by New Garden Township. Information from the DEP document titled "Sewage Pumping Station Guidance" was used in the design of the pump station and calculating the performance criteria of each pump selected for use in the pump station. *The capacity of this pump station is not expected to be exceeded in the next two years.*

The **Birkdale Circle (H3) Pump Station** and force main were permitted on May 15, 2001, permit number 1501407. This pump station conveys sewage from a portion of the Shinnecock Hill section (84 lots) of the Hartefeld Subdivision to the Bucktoe Road Pump Station. Construction of this pump station was completed in early 2002. Since this station is relatively new, it is in good condition and working well. There have been no major repairs or problems with the station. Pump 1 was replaced in 2010 and the check valve on the discharge side of each of the two pumps was serviced in 2010. This pump station is owned by the New Garden Township Sewer Authority and maintained by New Garden Township. Information from the DEP document titled "Sewage Pumping Station Guidance" was used in the design of the pump station and calculating the performance criteria of each pump selected for use in the pump station. *The capacity of this pump station is not expected to be exceeded in the next two years.*

The **Hartefeld Drive (H4) Pump Station** and 6" force main were permitted on 07/11/97 and 05/25/05, WQM permit number 1597406 and 1505403 respectively. This pump station conveys sewage from the Hartefeld Subdivision Sections A, B and C (104 lots), the Hartefeld Golf Course Clubhouse and Hartefeld Swim Club to a gravity main manhole in Section J of the Hartefeld Subdivision which then flows by gravity directly to the Bucktoe Road Pump Station. *A WQM permit has been issued, (WQM 1505403 09/15/09), for upgrades to the pump station in order to handle the future flow.* Prior to September 27, 2005 the discharge from Hartefeld Drive (H4) Pump Station was directed to the South End (Somerset Lake /Shangri-La) Waste Water Treatment Facility for treatment; however, on September 27, 2005 the flow was redirected from the South End (Somerset Lake /Shangri-La) Waste Water Treatment Facility to the East End Waste Water Treatment Facility. This pump station is owned by the New Garden Township Sewer Authority and maintained by New Garden Township. This pump station was constructed in 1997 and is in good condition. There have been no major repairs or problems with the station. Information from the DEP document titled "Sewage Pumping Station Guidance" was used in the design of the pump station and calculating the performance criteria of each pump selected for use in the pump station. *The capacity of this pump station is not expected to be exceeded in the next two years after the upgrades mentioned above are completed.*

General:

Each year contracted generator inspection and maintenance services are performed in addition to each unit being exercised once each week by Township contract personnel. Similarly, each pump station flow meter is calibrated and certified by a contractor each year. Quarterly, each pump station is cleaned and pumped by a licensed septage hauler.

8. INDUSTRIAL WASTES

At this time, there are no users of the sewer system discharging industrial waste into the Township waste water collection system for treatment at the WWTF. A copy of the Township's current sewer user ordinance is included as **Appendix 10**.

9. CORRECTIVE ACTION PLAN (CAP)

Currently, a Corrective Action Plan is not required. Therefore, **Appendix 11** is reserved for future use.

Connection Management Plan (CMP)

Currently, a formal Connection Management Plan is not required. Therefore, **Appendix 12** is reserved for future use.

Although there is **NO** projected overload, with respect to the East End WWTF, excluding capacity in the Kennett Borough WWTF, in the next five years, in the course of reviewing, and considering for approval, development plans, the Board of Supervisors will make a determination concerning the availability of sewage treatment capacity for each project based on the information available at that time.

New connections will be managed as shown in **Appendix 5, 5A and 5B**. Based on where each of the projects stands with respect to plan approval, permitting, construction and occupancy, coupled with current and near term market conditions, the schedule shown in **Appendix 5, 5A and 5B** is realistic. There is a considerable cushion with respect to when and if an overload might actually occur which is dependent upon when and if the projected new connections are actually made as shown in **Appendix 5, 5A and 5B**.

Every new project submitted to the Township is immediately reviewed with respect to sewage needs and a dialog with the applicant is established. A determination of the capacity needed for the project is made and a realistic time frame established for connection of new units. The connection schedule is updated to reflect new project flows, if any, as new projects are approved.

The amount of flow and its organic concentration is routinely monitored as it enters the East End WWTF in order to avoid the situation where the flow is below the hydraulic capacity of the East End WWTF but the organic load exceeds the organic treatment capacity of the East End WWTF or the opposite.

The East End WWTF will NOT reach its currently permitted capacity within the next five years assuming all of the sources of projected flow listed in **Appendix 5, 5A and 5B** connect as shown. **Appendix 5, 5A and 5B** are annotated to indicate which projects have received DEP planning approval, which ones are currently being processed and the balance which are not yet in the approval process. Therefore, it is unlikely that all of the listed projects will begin discharging in the time frames listed. Consequently, the management of overall system capacity is an

ongoing process which anticipates that adjustments will be made throughout the coming years in close cooperation with the DEP Planning Section. In the course of reviewing, and considering for approval, development plans, the Board of Supervisors will make a determination concerning the availability of sewage treatment capacity for each project based on the information available at that time. Projects which are anticipated to move forward at some indeterminate later date are listed in **Appendix 5B**. Projects and associated flows that are beyond the immediate next five year period are not counted in the projected WWTF for the next five years.

One step taken by the Board of Supervisors to address flow management was to prepare and adopt three ordinances in 2007 which directly address reservation of capacity and connection to and use of the sewer system; a copy of each ordinance is included as **Appendix 13**. Application of the provisions of these ordinances will greatly improve the management of new flow and system capacity.

Water meter readings are monitored on a quarterly basis and compared to metered sewage flows. In those instances when a user discharges more than is allocated, contact is made with the user and steps are taken to either reduce the discharge or purchase additional capacity, if available. Also, these reviews give an early indication of possible I & I problems which are then promptly addressed in order to maintain maximize usable system capacity.

Further, plans have been developed and are kept current which address ways in which to expand plant capacity. The next major element in the East End WWTF expansion plan is construction of the second storage lagoon. Geotechnical investigations throughout the proposed location of the second storage lagoon have been completed, the design is finished, a WQM Permit has been issued. Construction of this lagoon was permitted as part of the East End WWTF WQM Permit renewal in February 25, 2008

In 2005 construction of an interconnection between the East End WWTF and a force main to the Kennett Borough collection system was completed. This connection conveys treated effluent from the East End WWTF storage lagoon to the Kennett Borough WWTF for final processing. The design of a valving system to enable conveyance of raw sewage from the East End Sewer Main Pump Station to the Kennett Borough WWTF for treatment and disposal has been completed.

In addition to the Main Pump Station raw sewage connection mentioned above, the Township is evaluating ways in which to send raw sewage from other parts of the East End Sewer Service Area to the Kennett Borough WWTF. This is particularly important because the strength and flow rate of the raw waste water entering the Main Pump Station could exceed that which is permitted by Kennett Borough to be discharged from New Garden Township. In addition, Township and Borough representatives have recently discussed financial and administrative matters related to activating and using the raw sewage interconnection alternative.

The Township will continue to aggressively pursue the various alternatives mentioned herein and implement them in a logical and timely manner so as to make sure there is sewage treatment and reclamation capacity available when it is needed to first serve the projects listed in **Appendix 5, 5A and 5B** and then others as they are identified.

No stream discharge occurred during the reporting year under the provisions of NPDES Permit No. PA 0058050 and WQM Part II Permit No. 1596417A2 which were issued in conjunction with the U.S.G.S study. **A request not to renew the NPDES permit has been submitted to the DEP.**

The U.S.G.S. study referred to in the Chapter 94 report for 2000 has been completed. Consequently, Spray Zones 4 and 5 were placed in service which resulted in an additional 0.100 MGD of nominal capacity becoming available.

Subsequent to placing Spray Zones 4 and 5 in service, Spray Zone 6 was placed in service which adds a nominal 0.050 MGD of additional capacity to the system; however, additional storage is needed in order to fully utilize the additional spray capacity.

The Crop Management Plans in included as **Appendix 9.**

10. CALIBRATION REPORTS

Meter calibration reports are included as **Appendix 8.**

11. TRIBUTARY MUNICIPALITY REPORTS

There are no flows from outside of New Garden Township entering the sewer system.

12. SLUDGE DISPOSAL

Since the East End WWTF employs lagoon treatment, sludge is not generated in the conventional sense and therefore removal is only required infrequently; every several years. Inorganic and organic material that is not totally decomposed during the treatment process will settle and accumulate on the bottom of the lagoons. Experience at the South End WWTF suggests that it will be five to ten years before enough sludge has accumulated in the lagoons to warrant its removal.

In 2007 and 2009 the depth of sludge in the lagoons was actually measured and it was determined that the amount of accumulated sludge was not significant and did not warrant removal.

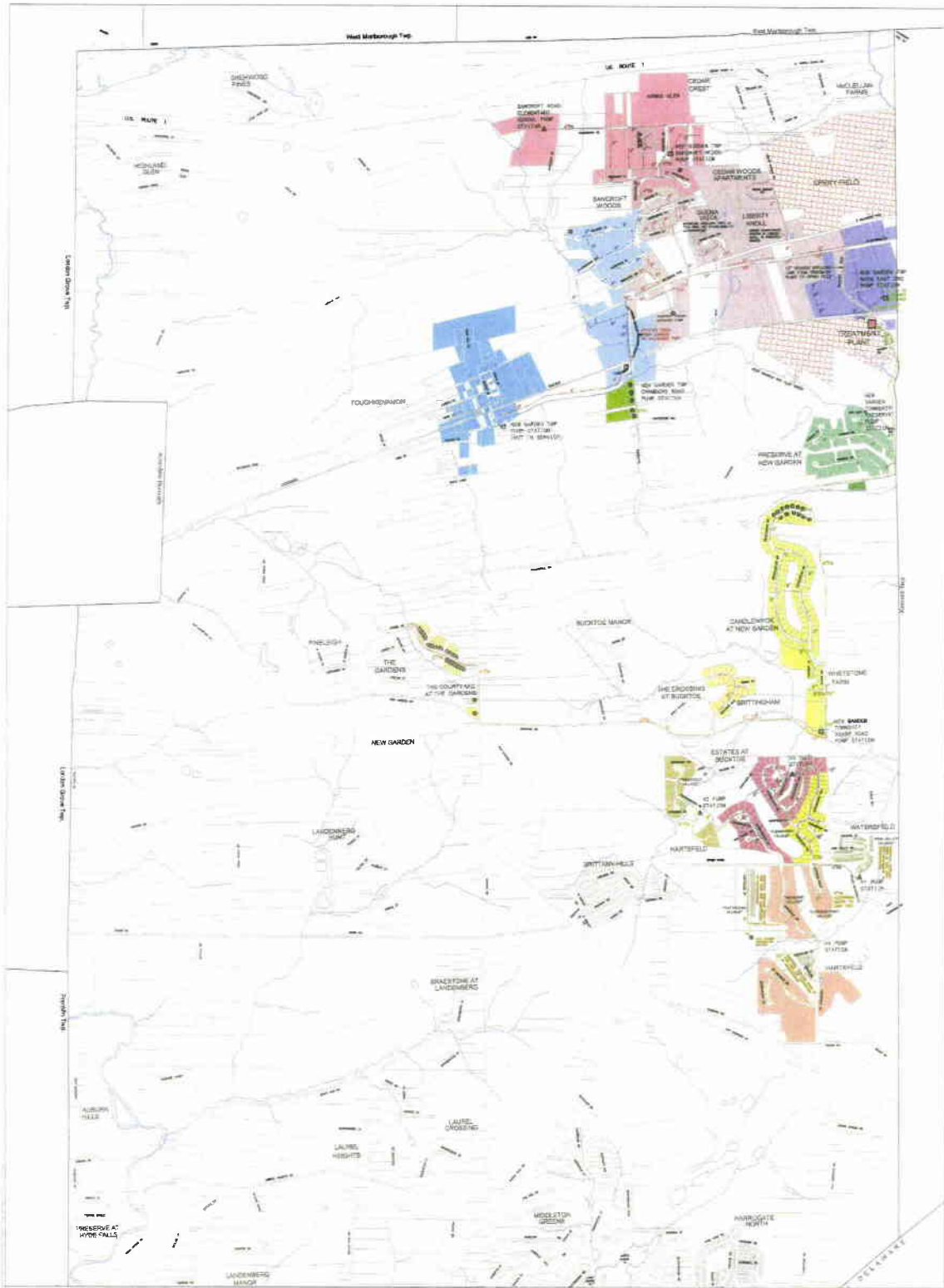
APPENDICES

APPENDIX 1

PROCESS DIAGRAM

APPENDIX 2

SEWER SERVICE AREA MAP



SEWER SERVICE DISTRICTS LEGEND - CONNECTED UNITS

EAST END		MIDDLETON		WEST END	
INDEPENDENCE PUMP STATION (EAST END)	HARTSFIELD DRIVE PUMP STATION (EAST END)	SHIPPING CENTER PUMP STATION (EAST END)	WEST END PUMP STATION (EAST END)	INDEPENDENCE PUMP STATION (EAST END)	HARTSFIELD DRIVE PUMP STATION (EAST END)
LANCASTER PUMP STATION (EAST END)	PORTLAND DRIVE PUMP STATION (EAST END)	WEST END PUMP STATION (EAST END)	WEST END PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)	PORTLAND DRIVE PUMP STATION (EAST END)
LANCASTER PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)
LANCASTER PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)	LANCASTER PUMP STATION (EAST END)

MANUALS SITE

- PUMP STATION PUBLIC
- PUMP STATION PRIVATE
- PUMP STATION DOMESTIC OPENED PUMP

Scale: 1" = 100'

Government Specialists, Inc.
 28 South Third Street, P.O. Box 224, York, PA 17403-0224
 Phone: 717-853-3322, Fax: 717-853-3328

APPENDIX 3

CURRENT CONNECTED POPULATION

APPENDIX 3

The 2010 U. S. Census data shows the average household size for each occupied dwelling unit in New Garden Township is 3.2 persons. There are 1,011 residential units connected to the public sewerage system. The equivalent population is $3.2 \times 1,011 = 3,235$ persons.

There are a total of 1,143 equivalent dwelling units connected to the public sewage system which equates to 3,658 persons.

APPENDIX 4

INFLUENT FLOW METER CALIBRATION REPORT

TheMeterGuy, LLC.

5758 GLEN OAKS DRIVE NARVON, PA 17555
PHONE: (717) 940-1987

SERVICE REPORT

TOM BAKER
NEW GARDEN TOWNSHIP
299 STARR ROAD
LANDENBERG, PA 19350

SERVICE DATE: 12/28/2015
METER#: C6168 AE
LOCATION: EAST END INFLUENT
SERIAL #: 9711-78951-CO5/H137245097
MANUFACTURER: SPARLING
RECORDER: FM6550631100
TRANSMITTER: TIGER MAG
PRIMARY: 6 INCH
MAXIMUM CAPACITY: 2000 GPM
SERVICE CONTRACT: ANNUAL

WORK PERFORMED

CLEANED EQUIPMENT: X PRIMARY: X

RECORDER CALIBRATION CHECKED AT: 0, 25, 50 & 100%
ERROR: 0% CORRECTED ACCURACY: $\pm 1\%$

TOTALIZER CALIBRATION CHECKED AT: 0 & OPERATING RATE
ERROR: 0% CORRECTED ACCURACY: $\pm 1\%$

TRANSMITTER CALIBRATION CHECKED PROGRAMMING AND CHECKED AT 0 &
OPERATING RATE
ERROR: * CORRECTED ACCURACY: $\pm 1\%$

COMMENTS: * METER TO BE REPLACED *

SERVICE REPRESENTATIVE: GAVIN McCULLOCH **PERSON SEEN:** TOM BAKER
copies: [EM: tpbaker1969@gmail.com](mailto:EM:tpbaker1969@gmail.com)

Appendix 5
Connections and Associated EDUs for 2016 - 2020

Project Name	Watershed	Service Area	Total Units / EDUs	Estimated Timing of Additional Connections / EDUs				
				2016	2017	2018	2019	2020
NON-RESIDENTIAL @ 181 GPD / EDU								
Commonwealth Real Estate Investors ^{(1)(2)*}	4	BP	- / 54.1	—	—	13.5	13.5	13.5
Davidson & Pizzini ^{(3)*}	18	BR	1 / 4.4	—	4.4	—	—	—
Giant Foods ^{(2)(4)*}	5	SC	- / 42	—	—	—	—	—
Michael Phillips - Scarlett Road ^{(1)*}	6c	EE	1 / 4.4	—	—	4.4	—	—
Modern Mushroom Business Park ⁽²⁾⁽⁶⁾	1	WB	- / 442	—	—	—	—	—
New Garden Retail Center ^{(1)(2)(10)*} [White Clay Point]	10	PC	- / 168	—	—	33.6	67.2	33.6
Nunan Office Addition ⁽¹⁾	6a	GL	1 / 2.2	—	2.2	—	—	—
RJL & J Co., LLC ^{(3)*}	18	BR	1 / 4.4	—	4.4	—	—	—
TOTAL EDUs ⁽⁸⁾			721.5	0.0	11.0	51.5	80.7	47.1
RESIDENTIAL @ 200 GPD / EDU								
Poe Mobile Home Park (New) ⁽³⁾⁽⁶⁾	2	BW	8 / 8	—	—	4	4	—
PREIT – Age Qualified Residential ⁽²⁾⁽⁶⁾	8 & 9	HD	63 / 63	—	—	20	20	14
Hawks Glen ⁽¹⁾	2	BW	86 / 86	10	28	28	20	—
Bucktoe Road Failing Systems ⁽³⁾	7, 14 & 18	BR	25 / 25	5	5	5	5	5
Pemberton Road Failing Systems ⁽³⁾	2	BW	20 / 20	4	4	4	4	4
Single Connections	All	N/A	30 / 30	6	6	6	6	6
Contingency Reserve ⁽⁷⁾	All	N/A	30 / 30	6	6	6	6	6
TOTAL EDUs ⁽⁹⁾			262.0	31.0	49.0	73.0	65.0	35.0
TOTAL EDUs			983.5	31.0	60.0	124.5	145.7	82.1
CUMULATIVE EDUs				1,259.0	1,319.0	1,443.5	1,589.2	1,671.3

(1) Plans approved.

(2) See Appendix 5B.

(3) Existing units to be connected.

(4) Allocated but unused remaining capacity - no plans within five (5) years for use of this capacity.

(5) Plans in process - approvals not yet finalized.

(6) Plan submission anticipated.

(7) Existing connections, flow variations/increases and infill development

(8) 181 gpd/unit = 1 EDU per commercial unit. From Appendix 6.

(9) 200 gpd/unit = 1 EDU per residential unit.

(10) Project approved by DEP to flow to the Avondale WWTF. It is included here as an alternative.

* Sewage facilities planning approved by DEP.

Appendix 5A
Connections and Associated Flows for 2016 - 2020 [Gallons]

Project Name	Watershed	Service Area	Total Gallons	Estimated Timing of Additional Flows				
				2016	2017	2018	2019	2020
NON-RESIDENTIAL @ 181 GPD / EDU								
Commonwealth Real Estate Investors ^{(1)(2)*}	4	BP	9,800	—	—	2,450	2,450	2,450
Davidson & Pizzini ^{(3)*}	18	BR	800	—	800	—	—	—
Giant Foods ^{(2)(4)*}	5	SC	7,600	—	—	—	—	—
Michael Phillips - Scarlett Road ^{(1)*}	6c	EE	800	—	—	800	—	—
Modern Mushroom Business Park ⁽²⁾⁽⁵⁾	1	WB	80,000	—	—	—	—	—
New Garden Retail Center ^{(1)(2)(10)*} [White Clay Point]	10	PC	30,400	—	—	6,080	12,160	6,080
Nunan Office Addition ⁽¹⁾	6a	GL	400	—	400	—	—	—
RJL & J Co., LLC ^{(3)*}	18	BR	800	—	800	—	—	—
TOTAL GPD ⁽⁸⁾			130,600	0	2,000	9,330	14,610	8,530
RESIDENTIAL @ 200 GPD / EDU								
Poe Mobile Home Park (New) ⁽³⁾⁽⁶⁾	2	BW	1,600	—	—	800	800	—
PREIT – Age Qualified Residential ⁽²⁾⁽⁶⁾	8 & 9	HD	12,600	—	—	4,000	4,000	2,800
Hawks Glen ⁽¹⁾	2	BW	17,200	2,000	5,600	5,600	4,000	—
Bucktoe Road Failing Systems ⁽³⁾	7, 14 & 18	BR	5,000	1,000	1,000	1,000	1,000	1,000
Pemberton Road Failing Systems ⁽³⁾	2	BW	4,000	800	800	800	800	800
Single Connections	All	N/A	6,000	1,200	1,200	1,200	1,200	1,200
Contingency Reserve ⁽⁷⁾	All	N/A	6,000	1,200	1,200	1,200	1,200	1,200
TOTAL GPD ⁽⁹⁾			52,400	6,200	9,800	14,600	13,000	7,000
TOTAL GPD			183,000	6,200	11,800	23,930	27,610	15,530
CUMULATIVE GALLONS				181,100	192,900	216,830	244,440	259,970

(1) Plans approved.

(2) See Appendix 5B.

(3) Existing units to be connected.

(4) Allocated but unused remaining capacity - no plans within five (5) years for use of this capacity.

(5) Plans in process - approvals not yet finalized.

(6) Plan submission anticipated.

(7) Existing connections, flow variations/increases and infill development.

(8) 181 gpd/unit = 1 EDU per commercial unit. From Appendix 6.

(9) 200 gpd/unit = 1 EDU per residential unit.

(10) Project approved by DEP to flow to the Avondale WWTF. It is included here as an alternative.

* Sewage facilities planning approved by DEP.

Appendix 5B
Connections and Associated Flow Beyond 2020 [Gallons]

Project Name	Watershed	Service Area	Total Gallons	Estimated Timing of Additional Connections				
				2021	2022	2023	2024	2025
NON-RESIDENTIAL @ 181 GPD / EDU								
Commonwealth Real Estate Investors ^{(1)*}	4	BP	2,450	2,450	—	—	—	—
Giant Foods ^{(2)*}	5	SC	7,600	—	—	—	—	—
Modern Mushroom Business Park ⁽³⁾	1	WB	80,000	16,000	16,000	16,000	16,000	16,000
New Garden Retail Center ^{(1)/(6)*} [White Clay Point]	10	PC	6,080	3,040	3,040	—	—	—
TOTAL GPD ⁽⁴⁾			96,130	21,490	19,040	16,000	16,000	16,000
RESIDENTIAL @ 200-GPD / EDU								
PREIT – Age Qualified Residential ⁽³⁾	8 & 9	HD	1,800	1,800	—	—	—	—
TOTAL GPD ⁽⁵⁾			1,800	1,800	0	0	0	0
TOTAL GPD			97,930	23,290	19,040	16,000	16,000	16,000
CUMULATIVE GALLONS				285,060	304,100	320,100	336,100	352,100

- (1) Plans approved.
- (2) Allocated but unused remaining capacity - no plans within five (5) years for use of this capacity
- (3) Plan submission anticipated.
- (4) 181 gpd/unit = 1 EDU per commercial unit. From Appendix 6.
- (5) 200 gpd/unit = 1 EDU per residential unit.
- (6) Project approved by DEP to flow to the Avondale WWTF. It is included here as an alternative.

* Sewage facilities planning approved by DEP.

APPENDIX 6
EAST END WWTF
NEW GARDEN TOWNSHIP CHESTER COUNTY, PA

WATER QUALITY MANAGEMENT PERMIT NO. 1596417
PERMIT RENEWAL AND AMENDMENT FEBRUARY 25, 2008

HISTORICAL ORGANIC & HYDRAULIC LOAD SUMMARY

YEAR	2011	2012	2013	2014	2015	5-Year Average
Total EDUs Connected	1,109	1,110	1,112	1,143	1,143	
Annual Average Organic Load (total lbs/day)	423	507	518	486	543	495
Load Per EDU (lbs/day)	0.3814	0.4568	0.4658	0.4252	0.4751	0.4409
Annual Average Flow (MGD)	0.2043	0.1990	0.2240	0.2122	0.1749	0.2029
Flow Per EDU (GPD)	184	179	201	186	153	181

APPENDIX 7

ORGANIC LOAD PROJECTIONS

APPENDIX 7

EAST END WWTF
NEW GARDEN TOWNSHIP CHESTER COUNTY, PA

WATER QUALITY MANAGEMENT PERMIT NO. 1596417
PERMIT RENEWAL AND AMENDMENT FEBRUARY 25, 2008

ORGANIC LOAD PROJECTIONS

Year	Base Annual Average Organic Load (LBS/DAY)	Projected Additional Organic Load (LBS/DAY) ⁽²⁾	Projected Total Annual Average Organic Load (LBS/DAY)	Projected Max. Month Organic Load (LBS/DAY) ⁽³⁾
2016 ⁽¹⁾	543	15	558	798
2017	558	29	587	839
2018	587	59	646	924
2019	646	69	715	1022
2020	715	39	754	1078

- (1) The starting organic load is the current report year's Annual Average organic load.
- (2) The Projected Additional Organic Load is computed using the number of connections projected to be added in a given year times the average annual organic load for each connection shown in Appendix 6.
- (3) The Projected Maximum Month Organic Load is computed using the Projected Total Annual Average Organic Load in a give year times the 5-year average organic peak factor as shown in Table 3.

APPENDIX 8

FLOW METER CALIBRATION REPORTS

TheMeterGuy, LLC.

5758 GLEN OAKS DRIVE NARVON, PA 17555
PHONE: (717) 940-1987

*****SERVICE REPORT*****

TOM BAKER
NEW GARDEN TOWNSHIP
299 STARR ROAD
LANDENBERG, PA 19350

SERVICE DATE: 12/28/2015
METER#: C6168 AG
LOCATION: BANCROFT WOODS
SERIAL #: MO21841300
MANUFACTURER: SPARLING
RECORDER: N/A
TRANSMITTER: TIGER MAG
PRIMARY: 4 INCH
MAXIMUM CAPACITY: 200 GPM
SERVICE CONTRACT: ANNUAL

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** N/A
ERROR: N/A **CORRECTED ACCURACY:** N/A

TOTALIZER CALIBRATION **CHECKED AT:** 0 & OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

TRANSMITTER CALIBRATION **CHECKED PROGRAMMING AND CHECKED AT 0 &**
OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE: GAVIN McCULLOCH **PERSON SEEN:** TOM
copies: [EM: tpbaker1969@gmail.com](mailto:tpbaker1969@gmail.com).

TheMeterGuy, LLC.

5758 GLEN OAKS DRIVE NARVON, PA 17555
PHONE: (717) 940-1987

SERVICE REPORT

TOM BAKER
NEW GARDEN TOWNSHIP
299 STARR ROAD
LANDENBERG, PA 19350

SERVICE DATE: 12/28/2015
METER#: C6168 AH
LOCATION: CHAMBERS ROAD
SERIAL #: MO17123099
MANUFACTURER: SPARLING
RECORDER: N/A
TRANSMITTER: TIGER MAG
PRIMARY: 4 INCH
MAXIMUM CAPACITY: 300 GPM
SERVICE CONTRACT: ANNUAL

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** N/A
ERROR: N/A **CORRECTED ACCURACY:** N/A

TOTALIZER CALIBRATION **CHECKED AT:** 0 & OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

TRANSMITTER CALIBRATION **CHECKED PROGRAMMING AND CHECKED AT 0 &**
OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE: GAVIN McCULLOCH **PERSON SEEN:** TOM
copies: [EM: mbaker1969@gmail.com](mailto:mbaker1969@gmail.com)

TheMeterGuy, LLC.

5758 GLEN OAKS DRIVE NARVON, PA 17555
PHONE: (717) 940-1987

*****SERVICE REPORT*****

TOM BAKER
NEW GARDEN TOWNSHIP
299 STARR ROAD
LANDENBERG, PA 19350

SERVICE DATE: 12/28/2015
METER#: C6168 AO
LOCATION: THE PRESERVE
SERIAL #: MO36503001
MANUFACTURER: SPARLING
RECORDER: N/A
TRANSMITTER: TIGER MAG
PRIMARY: 4 INCH
MAXIMUM CAPACITY: 200 GPM
SERVICE CONTRACT: ANNUAL

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** N/A
ERROR: N/A **CORRECTED ACCURACY:** N/A

TOTALIZER CALIBRATION **CHECKED AT:** 0 & OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

TRANSMITTER CALIBRATION **CHECKED PROGRAMMING AND CHECKED AT 0 &**
OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE: GAVIN McCULLOCH **PERSON SEEN:** TOM
copies: EM:tpbaker1969@gmail.com

TheMeterGuy, LLC.

5758 GLEN OAKS DRIVE NARVON, PA 17555
PHONE: (717) 940-1987

*****SERVICE REPORT*****

TOM BAKER
NEW GARDEN TOWNSHIP
299 STARR ROAD
LANDENBERG, PA 19350

SERVICE DATE: 12/28/2015
METER#: C6168 AI
LOCATION: SHARP ROAD
SERIAL #: MO92112605
MANUFACTURER: SPARLING
RECORDER: N/A
TRANSMITTER: TIGER MAG
PRIMARY: 6 INCH
MAXIMUM CAPACITY: 1000 GPM
SERVICE CONTRACT: ANNUAL

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** N/A
ERROR: N/A **CORRECTED ACCURACY:** N/A

TOTALIZER CALIBRATION **CHECKED AT:** 0 & OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

TRANSMITTER CALIBRATION **CHECKED PROGRAMMING AND CHECKED AT 0 &**
OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE: GAVIN McCULLOCH **PERSON SEEN:** TOM
copies: [EM: tom.baker1969@gmail.com](mailto:tom.baker1969@gmail.com)

TheMeterGuy, LLC.

5758 GLEN OAKS DRIVE NARVON, PA 17555
PHONE: (717) 940-1987

*****SERVICE REPORT*****

TOM BAKER
NEW GARDEN TOWNSHIP
299 STARR ROAD
LANDENBERG, PA 19350

SERVICE DATE: 12/28/2015
METER#: C6168 AK
LOCATION: HARTEFELD I
SERIAL #: MO159774211
MANUFACTURER: SPARLING
RECORDER: N/A
TRANSMITTER: TIGER MAG
PRIMARY: 2 INCH
MAXIMUM CAPACITY: 100 GPM
SERVICE CONTRACT: ANNUAL

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** N/A
ERROR: N/A **CORRECTED ACCURACY:** N/A

TOTALIZER CALIBRATION **CHECKED AT:** 0 & OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

TRANSMITTER CALIBRATION **CHECKED PROGRAMMING AND CHECKED AT 0 &**
OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE: GAVIN McCULLOCH **PERSON SEEN:** TOM
copies: EM:tbaker1969@gmail.com

TheMeterGuy, LLC.

5758 GLEN OAKS DRIVE NARVON, PA 17555
PHONE: (717) 940-1987

*****SERVICE REPORT*****

TOM BAKER
NEW GARDEN TOWNSHIP
299 STARR ROAD
LANDENBERG, PA 19350

SERVICE DATE: 12/28/2015
METER#: C6168 AL
LOCATION: HARTEFELD II
SERIAL #: MO97154705
MANUFACTURER: SPARLING
RECORDER: N/A
TRANSMITTER: TIGER MAG
PRIMARY: 2 INCH
MAXIMUM CAPACITY: 300 GPM
SERVICE CONTRACT: ANNUAL

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** N/A
ERROR: N/A **CORRECTED ACCURACY:** N/A

TOTALIZER CALIBRATION **CHECKED AT:** 0 & OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

TRANSMITTER CALIBRATION **CHECKED PROGRAMMING AND CHECKED AT 0 &**
OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: LEFT EQUIPMENT OPERATING PROPERLY * FOUND mA 3.96-20.01

SERVICE REPRESENTATIVE: GAVIN McCULLOCH **PERSON SEEN:** TOM
copies: [EM: tbaker1969@gmail.com](mailto:tbaker1969@gmail.com)

TheMeterGuy, LLC.

5758 GLEN OAKS DRIVE NARVON, PA 17555
PHONE: (717) 940-1987

SERVICE REPORT

TOM BAKER
NEW GARDEN TOWNSHIP
299 STARR ROAD
LANDENBERG, PA 19350

SERVICE DATE: 12/28/2015
METER#: C6168 AJ
LOCATION: HARTEFELD III
SERIAL #: MO33121501
MANUFACTURER: SPARLING
RECORDER: N/A
TRANSMITTER: TIGER MAG
PRIMARY: 4 INCH
MAXIMUM CAPACITY: 300 GPM
SERVICE CONTRACT: ANNUAL

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** N/A
ERROR: N/A **CORRECTED ACCURACY:** N/A

TOTALIZER CALIBRATION **CHECKED AT:** 0 & OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

TRANSMITTER CALIBRATION **CHECKED PROGRAMMING AND CHECKED AT 0 &**
OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE: GAVIN McCULLOCH **PERSON SEEN:** TOM
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TheMeterGuy, LLC

5758 GLEN OAKS DRIVE NARVON, PA 17555
PHONE: (717) 940-1987

SERVICE REPORT

TOM BAKER
NEW GARDEN TOWNSHIP
299 STARR ROAD
LANDENBERG, PA 19350

SERVICE DATE: 12/28/2015
METER#: C6168 AM
LOCATION: HARTEFELD IV
SERIAL #: MO92122705
MANUFACTURER: SPARLING
RECORDER: N/A
TRANSMITTER: TIGER MAG
PRIMARY: 6 INCH
MAXIMUM CAPACITY: 500 GPM
SERVICE CONTRACT: ANNUAL

WORK PERFORMED

CLEANED EQUIPMENT: X **PRIMARY:** X

RECORDER CALIBRATION **CHECKED AT:** N/A
ERROR: N/A **CORRECTED ACCURACY:** N/A

TOTALIZER CALIBRATION **CHECKED AT:** 0 & OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

TRANSMITTER CALIBRATION **CHECKED PROGRAMMING AND CHECKED AT 0 &**
OPERATING RATE
ERROR: 0% **CORRECTED ACCURACY:** ± 1%

COMMENTS: LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE: GAVIN McCULLOCH **PERSON SEEN:** TOM
copies: [EM: tpbaker1969@gmail.com](mailto:tpbaker1969@gmail.com)

APPENDIX 9

**CROP MANAGEMENT PLAN
SPRAY FIELD COMPACTION EVALUATION**

Crop Management Plan For New Garden Township East End Plant

The spray irrigation system for New Garden Township is located in Kennett Square.. The field is located at the intersection of Baltimore Pike and Cedar springs Road and consists of approximately 54 acres. The spray area contains well drained soils; see attached soil maps and mapping unit descriptions.

Soil Nutrients

Soil samples have been collected from each zone, however. Ten to twelve cores have been randomly pulled from each zone to obtain a representative sample. These cores were pulled from 4-5 inches deep in the soil. Maps have been attached to this plan to describe the location of sample zones. All zones continue to have adequate soil pH levels. Zones 1,2 are moderate in soil test phosphorus and moderate to good in potassium. Zones 3,4,5,6 are excessive in phosphorus but remain lower in potassium. Soil phosphorus levels have definitely not been yield limiting but a maintenance application of potash will likely be recommended to cover nutrient removals from hay harvest.

Crop Production

All zones currently have an established grass mix of reed canary grass and tall fescue with a small percentage of orchard grass. This blend provides a resilient cover on the soil as well as useful forage that can be harvested throughout the summer in multiple cuttings. This grass mixture can handle substantial water applications. Optimizing crop yield will allow this grass mixture to provide significant nutrient removal. A six ton per acre yield of hay will remove 240 lbs/acre of nitrogen, 90 lbs/acre of phosphorus and 300 lbs/acre of potassium from the soil.

Managing grass fields intensively generally includes some renovation of stands. Traffic and high management can thin stands. March and August are ideal times to overseed and thicken existing stands if need be. Renovation is recommended by no-tilling the cool season grass mix into thin areas in late August. A no-till drill will penetrate existing residue and will lightly incorporated seed into the soil while providing minimal soil disturbance. This will help to alleviate soil erosion possibilities. The rate for over seeding cool season grasses into these areas is 20-25 lbs of seed per acre.

Cutting Management

Cool season grass hay, generally, is ready to be harvested for the first time in early May. In general, the best compromise between yield and forage quality occurs in boot stage, this is when the grass head is ready to emerge from the top of the stem. Harvesting early

will reduce yield and possibly stress plants enough to reduce stands. Harvesting late will increase lignin in the plant which drastically reduces forage quality.

Later cuttings of cool season grasses tend to be much more vegetative. Stem development and elongation is reduced and harvested material is much leafier. Cool season grass mixes can generally be harvested on six to seven week intervals. Maintaining harvest intervals will not allow grasses to gain excessive height, thus interfering with spray heads. Care should be taken at harvest time to trim around all risers and spray heads. Tall vegetation could interfere with spray heads and cause a disruption in the spray pattern. This will cause an uneven distribution of water and nutrients

Weed Control

The following is a list of herbicide options for grass hay:

Ally XP

- Apply 0.2 to 0.3 oz./acre or 1 oz. per 100 gallons of water for spot treatments
- Always add surfactant at 1 qt. per 100 gal. of solution
- No grazing or haying restrictions with this product
- Do not over-seed or reseed pastures for 6-12 months depending on the species

Cimmaron

- Very similar product to *Ally XP* and will probably end up replacing *Ally XP* completely
- All rates, additives and restrictions are the same as listed above for *Ally XP*

Overdrive

- Apply 6 oz. per acre
- Always add surfactant at 1 qt. per 100 gallons of solution
- No grazing restrictions
- Fields can be overseeded or rotated to any crop 30 days after herbicide application

Milestone

- Apply 6 oz. per acre
- Addition of surfactant at 1 qt. per 100 gallons of solution is recommended
- No grazing or haying restrictions
- Not labeled for over-seeding for 12 months after application

General Herbicide Application Tips

- Best results are generally achieved when weeds are small and actively growing
- If making an application later in growing season, it is suggested to clip the pasture and let weeds start to re-grow before applying herbicide
- Do not mow pastures for 10-14 days following the herbicide application
- **As with any pesticide, always read and follow the herbicide label**

Compaction

Compaction is often an issue in spray irrigation fields. Traffic is often forced to be on fields under less than ideal soil conditions. Compaction reduces water the soils ability to allow for water infiltration and also reduces crop growth and yield. The best way to minimize compaction is to reduce traffic on field and stay off when conditions are too wet. Eliminating irrigation several days before harvest will allow the soil to dry and should prove helpful in reducing soil compaction as well as curing the crop.

An Aerway is a tool that will help to loosen soil and increase percolation potential. This tool is most helpful when used in fall and /or spring. An Aerway has a series of blades which penetrate soil and twist and loosen the soil surface while doing minimal damage to the established sod.

Water Management

All zones in both fields are rated for the following rates of hydraulic loading:

Winter months	0.5 inch/acre/week
Spring months	1.5 inch/acre/week
Summer months	2.5 inch/acre/week
Fall months	1.75 inch/acre/week

The ideal water management system would be to make an effluent application and then allow the soil to absorb that application and dry prior to making subsequent applications. Continually maintaining fields, at or above, field capacity for moisture promotes, runoff, nutrient leaching, plant disease and soil compaction. This management will vary somewhat depending on rainfall.

Fertility Recommendations

Limestone

Limestone recommendations will be made based on results of the soil analysis.

*Maintaining soil ph levels between 6.1 and 6.7 optimizes plant growth thus maximizing nutrient uptake.

<u>Field</u>	<u>Limestone Type</u>	<u>Application Rate</u>
1	--	--
2	--	--
3	--	--
4	--	--
5	--	--
6	--	--

Broadcast Fertilizer

New Garden Township has recently started sampling effluent for macro-nutrients. It is recommended that in the future an effluent sample be collected annually and analyzed for the following nutrients; total nitrogen; ammonia nitrogen, phosphorus, potassium, calcium, magnesium & sodium. This will allow for better management of nutrients through effluent and broadcast fertilizer applications.

Effluent Nutrient Loading Rate

TKN	3.3 lbs/acre/inch
NH4	0.590 lbs/acre/inch
Nitrate N	2.66 lbs/acre/inch

If each field is at 100% capacity for hydraulic loading, the following rates of nitrogen would be applied annually. Nitrogen values are nitrate nitrogen only because with surface applications ammonia nitrogen is assumed to be lost to volatilization. A mineralization factor is also assumed for organic nitrogen.

79.8 lbs nitrogen

Based on the available results, nitrogen is relatively low.

I recommend a supplemental rate of nitrogen be applied to all spray zones. Apply supplemental nitrogen at the rate of 30 lbs/acre after spring green-up, when fields are

actively growing. Apply an additional 25 lbs/acre after first cutting. This will help to reduce stress and promote overall plant health. In addition, a maintenance application of potash is recommended. Apply 0-0-60 at 150 lbs per acre to all zones.

It is also recommended plant tissue samples be taken during the growing season. These samples provide an excellent report card of nutrient availability and uptake. These sample analyses afford us the ability to more closely regulate any and all nutrient applications.

Soil sodium levels were also evaluated in all fields. High soil sodium levels can affect soil structure thus altering water percolation. Soil sodium levels can be buffered with a gypsum application (calcium sulfate) if need be.

The chart below outlines exchangeable sodium levels. At this time all fields are calling for very little, if any, buffering. Therefore no supplemental gypsum applications are recommended at the present time.

Exchangeable Sodium Levels

Field	Ca	Mg	Na	Ca	Mg	Na	SAR	ESR	ESP	CEC	CaSO ₄ needed (lb/acre)
	ppm			meq							
East 1	1625	235	64	8.13	1.96	0.28	0.124	0.028	2.70	9.6	0
East 2	1265	186	47	6.33	1.55	0.21	0.103	0.026	2.54	9.9	0
East 3	3209	305	67	16.05	2.54	0.29	0.096	0.016	1.55	9.7	0
East 4	2777	279	64	13.89	2.33	0.28	0.098	0.017	1.69	9.9	0
East 5	3271	314	62	16.36	2.62	0.27	0.088	0.014	1.41	11.1	0
East 6	1623	245	60	8.12	2.04	0.26	0.116	0.026	2.51	13.7	0

SAR = Sodium Adsorption Ratio
 ESR = Exchangeable Sodium Ratio
 ESP = Exchangeable Sodium Percent
 CEC = Cation Exchange Capacity

Soil Summary

Client: New Garden TWP

Acres: 74.0

Date: 04/13/15

Field #	Acres	Sample Date	Crop Rotation History			OM	CEC	pH	PPM			% Saturation		
			2014	2015	2016				P	P FIV	K	K	Mg	Ca
EAST1	9.0	02/27/15	grass	grass	grass	2.5	8.3	6.4	63	76	115	3.0	20.7	73.0
EAST2	9.0	02/27/15	grass	grass	grass	2.2	8.1	6.6	49	61	81	2.2	16.8	58.5
EAST3	9.0	02/27/15	grass	grass	grass	3.9	17.8	6.8	292	319	141	1.7	12.5	67.5
EAST4	9.0	02/27/15	grass	grass	grass	2.7	15.2	6.9	234	257	126	1.8	13.4	68.4
EAST5	9.0	02/27/15	grass	grass	grass	4.3	17.7	6.9	350	380	134	1.6	13.0	69.3
EAST6	9.0	02/27/15	grass	grass	grass	2.0	10.2	6.7	66	79	103	2.2	17.6	59.6
SOUTH1-2	20.0	02/27/15	grass	grass	grass	2.4	10.3	6.7	70	83	113	2.4	17.0	59.8
SOUTH3-4	\	02/27/15	grass	grass	grass	2.2	9.6	6.6	30	41	95	2.1	18.7	56.9
SOUTH5-7	\	02/27/15	grass	grass	grass	3.4	9.3	6.4	122	138	176	4.1	23.4	69.5

Soil Analysis Report



Report To
 AET CONSULTING INC
 2677 TELEGRAPH RD
 NORTH EAST, MD 21901-1207

Prepared For
 NEW GARDEN TWP

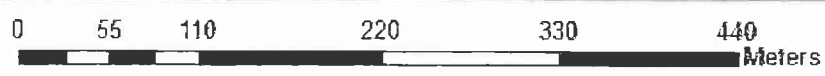
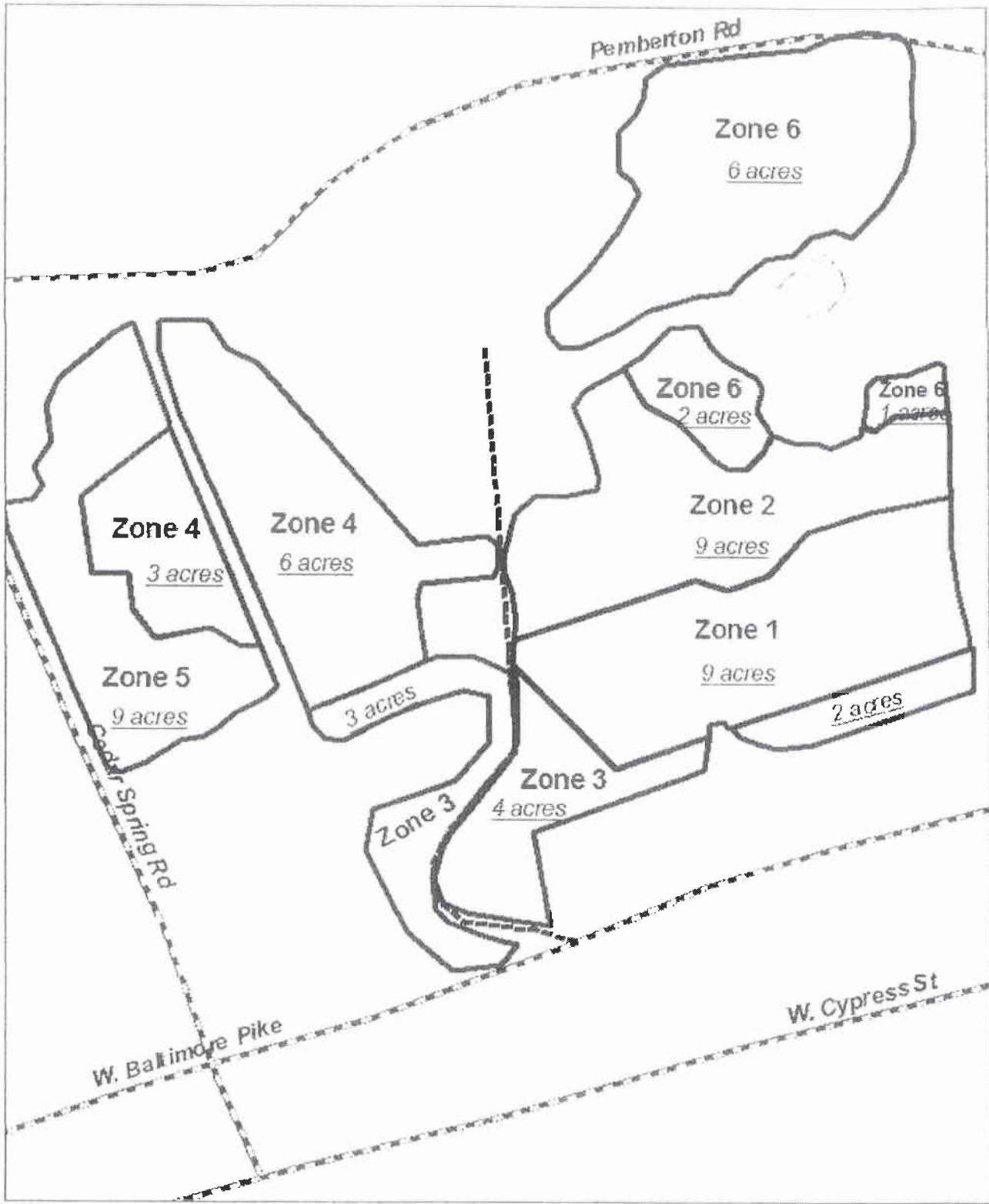
Sampled 02-27-2016
Tested 03-04-2016

Sample Number	Lab Number	pH		Organic Matter %	Analysis Result* and Rating				CEC	Base Saturation			Mehlich-3 PPM and Rating					
		Soil pH	Buffer pH		Phosphorus P	Potassium K	Magnesium Mg	Calcium Ca		K %	Mg %	Ca %	Sulfur S	Boron B	Zinc Zn	Iron Fe	Copper Cu	Mang. Mn
EAST 1	J36639	6.4	7.0	2.5	63 G	115 M	235 G	1625 H	8.3	3.0	20.7	73.0						
EAST 2	J36640	6.6	7.0	2.2	49 M	81 M	186 G	1265 G	8.1	2.2	16.8	58.5						
EAST 3	J36642	6.8	7.2	3.9	292 V	141 M	305 G	3209 G	17.8	1.7	12.5	67.5						
EAST 4	J36643	6.9	7.2	2.7	234 V	126 M	279 G	2777 G	15.2	1.8	13.4	68.4						
EAST 5	J36644	6.9	7.1	4.3	350 V	134 M	314 G	3271 H	17.7	1.6	13.0	69.3						
EAST 6	J36645	6.7	7.0	2.0	66 G	103 M	245 G	1623 G	10.2	2.2	17.6	59.6						
SOUTH 1-2	J36646	6.7	7.0	2.4	70 G	113 M	240 G	1648 G	10.3	2.4	17.0	59.8						
SOUTH 3-4	J36647	6.6	7.2	2.2	30 M	95 M	245 G	1455 G	9.6	2.1	18.7	56.9						
SOUTH 5-7	J36648	6.4	7.1	3.4	122 H	176 G	296 G	1722 G	9.3	4.1	23.4	69.5						

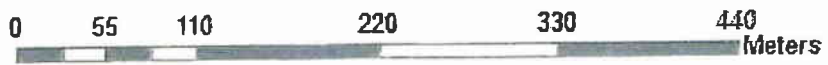
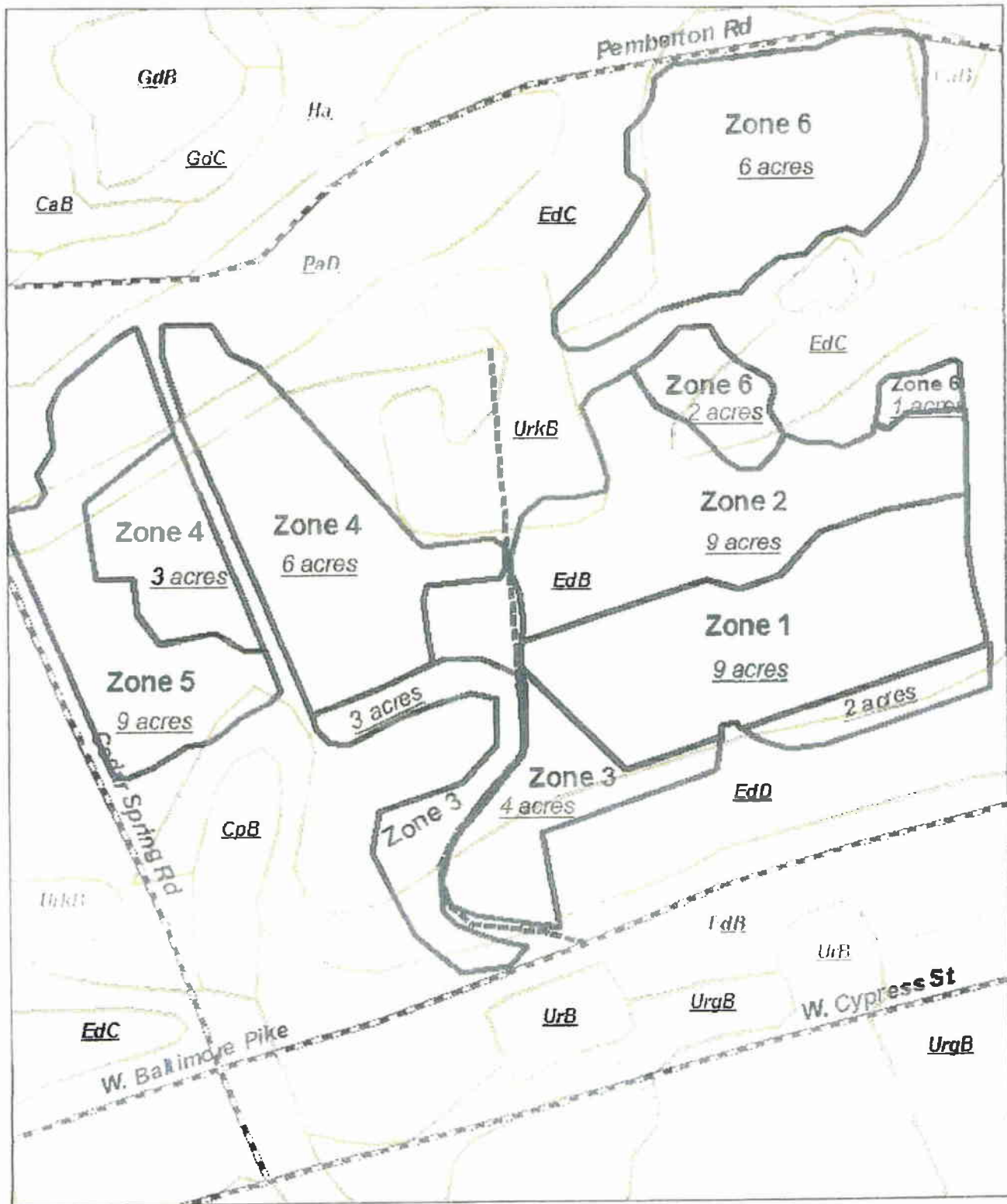
* Results: P, K, Mg and Ca are extracted by Mehlich-3 (ICP) and are reported in ppm
 Ratings: L=Low M=Medium G=Good H=High V=Very High

Sample Number	Lab Number	P-FIV	DPS	Na m3-ppm	Na Sat %
EAST 1	J36639	76		64	3.3
EAST 2	J36640	61		47	2.5
EAST 3	J36642	317	84	67	1.6
EAST 4	J36643	256	66	64	1.8
EAST 5	J36644	379	103	62	1.5
EAST 6	J36645	79		60	2.6
SOUTH 1-2	J36646	83		67	2.8
SOUTH 3-4	J36647	41		50	2.3
SOUTH 5-7	J36648	138		66	3.1

New Garden Township East End

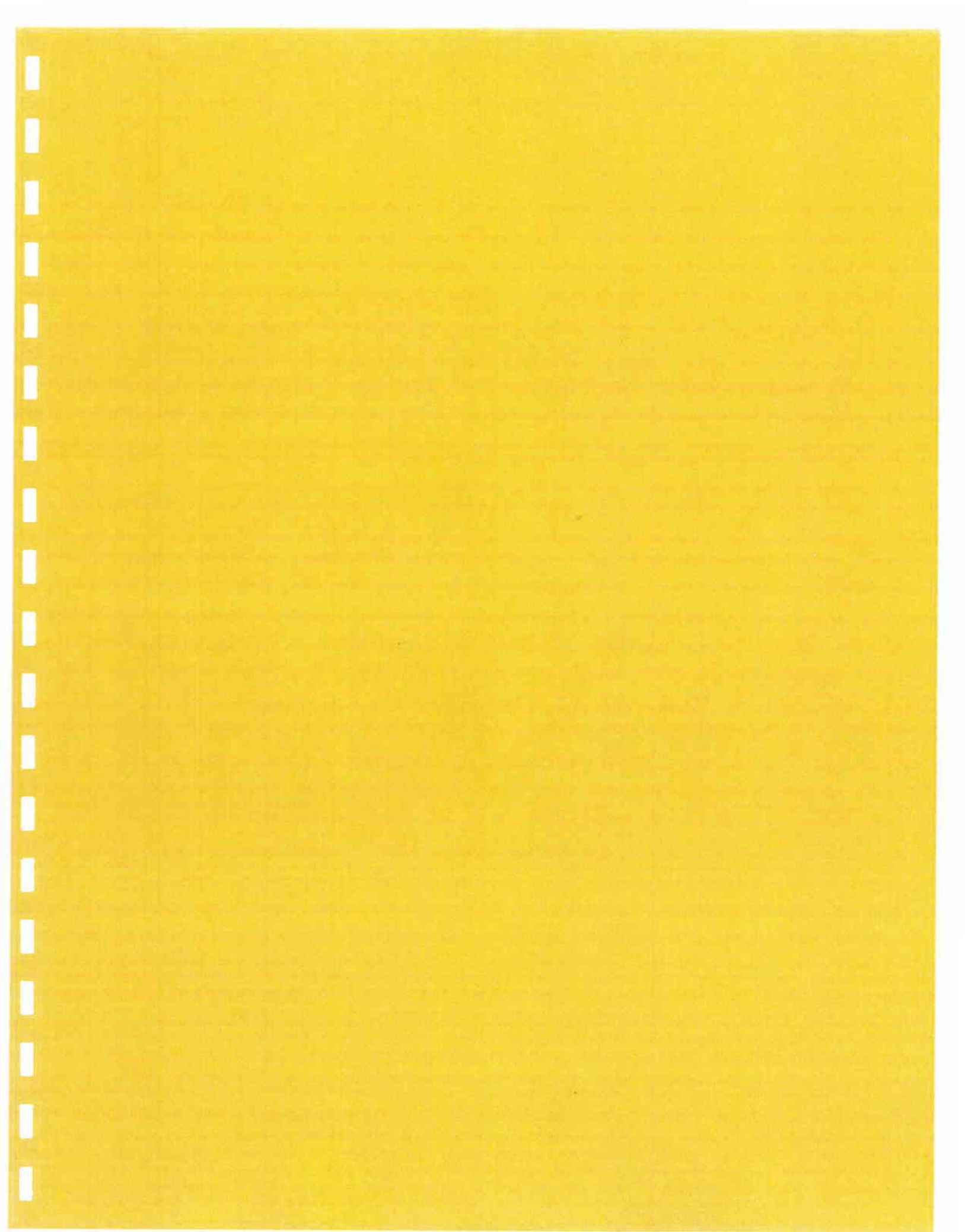


New Garden Township East End



Map Unit Legend

Chester County, Pennsylvania (PA029)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CaB	Califon loam, 3 to 8 percent slopes	1.2	0.9%
Co	Codorus silt loam	0.1	0.1%
CpA	Cokesbury silt loam, 0 to 3 percent slopes	0.0	0.0%
CpB	Cokesbury silt loam, 3 to 8 percent slopes	2.4	1.7%
EdB	Edgemont channery loam, 3 to 8 percent slopes	77.8	56.5%
EdC	Edgemont channery loam, 8 to 15 percent slopes	18.0	13.1%
EdD	Edgemont channery loam, 15 to 25 percent slopes	15.5	11.3%
GdC	Gladstone gravelly loam, 8 to 15 percent slopes	1.1	0.8%
GlB	Glenville silt loam, 3 to 8 percent slopes	1.1	0.8%
Ha	Hatboro silt loam	3.1	2.2%
PaD	Parker gravelly loam, 15 to 25 percent slopes	10.8	7.8%
UrkB	Urban land-Edgemont complex, 0 to 8 percent slopes	6.0	4.4%
W	Water	0.7	0.5%
Totals for Area of Interest		137.7	100.0%



Spray Field Compaction Evaluation

East End Spray Field

Prepared by : Larry Hepner, Soil Scientist, CPSS

Introduction

On December 16, 2015 I examined 6 backhoe test pits at various locations in the East End Wastewater Treatment Spray Field. The purpose of the investigation was to determine the level of compaction that may have occurred after several years of operation and harvesting of the hay. It is not uncommon for compaction to occur because of the typically higher soil moisture content at the time of hay harvest. If that compaction is not ameliorated it can slow infiltration and water movement through the soil profile. The profile descriptions contained at the end of the report.

Summary of Findings and Recommendations

Backhoe test pits 1 through 3 show some evidence in terms of structure and consistence that compaction is beginning to occur. However pits 4 through 6 show much stronger evidence of compaction zones starting at 5 inches beneath the surface and going to 9 inches beneath the surface in pit 4, starting at 4 inches and going to 21 inches in pit 5, and starting at 6 inches and going to 19 inches in pit 6. Map 1 shows the approximate location of these pits.

Map 1 – Approximate pit locations



Based on these test pit observations on Map 2, I have outlined three areas.

Map 2 – Areas



I would suggest you consider subsoiling Area 2 and Area 3 this crop season and subsoil Area 1 during the 2017 crop season. Here are some points to keep in mind for subsoiling:

1. Subsoiling should be done when the soil is as dry as possible. It should be done after one of the harvests before the spray system is turned back on. The soil will be driest during that time.
2. The depth should be about 24 inches. The compaction goes to 21 inches in some locations in the field.
3. Use a subsoiler that will have minimum disturbance to the surface. Subsoilers have different types of shanks which produce more or less surface disturbance. You want as little surface disturbance as possible but a shank that will break the compaction beneath the surface. Here are two photos two of the subsoiler. Note the bottom of the subsoil shank on the second photo. The shank has wings on the shank point that will lift and break up the soil below the surface. The third photo shows what the surface should look like after the unit is used.





4. The soils at the East End site have stones so the subsoiler will pull up stones, rocks that will need to be handpicked over the field. The stone picking should be included in the contract specs. Stones cannot be left at the surface or they will damage the diskbine mowers used to cut and harvest the hay.
5. Feel free to contact me with any questions.

Test pit descriptions

Pit 1

Ap 0-12" 7.5YR 4/4 brown silt loam; very weak prismatic structure parting to subangular blocky structure; friable. (7-12 zone not as friable as 0-7 zone)

Bt 12-28" 5YR 4/4 dull reddish brown silt loam; very weak prismatic parting to subangular blocky structure; friable. (earthworm at 16 inches)

C 28-40" 7.5YR 4/6 brown silt loam to loam;

Pit 2

Ap1 0-4" silt loam; granular structure; friable

Ap2 4-10" silt loam; weak prismatic and weak platy to subangular blocky structure; friable to slightly firm.

Bt1 10-24" silt loam; weak prismatic parting to subangular blocky structure; friable. (10-14" not as friable as 14-24")

Bt2 24-40" silt loam; subangular blocky structure; friable; (earthworm at 26 inches)

Pit 3

Ap1 0-4" silt loam; granular structure; friable.

Ap2 4-15" silt loam; weak prismatic parting to subangular blocky structure; friable.

Bt 15-22" silt loam; coarse prismatic parting to subangular blocky structure; friable to slightly firm.

Pit 4

Ap1 0-5" 7.5YR 2.5/2 brownish black silt loam; granular structure; friable

Ap2 5-9" 7.5YR 4/3 brown silt loam; weak prismatic parting to platy and subangular blocky structure; firm.

Bt1 9-24" 7.5YR 5/6 bright brown silt loam; subangular blocky structure; friable.

Bt2 24-40" 7.5YR 5/6 bright brown silt loam with common distinct 7.5YR 7/2 light brownish gray iron depletions and 7.5YR 5/8 bright brown iron concentrations; subangular blocky and prismatic structure; firm.

Pit 5

Ap 0-4" silt loam; granular structure; friable. (earthworm bottom of Ap)

Bt1 4-12" silt loam; platy structure; firm

Bt2 12-21" silt loam; platy structure; firm

C 21-36" micaceous silt loam; weak platy and subangular blocky structure; friable.

Pit 6

Ap 0-6" 7.5YR 3/2 brownish black silt loam; granular and subangular blocky structure; friable.

Bt1 6-19" 5YR 4/6 brown silty clay loam; prismatic and coarse platy structure; firm.

Bt2 19-36" 5YR 4/6 brown silty clay loam; subangular blocky structure; friable.

TOWNSHIP OF NEW GARDEN
CHESTER COUNTY, PENNSYLVANIA
ORDINANCE NO. 174

AN ORDINANCE OF THE TOWNSHIP OF NEW GARDEN FIXING AND IMPOSING SEWER RENTS AND CHARGES FOR THE SEWER SERVICE RENDERED BY THE TOWNSHIP; PROVIDING FOR THE COLLECTION OF SEWER RENTS AND CHARGES AND IMPOSING PENALTIES FOR DELINQUENT PAYMENTS; AND PROVIDING FOR PROHIBITED DISCHARGE STANDARDS AND OTHER RELATED MATTERS.

WHEREAS, the Township of New Garden (the "Township") operates and maintains sewerage collection systems (the "Sewer System") in certain areas of the Township, and provides sewerage service to properties in those certain areas, which Sewer System is owned by the New Garden Township Sewer Authority, pursuant to Lease dated March 1, 1991, and Supplementary Lease dated May 1, 1997 amending and supplementing the said Lease dated March 1, 1991, and Second Supplementary Lease dated August 29, 2001 further amending and supplementing the said Lease dated March 1, 1991 and the said Supplementary Lease dated May 1, 1997; and

WHEREAS, the Township of New Garden (the "Township") has previously enacted Ordinances wherein sewer rents and charges for the sewer services rendered by the Township were imposed upon users of such services; and

WHEREAS, the Township desires to continue to effect technical corrections and amendments to those prior Ordinances to ensure that the provisions of the sewerage treatment Permits and the sewerage treatment Agreements between the Township and other municipalities are being complied with, and that all properties being provided with sewerage service are treated equally; and

WHEREAS, the sewer rents and charges imposed by the latest of these Ordinances have been found to be presently insufficient in amount for the Township to comply with the expenses and obligations related thereto; and

WHEREAS, the Township deems it necessary to increase the sewer rents and charges imposed for the sewer service rendered by the Township; and

WHEREAS, in furtherance of the foregoing, the Township desires to amend and re-state the foregoing Article III of Chapter 152 of the New Garden Township Code as hereinafter set forth.

NOW, THEREFORE, the Board of Supervisors of New Garden Township hereby enacts and ordains as follows:

SECTION 152-11. DEFINITIONS

Unless the context specifically indicates otherwise, the meaning of the terms used in this Ordinance shall be as follows:

- a. AUTHORITY shall mean New Garden Township Sewer Authority.
- b. BUILDING SEWER shall mean the extension from the sewage drainage system of any structure to the Lateral of a Sewer, at the property line, curb line or alley line.
- c. CONNECTION UNIT shall mean as follows:

(1) With respect to single-family residential customers, each residence connected to the Sewer System shall be considered One (1) connection unit. With respect to attached dwelling units or dwelling units located as apartments, flats or other multi-family arrangements, each attached dwelling unit, flat, apartment or other multiple dwelling unit, whether connected through sewer laterals to each individual unit or a common lateral, shall be considered One (1) connection unit, as if each such unit had a direct and separate connection to the Sewer System; and

(2) With respect to non single-family dwellings, flats, apartments, stores or offices having the use of the Sewer System through one sewer lateral, each and every residential unit, flat, apartment, store, or office shall be considered One (1) connection unit, as if each such unit had a direct and separate connection to the Sewer System. For purposes of clarification, a shopping center with Ten (10) stores connected to a single lateral would be considered Ten (10) connection units, except as such connection units may be increased by the provisions of Subsection (3) below of this SECTION 152-11; and except as such connection units may be increased by the provisions of Subsection (3) below of this SECTION 152-11 DEFINITIONS, Subsection C. connection unit of this Ordinance.

(3) With respect to commercial or industrial properties, the number of connection units shall be equal to the daily water usage in gallons divided by 200. The daily water usage shall be computed by dividing the difference in successive quarterly meter readings by the number of days between such readings. If, after such an industrial or commercial building is fully occupied, or, if after a change in use of a commercial or industrial building is determined to have occurred by the Township or the Authority, the Township or the Authority shall, based upon water meter readings, review the number of connection units assessed upon initial connection of a building to make certain that the number of connection units actually in use by the customer are the same or less than those assessed. If the number of connection units exceeds those charged at the time of initial connection of the building as determined by comparison of meter readings as indicated above, the Township or the Authority shall charge additional tapping

fees at the rate then in effect in the Township. However, should such excess connection units not be available, the user must curtail (terminate) the excess (additional) flow being discharged to the Sewer System.

- d. DOMESTIC WASTE shall mean sewage discharged into the Sewer System having concentrations not exceeding the following:
 - (1) Ammonia - Nitrogen as N: 20mg/l;
 - (2) BOD₅: 250mg/l;
 - (3) Dissolved solids: 500mg/l;
 - (4) Nitrogen (TKN): 40mg/l;
 - (5) Phosphorus (Phosphate) as P: 10mg/l;
 - (6) Suspended solids: 250mg/l.
- e. INDUSTRIAL WASTE shall mean any biodegradable solid, liquid, or gaseous substance or water borne wastes or form of energy rejected, ejected or escaping from any industrial, manufacturing, trade or business process or from the development, recovery or processing of natural resources, as distinct from domestic waste.
- f. LATERAL shall mean that part of the Sewer System extending from a Sewer to the property line, curb line or alley line.
- g. OWNER shall mean any person vested with ownership, legal or equitable, sole or partial, of any property located in a Sewer Area.
- h. PERSON shall mean any individual, partnership, company, association, society, corporation or other group or entity.
- i. SEWER shall mean any pipe or conduit constituting a part of the Sewer System used or usable for sewage collection purposes and to which ground, surface or storm water is not admitted intentionally.
- j. SEWER SYSTEM shall mean all facilities, as of any particular time, for collecting, treating and/or disposing of sewage and owned or operated by the Township or the Authority.
- k. TOWNSHIP shall mean the Township of New Garden.

SECTION 152-12. SEWER RENTALS AND CHARGES, EXCLUDING CHARGES FOR INDUSTRIAL WASTE

A. There is hereby imposed on the owner of each property served by the Sewer System, not discharging Industrial Waste, quarter-annual sewer rents and/or charges based upon the following classifications and in the following base minimum amounts:

BASE MINIMUM QUARTERLY SEWER RENT

Occupancy for periods of less than a full quarter will result in the quarterly sewer user charge being billed plus excess, if any

- (1) Each private dwelling; each dwelling unit in a double house or in a row of connecting houses; each apartment, room, group of rooms, manufactured home or enclosure occupied or intended to be occupied as separate living quarters by a family or group of persons living together or by persons living alone, but excluding hotels, motels, or boarding houses.....\$ 80.00

- (2) Each commercial, retail, industrial or institutional establishment and each bedroom unit of a motel, hotel or boarding house, having sanitary facilities, including stores, food markets, professional offices, mushroom houses, automotive repair garages and establishments not regularly preparing and/or dispensing food or beverages, but excluding those uses enumerated in Subsection (3)below of SECTION 152-12, Subsection A. hereof, and excluding industrial establishments discharging biodegradable industrial waste which are governed by SECTION 152-13, hereof.....\$110.00

- (3) Each restaurant, bar, institution or establishment regularly preparing and/or dispensing food or beverages, whether for consumption on or off the premises, including, but not limited to, stores, food markets, delicatessens, food marts, schools, day care centers, or other establishments requiring food handling licensing, and beauty parlor and service station.....\$130.00

B. There is hereby imposed on the owner of each property served by the Sewer System, not discharging Industrial Waste, in addition to the base quarter - annual sewer rents and/or charges, additional rents and/or charges for discharge (based on water usage) in excess of Five thousand (5,000) gallons per quarter, but less than Fifteen Thousand and One (15,001) gallons per quarter, based upon the following classifications and in the following amounts:

EXCESS QUARTERLY SEWER RENT

Occupancy for periods of less than a full quarter will result in the quarterly sewer user charge being billed plus excess, if any.

- (1) Each private dwelling; each dwelling unit in a double house or in a row of connecting houses; each apartment, room, group of rooms, manufactured home or enclosure occupied or intended to be occupied as separate living quarters by a family or group of persons living together or by persons living alone, but excluding hotels, motels or boarding houses.....\$ 10.50 per 1,000 gallons or any fraction thereof

- (2) Each commercial, retail, industrial or institutional establishment and each bedroom unit of a motel, hotel or boarding house, having sanitary facilities, including stores, food markets, professional offices, mushroom houses, automotive repair garages and establishments not regularly preparing and/or dispensing food or beverages, but excluding those uses enumerated in Subsection(3) below of SECTION 152-12, Subsection B. hereof, and excluding industrial establishments discharging biodegradable industrial waste which are governed by SECTION 152-13 hereof.....\$16.00 per 1,000 gallons or any fraction thereof

- (3) Each restaurant, bar, institution or establishment regularly preparing and/or dispensing food or beverages, whether for consumption on or off the premises, including but not limited to, stores, food markets, delicatessens, food marts, schools, day care centers, or other establishments requiring food handling licensing, and beauty parlor and service station.....\$ 21.75 per 1,000 gallons or any fraction thereof

D. If two or more of the use classifications specified in Subsections A., B. and C. above of this SECTION 152-12 hereof exist in one building and have the use of the sewer system through one sewer connection, the charge applicable to both or all of such use classifications shall be imposed as if there were a separate connection for each of the use classifications.

SECTION 152-13. SEWER RENTS AND CHARGES FOR INDUSTRIAL WASTE AND REGULATIONS PERTAINING THERETO

A. There is hereby imposed on the Owner of each property served by the Sewer System and discharging Industrial Waste into the Sewer System, based on the volume of metered water usage, quarter-annual sewer rents or charges, as follows:

The Base minimum quarter-annual Sewer Rent shall be Three hundred eighty five and 00/100 Dollars (\$385.00) for the first Five thousand (5,000) gallons of sewerage discharged. Thereafter, the Excess quarter-annual Sewer Rent shall be Twenty-seven and 50/100 Dollars (\$27.50) for each One Thousand (1,000) gallons of sewerage discharged, or fraction thereof, in excess of Five Thousand (5,000) gallons per quarter; but less than Fifteen Thousand and One (15,001) gallons per quarter, and Thirty-six and 00/100 (\$36.00) for each One Thousand (1,000) gallons of sewerage discharged, or fraction thereof, in excess of Fifteen Thousand (15,000) gallons per quarter.

B. No Industrial Waste shall be discharged into the Sewer System until:

1. a water meter satisfactory to the Township has been installed at the Owner's expense, which Owner shall be responsible for its maintenance and safekeeping; and
2. a sewage meter satisfactory to the Township for the purpose of monitoring sewage flows, and not for the purpose of computing sewer rents, has been installed at the Owner's expense, which Owner shall be responsible for its maintenance and safe keeping; and
3. the Owner has applied for and obtained approval from the Township for the discharge of Industrial Waste.

C. Industrial Waste surcharges. There shall be additional charges for industrial wastes having concentrations of BOD₅, suspended solids, dissolved solids, nitrogen or phosphorus in excess of the average concentration of these pollutants in normal domestic waste, based on the "Surcharge Formula" set forth in Subsection D. below of this SECTION 152-13 hereof. This provision does not, however, vest any right for any user of the sewer system to discharge waste which exceeds the strength of Domestic Waste.

D. Surcharge Formula.

1. In order to determine the additional charge for Industrial Waste with strength greater than that of domestic waste, the following formula shall be used:

$$S_Q = 0.00834 Q_I [(BOD_{5I} - 250) TC_{BOD5} + (SS_I - 250) TC_{SS} + (DS_I - 500) TC_{DS} + (N_I - 40.0) TC_N + (P_I - 10) TC_P]$$

Where:

S_Q = The quarterly surcharge to be added to the normal sewer rent.

0.00834 = A constant to convert waste concentrations, expressed in mg/l, to thousands of pounds of waste.

Q_I = The quarterly industrial waste flow, expressed in million gallons.

BOD_{5I} , SS_I , DS_I , N_I , and P_I = The respective concentrations of BOD_5 , suspended solids, dissolved solids, nitrogen (TKN) and phosphorus (total as P) of the industrial waste, expressed in mg/l.

250, 250, 500, 40 and 10 = Constants which express the waste load concentrations in mg/l for normal domestic wastes.

TC_{BOD5} = The treatment cost incurred by the Township as updated annually per one thousand (1,000) pounds of BOD_5 .

TC_{SS} = The treatment cost incurred by the Township as updated annually per one thousand (1,000) pounds of suspended solids.

TC_{DS} = The treatment cost incurred by the Township as updated annually per one thousand (1,000) pounds of dissolved solids.

TC_N = The treatment cost incurred by the Township as updated annually per one thousand (1,000) pounds of nitrogen.

TC_P = The treatment cost incurred by the Township as updated annually per one thousand (1,000) pounds of phosphorus.

2. When a value of BOD_5 , suspended solids, dissolved solids, nitrogen and/or phosphorus is less than the normal domestic waste concentration as established herein, then the normal domestic waste concentration shall be used in the calculation of the industrial waste surcharge.

E. Additional surcharges. The formula specified in Subsection D., hereof is to determine additional charges or surcharges for the treatment of Industrial Wastes having concentrations of BOD₅, suspended solids, dissolved solids, nitrogen and phosphorus in excess of those of domestic waste. It is, however, recognized that the discharge of any waste or other matter which contains any one (1) or more of the prohibited substances listed in Section 4. hereof, may result in extraordinary laboratory, labor, maintenance and/or treatment expenses to the Township - Hence, in the event of the discharge of any Industrial Waste or other matter or substance, as may be permitted by the Township, containing any one (1) of the prohibited substances listed in Section 4. hereof, the Township shall have the power to assess the owner of the property from which such discharge is made administrative fees or charges and penalties in addition to the normal sewer rental and/or any Industrial Waste surcharge incurred under Subsection D. hereof.

F. Methods of payment of extra charges by industrial users. The Industrial Waste surcharge shall be payable quarterly. The Township shall cause the water meter of each industrial user where the wastewater flow determination is based upon metered water consumption, and the wastewater meter where the wastewater flow determination is based upon wastewater flow measurement, to be read on a quarterly basis, and the Township shall cause Industrial Waste surcharge bills to be mailed forthwith following each reading.

1. The Township shall cause periodic sampling of the wastewater discharged by each industrial user, at the Owner's expense.

2. The analysis (which shall also be at Owner's expense) of the sample shall be the basis for computing industrial waste surcharges.

3. Bills for industrial waste surcharge shall be mailed to the owner's address specified on the industrial waste discharge permit. Failure to receive a bill as a result of incorrect address or otherwise shall not excuse the obligation to pay the charges or extend the time for payment.

G. Industrial users. Industrial Waste surcharge payments by an industrial user shall be computed from the date Industrial Waste discharge to the Sewer System begins and shall continue indefinitely.

H. Discontinuance of use. If an industrial user discontinues discharging Industrial Waste as determined by the Township, to the Sewer System, its charges for Industrial Waste surcharges shall cease.

I. All chemical or biological analyses specified herein shall be performed by an independent laboratory certified by the Commonwealth of Pennsylvania to conduct such tests in accordance with applicable procedures presented in the latest revised edition of "Standard Methods for the Examination of Water and Waste Water", as published jointly by the American Public Health Association, American Water Works Association and the Water Pollution Control Federation.

J. Occupancy for periods of less than a full quarter will result in the minimum quarterly sewer user charge being billed plus excess, if any.

SECTION 152-14. PROHIBITED DISCHARGE STANDARDS

A. No waste, chemicals or other matter shall be discharged into the Sewage System:

- (1) having a five (5) - day, twenty (20) degree C. (Centigrade) biochemical oxygen demand (B.O.D.) averaging more than 250 milligrams per liter (mg/l) or as may be otherwise determined by the Township, but no higher than such determination;
- (2) having a suspended solids content averaging more than 250 mg/l;
- (3) having ammonia nitrogen as N in excess of 20 mg/l;
- (4) having a dissolved solids content in excess of 500 mg/l;
- (5) having a phosphorus content as P in excess of 10 mg/l;
- (6) having an average chlorine demand greater than ten (10) mg/l;
- (7) having a temperature higher than 150 degrees F;
- (8) containing more than 100 mg/l of fat, oil or grease;
- (9) containing any gasoline, benzene, naphtha, fuel oil or other inflammable or explosive liquid, solid or gas;
- (10) containing any unground garbage;
- (11) containing any ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, paunch manure or any other solid or viscous substance capable of causing obstruction to the flow in the sewer system or other interference with the proper operation of the sewage collection, conveyance, or treatment systems;
- (12) having a "PH" lower than 6.5 or higher than 9.0 or having any other corrosive property capable of causing damage or hazard to structures, equipment or personnel of the Sewer System;
- (13) containing toxic or poisonous substances in sufficient quantity to injure or interfere with any sewage treatment process, to constitute a hazard to humans or animals, or to create any hazard in the waters receiving the effluent of the sewage treatment plant (toxic wastes shall include, but shall

not be limited to, wastes containing cyanide, copper and/or chromium ions);

- (14) containing total solids, waters, wastes, or other solids of such character and quantity that unusual attention or expense is required to handle such materials at the sewage treatment plant to which such effluent is discharged, or in the collection and conveyance systems;
- (15) containing any noxious or malodorous gas or substance capable of creating a public nuisance;
- (16) collected from septic tanks, cesspools or other on - lot sanitary disposal systems;
- (17) restricted by virtue of the Department Of Environmental Protection Permit under which the Sewer System to which such effluent is discharged is required to operate;
- (18) containing any radioactive materials;
- (19) containing any colored wastewaters;
- (20) having any rates of flow taking on the properties of a slug, except as the Township may specifically agree to accept in accordance with Section 3, of this Ordinance; or
- (21) having an Aluminum content in excess of 1.10 mg/l;
- (22) having an Antimony content in excess of 5.0 mg/l;
- (23) having an Arsenic content in excess of .42 mg/l;
- (24) having a Barium content in excess of 4.0 mg/l;
- (25) having a Boron content in excess of 1.0 mg/l;
- (26) having a Cadmium content in excess of .02 mg/l;
- (27) having a Chlordane content in excess of .000121 mg/l;
- (28) having a Chloroform content in excess of .002 mg/l;
- (29) having a Chromium (hexavalent) content in excess of .1 mg/l;
- (30) having a Chromium (total) content in excess of 1.0 mg/l;
- (31) having a Copper content in excess of .09 mg/l;
- (32) having a Cyanide (total) in excess of .18 mg/l;
- (33) having a Diazinon content in excess of .00053 mg/l;
- (34) having an Iron content in excess of 5.0 mg/l;
- (35) having a Lead content in excess of .032 mg/l;
- (36) having a Lindane content in excess of .00018 mg/l;
- (37) having a Manganese content in excess of 1.0 mg/l;
- (38) having a Mercury content in excess of .0014 mg/l;

D. Standards Relating To Fat, Oil and Grease,

1. No waste, chemicals or other matter shall be discharged into the Sewage System containing more than 100 mg/l of fat, oil or grease;
2. No fat, oil, grease or other substance shall be discharged into the Sewage System that will become solid or viscous and which may cause obstruction to the flow in a sewer or pass through or cause other interference with the operation of the wastewater treatment facilities or collection system;
3. No fat, oil, or grease shall be discharged into the Sewage System in such quantity or concentration which may cause obstruction to the flow in a sewer or pass through or cause other interference with the operation of the wastewater treatment facilities or collection system;
4. Fat, oil and grease interceptors (traps) shall be provided and installed, at the Owner's sole cost and expense, when, in the opinion of the Township or the Authority, they are necessary for the proper handling of liquid wastes containing floatable fat, oil or grease in such quantity or concentration as to cause obstruction to the flow in a sewer or pass through or interfere with the operating of the wastewater treatment facilities, except such interceptors shall not be required for private living quarters or dwelling units;
5. All fat, oil and grease interceptors (traps) shall be of a type and capacity approved by the Township and the Authority, shall be located as to be readily and easily accessible for inspection, sampling and cleaning, shall be designed, constructed and maintained in accordance with the STANDARD SPECIFICATIONS AND DETAILS regarding sewer facilities and infrastructure of the New Garden Township Sewer Authority dated March 2003, and adopted by both the Township and the Authority by separate Resolutions on March 11, 2003, as may be from time to time amended;
6. The Township or the Authority shall cause periodic inspections of the interceptors, periodic sampling of the wastewater discharge to and from the interceptor (as may be deemed necessary by the Township or the Authority), and the analysis of such wastewater (also as may be deemed necessary by the Township or the Authority), all at the sole cost and expense of the Owner;
7. The Township or the Authority, in the proper maintenance of these interceptors, shall cause the captured material to be removed and disposed of by appropriate means on a schedule to be determined by the Township or the Authority, at the sole cost and expense of the Owner. The removal, hauling and disposal of the collected materials shall be performed by currently-licensed waste disposal firms;

ACTION TAKEN BY LEGAL COUNSEL: LEGAL FEES FOR SUCH ACTION:

Open file and send demand letter	\$165.00
File lien and send second letter	\$150.00
Prepare and file Writ of Scire Facias	\$175.00
Re-Issue Writ	\$ 50.00
Prepare and mail correspondence per Pa.R.C.P. Section 237.1	\$ 35.00
Motion for Alternate Service	\$200.00
Motion for Summary Judgment	\$200.00
Prepare and file Default Judgment	\$150.00
Prepare and file Writ of Execution for Sheriff Sale	\$750.00
With Sale	\$500.00
Charge for Check which does not clear	\$ 35.00
Miscellaneous Litigation	Hourly rate \$175.00 per hour.

C. Every Owner shall keep the Township advised of his correct address. Failure of any Owner to receive his quarter-annual bills shall not be considered an excuse for non-payment nor shall such failure result in an extension of the time during which the bill is payable.

SECTION 152-16. ADDITIONAL CONDITIONS REGARDING SERVICE

A. If any Person shall fail for (30) thirty days after written notice from the Township to remedy any unsatisfactory condition with respect to a Building Sewer, the Township may refuse to permit such Person to use the Sewer System until such unsatisfactory condition shall have been remedied to the satisfaction of the Township.

B. The Township reserves the right to refuse any Person or property the use or increased use of the Sewer System, to refuse any person or property additional connection units, or to compel the pretreatment of Industrial Wastes, in order to prevent discharge into the Sewer System of excessive effluent and/or harmful wastes.

C. The Township reserves the right to and may, from time to time, adopt, revise, amend and re-adopt such rules and regulations as it deems necessary and proper for the use and operation of the Sewer System. Any such revisions, amendments and re-adoption effecting this Ordinance shall be applied retroactively and immediately to all users of the Sewer System without regard to the provisions of any ordinance, rule, regulation and similar legislation that was in effect at the time when connection to and use of the Sewer System was first made by any and all users thereof.

D. The Township or the Authority in their absolute discretion shall have the right to enter into Agreements with respect to the terms and conditions under which Domestic Waste or Industrial Waste may be discharged into the Sewer System and with respect to the payment to be made in connection therewith.

E. All persons and properties discharging sewerage into the Sewer System or being served thereby, not having water meters installed on the water lines serving such Persons or properties, shall have water meters installed on such water lines. The Township or the Authority shall install such water meters.

F. The Township or the Authority reserves the right to compel any Person or property discharging sewerage into the Sewer System to install sewer meters at the expense of such person or the Owner of the property and to base all sewer rentals and/or charges on metered sewerage usage.

G. All meters or other measuring devices and effluent sampling devices installed or required to be used under the provisions of this Ordinance shall be installed at a location approved by and accessible to the Township and the Authority, and the Township or the Authority shall be responsible for the reading thereof.

H. All sewer rentals and/or charges shall be based on metered water usage; except as may be otherwise determined by the Township or the Authority in cases of certain industrial and/or commercial users not discharging all of such user's sewerage effluent into the Sewer System, or not returning all of the water used to the Sewer System, in which cases sewer rentals and/or charges may be based on sewerage discharged into the Sewer System by determining the differences between water meters where there are separate water meters which measure water flow delivered to the subject property and measure the water flow that is not discharged into the Sewer System and/or by the sewerage discharged into the Sewer System measured by a separate sewage meter, whichever method is determined by the Township or Authority to be most appropriate.

I. All meters or other measuring devices installed or required to be used under the provisions of this Ordinance shall be approved by the Township or the Authority, and shall be tested, inspected, and repaired as required by the Township or the Authority, and all testing, inspection and repairs of such measuring device shall be made at the expense of the property Owner. The Owner of the property upon which such measuring device is installed shall be responsible for its maintenance and safe keeping, and all testing, inspection and repairs of such measuring device shall be made at the expense of the property Owner.

J. The Township reserves the right to, and may from time to time modify, revise or raise the fees, charges, surcharges, excess charges, administrative fees and rates set forth in this Ordinance by the adoption of amendments hereto, Resolution or subsequent Ordinances.

K. There shall be only one (1) water meter permitted for any property whereon a single residential dwelling unit is located for the purpose of measuring the amount of water used thereon.

SECTION 152-17. MISCELLANEOUS

A. The Township shall have the right of access at all reasonable times to any part of any property served by the Sewer System as shall be required for purposes of inspection, measurement, sampling and testing, and for other functions relating to service rendered by the Township to its Sewer System.

B. Whenever a property is vacated, the Owner must give notice to the Township Secretary of such fact and until such notice is given, and such vacancy is confirmed by the Township, the Owner shall be responsible for sewage charges. When a vacancy is properly reported an allowance for the period of vacancy, if such vacancy extends for a period of one billing quarter or more, shall be made if it is shown to the satisfaction of the Township that the water system is properly secured against use, so long as there exists no moratorium on connections to the Sewer System in the sewerage district in which such property is located. Should there be such moratorium in effect during all or any portion of the period in which any such property is vacant, the full sewage charges must be paid for the total number of connection units assigned to such property. Further, should such vacancy continue for a period of Three (3) years, the Owner will again become responsible for sewerage charges, regardless of the existence of such moratorium. The failure to pay or continue to pay all such sewage charges when due will result in the loss to such property of those connection units for which such sewage charges are not timely paid, with no return nor reimbursement of Connection Fees or any portion thereof, and the assignment of such connection units to other persons or properties.

Additionally, the continuance of such vacancy, for a period of Five (5) years from the date the property became vacant will result in the loss to such property of those connection units attributable to such vacancy, with no return nor reimbursement of Connection Fees or any portion thereof, and the assignment of such connection units to other persons or properties.

C. The reservation of sewer connection units by any party for any property shall be governed by various Township Ordinances and Resolutions and Resolutions of the Authority as the same may from time to time be amended, revised, modified or replaced.

D. Whenever there is any change of ownership of any improved property, the property Owner must give to the Township Secretary written notice of such change of ownership.

E. This Ordinance shall supersede all prior Ordinances or Resolutions as to the specific subject matter contained herein. All Ordinances or parts of Ordinances which are inconsistent herewith are hereby repealed.

F. This Ordinance shall be applicable to all persons using properties, owners of properties, tenants of properties and properties which are currently connected to the Sewer System or which may hereafter become connected to the Sewer System and shall apply to all sewer rents and charges for the Sewer Service rendered by the Township and the collection thereof, including Penalties and Delinquent Payments, and other matters relating thereto.

G. The provisions of this Ordinance are severable and if any of its provisions shall be held to be unconstitutional, illegal or invalid, such unconstitutionality, illegality or invalidity shall not effect or impair any of the remaining provisions of this Ordinance. It is hereby declared to be the legislative intent of the Board of Supervisors that this Ordinance would have been adopted had any such unconstitutional, illegal or invalid provision not been included herein.

SECTION 152-18. VIOLATIONS AND PENALTIES

A. The Solicitor for the Authority and/or the Solicitor for the Township shall be empowered and shall be charged with the responsibility of obtaining equitable, injunctive or other appropriate relief in the Court of Common Pleas of Chester County, before a District Magistrate or before appropriate administrative boards in order to secure compliance with the provisions of this Ordinance.

B. Any person or entity who or which violates or permits the violation of any provision of this Ordinance who shall not voluntarily pay the penalty imposed for violation of this Ordinance shall, upon being found liable thereof in any civil enforcement or other proceeding before a District Magistrate, pay a civil penalty of not more than Six Hundred (\$600.00) Dollars, plus court costs and reasonable attorney's fees, for each and every violation. Such civil penalty, costs and attorney's fees shall be enforced by the Authority and/or the Township pursuant to the applicable Rules of Civil Procedure, and shall be paid into the appropriate Sewer Fund. Each day during which failure to comply continues shall constitute a separate violation. This remedy shall be in addition to any other lawful remedies available to the Authority and Township.

This Ordinance shall be recorded in the Ordinance Book of the Township and shall become effective five (5) days after adoption thereof.

APPENDIX 11

CORRECTIVE ACTION PLAN

APPENDIX 11

CURRENTLY

A

CORRECTIVE ACTION PLAN

IS NOT REQUIRED

APPENDIX 12

CURRENTLY

A

CONNECTION MANAGEMENT PLAN

IS NOT REQUIRED

APPENDIX 13

ORDINANCES RELATED TO RESERVING SEWAGE TREATMENT CAPACITY

to construct, cause to be constructed or otherwise connect to the Authority's Sewer System shall pay a nonrefundable application fee set by the Authority, from time to time by resolution, plus reimburse the Authority for any and all additional actual costs and expenses incurred by the Authority associated with processing such application. All applications for connection to the Authority's Sewer System shall be made in writing on forms provided by the Authority, shall be submitted to the Authority's business office at 299 Starr Road and shall include such information, plans and documents as requested by the Authority concerning the source(s) of the proposed discharge and the estimated flow in gallons per day and number of EDUs associated with the proposed connection and discharge to the Authority's Sewer System. All applications for connection to the Authority's Sewer System shall include a detailed description of the nature and character of the waste proposed to be discharged to the Authority's Sewer System and detailed calculations showing how the amount of flow from the proposed discharge was computed. Applicant shall also provide a written detailed explanation and diagrams which thoroughly describe the manner and method by which the physical connection to the Authority's sewer system is proposed to be made. Applications shall be logged in by the Authority by the date and time that the written application was determined to be complete by the Authority in its sole discretion, to include the nonrefundable application fee. Applications for connection to the Authority's Sewer System shall not be processed by the Authority until such written applications are determined by the Authority to be complete and include the information, plans, documents and nonrefundable application fee required herein, by the rules and regulations of the Authority and any other information requested by the Authority. The Authority reserves the right and privilege to reject any application that it deems incomplete.

B. Sewer connection.

- (1) No physical connection shall be made to the Authority's Sewer System by the Applicant, Applicant's contractor, Applicant's agent or any party other than the Authority, Authority's contractors or others specifically authorized by the Authority or the Township.
- (2) Applicant shall notify Authority at least five (5) business days in advance of the date that physical connection to the Authority's Sewer System is expected to be made. Authority shall, upon receipt of such notice, coordinate with Applicant with regard to completing said physical connection and inspection of the same. Physical connection to Authority's Sewer System shall not be made until the steps set forth in Paragraph A. hereinabove have been satisfactorily executed. Applicant shall be solely responsible for the payment of all costs and expenses associated with completing such physical connection and restoration of all areas disturbed thereby. All physical connections shall be made pursuant to the Standard Specifications and Details, rules, regulations, policies, procedures and ordinances of the Authority and Township.

- C. An equivalent dwelling unit (EDU) is currently the same as a billing unit which is 200 gallons per day which may be revised from time-to-time at the sole discretion of the Authority or the Township.

§ 152-27 Reservation of Capacity.

- A. Method of allocation of capacity. The Authority shall allocate and reserve capacity in its sewer system in terms of gallons per day. The Applicant is required to fully substantiate the amount of sewage discharge (flow) requested in the application for reservation and allocation of capacity. The Authority shall determine, in its sole discretion, the validity of Applicant's request and computation of flow and shall make the final determination as to the amount of flow to be reserved in conjunction with each application received and processed.
- B. Method of reservation of capacity. The Authority shall, in its sole discretion, make the final determination as to the amount of flow to be reserved in conjunction with each application received and processed.
- C. Application for allocation and reservation of capacity. An Applicant for reservation and allocation of capacity in the Authority's Sewer System shall pay a nonrefundable application fee by cash, check or money order, set by the Authority from time to time by resolution, plus reimburse the Authority for any and all additional actual costs and expenses incurred by the Authority associated with processing such application. All applications for allocation and reservation of capacity in the Authority's Sewer System shall be made in writing on forms provided by the Authority, shall be submitted to the Authority's business office at 299 Starr Road and shall include such information, plans and documents as requested by the Authority concerning the source(s) of the proposed discharge and the estimated flow, in gallons per day for which the reservation and allocation of capacity is being requested. All applications for allocation and reservation of capacity shall include a detailed description of the nature and character of the waste proposed to be discharged to the Authority's Sewer System and detailed calculations showing how the amount of flow from the proposed discharge was computed. An application for allocation and reservation of capacity will only be accepted for processing when such application is submitted in conjunction with filing a formal application to the Township for subdivision or land development approval or conditional use. Applications shall be logged in by the Authority by the date and time that the written application was determined to be complete by the Authority, in its sole discretion, to include payment of the nonrefundable application fee and twenty percent (20%) of the total amount of the tapping fee due based on the total number of gallons requested to be reserved and allocated. Applications for the reservation and allocation of capacity shall not be processed by the Authority until such written applications are determined by the Authority to be complete and include the information, plans, documents, nonrefundable application fee and twenty percent (20%) of the total amount of the tapping fee due based on the total number of gallons requested to be reserved and allocated as required herein, by the rules and regulations of the Authority and any other

information requested by the Authority. The Authority reserves the right and privilege to reject any application that it deems incomplete.

- D. Allocation of capacity. Capacity remaining in the Authority's Sewage System shall be allocated and reserved based on the order in which written applications, as described in paragraph C. hereinabove, are determined to be complete by the Authority by date and time of day. Subject to the limitations set forth herein, capacity shall be reserved and allocated in an amount equal to one-hundred percent (100%) of the total amount approved by the Authority for each application until there is no longer sufficient capacity in the Authority's Sewer System to accommodate the amount approved by the Authority for each subsequent application, provided, that all fees, costs and/or charges for reservation of such capacity shall have been paid in full. Where an Applicant who seeks to reserve capacity has previously been allocated and reserved capacity for a particular facility, property, tract or subdivision, such Applicant shall not be eligible to apply for or to receive an additional allocation and reservation of capacity, in any amount, for the same facility, property, tract or subdivision, until Applicant has constructed and connected to the Authority's sewer system, source(s) of discharge which contribute at least forty percent (40%) of the flow of capacity from the immediately preceding amount of reserved and allocated for such Applicant, and one-hundred percent (100%) of the flow of capacity from any and all previously reserved and allocated capacity, and such connected units are generating revenue to the Authority in an amount at least equal to the Authority's minimum quarterly sewer user rates for each EDU so connected. In interpreting this section, separate phases of construction of a property, project, facilities, subdivision or land development shall be treated as part of the same property, project, facilities, subdivision or land development and this provision shall apply to each phase of such property, project, facilities, subdivision or land development.
- E. Nothing herein contained to the contrary, the Authority shall retain for the discretionary use of the Township, flow equal to forty (40) EDUs. Further, the Authority shall retain flows equal to fifteen (15) EDUs for use of the Township but restricted to uses such as individual residential or commercial requiring one (1) or two (2) EDUs of capacity or to replace the use of an on-site septic system that is failing or has failed or if expansion thereof is required and no suitable area is available for such expansion.
- F. Failure to commit capacity. If the Authority has not reserved and allocated capacity for a particular application, within twelve (12) months immediately following the date the Authority determined that such application for reservation and allocation of capacity is complete, then, and only in such circumstance, such application may be considered void and no longer valid at the option of the applicant. If applicant exercises such option to void the application, such application shall be removed from the list of complete applications and the twenty percent (20%) payment of the amount of the tapping fee paid in conjunction with filing such application shall be refunded, in full, but without interest, to Applicant

who filed such application. If Applicant shall thereafter file an application for reservation and allocation of capacity for the same or substitute property, project, facilities, subdivision or land development, such application shall be processed as a new application pursuant to the provisions of this Article V.

G. Payment for reservation and allocation of capacity. All payments required under this Article shall be by cash, check or money order.

(1) Capacity shall not be considered reserved and allocated until Applicant has received approval from the Authority, the Pennsylvania Department of Environmental Protection (DEP), and any other agency having jurisdiction, of the Sewage Facilities Planning Module ("SFPM") for the subject property, project, facilities, subdivision or development, and, within thirty (30) calendar days immediately following the date of approval by the Authority, the DEP, and any other agency having jurisdiction, of the SFPM, Applicant has paid to the Authority thirty percent (30%) of the total amount of the tapping fee based on the total number of gallons to be reserved and allocated. Such thirty percent (30%) payment is in addition to the twenty percent (20%) payment noted in paragraph C. hereinabove.

(2) The balance of the tapping fee, which is equal to fifty percent (50%) of the total tapping fee due based on the total number of gallons to be reserved and allocated, shall be paid in full upon the sooner of the following events having occurred: (a) within two (2) years immediately following the date of approval by the DEP, and any other agency having jurisdiction, of the SFPM for the subject property, project, facilities, subdivision or land development or (b) when fifty percent (50%) of the total amount of capacity which has been reserved and allocated for a property, project, facilities, subdivision or land development has been placed in service and generating at least the minimum quarterly base sewer user charge as income to the Authority.

The failure to timely pay (time to be of the essence) any payment due under Section G.(1) and/or G.(2) above shall constitute a forfeiture of reservation and capacity for such unpaid capacity.

H. Retention of capacity. Once capacity has been reserved and allocated to a property, project, facilities, subdivision or land development, it shall be reserved and allocated only for that property, project, facilities, subdivision or land development set forth in the application. All reservations and allocation of capacity shall be made in accordance with the provisions of this article and the resolutions, rules and regulations of the Authority, as the same may now exist and as the same may be amended and revised from time to time.

(1) The reservation and allocation of capacity for a property, project, facilities, subdivision or land development, except as provided in Subsection H(1)(a) hereof, shall remain valid for a period of five (5) years from the date the

Authority established that capacity has been reserved and allocated to the subject property, project, facilities, subdivision or land development.

(a) If, after reservation of capacity to the subject property, project, facilities, subdivision or land development, the amount of the estimated flow, in gallons per day for which the reservation and allocation of capacity was determined, is reduced as a result of the governmental review process associated with approval of the subject property, project, facilities, subdivision or land development, through "no fault" of the Applicant, any flows (EDUs) which are no longer required to adequately serve the subject property, project, facilities, subdivision or land development shall then and in those circumstances be reallocated and returned to the Authority. For example, if capacity has been reserved and allocated for one-hundred (100) dwelling units in a subdivision, but the final approved subdivision plan permits construction of only seventy-five (75) dwelling units, then the flow allocated and reserved for twenty-five (25) dwelling units shall become available to the Authority for reallocation by the Authority in its sole discretion. In such case, the tapping fee paid by the Applicant for reservation and allocation of capacity in excess of that which is required to adequately serve the subject property, project, facilities, subdivision or land development shall be fully refunded to the Applicant, without interest.

(2) If the Applicant for a particular property, project, facilities, subdivision or land development who obtained a reservation and allocation of capacity to serve such property, project, facilities, subdivision or land development thereafter transfers ownership of the subject property, project, facilities, subdivision or land development for which the reservation and allocation of capacity has been granted and assigned, said reservation of capacity may, with written approval from the Authority, be transferred with the change in ownership of the property, project, facilities, subdivision or land development, provided that, the required amount of capacity and number of EDUs for the transferee's proposed use remains the same as the original reservation and allocation of capacity for the subject property, project, facilities, subdivision or land development. The transferee of ownership of the property, project, facilities, subdivision or land development shall not be allocated any additional capacity as a result of the transfer or any proposed change in the use associated with property, project, facilities, subdivision or land development. The Authority must be notified in advance and in writing of any transfer of ownership of a property, project, facilities, subdivision or land development for which capacity has been reserved and allocated and provided with documentation substantiating the identity of the transferee of the property, project, facilities, subdivision or land development. In addition, the transferee shall be required to execute and deliver to the Authority such financial assurances and guarantees as may be required by the Authority,

in its sole discretion, to perform and fulfill all of the requirements related to the reservation and allocation of capacity for the subject property, project, facilities, subdivision or land development and such transferee shall be subject to the provisions of this article and the applicable resolutions, rules and regulations of the Authority.

- (3) Capacity which has been reserved and allocated cannot be sold, transferred, assigned or otherwise used for any other property, project, facilities, subdivision or land development than that for which the application was made and approved.
- (4) If an Applicant has not caused the property, project, facilities, subdivision or land development to be connected to and commence using the Authority's Sewer System within the five-year (5) period set forth hereinabove, the reservation of and allocation of capacity shall expire and the capacity which had been reserved and allocated for the property, project, facilities, subdivision or land development shall be recovered by the Authority for its use and reallocation in its sole discretion unless the Applicant shall take the steps set forth in Subsection H.(4)(b) hereof of this article to preserve the reservation of capacity.
 - (a) If an Applicant does not desire to retain some or all of the unused but reserved and allocated capacity for a property, project, facilities, subdivision or land development beyond the original five-year (5) period, the Applicant may request a refund of the tapping fee paid for such unused but reserved and allocated capacity and notify the Authority of the Applicant's unconditional release of such unused but reserved and allocated capacity. Upon receipt of such request, the Authority shall refund eighty-five percent (85%) of the dollar amount of the tapping fee originally paid by Applicant to reserve and allocate such unused capacity.
 - (b) If the Applicant desires to retain the unused but reserved and allocated capacity beyond the five-year (5) period, the Applicant must immediately begin to pay each quarter, commencing immediately upon the expiration of the five-year (5) period set forth herein, the minimum quarterly base sewer user charge for each and every EDU of capacity which has been reserved and allocated but which remains unused. If the Applicant is delinquent in the payment of such minimum quarterly base sewer user charge for a period of ninety (90) or more days, the reservation and allocation of capacity associated with the unused but reserved and allocated capacity shall automatically, and immediately, expire and the unused allocated and reserved capacity which has been allocated to the property, project, facilities, subdivision or land development shall be recovered by the Authority for reallocation in its sole discretion. In such instance and circumstance, the Applicant shall

not be entitled to any compensation in any form for any of the unused but reserved and allocated capacity forfeited by Applicant under the provision of this section.

- I. Reduction in capacity. In the event any governmental or regulatory body or court having competent jurisdiction to do so reduces the Authority's capacity in its Sewer System or if the rules, regulations or written guidance of such entity results in a reduction in said capacity and such reduction makes it impossible for the Authority to honor any or all of its commitment to reserve and allocate capacity previously approved by the Authority, the Authority shall equitably reapportion the remaining, reduced Sewer System capacity among and between those applicants to whom capacity has been reserved and allocated in accordance with the Authority's resolutions, rules and regulations as may be adopted and/or promulgated from time to time.
 - (1) The Authority shall, in the event of a reduction in its Sewer System capacity, give written notice to all parties entitled to a reservation and allocation of capacity, informing each of them of the cause of the reduction in the Sewer System capacity, providing a calculation of the amount of the reduction in the Sewer System capacity and the amount of Sewer System capacity reserved and reallocated to each such Applicant. The notice shall also contain a calculation of the amount of fees and charges payable in connection with the amount of capacity reserved and reallocated to each such Applicant to include a computation of any refund which may be due the Applicant as a result of such reduction in Sewer System capacity.
 - (2) Under such circumstances as described in the immediately preceding paragraph, the Authority shall refund the amount of any tapping fee paid for the reservation and allocation of capacity which was then subsequently reduced, in full, without interest, to each Applicant affected by such reduction.
 - (3) Under such circumstances, any Applicant who has experienced a reduction in the amount of capacity Applicant would otherwise be entitled to, such Applicant may chose to make a new application for reservation of capacity under the provisions of this Article V. If Applicant elects to make such application, the Authority may, in its sole discretion, place such request for reservation and allocation of capacity on the list of reserved and allocated capacity ahead of others already on said list and adjust the allocation of reserved capacity to all Applicants on said list accordingly if there is insufficient capacity to accommodate the total amount of capacity so reserved and allocated by all Applicants.

§ 152-28 Definitions.

Unless the context specifically indicates otherwise, the meaning of the terms used in this article shall be as defined in Pennsylvania Act of December 19, 1990 (P.L. No. 203) of

8/23/07

the Municipalities Authorities Act of 1945, as amended. Editor's Note: See now 53 Pa.C.S.A. § 5601 et seq.

§ 152-29 Effect on other provisions.

This Ordinance shall supersede all prior Ordinances and Resolutions as to the specific subject matter contained herein. All Ordinances or parts of Ordinances which are inconsistent herewith are hereby repealed.


This Ordinance shall be recorded in the Ordinance Book of the Township and shall become effective five (5) days after adoption thereof.

2007. ORDAINED AND ENACTED THIS 11TH day of SEPTEMBER,

BOARD OF SUPERVISORS
NEW GARDEN TOWNSHIP

BY: 
Chairman

BY: 
Vice Chairman

BY: 
Member

BY: 
Member

BY: _____
Member

ATTEST:


Secretary

(SEAL)

TOWNSHIP OF NEW GARDEN
CHESTER COUNTY, PENNSYLVANIA
ORDINANCE NO. 173

AN ORDINANCE OF THE TOWNSHIP OF NEW GARDEN GOVERNING CONNECTION TO THE SEWER SYSTEM, THE IMPOSITION OF TAPPING FEES, AND PROVIDING FOR PENALTIES FOR VIOLATIONS OF THE ORDINANCE.

WHEREAS, the New Garden Township Sewer Authority (the "Authority") owns a Sewer System located in and serving various geographical areas within New Garden Township ("the "Sewer System"); and

WHEREAS, the Township of New Garden (the "Township") operates and maintains the Sewer System within the Township; and

WHEREAS, the Township has previously enacted Ordinances providing for connection to the Sewer System, permit requirements, conditions and the imposition of tapping fees; and

WHEREAS, the Township desires to modify, amend and re-state such Ordinances; and

WHEREAS, in furtherance of the foregoing, the Township, has deemed it appropriate to amend and re-state Article II of Chapter 152 of the New Garden Township Code as hereinafter set forth.

NOW, THEREFORE, the Board of Supervisors of New Garden Township hereby enacts and ordains as follows:

ARTICLE II Tapping Fees

§ 152-7. Connection to Sewer System; permit required; conditions.

- A. No person shall uncover, connect with, make any opening into, use, alter or disturb, in any manner, any main or any part of the Sewer System without first obtaining a permit in writing from the Township and Authority.
- B. The application for a permit required under Subsection A. of this section shall be made by the owner of the property served or to be served by the Sewer System, or by the duly authorized agent of such owner.
- C. No person shall make or shall cause to be made a connection of any improved property to a sewer main or Sewer System until such person fulfills each of the following conditions:

- (1) Applies for and obtains a permit as required by Subsection A. of this section;
- (2) Provides to the Township and Authority at least five (5) business days notice before such connection is to be made in order that the Township and/or Authority may supervise and inspect or may cause to be supervised and inspected the work of connection and necessary testing the sewer lateral;
- (3) Furnishes satisfactory evidence that any tapping fee charged and imposed by this article has been paid;
- (4) Obtains and pays for any required street opening permit; and
- (5) Complies with all applicable rules, regulations, specifications and ordinances of the Township and/or Authority with respect to the sewer system. In particular, the provisions of Chapter 152, Article V of the Code of the Township of New Garden.

D. All direct and indirect costs and expenses associated with construction of the extension from the sewage drainage system of any structure to the property line or curb stop (the "building sewer") and the extension from the building sewer to the sewer system main (the "lateral") and all direct and indirect costs and expenses of connection of the lateral to the sewer system main shall be borne by the owner of the property to be connected; and such owner shall indemnify and shall save harmless the Township and the Authority from all loss or damage that may be occasioned directly or indirectly as a result of construction of a building sewer or lateral or connection of a lateral to a sewer system main.

E. Except as otherwise provided in this subsection, each property shall be connected separately and independently to the Sewer System through a single building sewer. Grouping of more than one property on one building sewer shall not be permitted, except under special circumstances, and for good cause shown, and then only after special permission by the Board of Supervisors or the Sewer Authority, in writing, shall have been secured subject to such rules, regulations, and conditions that may be prescribed by the Township and/or the Sewer Authority.

§ 152-8. Imposition of tapping fees.

A. All persons who desire to or are required by ordinance of the Township to connect to the Sewer System shall be required to pay the fees enumerated herein.

- B. In lieu of the payment of a connection fee or consumer facilities fee component of the tapping fee, as such terms are defined in Act 203; as amended from time-to-time, the Township shall require the owner or owners of a subject property to construct and connect a sewer lateral to serve the subject property at the sole cost and expense of such property owner or owners. The property owner or owners shall dedicate said lateral to the Authority upon completion of construction thereof. All laterals shall be constructed and connected in accordance with the then applicable rules, regulations and ordinances of the Township and Authority.
- C. The Township has heretofore and hereby imposes a tapping fee on all property owners who desire to or are required to connect to the Sewer System. The amount of said fee shall be based upon the fee schedule attached hereto and incorporated herein by reference, and shall contain a capacity component, collection component, special purpose component, and reimbursement component, or such other categories as may be prescribed by applicable statute, each as set forth on the attached fee schedule. Said fee schedule may be modified hereafter by the Township and Authority by resolution.

§ 152-9. Violations and Penalties.

- A. The Solicitor for the Authority and/or the Solicitor for the Township shall be empowered and shall be charged with the responsibility of obtaining equitable, injunctive or other appropriate relief in the Court of Common Pleas of Chester County, before a District Magistrate or before appropriate administrative boards in order to secure compliance with the provisions of this Ordinance.
- B. Any person or entity who or which violates or permits the violation of any provision of this Ordinance who shall not voluntarily pay the penalty imposed for violation of this Ordinance shall, upon being found liable thereof in any civil enforcement or other proceeding before a District Magistrate, pay a civil penalty of not more than Six Hundred (\$600.00) Dollars, plus court costs and reasonable attorney's fees, for each and every violation. Such civil penalty, costs and attorney's fees shall be enforced by the Authority and/or the Township pursuant to the applicable Rules of Civil Procedure, and shall be paid into the appropriate Sewer Fund. Each day during which failure to comply continues shall constitute a separate violation. This remedy shall be in addition to any other lawful remedies available to the Authority and Township.

§ 152-10. Effect on other Ordinances.

This Ordinance shall supersede all prior Ordinances and Resolutions as to the specific subject matter contained herein. All Ordinances or parts of Ordinances which are inconsistent herewith are hereby repealed.

This Ordinance shall be recorded in the Ordinance Book of the Township and shall become effective five (5) days after adoption thereof.

2007

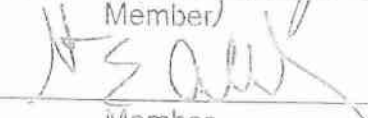
ORDAINED AND ENACTED THIS 11th day of SEPTEMBER,

BOARD OF SUPERVISORS
NEW GARDEN TOWNSHIP

BY: 
Chairman

BY: 
Vice Chairman

BY: 
Member

BY: 
Member

BY: _____
Member

ATTEST:


Secretary

(SEAL)

SEWERS
CHAPTER 152
ATTACHMENT 1

TOWNSHIP OF NEW GARDEN
SEWER TAPPING FEE SCHEDULE

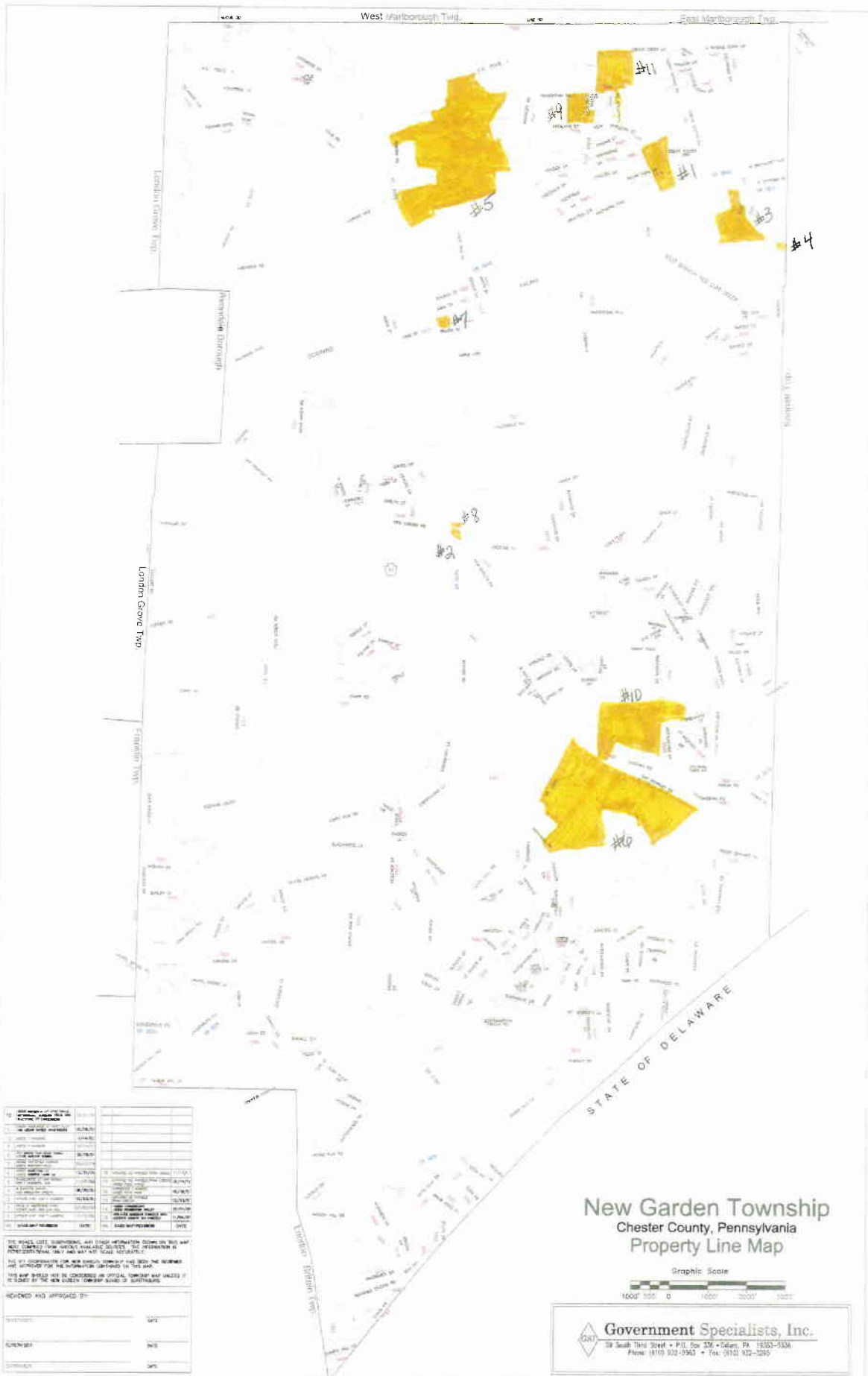
(a)	Collection Component	
	All Drainage/Service Areas	\$ 1,316.31 per EDU
(b)	Capacity Component	
	All Drainage/Services Areas	\$ 6,796.28 per EDU
(c)	Special Purpose Component	
	All Drainage/Service Areas	NONE
(d)	Reimbursement Component	
	All Drainage/Service Areas	NONE

The Tapping Fee payable by a property owner shall be the sum of the applicable capacity and collection components unless circumstances are such that the Special Purpose Component and/or the Reimbursement Component are to be included, in which case those dollar amounts associated with each of the respective Components shall be added to the Collection Component and Capacity Component dollar amounts in order to determine the total amount of the Tapping Fee which shall then become due and payable.

One (1) EDU of capacity shall be the equivalent of 200 gallons per day of average daily flow based on a consecutive ninety (90) day period.

The above listed Tapping Fee dollar amounts were last revised July 18, 2005.

MAP



NO.	DESCRIPTION	DATE
1	PREPARED BY: [Name]	[Date]
2	REVIEWED BY: [Name]	[Date]
3	APPROVED BY: [Name]	[Date]
4	DATE: [Date]	
5	SCALE: [Scale]	
6	PROJECT NO.: [Number]	
7	CLIENT: [Name]	
8	ADDRESS: [Address]	
9	CITY: [City]	
10	STATE: [State]	
11	COUNTY: [County]	
12	TOWNSHIP: [Township]	
13	SECTION: [Section]	
14	RANGE: [Range]	
15	REMARKS: [Remarks]	

THE ABOVE LIST, SUPERSEDES ALL OTHER INFORMATION SHOWN ON THIS MAP AND SHALL BE USED AS THE ONLY SOURCE OF INFORMATION FOR THE DETERMINATION OF PROPERTY LINES. NO LIABILITY SHALL BE ASSUMED FOR ANY ERRORS OR OMISSIONS.

THIS MAP IS NOT TO BE CONSIDERED AN OFFICIAL RECORD MAP UNLESS IT IS FILED BY THE NEW JERSEY DEPARTMENT OF TREASURY.

REVIEWED AND APPROVED BY:

DATE: _____

DATE: _____

DATE: _____

New Garden Township
 Chester County, Pennsylvania
 Property Line Map



Government Specialists, Inc.
 39 South Third Street • P.O. Box 232 • Salem, PA 15353-0232
 Phone: (412) 832-3943 • Fax: (412) 832-3295

MAP 1 INDEX
Connections and Associated Flows for 2016 - 2020 [Gallons]

Map Key	Project Name	Watershed	Service Area	Total Gallons	Estimated Timing of Additional Connections				
					2016	2017	2018	2019	2020
NON-RESIDENTIAL @ 181 GPD / EDU									
1	Commonwealth Real Estate Investors ^{(1)(2) *}	4	BP	9,800	—	—	2,450	2,450	2,450
2	Davidson & Pizzini ^{(3) *}	18	BR	800	—	800	—	—	—
3	Giant Foods ^{(2)(4) *}	5	SC	7,600	—	—	—	—	—
4	Michael Phillips - Scarlett Road ^{(1) *}	6c	EE	800	—	—	800	—	—
5	Modern Mushroom Business Park ⁽²⁾⁽⁶⁾	1	WB	80,000	—	—	—	—	—
6	New Garden Retail Center ^{(1)(2)(10) *} [White Clay Point]	10	PC	30,400	—	—	6,080	12,160	6,080
7	Nunan Office Addition ⁽¹⁾	6a	GL	400	—	400	—	—	—
8	RJL & J Co., LLC ^{(3) *}	18	BR	800	—	800	—	—	—
	TOTAL GPD ⁽⁸⁾			130,600	0	2,000	9,330	14,610	8,530
RESIDENTIAL @ 200 GPD / EDU									
9	Poe Mobile Home Park (New) ⁽³⁾⁽⁶⁾	2	BW	1,600	—	—	800	800	—
10	PREIT - Age Qualified Residential ⁽²⁾⁽⁶⁾	8 & 9	HD	12,600	—	—	4,000	4,000	2,800
11	Hawks Glen ⁽¹⁾	2	BW	17,200	2,000	5,600	5,600	4,000	—
	Bucktoe Road Failing Systems ⁽³⁾	7, 14 & 18	BR	5,000	1,000	1,000	1,000	1,000	1,000
	Pemberton Road Failing Systems ⁽³⁾	2	BW	4,000	800	800	800	800	800
	Single Connections	All	N/A	6,000	1,200	1,200	1,200	1,200	1,200
	Contingency Reserve ⁽⁷⁾	All	N/A	6,000	1,200	1,200	1,200	1,200	1,200
	TOTAL GPD ⁽⁹⁾			52,400	6,200	9,800	14,600	13,000	7,000
	TOTAL GPD			183,000	6,200	11,800	23,930	27,610	15,530
	CUMULATIVE GALLONS				218,400	230,200	254,130	281,740	297,270

(1) Plans approved

(2) See Appendix 5B.

(3) Existing units to be connected.

(4) Allocated but unused remaining capacity - no plans within five (5) years for use of this capacity.

(5) Plans in process - approvals not yet finalized.

(6) Plan submission anticipated.

(7) Existing connections, flow variations/increases and infill development.

(8) 181 gpd/unit = 1 EDU per commercial unit. From Appendix 6.

(9) 200 gpd/unit = 1 EDU per residential unit.

(10) Project approved by DEP to flow to the Avondale WWTF. It is included here as an alternative

* Sewage facilities planning approved by DEP.