Municipal Water Authority of Aliquippa

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ROBERT J. BIBLE, P.E.
General Manager

ROBERT E. RAGER
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March 9, 2017

PA Department of Environmental Protection
Southwest Regional Office
Water Management Program
400 Waterfront Drive
Pittsburgh, PA 15222

Re: NPDES Permit No. PA00215968
Chapter 94 Municipal Wasteload Management Report
Operating Year 2016

Ladies / Gentlemen:

Please find enclosed two (2) copies of the Authority's Chapter 94 Wasteload Management Report for the 2016 Operating Year.

If you have any questions or require any additional information, please do not hesitate to contact our office.

Sincerely,

MUNICIPAL WATER AUTHORITY
OF ALIQUIPPA

ROBERT J. BIBLE, P.E.
General Manager

cc: Ned Mitrovich, P.E. / LSSE
Ben Koda / WWTP Plant Foreman
File

MUNICIPAL WATER AUTHORITY OF ALIQUIPPA

MUNICIPAL WASTELOAD MANAGEMENT REPORT
OPERATING YEAR 2016

NPDES PERMIT NO. PA0025968

MARCH 2017

160 HOPEWELL AVENUE
ALIQUIPPA, PA 15001

MUNICPAL WATER AUTHORITY OF ALIQUIPPA
WATER POLLUTION CONTROL PLANT
MUNICIPAL WASTELOAD MANAGEMENT REPORT
OPERATING YEAR 2016

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MARCH 2017

PURPOSE AND SCOPE

This report is submitted in fulfillment of the requirements of Chapter 94 - Municipal Wasteload Management, of the Pennsylvania Department of Environmental Protection (PaDEP) Rules and Regulations. This report presents the following:

1. Hydraulic and organic loading graphs including five-year projections.
2. A discussion of the hydraulic and organic load projection methodology.
3. A description of all sewer extensions approved and all sewer extensions constructed in the year reported; and all known proposed projects which will require public sewers but are presently in the preliminary planning stages.
4. A description of the operation and maintenance program for the sewer system including monitoring.
5. A discussion of the condition of the sewer system.
6. A discussion of the condition and capacities of all sewage pumping stations.
7. Description of industrial waste dischargers.
8. Plan to reduce or eliminate existing/projected overload conditions.
9. Information on tributary communities. See Appendix.

SECTION 1: HYDRAULIC LOADING GRAPH (§ 94.12.(a)(1))

Figure 1 contained in the Appendix presents the hydraulic loading graph presenting flows as recorded at the sewage treatment facility for the period of time between 2012 through

2016. Figure 1 also presents flow projections for the coming five-year period (2017 through 2021). The actual data is presented in tabular form appended as Table 1. Hydraulic loading data is taken from Discharge Monitoring Reports (DMRs) submitted monthly by the Municipal Authority to PaDEP. Section 3 of this report provides discussion of the past and projected future hydraulic loadings on the Municipal Authority's sewage treatment facility.

SECTION 2: ORGANIC LOADING GRAPH (§ 94.12.(a)(2))

Figure 2 contained in the Appendix presents the organic loadings tributary to the Municipal Authority's sewage treatment facility for the most recent five year period (2012 through 2016) and projects anticipated organic loadings for the coming five year period (2017 through 2021). Organic loading data is taken from DMRs submitted monthly by the Municipal Authority to PaDEP. Historic loading data is provided in tabular form appended as Table 2. Section 3 of this report discusses past and projected future organic loadings.

SECTION 3: DISCUSSION OF HYDRAULIC AND ORGANIC LOADINGS (§ 94.12.(a)(3))

Hydraulic Loadings

The average daily hydraulic loading for Operating Year 2016 ranged from a low of 2.30 mgd in September to a high of 3.80 mgd in March. The 3-month maximum hydraulic loading during the 2016 Operating Year was 3.57 mgd, therefore, the treatment plant was hydraulically overloaded in 2016.

The projected hydraulic loading for the next five years was determined using a nominal estimated increase of 1% additional flow per year. The average annual and 3-month

maximum hydraulic loading projections for 2021 is 2.88 mgd and 3.45 mgd respectively. Therefore, the treatment plant is projected to be hydraulically overloaded in the next five (5) years. A summary table of the projected hydraulic loading during each of the next five (5) years is presented as Table 3.

Organic Loadings

The average daily organic loading for Operating Year 2016 ranged from a low of 552 lbs/day in March to a high of 1,590 lbs/day in February. Monthly average organic loadings at the WWTP did not exceed the design organic capacity of 5,673 lbs/day at any time during the 2016 Operating Year, therefore the WWTP was not organically loaded in 2016.

The projected organic loading was determined using an estimated increase of 1% loading per year. The projected organic loading for 2021 is 1,084 lbs BOD_5/day with a maximum monthly load projection of 1,516 lbs BOD_5/day, which are lower than the permitted organic capacity of 5,673 lbs BOD_5/day. Therefore, the treatment plant is not projected to be overloaded in the next five (5) years. A summary of the projected organic loading during each of the next five years is presented as Table 4.

Sewage Sludge Management Inventory

Reported sludge transfer calculations and Sludge Estimating Worksheet is provided in the Appendix.

SECTION 4: SEWER EXTENSIONS (§ 94.12.(a)(4))

The Woodlawn Road sewer extension was completed in 2012, consisting of 1,392 linear feet of gravity sewer, 1,150 linear feet of force main and one pump station (Permit No. 0410402). All future flows will be metered through the pump station.

A sewer extension was completed in 2016 to serve a new 200,000 sf warehouse and laydown yard development along Woodlawn Road in Hopewell Township. The sewer extension consisted of 1,895 linear feet of 4-inch and 8-inch gravity sewer, 4-inch force main discharging into the existing 10-inch gravity sewer tributary to the Jail pump station, and one E-One duplex grinder pump station.

SECTION 5: SEWER SYSTEM MONITORING, MAINTENANCE, REPAIR AND REHABILITATION (§ 94.12.(a)(5)

The Municipal Water Authority of Aliquippa employs three (3) licensed wastewater operators and one (1) laborer to operate, maintain and oversee daily WWTP operations. Additionally, the Authority employs seven (7) full-time maintenance personnel that devote part of their time to sanitary system inspection and maintenance. Authority staff or outside contractors perform sanitary system rehabilitation and cleaning as needed to maintain system integrity.

Routine maintenance performed by Authority staff includes:

(1) Maintain Operator License and meet all continuing education requirements of PaDEP.

(2) Operate and maintain the sewage collection, conveyance and treatment facilities in good operating condition necessary to maintain compliance with NPDES Permit.

(3) Keep good housekeeping of Authority facilities including the WWTP and five (5) active pump stations (Wye Lift Station, West Aliquippa Lift

Station, Golf Course Road Lift Station, Jail Pump Station, Steel Street Pump Station).

(4) Provide labor to perform all preventative maintenance on existing facilities in accordance with manufacturers' recommendations.

(5) Collect influent and effluent samples at the WWTP in accordance with the NPDES Permit and delivered to CWM Environmental for analysis.

(6) Prepare all documents required to report compliance with NPDES Permit.

(7) Advise the Authority as to necessary repairs, replacement and upgrades of the system.

(8) Prepare and submit a monthly written report to the Authority summarizing all work performed. Provide in report an update on system operating condition and permit compliance.

(9) Test operation of generators, pumps and equipment three times per week.

(10) Investigate/resolve customer complaints.

The Authority maintains a stock of spare parts, filters and lubricants for its equipment. The Authority owns a backhoe and trailer, two (2) dump trucks, air compressor and other miscellaneous tools and equipment. In 2016, sewer maintenance equipment (i.e. root cutter, flush / jet truck, etc.) was contracted through Tri-State Maintenance.

Analysis of historical flow data indicates an infiltration / inflow (I/I) flow component is present. As shown in Table 1, average monthly flows are higher during winter/spring season than during the summer. CCTV inspection and sewer line cleaning was performed by Tri-State Maintenance on an as needed basis in 2016. The Authority spent approximately $8,000 in 2016 flushing and/or televising sewer lines in the following areas:

- Monaca Road
- Main Street
- Irwin Street
- 1st Avenue
- Meadow Street
- Sheffield Avenue
- Main Avenue
- Hill Street

- Boundary Street
- McMinn Street
- Ohio Street
- Jarvis Street
- Wilker Avenue
- Maratta Road
- Hemlock Street
- Spring Street
- Calvert Street
- Brodhead Road
- Davis Street
- Adams Street
- Walnut Street
- 2nd Avenue
- 5th Avenue
- 18th Street
- Jail Pump Station
- Waugaman Street
- Walnut Street
- Mill Street
- Hospital Drive
- Return Street
- McDonald Blvd
- James Street
- Glen Street
- WWTP – Clarifier Sludge Line & Headworks
- Ross Street
- Allegheny Avenue
- Spaulding Street
- Franklin Avenue
- Reed Street
- Orchard Street
- 4th Avenue
- Sycamore Street
- Daniel Drive
- Angela Drive

Influent samples are collected with an auto sampler at the headworkers of the plant. The plant flow meter was calibrated in 2016. The flow meter calibration certificate is provided in the appendix.

The Authority inspects its sewage lift stations two to three times per week. The inspection includes a review of flow data, pump status / operation and observation of the wet well. Minor deficiencies found (i.e. grease on floats, clogged pumps, etc.) are repaired in-house. Major repairs such as pump service, wet well cleaning, electrical work, etc. is performed by outside contractors. The grounds at the lift stations are mowed and treated for weeds.

The condition of the sewer collection and conveyance system is commensurate with age. Overflows and / or bypasses reported in 2016 are summarized in Table 5.

Primary Clarifier

Primary Clarifier No. 1 collapsed in May 2015. All of the equipment was removed.

Procurement bids were received by the Authority in July 2015. A Contract was awarded to Envirodyne Systems in August 2015. Equipment shop drawings were submitted and approved in December 2015. The equipment was delivered to the site in April 2016.

Installation bids were received by the Authority on July 20, 2016. A Contract was awarded in August 2016. Construction was completed and the clarifier was placed into service in November 2016.

During the time that the clarifier was out of service, the Authority used the tank as an equalization tank during wet weather periods and continue to draw off settled solids as conditions warrant.

J&L Tunnel Sewer

It was discovered in October 2011 that a sewer line running from the Industrial Park through the tunnel to the Wye lift station collapsed allowing raw sewage to discharge directly into Logstown Run. In March 2012, the PaDEP issued a Notice of Violation for this defect. As a temporary fix, the Authority installed a hose connection.

Construction bids for a permanent fix were received by the Authority in July 2014. The sole bid was approximately $400,000 to replace the 16-inch sanitary sewer in place. At the time, the Authority did not have funds available to award the project and solicited grant monies from a number of organizations to no avail.

One option evaluated to reduce the capital cost of the project was to replace the 16-inch pipe with a smaller size. The Authority Board authorized its Consulting Engineer to initiate the necessary sewage facilities planning / permitting to allow for the reduction in pipe size.

Water Quality Management Part II Permit application was submitted to PaDEP on July 12, 2016. Permit was received on December 6, 2016. Construction bids were received by the Authority on February 15, 2017. Currently, the Authority's Consulting Engineer is reviewing and tabulating Bids. The Authority anticipates construction to be completed by the end of the third quarter of 2017.

SECTION 6: PUMPING STATIONS (§ 94.12.(a)(7))

There are six active sewage pump stations that contribute flow to the WWTP which are detailed below. Flows from each of the lift stations are not metered. Each of the five (5) lift stations owned and maintained by the Authority is equipped with pump run time meters to estimate flow rates.

1. The Wye Lift Station serves Aliquippa and portions of Hopewell Township. It is equipped with four 3000 gpm pumps powered by 75 HP motors. The maximum monthly flowrate in 2016 was 3,329 gpm.

2. The West Aliquippa Lift Station serves West Aliquippa and portions of Hopewell Township. It is equipped with two 500 gpm pumps powered by 10 HP motors. The maximum monthly flowrate in 2016 was 46 gpm.

3. The Golf Course Road Lift Station serves the Hospital Drive area. It is equipped with two 160 gpm pumps powered by 15 HP motors. The maximum monthly flowrate in 2016 was 22 gpm.

4. The Jail Pump Station serves the new Beaver County Jail. It is equipped with two 300 gpm pumps powered by 5 HP motors. The 2016 maximum flow was 135 gpm and the projected 2-year maximum flow is 136 gpm.

5. The Steel Street Pump Station serves the Industrial Park. It is equipped with two 200 gpm pumps powered by 5 HP motors. The 2016 maximum flow was 20 gpm and the projected 2-year maximum flow is 21 gpm.

6. The Woodlawn Park Pump Station is owned and maintained by Hopewell Township. The pump station serves 11 residential units in the Woodlawn Park area and is equipped with two 85 gpm pumps. The 2016 maximum flow was 11 gpm and the projected 2-year maximum flow is 11 gpm. (Refer to Sanitary Sewer System and Pump Station Information prepared by Hopewell Township and provided in the appendix)

There is one inactive sewage pump station; the Woodlawn Road Pump Station completed in 2012. It is equipped with two 122 gpm pumps powered by 4 HP motors. Projected average future flows are 6,000 gpd (30,000 gpd peak).

SECTION 7: INDUSTRIAL WASTE DISCHARGES (§ 94.12.(a)(8))

There are no known industrial wastes being discharged into or treated by the WWTP.

SECTION 8: SEWAGE MANAGEMENT PLAN (§ 94.12.(a)(9))

Based on the WWTP influent data collected to date and the projected loadings over the next five years, the WWTP has adequate capacity.

SUMMARY

As presented in this Municipal Wasteload Management Report, the Municipal Water Authority of Aliquippa Wastewater Treatment Plant was considered hydraulically overloaded in 2016. Projected loadings indicate that the WWTP will be hydraulically overloaded in the next five (5) years but not organically overloaded in the next five (5) years.

SECTION 9: SIGNATURES

To comply with the requirements of the Chapter 94 Municipal Wasteload Management Program, the following signatures are provided.

Preparer / Permittee:

_____ _____

Robert J. Bible, P.E., General Manager Date
Municipal Water Authority of Aliquippa

FIGURE 1
HYDRAULIC LOADING GRAPH
MWAA WASTEWATER TREATMENT PLANT

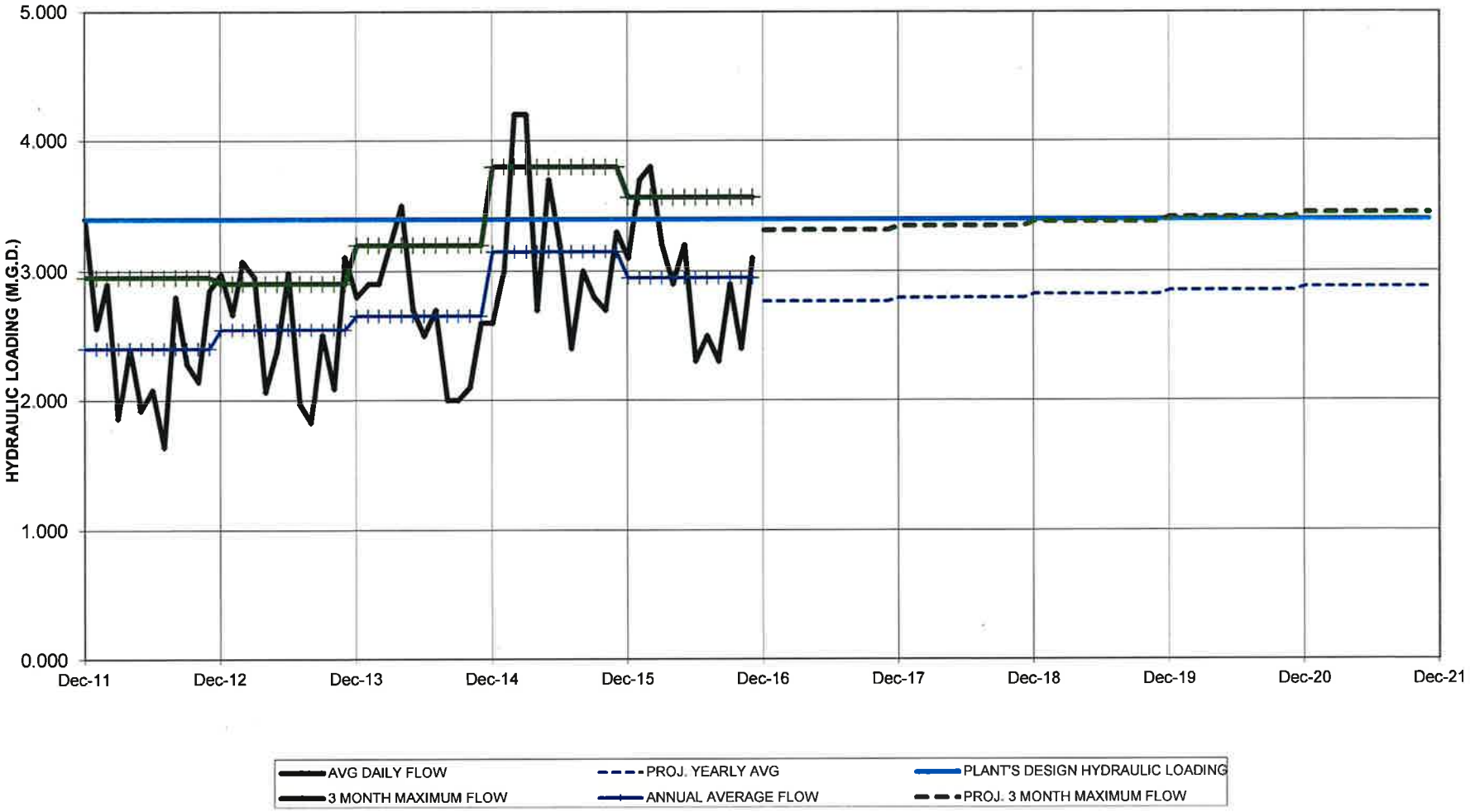

FIGURE 2
ORGANIC LOADING GRAPH
MWAA WASTEWATER TREATMENT PLANT

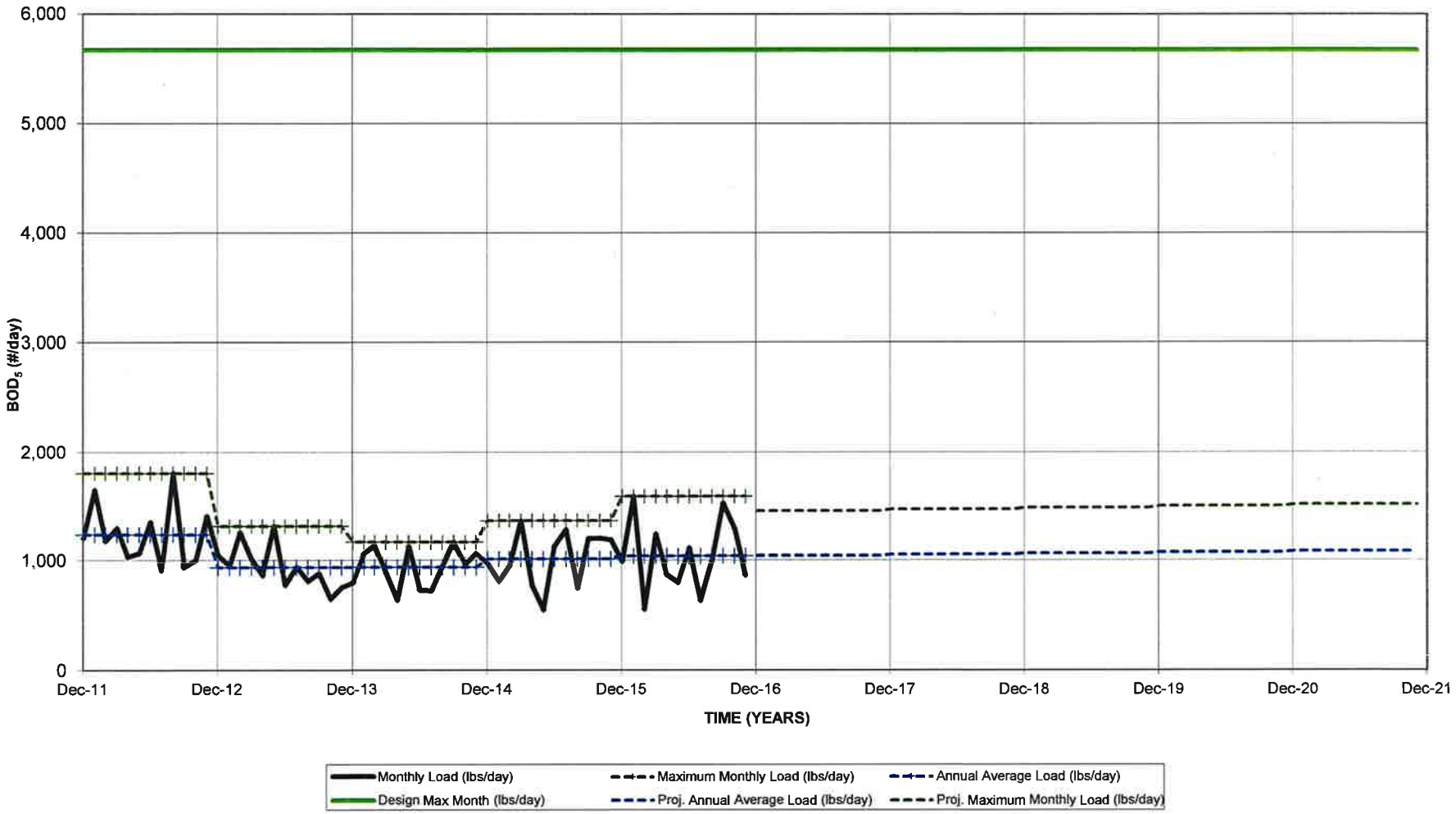

TABLE 1

MUNICIPAL WATER AUTHORITY OF ALIQUIPPA

WATER POLLUTION CONTROL PLANT

HYDRAULIC LOADING DATA SUMMARY

JANUARY 2012 THROUGH DECEMBER 2016

DATE	2012	2013	2014	2015	2016
January	3.40 *	2.98 *	2.80	2.60	3.10
February	2.56 *	2.67 *	2.90	3.00 *	3.70 *
March	2.90 *	3.07 *	2.90 *	4.20 *	3.80 *
April	1.86	2.95	3.20 *	4.20 *	3.20 *
May	2.40	2.06	3.50 *	2.70	2.90
June	1.92	2.39	2.70	3.70	3.20
July	2.08	2.99	2.50	3.20	2.30
August	1.64	1.98	2.70	2.40	2.50
September	2.80	1.83	2.00	3.00	2.30
October	2.28	2.51	2.00	2.80	2.90
November	2.14	2.09	2.10	2.70	2.40
December	2.85	3.10	2.60	3.30	3.10
Annual Average (mgd)	**2.40**	**2.55**	**2.66**	**3.15**	**2.95**
90 Day Sustained Flow Rate (mgd)	**2.95**	**2.90**	**3.20**	**3.80**	**3.57**
Ratio (90-Day Sustained to Annual Average)	**1.23**	**1.14**	**1.20**	**1.21**	**1.21**
5-Year 90-Day Sustained/Annual Average Ratio	**1.20**				
5-Year Annual Average Hydraulic Loading (mgd)	**2.74**				
5-Year 90-Day Sustained Hydraulic Loading (mgd)	**3.28**				

*Maximum 3-month flow period.

TABLE 2

MUNICIPAL WATER AUTHORITY OF ALIQUIPPA

WATER POLLUTION CONTROL PLANT

ORGANIC LOADING DATA SUMMARY

JANUARY 2012 THROUGH DECEMBER 2016

DATE	2012	2013	2014	2015	2016
January	1,203	1,042	794	968	988
February	1,648	945	1,064	806	**1,590**
March	1,177	1,255	1,137	945	552
April	1,294	1,009	881	**1,364**	1,238
May	1,030	860	642	765	871
June	1,064	**1,313**	1,126	547	798
July	1,351	772	730	1,129	1,111
August	911	939	721	1,280	634
September	**1,805**	808	951	745	995
October	939	878	**1,168**	1,197	1,527
November	998	644	963	1,202	1,291
December	1,406	751	1,063	1,187	865
Annual Average (LBS BOD_5/Day)	**1,236**	**935**	**937**	**1,011**	**1,038**
Maximum Month (LBS BOD_5/Day)	**1,805**	**1,313**	**1,168**	**1,364**	**1,590**
Ratio (Maximum Month to Annual Average)	**1.46**	**1.40**	**1.25**	**1.35**	**1.53**
5-Year Maximum Month/Annual Ratio Average	**1.40**				
5-Year Annual Average Organic Loading (LBS BOD_5/Day)	**1,031**				
5-Year Maximum Month Average (LBS BOD_5/DAY)	**1,448**				

TABLE 3
MUNICIPAL WATER AUTHORITY OF ALIQUIPPA
WATER POLLUTION CONTROL PLANT

PROJECTED HYDRAULIC LOAD

YEAR	ANNUAL AVERAGE FLOW (mgd)			90 DAY SUSTAINED AVERAGE (mgd)		
	BASE FLOW	ADDED FLOW *	TOTAL	AVERAGE	RATIO	FLOW
2017	2.74	0.027	2.77	2.77	1.20	3.32
2018	2.77	0.028	2.80	2.80	1.20	3.35
2019	2.80	0.028	2.83	2.83	1.20	3.38
2020	2.83	0.028	2.85	2.85	1.20	3.42
2021	2.85	0.029	2.88	2.88	1.20	3.45

* Estimated 1% increase per year

TABLE 4

MUNICIPAL WATER AUTHORITY OF ALIQUIPPA
WATER POLLUTION CONTROL PLANT

PROJECTED ORGANIC LOAD

ANNUAL AVERAGE LOADING LBS BOD_5/DAY				**MAXIMUM MONTH LOADING** LBS BOD_5/DAY			
YEAR	**BASE**	**ADDED LOAD ***	**TOTAL**	**YEAR**	**BASE**	**RATIO**	**TOTAL**
2017	1,031	10.3	1,042	2017	1,042	1.40	1,457
2018	1,042	10.4	1,052	2018	1,052	1.40	1,471
2019	1,052	10.5	1,063	2019	1,063	1.40	1,486
2020	1,063	10.6	1,073	2020	1,073	1.40	1,501
2021	1,073	10.7	1,084	2021	1,084	1.40	1,516

* Estimated 1% increase per year

TABLE 5

MUNICIPAL WATER AUTHORITY OF ALIQUIPPA
WASTEWATER TREATMENT PLANT

2016 OVERFLOW & BYPASS DATA

Location	Date	Duration (hours)	Reason
Golf Course Road	10/21/16	3.75	Wet Weather
Wye Lift Station	10/19/16	120.5	"Temporary" Line in Tunnel Failed

Diameter	SWD	Area	Volume		Gal/ft	Gal /inch
ft	ft	sq.ft	cu.ft	gal		
55	18	2,374.6	42,743	319,720	17,762.20	1,480.18
			85,487			

Reported Sludge Transfers

Date	From Process To #1		From #1 To #2		Supernate from #2		From #2 To Reed Beds			
	inches	gallons	inches	gallons	inches	gallons	inches	gallons	% Solids	#'s Dry Solids
1/31/2016	93	137,657	100	148,018	139	205,745		-		
2/29/2016	100	148,018	70	103,613	69	102,133		-		
3/31/2016	90	133,216	72	106,573	70	103,613	78	115,454	7.61	73,276
4/30/2016	97	143,578	73	108,053	67	99,172		-		
5/31/2016	91	134,697	111	164,300	60	88,811		-		
6/30/2016	111	164,300	102	150,979	145	214,627	81	119,895	5.50	54,996
7/31/2016	98	145,058	123	182,062	47	69,569		-		
8/31/2016	102	150,979	74	109,534	66	97,692	78	115,454	6.60	63,551
9/30/2016	86	127,296	87	128,776	0	-		-		
10/31/2016	100	148,018	116	171,701	113	167,261		-		
11/30/2016	85	125,816	82	121,375	78	115,454		-		
12/31/2016	121	179,102	108	159,860	78	115,454		-		-
Annual Totals		1,737,735		1,654,845		1,379,530		350,803	6.05	191,822
Monthly Average		144,811		137,904		114,961		29,234		
Daily Average		4,748		4,521		3,769		958		524
							4,728	>Daily Total Supernate plus volume to reed beds		
1/31/2015	111	164,300	120	177,622	0	-		-		
2/28/2015	94	139,137	72	106,573	144	213,146		-		
3/31/2015	125	185,023	147	217,587	71	105,093		-		
4/30/2015	136	201,305	136	201,305	139	205,745		-		
5/31/2015	113	167,261	121	179,102	90	133,216	90	133,216	7.00%	77,772
6/30/2015	127	187,983	145	214,627	147	217,587		-		
7/31/2015	133	196,864	106	156,899	68	100,652		-		
8/31/2015	91	134,697	85	125,816	70	103,613	96	142,098	8.00%	94,807
9/30/2015	103	152,459	99	146,538	62	91,771		-		
10/31/2015	94	139,137	76	112,494	69	102,133		-		
11/30/2015	82	121,375	66	97,692	72	106,573	90	133,216	7.59%	84,327
12/31/2015	93	137,657	106	156,899		-		-		-
		1,927,198		1,893,154		1,379,530		408,530	7.53%	256,906
Monthly Average		160,600		157,763		114,961		40,853		
Daily Average		5,353		5,259		4,180		1,119		704
							5,300	>Daily Total Supernate plus volume to reed beds		

Formula = (Col. K /1,000,000)* (Col. L*10,000)*8.34

SLUDGE ESTIMATING WORKSHEET

This document is designed as a diagnostic aid in the estimation of sludge quantities produced at a well operated wastewater treatment plant. The calculations are based upon the observations made at hundreds of facilities. The sourse document is the EPA Handbook "Improving POTW Performance Using the Composit Correction Program Approach"

Required Information

1. Average Daily Flow	2.95	mgd
2. BOD_{inf}	42	mg/l
3. BOD_{eff}	6	mg/l
4. Digester Capacity	84500	gallons
5. Waste Sludge (combined w/ primary)	20000	mg/l
6. % solids of sludge leaving plant	6.05	%

STEP 1: Calculate the pounds of BOD being removed by the plant.
(BOD_{inf} - BOD_{eff}) x flow, mgd x 8.34 = pounds/day $BOD_{removed}$ **897**

STEP 2: Convert pounds/day BOD to pounds/day TSS removed
Pounds/day $BOD_{removed}$ x TSS/BOD factor = Pounds/day $TSS_{removed}$ **897**
(from step 1) (see Table #1)

STEP 3: Determine sludge feed rate to digesters
(from step #2)
$\frac{\text{(Pounds/day TSS) x } 10^6}{(WAS_{conc} \text{ x } 8.34)}$ = sludge feed rate, gpd **5375** ok - 4,748 gpd in calcs

STEP 4: Determine Digester Hydraulic Detection Time (HDT)
$\frac{\text{Digester Capacity, gallons}}{\text{(Sludge Feed Rate, gpd)}}$ = HDT, days **15.72**
(from step #3)

STEP 5: Estimate Volatile Solid destruction using HDT **0.45**
(see Table #2)

STEP 6: Calculate digested solids amount

TSS x (1.0 - Total Solids Reduction) = Solids Produced, #/d **493** ok - 524 lbs/day in calcs
(from step # 2) (from step # 5)

STEP 7: Convert from Dried Solids to sludge

(from step #6)
$\frac{\text{pounds per day dry solids produced}}{\text{\% solids of sludge leaving plant}}$ = sludge, pounds/day **8150**

STEP 8: Convert from pounds of sludge to gallons

$\frac{\text{pounds/day sludge produced}}{\text{8.34 pounds/gallon}}$ = Sludge, gpd **977**

Total Gallons Wasted **958**

Low Range 0.85 x 977 = 831 , gpd

High Range 1.15 x 977 = 1124 , gpd

This calculation should be within ± 15% of actual production of a well operated facility

Source : EPA Handbook "Improving POTW Performance Using the Composite Correction Program Approach" EPA-625/6-84-008

TABLE 1

Process Type	$TSS_{sludge}/BOD_{removed}$
Primary Clarification	1.7
Activated Sludge with Primary Clarification	0.7
Activated Sludge w/o Primary Clarification	
Conventional	0.85
Extended Aeration	0.65
Contact Stabilization	1.00
Attached Growth	
(TF, RBC, ABF)	1.00

TABLE 2

	Digester HDT	Total Solids Reduction
Aerobic Digesters	Days	%
Following Extended	10	10
Aeration (MCRT>20 days)	15	20
	20	30
	30	35
Aerobic Digesters	10	20
Following Conventional	15	35
Activated Sludge (MCRT<12)	20	40
Anaerobic Digesters for	20	25
Activated + Primary, and	30	35
Fixed Film (Supernating	40	45
Capability Useable)		

TABLE 3

Typical Sludge Concentrations for Suspended Growth POTW's

Sludge Type	Waste Concentrations (mg/l)
Primary	50,000
Activated	
Return Sludge/Conventional	6,000
Return Sludge/Extended	7,500
Return Sludge/Cont. Stab	8,000
Return Sludge/small plants with low SOR	10,000
Separate waste hopper in clarifier	12,000
Primary + Trickling Filter	45,000
Primary + RBC	45,000
Primary + ABF	35,000
Trickling Filter	30,000
RBC	30,000
ABF	12,000

Hopewell Township

Sanitary Sewer System and Pump Station Information
Municipal Water Authority of Aliquippa
Annual Wasteload Management Report
Operating Year 2016

1. Identify the industries tributary to your system.

   None. The Hopewell Township Sanitary Sewer System tributary to the MWAA is comprised entirely of residential customers.

2. Are the industries covered by an Industrial Waste Ordinance or Regulation?

   Hopewell Township adopted Sewer System Rules and Regulations via Ordinance No. 2010-04 on October 11th, 2010 which contains industrial waste discharge requirements.

3. If any industries are known to be causing a problem, has corrective action been proposed?

   Not Applicable.

4. Have any sewer extensions been constructed in 2016? Please describe areas and population served or to be served. Prepare a map if applicable.

   No sanitary sewer extensions were constructed in this area during 2016. No sanitary sewer extensions are proposed to be constructed during 2017.

5. Describe the sewer system monitoring, maintenance and rehabilitation program.

   The Hopewell Township Wastewater Collection, Conveyance, Pumping, and Treatment Facilities are operated and maintained by a staff of nine (9) full-time employees. Major repairs or replacements to the sanitary sewer system are performed by private contractors. Minor repairs or replacements are preformed by Hopewell Township personnel. Equipment available for Township personnel includes safety equipment, backhoe, front end loader, dump trucks, pickup trucks, sewer jet truck, vac truck, and internal inspection/camera equipment.

   Sewer problems are inspected as soon as Hopewell Township is made aware of the problem. Routine inspection (approximately quarterly) occurs in all areas of the wastewater collection system where known problems exist. Cleaning of known problem areas is performed on an as needed basis.

   New sanitary sewers are air tested and new manholes are vacuum tested. New lateral connections are visually inspected by the WPCS Superintendent. Roof drains, surface drains, and other stormwater connections are not permitted to be connected into the sanitary sewer system.

   No special activities were undertaken in this area of the sanitary sewer system during 2016.

6. Describe any infiltration/inflow monitoring preformed (pump station records, complaints, flow meters, smoke or dye testing, etc.).

   During 2016, Hopewell Township did not perform any comprehensive system-wide repair/rehabilitation work, smoke testing, dye testing, or wastewater flow monitoring in this area of the system.

   On October 11th, 2010, Hopewell Township implemented Ordinance No. 2010-04 requiring certification of sanitary sewer status prior to the sale of real estate served by public sewers both within and outside the service area of the wastewater treatment facilities of Hopewell Township as a condition for the issuance of municipal lien letters and property tax verification letters in order to reduce the amount of

infiltration/inflow entering the sanitary sewer system. Real estate testing may include, but may not be limited to, the following: dye testing each downspout and area drain; dye testing foundation drains by flooding or injection; smoke testing of the public sewer and lateral sewer to the house trap; smoke testing of the building drain on the house side of trap; air testing of the lateral sewer; hydrostatic testing of the lateral sewer; and internal inspection of the main sewer and/or lateral sewer during periods of saturated ground and/or precipitation.

During operating year 2016, forty-four (44) resale dye tests were performed within the Hopewell Township sewer system tributary to Aliquippa, resulting in four (4) failures and forty (40) acceptable dye tests. All four (4) failures have been repaired and certified. One (1) new residential unit was constructed, inspected, and certified during 2016. A copy of the 2016 Dye Test Summary is attached.

7. Describe any required maintenance and control of combined sewer regulators during 2016 (if applicable).

Not Applicable.

8. Describe the sewer system condition as follows:

   a. Define areas where the conveyance capacity is being exceeded or will be exceeded in the next five years (note: differentiate between dry weather and wet weather problems).

   None.

   b. Define areas where rehabilitation or cleaning is needed or is underway.

   None.

   c. Estimate any wet weather overflow volumes and note their location.

   Not Applicable

9. Compare available capacity of sewage pumping station (if applicable) with:

   a. Present maximum flows.

   b. Projected two (2) year maximum flow.

One (1) wastewater pumping station is located in the Woodlawn Park area of Hopewell Township and is tributary to the Aliquippa sewer system. The Woodlawn Park Wastewater Pumping Station serves eleven (11) residential units. As no wastewater flow meter exists at the Woodlawn Park Wastewater Pumping Station, the flow data presented below is theoretical and is based on 3.5 people/unit and 100 gpcd. The peak flow factor is 4.0.

Design Capacity : 85 GPM

Present Maximum Flow: 11 GPM

Projected 2-Year Maximum Flow: 11 GPM

No overflows occurred from the Woodlawn Park Wastewater Pumping Station during 2016.

10. Describe any plans to be taken to reduce or eliminate:

    a. Surface water connections.

    None (all tested and removed 1999). Continued implementation and enforcement of Ordinance No. 2010-04 requiring certification of sanitary sewer status prior to the sale of real estate served by public sewers.

    b. Downspout connections.

    None (all tested and removed 1999). Continued implementation and enforcement of Ordinance No. 2010-04 requiring certification of sanitary sewer status prior to the sale of real estate served by public sewers.

    c. Combined sewer flows.

    Not Applicable.

    d. Infiltration.

    Continued implementation and enforcement of Ordinance No. 2010-04 requiring certification of sanitary sewer status prior to the sale of real estate served by public sewers.

11. Describe any plans to reduce or equalize existing sanitary flows.

    None.

12. Provide population projections for the next 5, 10, and 20 years. If they differ significantly with previous years, please note.

    No major development is proposed to be connected to this portion of the Hopewell Township Wastewater Collection System. Hopewell Township estimates that two (2) or fewer connections will be made to this system each calendar year. The following population projections are based on the connection of two (2) units per year and each unit containing three (3) people.

2016 Population (Estimated @ 3 persons/EDU):	***3,048***
5 Year Population:	***3,078***
10 Year Population:	***3,108***
20 Year Population:	***3,168***

Respectfully Submitted,
HOPEWELL TOWNSHIP

Marie S. Hartman

Marie Stratakis Hartman, P.E.
Hopewell Township Engineer/Assistant Manager

HOPEWELL TOWNSHIP
ALIQUIPPA SANITARY SEWER SYSTEM TRIBUTARY AREA
PROPERTY RESALE DYE TESTING SUMMARY
OPERATING YEAR 2016

Dye Test Date	Property Address	Pass/Fail	Certificate Date	Certificate Number
1/7/2016	1944 Maratta Road	Pass	1/7/2016	1694
1/7/2016	1942 Maratta Road	Pass	1/7/2016	1695
1/15/2016	305 Pine Drive	Pass	1/15/2016	1700
1/15/2016	1006 Euclid Avenue	Pass	1/15/2016	1702
1/26/2016	1207 Maine Avenue	Pass	1/26/2016	1704
2/5/2016	1209 Montpelier Street	Pass	2/5/2016	1711
2/5/2016	925 Columbus Drive	Pass	2/5/2016	1712
2/19/2016	1215 Ridgeway Avenue	Pass	2/19/2016	1717
2/24/2016	1209 Massachusetts Avenue	Pass	2/24/2016	1720
3/10/2016	1288 Meadow Drive	Pass	3/10/2016	1725
3/17/2016	1119 Rhode Island Avenue	Pass	3/17/2016	1733
3/29/2016	2449 Brodhead Road	Pass	3/29/2016	1734
3/31/2016	1274 Meadow Drive	Pass	3/31/2016	1739
4/8/2016	168 Edgewood Street	Pass	4/8/2016	1748
5/5/5016	1301 Davidson Way	Pass	5/5/2016	1754
5/5/2016	928 Columbus Drive	Pass	5/5/2016	1755
5/5/2016	1228 Covert Street	Pass	5/5/2016	1756
5/12/2016	1209 Maine Avenue	Pass	5/12/2016	1761
5/12/2016	1201 New Hampshire	Pass	5/12/2016	1764
5/19/2016	2204 Ridgeway Avenue	Pass	5/19/2016	1767
5/19/2016	910 Columbus Drive	Pass	5/19/2016	1768
5/19/2016	1112 Rhode Island Avenue Extension	Pass	5/19/2016	1769
5/19/2016	32 Temple Road	Pass	5/19/2016	1770
5/26/2016	2903 Brodhead Road	Fail-Downspouts	7/1/2016	1793
6/3/2016	1654 Sohn Road	Pass	6/3/2016	1776
6/14/2016	57 Allen Street	Pass	6/14/2016	1781
6/14/2016	1340 Sunset Avenue	Pass	6/14/2016	1782
6/14/2016	2770 Mill Street	Fail-Area Drains, Stairwell Drains; Fresh Air Vent.	7/1/2016	1794
7/21/2016	1512 Alden Street	Pass	7/21/2016	1800
7/21/2016	1101 Vermont Avenue	Pass	7/21/2016	1801
8/4/2016	1708 Maratta Road	Pass	7/21/2016	1807
9/1/2016	1273 Meadow Drive	Fail-Could Not Get Dye From Toilet	10/25/2016	1859
9/13/2016	1207 Mraovich Drive	Pass-New Dwelling	9/13/2016	1829
9/22/2016	1204 Royal Drive	Pass	9/22/2016	1832
9/22/2016	1222 Covert Street	Pass	9/22/2016	1833
9/29/2016	1216 Vermont Avenue	Pass	9/29/2016	1840
10/6/2016	1920 Rhode Island Avenue	Pass	10/6/2016	1845
10/13/2016	1128 Croxall Avenue	Pass	10/13/2016	1851
10/20/2016	1319 Laird Avenue	Pass	10/20/2016	1855
10/20/2016	3108 Cleveland Avenue	Fail-Cleanout Cap; Inspection Sight Tee Cap; Area Drains; Stairwell Drains; Fresh Air Vent.	10/31/2016	1860
11/3/2016	1117 Rhode Island Avenue	Pass	11/3/2016	1163
11/7/2016	2 Temple Road	Pass	11/7/2016	1866
12/1/2016	1209 Concord Drive	Pass	12/1/2016	1875
12/1/2016	2083 Maratta Road	Pass	12/1/2016	1876

HCS – Instrumentation Division

326 Cycle Drive
Portersville, PA 16051
P: (724) 368-9282
F: (724) 368-9264

Certificate of Calibration

Customer: Aliquippa Waste Water

Model #: (2) Eartech Vantage 2210

S.N.: _____

Type of Primary Device: (2) 36" weirs x 9"

Date of Calibration: 7-13-16

Remarks: 0-10 MGD, in series with Chessel 392 chart recorder.

Andrew Fornadley