



**369 East Park Drive
Harrisburg, PA 17111
717. 564.1121
www.hrg-inc.com**

MARCH 2020

**CHAPTER 94
MUNICIPAL WASTELOAD MANAGEMENT REPORT
FOR
CALENDAR YEAR 2019**

**ELIZABETHTOWN BOROUGH
LANCASTER COUNTY, PENNSYLVANIA**

HRG Project No. 000598.0435

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INTRODUCTION

This document was prepared pursuant to the Pennsylvania Chapter 94 Wasteload Management requirements for the Borough of Elizabethtown. As suggested by the Pennsylvania Department of Environmental Protection (PADEP), the document was developed utilizing the PADEP Chapter 94 Template and the PADEP spreadsheets and graphs found at www.depweb.state.pa.us/chapter94.

The Borough of Elizabethtown operates a 4.5 million gallon per day (MGD) wastewater treatment plant (WWTP) located at the intersection of Amosite Road and Bainbridge Road in West Donegal Township, just west of the Borough. The plant provides wastewater treatment services for the Borough of Elizabethtown, and the Elizabethtown Regional Sewer Authority (ERSA) which covers portions of Mount Joy Township and West Donegal Township. Information submitted by ERSA as required to facilitate the preparation of this report can be found in Attachment 8. The plant operates under NPDES Permit PA0023108 which took effect on July 1, 2016 and will expire on June 30, 2021.

The treatment process utilizes screening, grit removal, anaerobic selector with alum addition for phosphorus removal, phased oxidation ditch, secondary clarification, hypochlorite disinfection, bisulfite dechlorination, and cascade aeration. The WWTP discharges treated effluent primarily to the Susquehanna River, approximately five miles from the plant through a 20-inch diameter gravity outfall line. A portion of this treated effluent is utilized by the Lancaster County Resource Recovery Facility as a source of cooling water. A secondary outfall discharges treated effluent during higher wet weather periods to the Conoy Creek at the edge of the WWTP site. Waste sludge is mechanically thickened, aerobically digested, and dewatered with volute dewatering press prior to disposal at a landfill. A detailed inspection report for the wastewater treatment facility is included as Attachment 5 to this document. Sludge related information is shown in Attachment 9.



CHAPTER 94 MUNICIPAL WASTELOAD MANAGEMENT ANNUAL REPORT

For Calendar Year: 2019

- ☒ Permittee is owner and/or operator of a POTW or other sewage treatment facility
☐ Permittee is owner and/or operator of a collection system tributary to a POTW not owned/operated by permittee

GENERAL INFORMATION			
Permittee Name:	The Borough of Elizabethtown	Permit No.:	PA0023108
Mailing Address:	600 South Hanover Street	Effective Date:	07/01/2016
City, State, Zip:	Elizabethtown, PA 17022-2522	Expiration Date:	06/30/2021
Contact Person:	Rebecca Denlinger	Renewal Due Date:	01/01/2021
Title:	Borough Manager	Municipality:	Borough of Elizabethtown
Phone:	717-367-1700	County:	Lancaster
Email:	rdenlinger@etownonline.com	Consultant Name:	Herbert, Rowland and Grubic, Inc.

CHAPTER 94 REPORT COMPONENTS	
1.	<p>Attach to this report a line graph depicting the monthly average flows (expressed in MGD) for each month for the past 5 years and projecting the flows for the next 5 years. The graph must also include a line depicting the hydraulic design capacity per the WQM permit. (25 Pa. Code § 94.12(a)(1))</p> <p>Check the appropriate boxes:</p> <p><input checked="" type="checkbox"/> Line graph for flows attached (Attachment 1)</p> <p><input checked="" type="checkbox"/> DEP Chapter 94 Spreadsheet used (Attachment 1)</p> <p><input type="checkbox"/> Section 1 is not applicable (report is for a collection system).</p>
2.	<p>Attach to this report a line graph depicting the monthly average organic loads (express as lbs BOD5/day) for each month for the past 5 years and projecting the organic loads for the next 5 years. The graph must also include a line depicting the organic design capacity of the treatment plant per the WQM permit. (25 Pa. Code § 94.12(a)(2))</p> <p>Check the appropriate boxes:</p> <p><input checked="" type="checkbox"/> Line graph for organic loads attached (Attachment 1)</p> <p><input checked="" type="checkbox"/> DEP Chapter 94 Spreadsheet used (Attachment 1)</p> <p><input type="checkbox"/> Section 2 is not applicable (report is for a collection system).</p>

3. If the DEP Chapter 94 Spreadsheet was not used to determine projections, discuss the basis for the hydraulic and organic projections. In all cases, include a description of the time needed to expand the plant to meet the load projections, if necessary, and data used to support the projections should be included in an appendix to this report. (25 Pa. Code § 94.12(a)(3))

As is shown on the DEP Chapter 94 Report Spreadsheet, no hydraulic or organic overload conditions are projected for this WWTP.

4. Attach a map showing all sewer extensions constructed within the past calendar year, sewer extensions approved or exempted in the past year in accordance with Act 537 and Chapter 71, but not yet constructed, and all known proposed projects which require public sewers but are in the preliminary planning stages. The map must be accompanied by a list summarizing each extension or project and the population to be served by the extension or project. If a sewer extension approval or proposed project includes schedules describing how the project will be completed over time, the listing should include that information and the effect this build-out-rate will have on populations served. (25 Pa. Code § 94.12(a)(4))

Check the appropriate boxes:

- ☒ Map showing sewer extensions constructed, approved/exempted but not yet constructed, and proposed projects attached (**Attachment 2**)
- ☒ List summarizing each extension or project attached (**Attachment 2**)
- ☒ Schedules describing how each project will be completed over time and effects attached (**Attachment 2**)

Comments:

There were no sewer extensions within the Borough of Elizabethtown during 2019. All information is included in Attachment 2 for the Borough system and Attachment 8 for the ERSA system.

5. Discuss the permittee's program for sewer system monitoring, maintenance, repair and rehabilitation, including routine and special activities, personnel and equipment used, sampling frequency, quality assurance, data analyses, infiltration/inflow monitoring, and, where applicable, maintenance and control of combined sewer regulators during the past year. Attach a separate sheet if necessary. (25 Pa. Code § 94.12(a)(5))

Information related to the Borough system is included as Attachment 3 and Attachment 8 for the ERSA system.

6. Discuss the condition of the sewer system including portions of the system where conveyance capacity is being exceeded or will be exceeded in the next 5 years and portions where rehabilitation or cleaning is needed or is underway to maintain the integrity of the system and prevent or eliminate bypassing, CSOs, SSOs, excessive infiltration and other system problems. Attach a separate sheet if necessary. (25 Pa. Code § 94.12(a)(6))

Check the appropriate boxes:

- ☐ System experienced capacity-related bypassing, SSOs or surcharging during the report year. On a separate sheet, list the date, location, and reason for each bypass, SSO or surcharge event.
- ☒ System did not experience capacity-related bypassing, SSOs or surcharging during the report year.

Comments:

No capacity related bypassing, SSO's, or surcharging occurred in 2019.

7. Attach a discussion on the condition of sewage pumping (pump) stations. Include a comparison of the maximum pumping rate with present maximum flows and the projected 2-year maximum flows for each station. (25 Pa. Code § 94.12(a)(7))

Check the appropriate boxes:

- ☐ The collection system does not contain pump stations
- ☒ The collection system does contain pump stations (Number – **16 (One (1) owned and operated by the Borough and 15 owned and operated by ERSA)**)
- ☒ Discussion of condition of each pump station attached (**Attachment 4 and Attachment 8 (ERSA)**)

8. If the sewage collection system receives industrial wastes (i.e., non-sanitary wastes), attach a report with the information listed below. (25 Pa. Code § 94.12(a)(8))

- a. A copy of any ordinance or regulation governing industrial waste discharges to the sewer system or a copy of amendments adopted since the initial submission of the ordinance or regulation under Chapter 94, if it has not previously been submitted.
- b. A discussion of the permittee's or municipality's program for surveillance and monitoring of industrial waste discharges into the sewer system during the past year.
- c. A discussion of specific problems in the sewer system or at the plant, known or suspected to be caused by industrial waste discharges and a summary of the steps being taken to alleviate or eliminate the problems. The discussion shall include a list of industries known to be discharging wastes which create problems in the plant or in the sewer system and action taken to eliminate the problem or prevent its recurrence. The report may describe pollution prevention techniques in the summary of steps taken to alleviate current problems caused by industrial waste dischargers and in actions taken to eliminate or prevent potential or recurring problems caused by industrial waste dischargers.

Check the appropriate boxes:

- ☒ Industrial waste report as described in 8 a., b. and c. attached (**Attachment 6**)
- ☐ Industrial pretreatment report as required in an NPDES permit attached (**Attachment**)

9. Existing or Projected Overload.

Check the appropriate boxes:

- ☐ This report demonstrates an existing hydraulic overload condition.
- ☐ This report demonstrates a projected hydraulic overload condition.
- ☐ This report demonstrates an existing organic overload condition.
- ☐ This report demonstrates a projected organic overload condition.

If one or more boxes above have been checked, attach a Corrective Action Plan (CAP) to reduce or eliminate present or projected overloaded conditions under §§ 94.21 and/or 94.22 (relating to existing overload and projected overload). (25 Pa. Code § 94.12(a)(9))

- ☐ Corrective Action Plan attached (**Attachment**)

10. Where required by the NPDES permit, attach a Sewage Sludge Management inventory that demonstrates a mass balance of solids coming in and leaving the facility over the previous calendar year.

- ☒ Sewage Sludge Management Inventory attached (**Attachment 9**)

11. For facilities with CSOs and where required by the NPDES permit, attach an Annual CSO Report (including satellite combined sewer systems).

- ☐ Annual CSO Report attached (**Attachment**)

12. For POTWs, attach a calibration report documenting that flow measuring, indicating and recording equipment has been calibrated annually. (25 Pa. Code § 94.13(b))

- ☒ Flow calibration report attached (**Attachment 7**)

RESPONSIBLE OFFICIAL CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Rebecca Denlinger

Name of Responsible Official

717-367-1700

Telephone No.

Signature

Date

PREPARER CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared by me or otherwise under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Logan Jury

Logan Jury

Name of Preparer

Signature

717-564-1121

March 25, 2020

Telephone No.

Date



CHAPTER 94 MUNICIPAL WASTELOAD MANAGEMENT ANNUAL REPORT INSTRUCTIONS

This form has been developed to promote consistency in the development of annual municipal wasteload management reports ("Chapter 94 reports") required by 25 Pa. Code § 94.12. At least two copies of the complete report must be submitted to the appropriate regional office of the Department of Environmental Protection (DEP) by March 31.

Enter the calendar year that the report covers at the top of the form. Check the appropriate box to indicate whether the permittee is the owner/operator of a publicly owned treatment works (POTW) or other sewage treatment facility, or is the owner/operator of a sewage collection system that is tributary to a POTW owned/operated by a different entity.

General Information

Record the name of the permittee, the permittee's full mailing address, the permittee's contact person and this person's title, phone number and email address. Also record the permit number (NPDES or WQM), the effective date of permit coverage, the expiration date of permit coverage (if applicable), the date by which an application or NOI is due for reissuance (renewal) (if applicable), the municipality and county where the sewage treatment facility or collection system is located, and the name of the consultant (company name), if any, who assisted in the preparation of the form.

Chapter 94 Report Components

This section requests responses to 12 questions that, if applicable, must be addressed for a complete Chapter 94 report. Questions 1 – 9 and 12 come directly from the Chapter 94 regulations, i.e., 25 Pa. Code §§ 94.12(a)(1) – 94.12(a)(9) and 94.13(b). Some questions request that you check an appropriate box, attach the information requested, and specify the attachment number, while responses to other questions may be entered directly on the form.

For Questions 1 and 2, permittees may use DEP's Chapter 94 Spreadsheet to satisfy 25 Pa. Code §§ 94.12(a)(1) and 94.12(a)(2), respectively. DEP encourages use of the Chapter 94 Spreadsheet to provide consistency in the format and calculations associated with hydraulic and organic load evaluations (see www.depweb.state.pa.us/chapter94). If the Chapter 94 Spreadsheet was used, check the appropriate box(es) and attach printouts of the data and graphs to the Chapter 94 report. If this report is being used for a collection system only, these graphs are not needed.

For Question 6, if the permittee checks the box that there were capacity-related bypasses or SSOs during the report year, in general the box for existing hydraulic overload in Question 9 should be checked. If the permittee checks the box in Question 6 because surcharging occurred during the report year, in general the box for projected hydraulic overload in Question 9 should be checked.

For Question 8, if the permittee has an EPA-approved pretreatment program, attachment of an annual pretreatment report as required in an NPDES permit will satisfy the requirement for an industrial waste report.

For Question 10, if a permit requires a "Sewage Sludge Management" inventory, check the appropriate box if the inventory is attached to the Chapter 94 report.

For Question 11, if an NPDES permit (individual permit or, for satellite collection systems, PAG-06 General NPDES permit coverage) requires an Annual CSO (Status) report, attach the CSO report to the Chapter 94 report and check the appropriate box.

Certification

In accordance with 25 Pa. Code § 94.12(a), both the individual who prepared the report and (a responsible official of) the permittee must sign the report. The term "responsible official" for a municipality is a principal executive officer or ranking elected official.

Questions on the completion of Chapter 94 reports may be directed to DEP's Bureau of Point and Non-Point Source Management at (717) 787-8184 or to the appropriate DEP regional office (contact information available by visiting DEP's website, www.depweb.state.pa.us, and selecting Regional Resources).



ATTACHMENT 1

Hydraulic and Organic Loading Spreadsheet
Hydraulic Loading Discussion and Supporting Data
Hydraulic Loading Graph
Organic Loading Discussion and Supporting Data
Organic Loading Graph



**PADEP Chapter 94 §
Sewage Treati**

Reporting Year: 2019

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLANT

Permit No.: PA0023108

Persons/EDU: 3.5

Existing Hydraulic Design Capacity: 7.2 MGD
Upgrade Planned in Next 5 Years? NO Year:
Future Hydraulic Design Capacity: MGD

Existing Organic Design Capacity: 8,650 lbs BOD5/day
Upgrade Planned in Next 5 Years? NO Year:
Future Organic Design Capacity: lbs BOD5/day

Monthly Average Flows for Past Five Years (MGD)

Month	2015	2016	2017	2018	2019
January	1.882	2.424	2.015	2.039	3.632
February	1.733	4.218	1.788	3.521	3.135
March	2.934	2.227	2.403	2.65	3.944
April	1.822	1.971	2.746	2.652	2.37
May	1.538	2.139	2.136	3.077	3.134
June	1.833	1.633	1.641	2.427	2.394
July	1.579	1.559	1.72	3.71	2.128
August	1.605	1.484	1.672	3.763	1.719
September	1.675	1.38	1.831	4.484	1.699
October	2.031	1.505	1.63	2.43	1.878
November	1.786	1.401	1.842	4.761	2.182
December	2.176	1.799	1.648	3.713	2.433
Annual Avg	1.883	1.978	1.923	3.269	2.554
Max 3-Mo Avg	2.183	2.956	2.428	3.986	4.035
Max : Avg Ratio	1.16	1.49	1.26	1.22	1.58
Existing EDUs	11,504.0	11,550.0	11,584.0	11,741.0	11,921.0
Flow/EDU (GPD)	163.7	171.3	166.0	278.4	214.2
Flow/Capita (GPD)	46.8	48.9	47.4	79.6	61.2
Exist. Overload?	NO	NO	NO	NO	NO

Projected Flows for Next Five Years (MGD)

	2020	2021	2022	2023	2024
New EDUs	201.0	161.0	121.0	100.0	77.0
New EDU Flow	0.0399	0.032	0.024	0.0199	0.0153
Proj. Annual Avg	2.361	2.393	2.417	2.4369	2.4522
Proj. Max 3-Mo Avg	3.171	3.214	3.246	3.273	3.294
Proj. Overload?	NO	NO	NO	NO	NO

Show Precipitation Data on Hydraulic Graph?

Total Monthly Precipitation for Past Five Years (Inches)

Month	2015	2016	2017	2018	2019
January	2.64	4.1	2.57	2.56	3.01
February	0.93	4.08	1.54	5.56	2.42
March	3.9	1.4	4.29	3.01	5.28
April	1.86	3.21	3.57	4.78	2.78
May	2.65	5.09	4.76	5.37	6.71
June	7.17	4.25	3.17	4.12	5.33
July	2.14	5.35	5.66	13.0	5.52
August	5.01	2.92	4.57	8.29	2.01
September	4.61	3.43	3.48	7.82	2.66
October	5.23	1.64	3.46	2.34	6.59
November	1.19	2.46	2.04	8.38	2.06
December	4.77	2.48	1.08	5.21	4.12

Monthly Average BOD5 Loads for Past Five Years (lbs/day)

Month	2015	2016	2017	2018	2019
January	3,283	3,153	3,298	3,573	3,667
February	3,168	3,505	3,045	3,183	3,693
March	3,294	2,925	3,110	3,056	3,565
April	3,115	2,982	3,261	3,148	3,286
May	2,914	2,930	3,041	2,968	4,103
June	2,832	2,619	3,109	3,470	3,007
July	2,754	2,495	2,835	3,699	3,382
August	2,718	2,689	3,117	3,358	3,229
September	2,747	2,495	3,211	3,566	3,744
October	2,982	2,791	3,068	3,528	3,340
November	3,189	2,890	3,318	3,633	2,908
December	3,377	3,105	3,569	3,627	3,143
Annual Avg	3,031	2,882	3,165	3,401	3,422
Max Mo Avg	3,377	3,505	3,569	3,699	4,103
Max : Avg Ratio	1.11	1.22	1.13	1.09	1.20
Existing EDUs	11,504	11,550	11,584	11,741	11,921
Load/EDU	0.263	0.249	0.273	0.290	0.287
Load/Capita	0.075	0.071	0.078	0.083	0.082
Exist. Overload?	NO	NO	NO	NO	NO

Projected BOD5 Loads for Next Five Years (lbs/day)

	2020	2021	2022	2023	2024
New EDUs	201	161	121	100	77
New EDU Load	54.790	43.886	32.983	27.259	20.989
Proj. Annual Avg	3,235	3,279	3,312	3,339	3,360
Proj. Max Avg	3,717	3,767	3,805	3,836	3,861
Proj. Overload?	NO	NO	NO	NO	NO

1.A. Hydraulic Loading Discussion and Supporting Data

The current design hydraulic loading for the Borough of Elizabethtown's Wastewater Treatment Plant is 4.5 MGD on an average daily basis and 7.2 MGD on a maximum monthly basis. The design of the WWTP was based on the maximum monthly loadings. The attached hydraulic loading graph was prepared from flow measurements continuously recorded at the WWTP. Figure 1.1 shows monthly average, annual average, and 3-month maximum flows for the past 5 years along with the design flow of the WWTP. Figure 1.1 also shows the projected annual average and projected 3-month maximum flows for the next five years.

The flows shown in Figure 1.1 represent the combined flows from all contributing municipalities. The recorded annual average flow for 2019 was 2.554 MGD. The hydraulic loading information is also shown in the PADEP Chapter 94 Spreadsheet in this section.

Flow projections were developed from anticipated sewer connection information obtained from all contributing municipalities. Attachment 2 contains the anticipated sewer connections over the next five years for each municipal entity in Table 2.1. The anticipated connections were multiplied by the average flow per EDU over the previous five years to obtain the annual increase in projected flows. The increase was then added to the average annual flow of the overall average from 2015, 2016, 2017, 2018 and 2019 within the PADEP Chapter 94 Spreadsheet to obtain projected flows beginning with year 2019. More detailed breakdowns of projected connections for ERSA are included in Attachment 8. Projected connections for each development in the Borough are summarized in Table 2.2.

The 3-month maximum flows were determined by selecting the period of three consecutive months with the highest average monthly flows. The projected 3-month maximum flows were determined by first finding the ratio of the 3-month maximum to annual average flow for each of the previous five years. The average of these ratios was then applied to the projected annual flows for years 2020 through 2024 to obtain the projected 3-month maximum flows.

The data presented indicate that there is not now, nor is there a projected hydraulic overload condition at the Elizabethtown WWTP through 2024.

We do want to note that 2018 must be considered an extreme year for rainfall. As noted in Table 1.1, there was almost twice the average annual rainfall of the previous for years covered by the PADEP Chapter 94 Spreadsheet. Consequently, unless the excessive rainfall continues during future years, we do not believe the projections noted by the spreadsheet will be nearly as high as shown for hydraulic loading, organic loading or pumping station flows.

ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLANT

TABLE 1.1 RAINFALL

	2015	2016	2017	2018	2019
JANUARY	2.64	4.1	2.57	2.56	3.01
FEBRUARY	0.93	4.08	1.54	5.56	2.42
MARCH	3.9	1.4	4.29	3.01	5.28
APRIL	1.86	3.21	3.57	4.78	2.78
MAY	2.65	5.09	4.76	5.37	6.71
JUNE	7.17	4.25	3.17	4.12	5.33
JULY	2.14	5.35	5.66	13.0	5.52
AUGUST	5.01	2.92	4.57	8.29	2.01
SEPTEMBER	4.61	3.43	3.48	7.82	2.66
OCTOBER	5.23	1.64	3.46	2.34	6.59
NOVEMBER	1.19	2.46	2.04	8.38	2.06
DECEMBER	4.77	2.48	1.08	5.21	4.12
TOTAL	42.1	40.41	40.19	70.44	48.49

1.B. Organic Loading Discussion

The current design organic loading for the Elizabethtown WWTP is 7,500 pounds of BOD-5 per day on an average daily basis and 8,650 pounds of BOD-5 per day on a maximum monthly basis. The organic loading graph shown as Figure 1.2 was prepared using influent BOD-5 samples collected and analyzed by the Borough's WWTP personnel. The monthly average organic loadings were calculated by multiplying the respective monthly average influent BOD-5 concentration in milligrams per liter (mg/L) times the corresponding monthly average flow in MGD times a conversion factor of 8.34 lbs/day/MG x mg/L. The organic loading data for the Elizabethtown WWTP for the past 5 years is summarized in the PADEP Chapter 94 Spreadsheet.

The organic loading projections were developed using the approach of multiplying the anticipated increase in connections for each future year times 3.5 persons per EDU times the average BOD-5 per person over the previous five years. The annual increase was then added to the average of the previous five year's loading to obtain projected loadings.

The projected maximum month organic loadings were determined by first finding the ratio of the maximum month to average month over the average annual organic loading for the past five years. This percentage increase was then applied to the projected annual organic loading for years 2020 through 2024 to obtain the respective projected maximum month organic loading. As shown in Figure 1.2, the projected maximum monthly organic loading is not expected to exceed the design organic loading of 8,650 pounds of BOD-5 per day during the next five years.

As noted in Section 1.A, the amount of rainfall during 2018 has to be considered abnormally high – almost twice as much as previous years. This has raised the projected organic loading significantly higher than what is actually anticipated at this facility.



ATTACHMENT 2

Sewer Extensions Discussion and Data
Map of Borough of Elizabethtown

2.A. Sewer Connections and Extensions

Table 2.1 summarizes the number of connections to the Elizabethtown service area for the Borough and ERSA over the past five years and those anticipated over the next five years. This information was used to determine anticipated future hydraulic and organic loadings to the WWTP. Figure 2.2 summarizes the projected future Borough connections by development. Similar information for the ERSA service area is contained in Attachment 8 of this report.

There were no sewer extensions to the Borough's wastewater system during 2019.

A total of 84 EDUs were connected to the Borough's portion of the sewer system during 2019. No disconnections occurred in 2019, resulting in a net increase of 84 EDUs.

Also during 2019, 96 EDUs were connected to the ERSA service area. Other information regarding the ERSA sewer lines and connections is included in their portion of this report included as Attachment 8.

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TABLE 2.1: PAST AND FUTURE CONNECTIONS

						PROJECTED					
						2020	2021	2022	2023	2024	
		2015	2016	2017	2018	2019					
Elizabethtown Borough	Connections:	21	6	16	14	84	25	30	6	5	7
	Disconnections:	1	0	0	1	0	0	0	0	0	0
	NET GAIN:	20	6	16	13	84	25	30	6	5	7
Additional Connections for:											
Elizabethtown Regional Sewer Authority:		19	40	18	144	96	176	131	115	95	70
TOTAL ADDITIONAL EDUS:		39	46	34	157	180	201	161	121	100	77

NOTES:

1. Anticipated growth for the Borough is based on current economic trends.

**BOROUGH OF ELIZABETHTOWN
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TABLE 2.2: PROJECTED FUTURE CONNECTIONS

Borough Development	Total Planned EDUs	EDUs In Service 1/1/2019	EDUs Connected 2019	EDUs Remaining 12/31/2019					
					2020	2021	2022	2023	2024
Elizabethtown School	20	17	0	3	1	1	1	0	0
Elizabethtown College	22	5	0	17	3	3	3	3	5
Village Green	64	0	64	0	0	0	0	0	0
Conoy Crossing	123	76	5	42	18	24	0	0	0
Sycamore Square	29	16	13	0	0	0	0	0	0
Miscellaneous	17	4	2	11	3	2	2	2	2
Total Borough EDU's	275	118	84	73	25	30	6	5	7



ATTACHMENT 3

Program for Sewer System Monitoring, Maintenance, and Repair

Corrective Action Plan

3.A. Sewer System Monitoring, Maintenance and Repairs

The Borough's sewer system is in good to fair condition with efforts made yearly to address Infiltration and Inflow (I/I) issues. During wet weather events, a large amount of I/I is experienced. The Borough continues to work on a sewer system monitoring, maintenance and repair program in an effort to address I/I problems since 1996. The Borough utilizes their vacuum truck and CCTV equipment to help maintain the collection system.

The work completed by the Borough during 2019 is summarized below:

• Sewer main lines televised by Borough	9,464.9 feet
• Sewer lines cleaned and roots cut	48 runs
• Sewer main line replaced	4 runs – 711 feet
• Sewer Laterals Televised	17
• New sewer lateral connections	3
• Sewer laterals replaced by Homeowner	26
• Sewer laterals repaired/replaced by Borough	33
• Sewer manholes replaced	3
• Manhole frames and covers repaired/replaced	16

The Borough recognizes that I/I is still an issue in its system. The Borough intends to continue an I/I reduction program which will include routine investigation and rehabilitation efforts. These efforts will continue to be coordinated with the Borough's street repaving program.

During 2020, the Borough plans to continue with work based on the recommendations provided for the Radio Road Interceptor Sewer System Capacity Study (SSCS) as discussed below in Section 3.B. of this document.

Discussions related to the condition and work on the ERSA sewer system are contained in their Chapter 94 Report included as Attachment 8 to this Report.

3.B. Radio Road Interceptor – Corrective Action Plan

The Borough identified surcharging in the Radio Road Interceptor during times of high groundwater and large storm events during wet weather investigations in 2014. Flow is completely contained within the sewer system and is designated as a projected hydraulic overload condition. Visual inspection previously completed by Borough staff identified the following:

1. Rainfall events greater than 5 inches typically result in surcharging
2. Rainfall events from 3 to 5 inches in high groundwater table typically cause surcharging
3. Rainfall events less than 3 inches typically do not cause surcharging

The surcharging is caused by infiltration and inflow (I/I) experienced in the Radio Road Interceptor drainage basin. In reviewing the flow projections for the Radio Road Interceptor, there is not much development anticipated in this basin.

A comprehensive Radio Road Interceptor Sewer System Capacity Study (SSCS) was completed by the Borough in 2016. The SSCS was completed in accordance with the Corrective Action Plan (CAP) for the Radio Road Interceptor identified in the Borough's 2014 Chapter 94 Report, approved by the Pennsylvania Department of Environmental Protection (PADEP) on October 9, 2015. The major objectives of the SSCS included the following:

1. Identify available capacity and hydraulically overloaded sections throughout the Interceptor.
2. Prioritize areas for additional investigations and/or improvements.
3. Assess the condition of the Interceptor utilizing closed-circuit televisual (CCTV) sewer inspection data provided by Borough staff.
4. Identify available capacity for the Elizabethtown Crossing Development within the Interceptor based on the results of the SSCS and the existing Inter-municipal Agreement between the Borough and the Elizabethtown Regional Sewer Authority (ERSA).

Herbert, Rowland & Grubic, Inc. (HRG) partnered with Mr. Rehab, Inc. to provide the necessary personnel and equipment to install and maintain ten (10) flow meters for the duration of the 17-week flow monitoring program. All precipitation measurements taken during the flow monitoring period were recorded by one (1) Sigma rain gauge installed at the B&G Lumber site. One (1) groundwater data logger located near manhole H29 was installed and maintained by HRG for the duration of the 17-week flow monitoring program.

The following is a summary of the recommendations provided in the SSCS:

Recommendation No. 1 - Due to the average to below average rainfall observed during the flow monitoring period, it is recommended that an additional eight (8) to twelve (12) weeks of flow monitoring and groundwater monitoring be considered by the Borough in the future during a wet weather season in an attempt to capture more system stressing wet weather events. This exercise will allow for confirmation of the simulated results of Scenarios 5 and 6 and the recommendations provided in the SSCS.

The Borough plans to complete this work in 2020. The Borough has retained a metering consultant and plans to complete the flow monitoring and groundwater monitoring activities in Spring 2020 or Fall 2020. A report will be provided to PADEP after completion of the field work and system modeling.

Recommendation No. 2 - It is recommended that the Borough contract with a CCTV contractor to complete flow diversion and CCTV inspection of the following Interceptor sewer sections which could not be completed by Borough staff:

- K15 to K14-1
- K14-1 to K14
- G2 to G1
- J1 to C44
- J8 to J7

The Borough completed this work in 2019.

Recommendation No. 3 - It is recommended that the Borough plan for completion of Interceptor Rehabilitation Alternative A as shown in Appendix G of the SSCS in order to address age and condition of the Interceptor, remove I/I within the Interceptor associated with noted defects in the mains requiring rehabilitation and provide additional capacity within the most hydraulically limited portions of the Interceptor. Alternative A is preferred over Alternatives 1 thru 3 at this time because it addresses potential capacity issues within the most hydraulically limited portions of the Interceptor in addition to addressing Interceptor condition as contemplated in Alternatives 1 thru 3. None of the identified repairs are considered emergencies. The condition of the Interceptor is generally indicative of the age and material of construction and Implementation of Alternative A is consistent with solid capital improvements planning for the future. It is recommended that the following items be considered prior to implementation of Alternative A:

1. Additional flow and groundwater monitoring as discussed above to determine the design flows.
2. All future flows from ERSA in order to determine the design flows.
3. Evaluation of Improvements to the poor pipe slope areas of the Interceptor during design.

If it is determined during completion of Item Nos. 1 thru 3 above or other assignments that hydraulic upgrades are not required for the Interceptor, then Alternative 2 is recommended for implementation. If it is determined during completion of Item Nos. 1 thru 3 above or other assignments that hydraulic upgrades are required for a smaller portion of the Interceptor, then a revised Alternative A to address only the hydraulically limited portions of the Interceptor is recommended for implementation.

The Borough will continue to evaluate this alternative after additional information has been obtained as discussed above. The 2020 flow monitoring program will assist with this effort.

Recommendation No. 4 - It is recommended that the Borough focus future I/I investigation work in sub-sewer sheds SS-2, SS-4 and SS-6. I/I work may include the following:

- A. CCTV inspections of sewer mains to identify the extent of the problems and identify repair/rehabilitation options within the Borough's system.

- B. Manhole inspections to identify problems and repair/rehabilitation options within the Borough's system.
- C. Smoke testing, dye testing, and home and private lateral inspections to identify problems and repair/rehabilitation options within the private portion of the system.

The Borough continued with a sub-sewer shed approach in the priority areas in 2019 as identified in Paragraph 3.A above.

Recommendation No. 5 - It is recommended that the Borough require installation of data loggers or another acceptable recording device at the Radio Road Meter Chamber to more accurately monitor ERSA flows in the future. ERSA currently uses an antiquated totalizer and chart recorder to measure flows at the metering chamber; however, that information can only provide an estimate of average daily flow and peak hourly flow.

It is also recommended that ERSA provide the flows recorded to the Borough on a monthly basis in order to confirm that ERSA does not exceed their allocated average daily or peak hourly capacity in accordance with the existing inter-municipal agreements.

This requirement was addressed in the new inter-municipal Agreement between the Borough and ERSA executed in 2018 (see below). ERSA installed the data loggers in 2019.

Recommendation No. 6 - It is recommended that ERSA provide projected five (5) year and ultimate buildout average and peak flow projections tributary to the Interceptor to the Borough for planning purposes.

The Borough plans to complete this work in 2020.

Recommendation No. 7 - It is recommended that a new inter-municipal agreement be prepared between the Borough and ERSA to replace the existing multiple inter-municipal agreements between the Borough and various municipal and municipal authority entities which are outdated.

The new inter-municipal agreement was adopted in 2018.

Recommendation No. 8 - It is recommended that the Borough continue to evaluate new connections on a case by case basis utilizing the flow and hydraulic model data developed during the SSCS and additional information obtained during implementation of the other recommended alternatives identified in the SSCS. It is recommended that the Borough not process sewage facilities planning exemptions for any proposed developments with flow tributary to the Interceptor until construction of Alternative A as described above is complete.

The following is a summary of the proposed Implementation Schedule for Recommendation Nos. 1 thru 8.

<u>Recommendation Number</u>	<u>Completion Date</u>
1	December 2020
2	Complete
3	Ongoing
4	Ongoing
5	Complete
6	December 2020
7	Complete
8	Ongoing

A copy of the SSCS was transmitted to PADEP with the Borough's 2016 Chapter 94 Report.

2019 Chapter 94 Report

2019 Laterals replaced/repared by homeowner

305 E. Bainbridge St
425 E. Bainbridge Street
222 E. Cherry Street
329 E. College Avenue
593 E. College Avenue
532 Groff Avenue
648 Hampden Road
525 E. High Street
407 Highlawn Ave
524 Holly Street
137 E. Hummelstown Street
593 E. Hummelstown Street
311 N. Locust Street
1001 S. Locust Street
518 S. Market Street
1107 S. Market Street
1115 S. Market Street
348 N. Mount Joy Street
101 Watercress Lane
58 W. Oak Street
301-303 E. Park Street
316 N. Poplar Street
316 E. Plum Street
411 Ridge Road
32 N. Spruce Street
340 N. Spruce Street

Sewer Laterals Televised

228 N. Spruce Street
525 Highlawn Avenue
56 N. Market Street
420 N. Locust Street
462 N. Holly Street
594 E. Willow Street
316 N. Poplar Street
326 Willow Street
348 N. Mount Joy Street
1001 S. Locust Street
593 College Avenue
101 Watercress Lane
319 Lemon Street
1115 S. Market Street
648 Hampden Road
301 E. Oak Street
118 S. Poplar Street

New lateral connections

405 Masonic Dr.
407 Masonic Dr.
409 Masonic Dr.

Sewer laterals replaced/repared by borough

215 Cherry St.
318 Cherry St.
320 Cherry St.
222 Cherry St.
225 Cherry St.
231 Cherry St.
237 Cherry St.
400 Cherry St.
415 Cherry St.
157 W. High St.
407 Highlawn Ave
201 N Holly St.
218 Lemon St.
320 Lemon St.
224 Lemon St.
225 Lemon St.
226 Lemon St.
227 Lemon St.
319 Lemon St.
327 Lemon St.
395 Lemon St.
660 S. Mt. Joy St.
700 S. Mt. Joy St.
710 S. Mt. Joy St.
724 S. Mt. Joy St.
738 S. Mt. Joy St.
777 S. Mt. Joy St.
842 S. Mt. Joy St.
855 S. Mt. Joy St.
909 S. Spruce St.
593 E. Willow St.
594 E. Willow St.
101 Watercress Ln.

Main Lines Televised

B21-B16	226	F58-F57	124
B21-B16	244.3	H48-H47	8.5
B21-B16	452.8	H49-H48	104.9
B23-B22	252.7	J10-J9	228.9
B56-B54	373.1	K14-1-K14	77.1
B59-B56	369.7	L14-L13	92.4
B61-B59	371.2	M19-M18	245.9
B62-B61	358	M20-M19	268.3
B63-B62	300.6	M21-M20	21.1
B64-B62	13.9	M21-M20	214.9
B65-B64	313.1	M22-M21	111.2
B67-B64	305.5	M22-M21	198.5
B69-B67	302.2	M23-M22	375.8
B70-B67	111.9	M28-M22	278.7
B71-B70	147.9	M29-M28	244.5
B71-B70	147.9	M30-M29	178
DE-B63	66	M31-M30	186.9
DE-J10	155.7	M32-M31	292.2
E14-E13	393.5	M33-M32	235.8
E14-E13	343.6	M34-M33	57.9
E15-E14	323.1		
E16-E15	401.8	Total LF	9464.9
E17-E16	248.9		
E18-E17	333.1		
E19-E18	301.4		
E20-E19	266.1		
E21-E20	348.7		
E22-E21	127.7		
E23-E22	73.1		
F15-F14	23.9		
F29A-F29	166.6		
F47-F48	133.5		
F48-F29A	127.6		
F49-F48	172.1		
F50-F49	152.5		
F52-F50	185		
F53-F52	122.1		
F54-F53	216.2		
F55-F54	127.9		
F56-F54	92.1		
F57-F56	271.9		

Main lines flushed and/or rootcut

E14-E13	E Willow
H48-H47	E Willow
N1-H1	Snyder Ave.
N2-N1	Spruce Street
B21-B16	Cherry Street
B21-B16	Cherry Street
B21-B16	Cherry Street
B23-B22	Lemon Street
B56-B54	S. Mt Joy Street
B59-B56	S. Mt Joy Street
B61-B59	S. Mt Joy Street
B62-B61	S. Mt Joy Street
B63-B62	Cherry Street
B64-B62	S. Mt Joy Street
B65-B64	Cherry Street
B67-B64	S. Mt Joy Street
B69-B67	Lemon Street
B70-B67	S. Mt Joy Street
B71-B70	S. Mt Joy Street
B71-B70	S. Mt Joy Street
DE-B63	Cherry Street
F15-F14	Cranfield Court
F29A-F29	Cliff Lane
F47-F48	Sherfield Court
F48-F29A	Sherfield Court
F49-F48	Sherfield Court
F50-F49	Sherfield Court
F52-F50	Sherfield Court
F53-F52	Foxfield Lane
F54-F53	Foxfield Lane
F55-F54	Foxfield Lane
F56-F54	Foxchase Lane
F57-F56	Foxchase Lane
F58-F57	Foxchase Lane
M19-M18	Highlawn Ave.
M20-M19	Highlawn Ave.
M21-M20	Highlawn Ave.
M21-M20	Highlawn Ave.
M22-M21	Highlawn Ave.
M22-M21	Highlawn Ave.
M23-M22	Oak Street
M28-M22	Highlawn Ave.
M29-M28	Highlawn Ave.
M30-M29	Highlawn Ave.
M31-M30	Highlawn Ave.
M32-M31	Highlawn Ave.

M33-M32	Highlawn Ave.
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M34-M33	Highlawn Ave.
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Manholes Frames replaced/repared

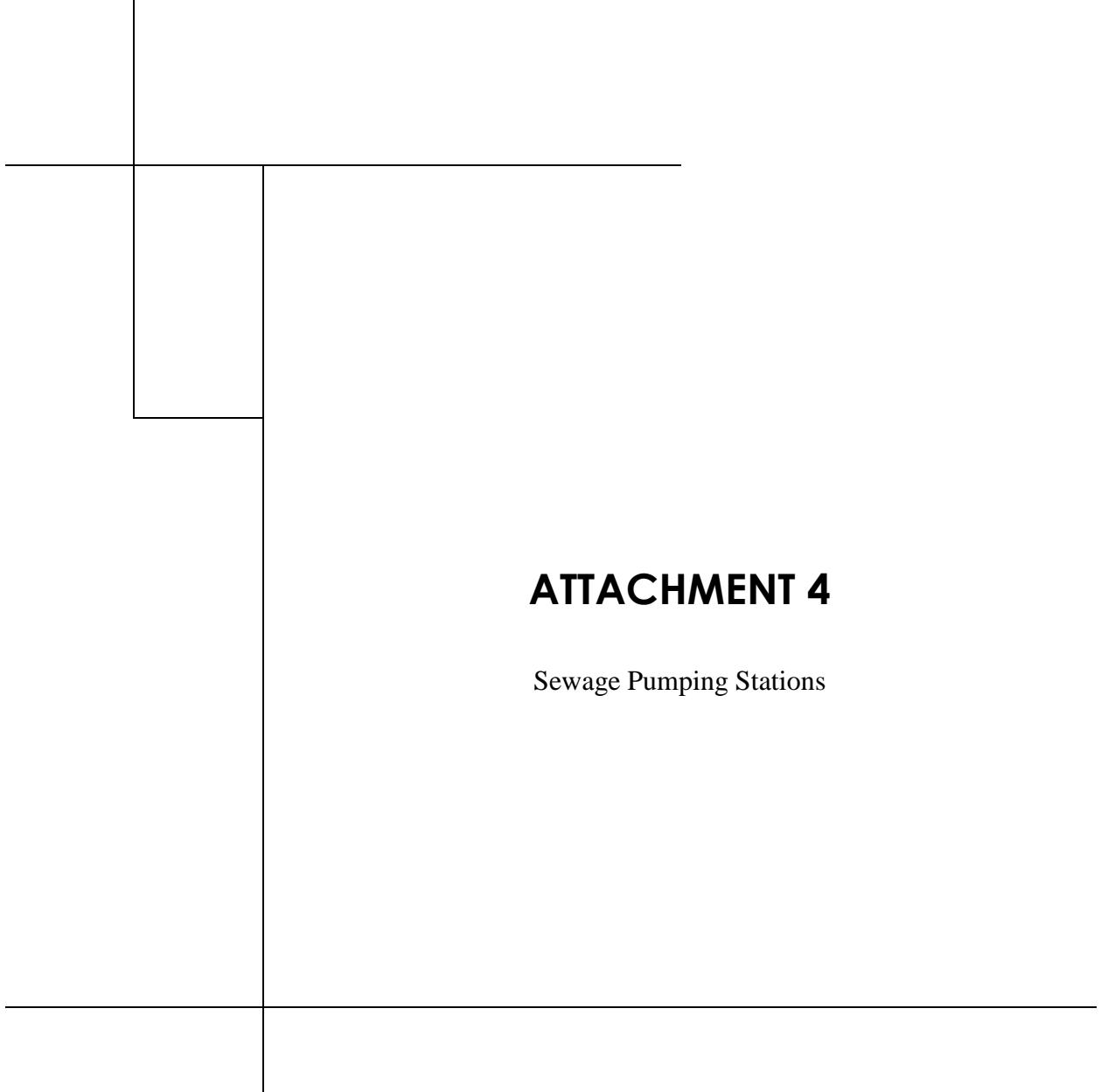
B22
B23
B54
B56
B59
B61
B62
B63
B64
B65
B66
B67
B68
B69
B70
B71

Main lines replaced by contractor

B71-B70	60
B70-B67	110
B68-B67	175
B56-B54	366

Manholes replaced by constractor

B54
B68
B70



ATTACHMENT 4

Sewage Pumping Stations

4.A. Condition of the Wastewater Pumping Stations

There are a total of 16 wastewater pumping stations in the overall Elizabethtown service area. Fifteen of the pumping stations are owned and maintained by ERSA. Information regarding the ERSA stations is contained in their Chapter 94 Report provided in Attachment 8 of this report. Only one of the stations, Oak Manor Pumping Station is owned and maintained by the Borough.

The 2019 average daily flows for each month for the Oak Manor Pumping Station are shown in Table 4.1. Run time hour meter readings are used to monitor flows at the Oak Manor Pumping Station. When the 2-year projected maximum flows as shown in Table 4.2 are compared with the capacity of the station, it can be seen that the Oak Manor Pumping Station is within its design capacity.

This station is in relatively good condition and is currently operating within its design capacity. More information regarding the condition of this station is included in the annual report on the condition of the WWTP and Pumping Station included in Attachment 5 of this report. No overload condition is projected at this station over the next two years.

**BOROUGH OF ELIZABETHTOWN
2019 ANNUAL CHAPTER 94 REPORT**

TABLE 4.1: OAK MANOR PUMPING STATION FLOWS

Month	YEAR 2019	
	TOTAL MONTHLY FLOW (gpd)	AVERAGE DAILY FLOW (gpd)
January	2,898,720	93,507
February	2,205,360	78,763
March	3,311,280	106,815
April	1,583,280	52,776
May	2,801,520	90,372
June	1,686,960	56,232
July	1,736,640	56,021
August	1,458,000	47,032
September	1,486,080	49,536
October	1,574,540	50,792
November	1,684,800	56,160
December	1,928,880	62,222
2019 Total	24,356,060	
2019 Average		66,729
2018 Average		119,806
% Increase/Decrease from previous year		-44.3%
Maximum		106,815

Note:

Flows are based on hour meter readings recorded daily by Borough personnel

**BOROUGH OF ELIZABETHTOWN
2019 ANNUAL CHAPTER 94 REPORT**

TABLE 4.2 PUMPING STATION FLOWS

MUNICIPALITY	PUMPING STATION	PUMP CAPACITY (MGD)	AVERAGE DAILY FLOW (MGD)	PROJECTED 2-YEAR MAXIMUM FLOW (MGD)
Elizabethtown (1)	Oak Manor	0.396	0.0667	0.167

Notes:

- (1) The Oak Manor Pumping Station capacity is the design capacity. Projected flow is the average daily flow multiplied by a 2.5 peaking factor to estimate a maximum hourly flow.

ELIZABETHTOWN WASTEWATER TREATMENT PLANT
OAK MANOR PUMP STATION

2019

January	Int	Time	Pump #1	Pump #2
1			3.5	3.9
2			2.8	3.1
3			2.5	2.8
4			2.5	2.8
5			2.5	2.7
6			1.6	1.7
7			1.8	2
8			1.8	2
9			1.7	1.9
10			1.5	1.6
11			1.4	1.5
12			1.4	1.5
13			1.5	1.7
14			1.3	1.4
15			1.3	1.4
16			1.2	1.3
17			1.1	1.2
18			1.5	1.4
19			2.8	3.2
20			3.6	4.2
21			2.8	3.1
22			2.1	2.3
23			2	2.2
24			3.5	3.8
25			2.6	2.9
26			2.4	2.7
27			2.6	2.8
28			2.1	2.3
29			1.6	1.8
30			1.5	1.7
31			1.5	1.7
Total Hours			64	70.6

NOTES

February	Int	Time	Pump #1	Pump #2
1			1.1	1.3
2			1.4	1.6
3			1.4	1.6
4			1.2	1.4
5			1.3	1.4
6			1.3	1.4
7			1.4	1.4
8			1.4	1.5
9			1.3	1.4
10			1.3	1.5
11			1.3	1.5
12			2.2	2.4
13			2	2.2
14			1.8	2
15			1.9	2
16			1.9	2.1
17			2.1	2.3
18			1.5	1.7
19			1.4	1.5
20			1.5	1.7
21			2.2	2.5
22			2.2	2.4
23			2.3	2.5
24			3.1	3.4
25			2.4	2.6
26			2.1	2.3
27			1.8	2
28			1.8	1.9
Total Hours			48.6	53.5

March	Int	Time	Pump #1	Pump #2
1			1.7	1.9
2			2	2.1
3			2.1	2.3
4			2.1	2.3
5			2	2.2
6			1.5	1.6
7			1.4	1.5
8			1.4	1.6
9			1.8	1.9
10			4	4.4
11			3.3	3.5
12			2.7	2.9
13			2.4	2.6
14			2.2	2.3
15			1.9	2
16			1.8	1.6
17			1.7	1.8
18			1.5	1.6
19			1.4	1.5
20			1.3	1.4
21			6	7.2
22			6.3	6.8
23			4.2	4.4
24			3.3	3.4
25			2.8	2.9
26			2.3	2.4
27			2	2.1
28			1.9	2
29			1.7	1.8
30			1.7	1.7
31			1.6	1.6
Total Hours			74	79.3

ELIZABETHTOWN WASTEWATER TREATMENT PLANT
OAK MANOR PUMP STATION

2019

April	Int	Time	Pump #1	Pump #2
1			1.4	1.5
2			1.4	1.4
3			1.3	1.4
4			1.2	1.3
5			1.2	1.2
6			1.3	1.3
7			1.4	1.4
8			1.2	1.3
9			1.1	1.1
10			1.1	1.1
11			1.1	1.1
12			1.1	1.1
13			1.2	1.2
14			1.6	1.7
15			1.5	1.6
16			1.3	1.3
17			1.2	1.2
18			1.1	1.1
19			1.3	1.4
20			1.3	1.3
21			1.1	1.1
22			1.1	1.2
23			1.1	1.1
24			1.1	1.1
25			1.1	1.1
26			0.99	1.04
27			1.12	1.16
28			1.2	1.2
29			1.1	1.1
30			1	1
Total Hours			36.21	37.1

May	Int	Time	Pump #1	Pump #2
1			1	1.1
2			1.1	1.1
3			1.5	1.5
4			1.5	1.6
5			2.6	2.7
6			2.4	2.5
7			1.9	2
8			1.2	1.7
9			1.6	1.6
10			1.3	1.3
11			1.5	1.6
12			3.7	3.7
13			5.7	6
14			4.2	4.4
15			3.2	3.3
16			2.7	2.8
17			2.2	2.2
18			2	2.1
19			2.7	2.7
20			2.6	2.7
21			2.2	2.2
22			1.9	1.9
23			1.8	1.85
24			1.5	1.6
25			1.6	1.6
26			1.38	1.41
27			1.5	1.55
28			1.4	1.4
29			1.4	1.4
30			1.27	1.3
31			1.13	1.17
Total Hours			63.68	65.98

June	Int	Time	Pump #1	Pump #2
1			0	1.56
2			1.5	1.6
3			1.3	1.3
4			1.2	1.2
5			1.4	1.3
6			1.2	1.2
7			1.2	1.2
8			1.2	1.2
9			1.1	1.2
10			1.4	1.3
11			1.3	1.3
12			1.3	1.3
13			1.5	1.5
14			1.2	1.2
15			1.2	1.3
16			1.5	1.6
17			1.4	1.4
18			1.3	1.3
19			1.4	1.4
20			1.5	1.5
21			1.2	1.3
22			1.3	1.3
23			1.3	1.3
24			1.3	1.4
25			1.3	1.3
26			1.2	1.2
27			1.1	1.1
28			1.1	1.1
29			1.3	1.3
30			1.8	1.9
Total Hours			38	40.06

NOTES

6-1-19 hour meter stuck

ELIZABETHTOWN WASTEWATER TREATMENT PLANT
OAK MANOR PUMP STATION

2019

July	Int	Time	Pump #1	Pump #2
1			1.2	1.3
2			1.2	1.2
3			1.07	1.1
4			1.1	1.1
5			1.22	1.2
6			1.25	1.26
7			1.4	1.4
8			1.5	1.5
9			1.4	1.4
10			1.3	1.3
11			1.7	1.7
12			1.5	1.5
13			1.5	1.5
14			1.4	1.4
15			1.3	1.3
16			1.2	1.2
17			1.3	1.3
18			1.44	1.42
19			1.27	1.25
20			1.26	1.26
21			1.3	1.4
22			1.4	1.4
23			1.3	1.3
24			1.3	1.2
25			1.2	1.2
26			1.1	1.1
27			1.2	1.2
28			1.3	1.3
29			1.2	1.2
30			1.2	1.1
31			1.2	1.2
Total Hours		40.21	40.19	

August	Int	Time	Pump #1	Pump #2
1			1.2	1.2
2			1.1	1.1
3			1	1
4			1.2	1.2
5			1.1	1.1
6			1.2	1.2
7			1.1	1.1
8			1.1	1
9			1.04	1.05
10			1.07	1.02
11			1.2	1.2
12			1.1	1.1
13			1.1	1.1
14			1.1	1.1
15			1.1	1.1
16			1.1	1.1
17			1.1	1.1
18			1	1
19			1.1	1.1
20			1	1
21			1	1.1
22			1.1	1.1
23			1.01	1.02
24			1.12	1.09
25			1.2	1.2
26			1.1	1.1
27			1	1.1
28			1.1	1.1
29			1.1	1
30			1.1	1
31			1	1
Total Hours		33.84	33.68	

September	Int	Time	Pump #1	Pump #2
1			1.4	1.4
2			1.2	1.2
3			1.17	1.17
4			1.2	1.17
5			1.23	1.25
6			1.1	1.1
7			1.24	1.19
8			1.3	1.3
9			1.2	1.2
10			1.3	1.3
11			1.2	1.2
12			1.3	1.3
13			1.15	1.13
14			1.25	1.21
15			1.4	1.4
16			1.2	1.1
17			1.1	1
18			1.1	1.1
19			1.1	1
20			1	1
21			1.1	1
22			1.2	1.2
23			1.1	1.1
24			1	1
25			1	1
26			1	1
27			0.87	0.85
28			1.02	1
29			1.3	1.2
30			1.1	1.07
Total Hours		34.83	34.14	

NOTES

ELIZABETHTOWN WASTEWATER TREATMENT PLANT
OAK MANOR PUMP STATION

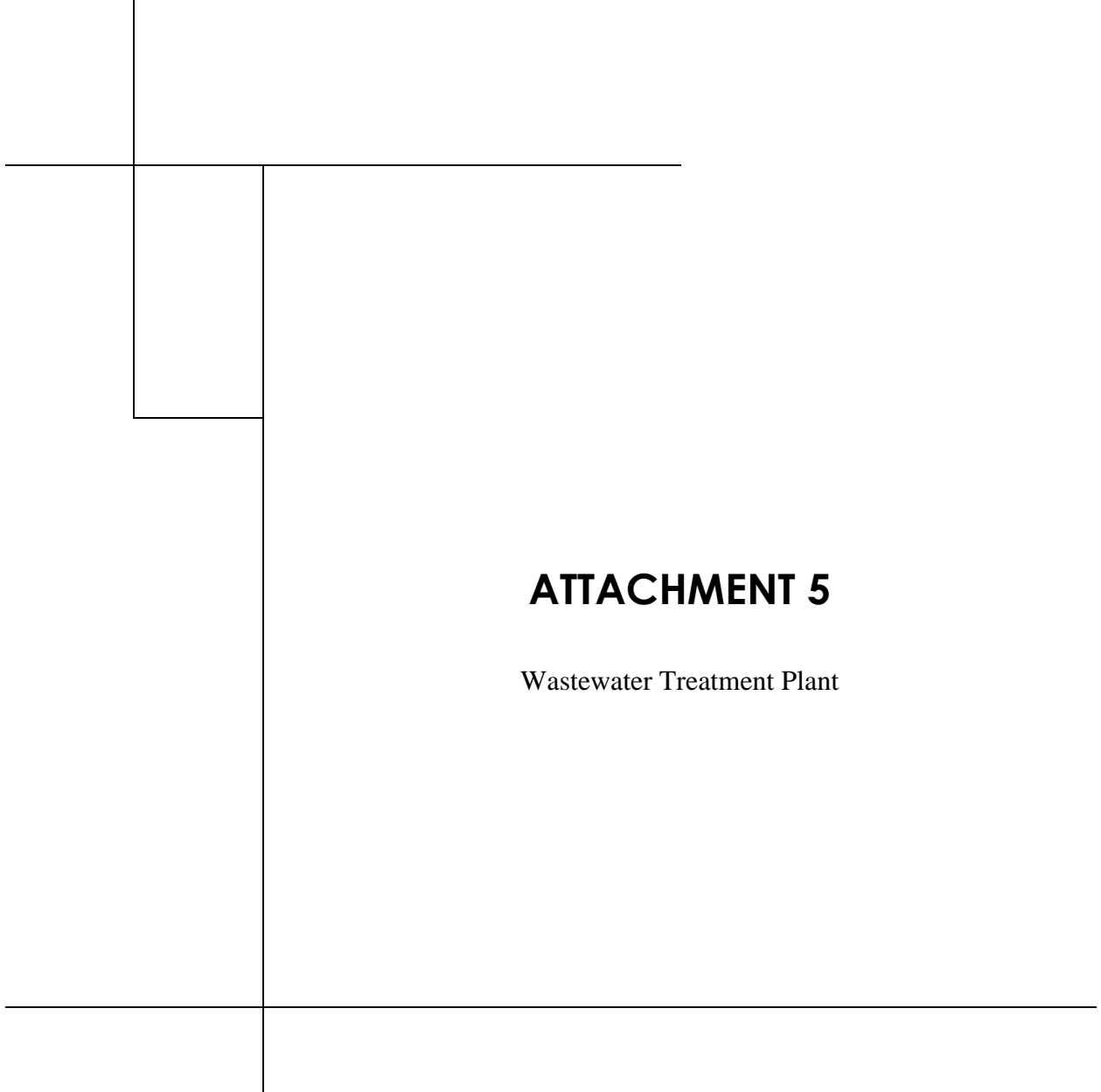
2019

October	Int	Time	Pump #1	Pump #2
1			1.1	1.1
2			1	1
3			1.22	1.19
4			0.96	0.92
5			1.02	1.02
6			1.2	1.1
7			1.2	1.2
8			1.1	1.1
9			1	1
10			1.1	1
11			0.9	0.85
12			1.03	1
13			1.1	1.1
14			1.1	1.1
15			1	0.9
16			1.3	1.2
17			1.1	1.09
18			1.01	0.97
19			1.08	1.04
20			1.3	1.2
21			1.1	1.1
22			1.3	1.3
23			1.2	1.2
24			1.1	1
25			1	1
26			1.2	1.2
27			1.7	1.7
28			1.2	1.2
29			1.2	1.2
30			1.6	1.6
31			2.5	2.4
Total Hours			36.92	35.98

November	Int	Time	Pump #1	Pump #2
1			1.95	1.9
2			1.93	1.82
3			1.8	1.8
4			1.6	1.5
5			1.4	1.3
6			1.3	1.3
7			1.4	1.4
8			1.23	1.16
9			1.37	1.27
10			1.5	1.4
11			1.3	1.3
12			1.2	1.2
13			1.2	1.1
14			1.2	1.1
15			1.1	1.1
16			1.3	1.2
17			1.2	1.2
18			1	1
19			1	1
20			1	1
21			1.2	1.1
22			1.1	1
23			1.42	1.36
24			1.9	1.8
25			1.4	1.3
26			1.3	1.2
27			1.3	1.2
28			0.9	0.9
29			1.2	1.1
30			1.2	1.1
Total Hours			39.9	38.11

December	Int	Time	Pump #1	Pump #2
1			1.4	1.3
2			1.3	1.2
3			1.2	1.2
4			1.3	1.2
5			1.2	1.2
6			1.06	1
7			1.15	1.13
8			1.5	1.4
9			1.3	1.2
10			1.4	1.3
11			1.3	1.2
12			1.3	1.3
13			1.3	1.2
14			1.7	1.6
15			1.7	1.6
16			1.9	1.8
17			2.7	2.5
18			2.1	2
19			1.8	1.7
20			1.6	1.5
21			1.6	1.5
22			1.5	1.5
23			1.6	1.5
24			1.36	1.28
25			1	1.06
26			1.34	1.24
27			1.23	1.21
28			1.27	1.22
29			1.4	1.4
30			1.7	1.6
31			1.6	1.5
Total Hours			45.81	43.54

NOTES



ATTACHMENT 5

Wastewater Treatment Plant

5.A. Condition of the Wastewater Treatment Plant

The last upgrade and expansion of the Borough of Elizabethtown's Wastewater Treatment Plant was completed at the end of 2002. The project involved the removal or demolition of the majority of the old plant equipment and structures, as well as the construction and installation of new equipment and structures. The treatment plant was converted from trickling filter treatment process to a phased oxidation ditch treatment process. The treatment plant continues to perform quite well. Due to its age (about 16 years old), the Borough is beginning to evaluate whether portions of the plant may need to be upgraded since maintenance expenditures are beginning to increase.

A copy of the annual inspection report for the WWTP is included in this section.

No hydraulic or organic overload conditions exist or are projected to occur at the Elizabethtown WWTP over the next five years.

Sludge production and disposal information is included in Attachment 9. Please note that in 2018, a new volute dewatering press was installed to replace the old belt filter press for sludge dewatering.

SANITARY SEWER TREATMENT FACILITY 2020 ANNUAL INSPECTION REPORT

BOROUGH OF ELIZABETHTOWN
LANCASTER COUNTY, PA

HRG PROJECT NO. 00598.0435

March 2020



[BUILDING RELATIONSHIPS.
DESIGNING SOLUTIONS.]

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SECTION 1	Introduction
SECTION 2	Wastewater Treatment Plant (WWTP)
SECTION 3	Oak Manor Pumping Station
SECTION 4	Summary of Recommendations
APPENDIX A	WWTP Photographs – March 4, 2020 Inspection

**2020 ANNUAL INSPECTION REPORT
SANITARY SEWER TREATMENT FACILITY**

**BOROUGH OF ELIZABETHTOWN
LANCASTER COUNTY, PENNSYLVANIA**

1.0 INTRODUCTION

This report represents the findings of the 2020 Annual Inspection of the Borough of Elizabethtown's (Borough) wastewater treatment facilities. The condition and operation of the wastewater treatment plant (WWTP) was reviewed by Herbert, Rowland & Grubic, Inc. (HRG) and Borough Staff on March 4, 2020.

The purpose of the 2020 Annual Inspection was to review observations and recommendations noted in previous HRG Annual Inspection Reports with Borough Staff, provide assistance to the Borough Staff relative to operation and maintenance (O&M) issues experienced within the sanitary sewer facilities, review operating procedures with Borough Staff, and provide recommendations for future capital improvements for continued operation and regulatory compliance of the sanitary sewer facilities.

A summary of our findings based on this inspection is provided in the following sections of the report:

- Wastewater Treatment Plant (WWTP)
- Oak Manor Pumping Station
- Summary of Recommendations

2.0 WASTEWATER TREATMENT PLANT (WWTP)

The Elizabethtown Borough WWTP is currently operating under NPDES Permit No. PA0023108, which is set to expire on June 30, 2021. Per the current NPDES Permit, the WWTP is permitted to treat an average daily flow of 4.5 million gallons per day (MGD) and a maximum month daily flow of 7.2 MGD. The design organic loading for this facility is 8,650 pounds/day.

During 2019, the average daily flow was 2.554 MGD and the maximum monthly flow recorded was 3.944 MGD during March. These flows are substantially lower than last year's flows, which can be attributed to the heavy rainfall that occurred in 2018. The treatment plant's influent and effluent flow meters are calibrated annually. The calibration reports for the various flow meters are attached as Attachment 7 to the Chapter 94 Report. The 2019 annual average organic loading was 3,422 pounds of BOD-5 per day with a maximum monthly loading of 4,103 pounds of BOD-5 per day during May. The organic loading to the WWTP in 2019 was very similar to that observed in 2018. The WWTP is operating well below its hydraulic and organic loading capacities.

The Borough's staff has indicated that the WWTP achieves compliance with permitted annual mass load limits for TN and TP. Based on the results of the Borough's 2019 Chesapeake Bay Annual Nutrient Summary Report, the effluent monthly total mass load (lbs) for Total Nitrogen (TN) and Total Phosphorus (TP) were 24,619 lb and 2,753 lb respectively. A summary of these results is included in Table 2.1 below.

Table 2.1 Comparison of Effluent TN and TP limits

Parameter	2019 Annual Net Mass Load (lb)	NPDES Net Annual Permit Limit (lb)	% below permit limit
Total Nitrogen (TN)	24, 619	109,500	77.5%
Total Phosphorus (TP)	2,753	13,688	79.9%

Based on the result of the annual TN and TP loads, the discharged mass loads were well below the effluent TN and TP mass load limits contained in the NPDES Permit for the WWTP. The Operators at the plant continue to feed aluminum sulfate solution to aid in solids settling and TP removal.

The WWTP consistently achieves compliance with all NPDES parameters. A list of the various improvements/maintenance projects that have been completed since the last WWTP Inspection is included in Table 2.2 below.

Table 2.2 2019 Operations and Maintenance Projects - WWTP

Item	Description of Work
1	Operators replaced the influent sampler located in the Headworks Building
2	Operators replaced the influent sampler located in the Influent Pumping Station
3	Operators replaced the neat polymer feed pump in the Sludge Thickening Building with a new ProMinent progressive cavity hose pump.
4	Various improvements were made within the Dewatering Building including new painting, light fixtures, and new ventilation and ductwork.
5	One of the dewatering screws and one of the volute plate cartridge sections for one of the dewatering drums on the PWTech volute dewatering press were replaced.
6	The dewatered cake discharge screw conveyor was overhauled and re-built.
7	Portions of the utility water piping system were replaced with new metal pipe.
8	Operators extended Ethernet cable to the WWTP Controls Building to improve internet access.

Observations and recommendations for each of the WWTP unit processes from HRG's previous Annual Inspection Reports are provided below with updates to completed items or new maintenance activities under completion noted where appropriate. Photographs of select unit processes where maintenance activities were being performed during our inspection or where operational deficiencies were noted by the Staff are included as Appendix A. This information was included to assist the Borough with developing annual WWTP O&M budgets and for Capital Improvements planning.

ADMINISTRATIVE	
NPDES Permit:	1. The current NPDES permit for the Borough's WWTP is set to expire on June 30, 2021. The application for renewal of the permit must be submitted to PADEP by January 01, 2021.
General:	1. Borough Staff continues to use O&M schedules and procedures for all equipment installed as part of the WWTP upgrade.

	2. Borough shall continue to support Operator Training opportunities for all staff.
--	---

HEADWORKS			
Observations:	1. The mechanical fine screens, grit removal system, and grit classifier continue to operate well. 2. Staff reported that issues with ragging arise within the headworks when the upstream screening station owned by Masonic Homes is not operational. This occurs a few times a year.		
		Completed	Ongoing
Recommendations:	1. Continue to monitor the effectiveness of screening by Masonic Homes to aid in preventing ragging issues with the mechanical screens.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	2. Staff should continue performing routine maintenance and service on the existing equipment.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

INFLUENT PUMPING STATION			
Observations:	1. No reported issues at this time.		
		Completed	Ongoing
Recommendations:	1. Staff should continue performing routine maintenance and service on the existing equipment.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ANAEROBIC SELECTOR TANK & OXIDATION DITCH			
Observations:	1. In 2018, the Operators reported issues with foam within the oxidation ditches. This has not been as great of an issue in 2019. 2. The Operators have budgeted for the removal of the existing rotors from the oxidation ditches, as they are not in use and have been abandoned in place. 3. No reported issues at this time.		
		Completed	Ongoing
Recommendations:	1. The Operators should move forward with the removal of the oxidation ditch rotors in 2020.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	2. Continue to maintain required O&M schedule for existing equipment.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SECONDARY CLARIFIERS			
Observations:	1. No reported issues at this time.		
		Completed	Ongoing
Recommendations:	1. None at this time	<input type="checkbox"/>	<input type="checkbox"/>

CHLORINATION/DECHLORINATION, CASCADE AERATION, EFFLUENT FLOW METERING, AND OUTFALLS	
Observations:	1. In 2018, the Operators reported issues with the streamflow meter

Observations:	<ol style="list-style-type: none"> 1. The new neat polymer feed system for the sludge thickening system is reported to be working well. 2. The paint on the walls and ceilings of the various rooms in the Chemical Building continues to degrade and peel, exposing the subsurface below. 3. One of the sodium hypochlorite tanks has developed pin holing and has begun leaking. The Operators intend to replace both tanks in 2020. 4. The Operators have reported issues with the performance of the sludge dewatering system that are believed to be linked to ineffective makedown of the neat polymer and inadequate blending of the polymer solution with the waste sludge.
---------------	---

March 2020

	sludge feed line, such as an in-line polymer injection ring. Additionally, the Operators should continue to work with PWTech and Velodyne to troubleshoot the issues and determine if any operational changes could resolve them.		
--	---	--	--

SLUDGE PRODUCTION AND DEWATERING			
Observations:	<ol style="list-style-type: none"> 1. The Operators have reported that the existing sludge feed pumps for both the sludge thickening system and sludge dewatering system have been receiving routine maintenance and continue to operate well. There are no issues with these pumping systems at this time. 2. The Operators have reported that the sludge thickening system is receiving routine maintenance and is continuing to operate well. There are no issues with this system at this time. 3. The Operators have reported that the re-built dewatered cake screw conveyor is operating without issue. 4. The Operators have reported that as of January 2019, the Lancaster County Solids Waste Management Authority (LCSWMA) stopped accepting dewatered cake at the incinerator. Dewatered cake solids must now be landfilled. This has increased the cost of disposing dewatered cake solids by approximately 250%. 5. In 2019, the dewatering screw and one of the dewatering volute cartridge on one of the drums of the PWTech volute dewatering press were replaced due to shearing within the drum. According to information provided by PWTech, these components should typically last approx. 20,000 operating hours. The Operators reported that the cause of the premature wear was likely due to the volute plates binding during operation preventing them from oscillating as the dewatering screw rotate past. Binding of the volute plates would create shear points and lead to damage within the unit. Jammed volute plates and metal shavings were observed on both dewatering drums while on-site, suggesting continuing issues. The Operators anticipate the need to replace the dewatering screw and dewatering volute cartridges on the second dewatering drum in the near future. 		
		Completed	Ongoing
Recommendations:	<ol style="list-style-type: none"> 1. The Operators should continue to perform routine maintenance and monitor the performance of the sludge pumping systems. 2. The Operators should continue to perform routine maintenance and monitor the performance of the sludge thickening system. 3. The Operators and the Borough should 	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

	<p>consider performing an analysis to determine if a means of reducing the costs of solids cake disposal exists. Achieving the appropriate balance of polymer feed and dewatered cake solids concentration will help minimize disposal costs. Optimizing the effectiveness of the dewatering polymer feed system as discussed under the "Chemical Feed Systems" section will contribute directly to the ability to reduce disposal costs. HRG would be willing to assist the Borough and the Operators in assessing this issue.</p> <p>4. The Operators should continue to troubleshoot the issues with the PWTech volute press and should continue to engage PWTech in communication on resolving the issues. The PWTech volute press was installed in 2018 and has been operated well below its rated loading capacity since it was put in operation. The aerobically digested sludge being fed to the press would be expected to have a moderate to moderately-low fiber and grit content. The short lifespan of the wearable components coupled with the relatively low abrasive nature of aerobically digested municipal sludge make the issues with the press unexpected. It is possible that larger grit particles are passing through the WWTP system and entering the volute press causing binding of the volute plates, or that the sludge generated at the WWTP is exceptionally abrasive. It is also possible that there are issues with the manufacture or installation of the equipment. The Borough should consider means of resolving the performance issues. HRG would be capable of assisting in troubleshooting the problem further if requested.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Utility Water System	
Observations:	1. Since the Operators replaced portions of the piping system with metal piping, there are no longer substantial issues associated

	<p>with vibration during pump operation.</p> <p>2. The Operators have ordered a new backflow and pressure regulator and intend to replace the existing aging equipment in 2020.</p> <p>3. No reported issues at this time.</p>		
		Completed	Ongoing
Recommendations:	<p>1. The Operators should continue to performance routine maintenance and monitor the operation of the utility water system.</p> <p>2. The Operators should proceed with the scheduled replacement of the backflow preventer and pressure regulator in 2020.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input checked="" type="checkbox"/>

EMERGENCY POWER			
Observations:	<p>1. The backup emergency generator is serviced on a routine basis and is cycled per recommendations of the manufacturer.</p> <p>2. No reported issues at this time.</p>		
		Completed	Ongoing
Recommendations:	<p>1. The Operators should continue to schedule routine maintenance of the generator and cycle the generator according to the recommendations of the manufacturer.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.0 Oak Manor Pumping Station

The Oak Manor Pumping Station is a wet well/dry well type station that includes two Gorman-Rupp Series T-4 pumps. This station has a design flow capacity of 275 gallons per minute (gpm) or 396,000 gallons per day (gpd). Based on pump run times, the 2019 average daily flows at this pumping station was 66,729 gpd with a maximum monthly flow rate of 106,815 gpd. Both of the pumps were serviced during 2016 and are still reported to be operating well.

Table 3.1 2019 Operations and Maintenance Projects Completed – Oak Manor Pumping Station

Item	Description of Work
1	One of the check valves in the pumping station was replaced.

Observations and recommendations for the Oak Manor Pumping Station based on HRG's previous Annual Inspection Reports are provided below with updates to completed items or new maintenance activities under completion noted where appropriate. This information was included to assist the Borough with developing annual O&M budgets and for Capital Improvements planning.

OAK MANOR PUMPING STATION	
Observations:	<p>1. The Operators reported the planned rebuilding of Pump #2 during 2019. Note: this project was not completed in 2019.</p>

	2. No reported issues at this time.		
		Completed	Ongoing
Recommendations:	1. The Operators should continue performing routine maintenance and service on the existing equipment.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	2. The Operators should move forward with rebuilding Pump #2 in 2020.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.0 SUMMARY OF RECOMMENDATIONS

In summary, the WWTP consistently achieves compliance with current NPDES Permit discharge limits including the annual nutrient mass loads for TN and TP. The Oak Manor Pumping Station is operating well and within its rated hydraulic capacity. Additionally, both the WWTP and the Oak Manor Pumping Station possess adequate hydraulic and organic capacity for new connections within the Borough and surrounding municipalities.

Miscellaneous WWTP improvements which are planned to be performed by the Borough or study efforts/improvements recommended by HRG include the following (based on level of high or moderate priority):

High Priority

- Completion of the application for renewal of the WWTP NPDES permit
- Replacement of the sodium hypochlorite chemical storage tanks
- Completion of an evaluation into the rapid deterioration of the PWTech Volute Dewatering Press wearable components
- Completion of an evaluation into possible improvements to the polymer feed system in the Dewatering Building
- Completion of a cost-benefit analysis on the costs of dewatered cake disposal

Moderate Priority

- Removal of the oxidation ditch rotors
- Repainting of the interior Chemical Building
- Replacement of the utility water system backflow preventer and pressure regulator
- Re-build Pump #2 at the Oak Manor Pumping Station as time allows

In order for the Borough to adequately project future expenditures relative to the replacement or rehabilitation of aged WWTP components, it is recommended that the Borough initiate the study efforts recommended in this Report for the identification of likely construction costs for such projects. This information can then be used to aid in the development of a yearly priority listing for future implementations.



Photo 1 – Oxidation Ditch



Photo 2 – Triton Mixer/Aerator



Photo 3 – Sludge Thickening System Polymer Feed System



Photo 4 – Dewatering Building Improvements



Photo 5 – PWTech Volute Press Dewatering Drums



Photo 6 – Sodium Hypochlorite Storage Tanks



ATTACHMENT 6

Industrial Wastes

6.A. Industrial Wastes

Permitted industrial and commercial establishments are monitored on a regular basis under the Borough's Industrial Waste Ordinance to regulate loadings. The Borough plans to continue inspections of commercial and industrial establishments in the service area. If deemed appropriate by the Borough, a permitting and monitoring program will be instituted for those establishments whose discharges might impact the collection, conveyance or treatment plant.

The Borough has identified a total of six establishments that have been issued Industrial Waste Permits. Where appropriate, sampling is being required on a regular basis to assure compliance with the Borough's Industrial Waste Ordinance.

The primary contributor of industrial wastes to the Elizabethtown WWTP is Mars Chocolate North America (M&M Mars Wrigley Confectionery). The Mars Chocolate North America facility has a pretreatment plant which discharges to the Borough's collection system. A summary of the laboratory analyses of the Mars pre-treated discharge samples for 2019 is summarized in Table 6.1.

ERSA is responsible for monitoring and administering commercial and industrial dischargers in their sewer system area. Refer to the ERS Chapter 94 Report found in Attachment 8 of this report for additional information related to their industrial waste program.

**BOROUGH OF ELIZABETHTOWN
2019 ANNUAL CHAPTER 94 REPORT**

TABLE 6.1: INDUSTRIAL WASTE MONITORING

MARS CHOCOLATE NORTH AMERICA

Month	Effluent COD (mg/l)	Effluent BOD (mg/l)	pH RANGE	TSS (mg/l)	Flow (gpd)
January	114	12	6.56 - 9.55	34	78,801
February	106	15	7.17 - 7.77	18	62,024
March	136	29	7.15 - 8.08	48	65,680
April	104	15	7.18 - 8.08	67	57,112
May	85	7	7.21 - 8.04	52	60,989
June	110	11	7.47 - 7.89	40	76,585
July	96	11	7.20 - 8.24	39	61,576
August	80	10	7.18 - 7.89	31	69,969
September	95	12	6.79 - 8.07	35	62,106
October	78	27	7.24 - 8.07	45	67,763
November	119	13	7.01 - 7.75	36	66,416
December	106	16	7.36 - 7.87	51	61,436
2019 Average	102	15	7.13 - 8.11	41	65,871
2018 Average	138	21	6.76 - 8.16	31	78,255
% Increase/Decrease from previous year	-34.74%	-41.57%		25.00%	-18.80%
2019 Maximum	136	29		67	78,801
2018 Maximum	154	107		45	88,880

Note:

-The data for this table is taken from The Monthly Operation Summary Reports which are submitted by Mars Chocolate North America to The Borough of Elizabethtown.

RONI RYAN
BOROUGH MANAGER
BOROUGH OF ELIZABETHTOWN
600 SOUTH HANOVER STREET
ELIZABETHTOWN, PA 17022

THE TOTAL DISCHARGE FROM THE MARS WRIGLEY CONFECTIONARY US, LLC
ELIZABETHTOWN PLANT TO THE MUNICIPAL SEWER SYSTEM DURING THE THREE MONTH
PERIOD OF:

January 1, 2019
THROUGH
March 31, 2019

WAS
6,393,933 GALLONS.

THE TOTAL DISCHARGE IS COMPRISED OF **6,215,578** GALLONS FROM THE PROCESS
EFFLUENT PRETREATMENT PLANT AND **178,355** GALLONS FROM THE SANITARY
DISCHARGE LINE. THE ABOVE DATA WAS COMPILED FROM THE DAILY READINGS TAKEN
FROM THE DREXELBROOK FLOW TOTALIZING METERS.

SINCERELY,

A handwritten signature in black ink, appearing to read 'A. E. King', with a stylized flourish at the end.

Andrew E. King
HSE Specialist



295 Brown Street
Elizabethtown, PA 17022
(717) 367-1500 Phone
(717) 367-0311 Fax

**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: JANUARY 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	2,442,841	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	78,801	250,000	GAL
EFFLUENT PH (MIN.)	7.31	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	7.96	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	34	250	MG/L
EFFLUENT COD (AVERAGE)	114	-----	MG/L
EFFLUENT BOD (AVERAGE)	12	250	MG/L
EFFLUENT TEMP (AVERAGE)	46	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	9.55	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	6.56	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	12.47	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	< 1.90	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR
HSE SPECIALIST

C. FREEMAN
A. KING *AK*

COPIES:

EFFLUENT TREATMENT PLANT COORDINATOR
SITE FILE COPY
CHIEF OPERATOR-BOROUGH

C. SOWERS
F. DISORI
D. BAIR



295 Brown Street
Elizabethtown, PA 17022
(717) 367-1500 Phone
(717) 367-0311 Fax

**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: FEBRUARY 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	1,736,670	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	62,024	250,000	GAL
EFFLUENT PH (MIN.)	(7.77) 0.00	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	7.77	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	18	250	MG/L
EFFLUENT COD (AVERAGE)	106	-----	MG/L
EFFLUENT BOD (AVERAGE)	15	250	MG/L
EFFLUENT TEMP (AVERAGE)	45	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	8.19	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	0.00	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	12.25	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	1.90	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR
HSE SPECIALIST

C. FREEMAN

A. KING *AK*

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EFFLUENT TREATMENT PLANT COORDINATOR
SITE FILE COPY
CHIEF OPERATOR-BOROUGH

C. SOWERS
F. DISORI
D. BAIR



295 Brown Street
Elizabethtown, PA 17022
(717) 367-1500 Phone
(717) 367-0311 Fax

**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: MARCH 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	2,036,067	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	65,680	250,000	GAL
EFFLUENT PH (MIN.)	7.15	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	8.08	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	48	250	MG/L
EFFLUENT COD (AVERAGE)	136	-----	MG/L
EFFLUENT BOD (AVERAGE)	29	250	MG/L
EFFLUENT TEMP (AVERAGE)	49	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	7.87	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	5.24	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	9.83	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	7.60	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR

C. FREEMAN

HSE SPECIALIST

A. KING 

COPIES:

EFFLUENT TREATMENT PLANT COORDINATOR

C. SOWERS

SITE FILE COPY

F. DISORI

CHIEF OPERATOR-BOROUGH

D. BAIR

RONI RYAN
BOROUGH MANAGER
BOROUGH OF ELIZABETHTOWN
600 SOUTH HANOVER STREET
ELIZABETHTOWN, PA 17022

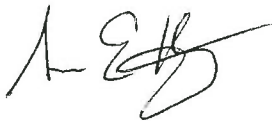
THE TOTAL DISCHARGE FROM THE MARS WRIGLEY CONFECTIONARY US, LLC
ELIZABETHTOWN PLANT TO THE MUNICIPAL SEWER SYSTEM DURING THE THREE MONTH
PERIOD OF:

April 1, 2019
THROUGH
June 30, 2019

WAS
5,619,250 GALLONS.

THE TOTAL DISCHARGE IS COMPRISED OF **5,426,280** GALLONS FROM THE PROCESS
EFFLUENT PRETREATMENT PLANT AND **192,970** GALLONS FROM THE SANITARY
DISCHARGE LINE. THE ABOVE DATA WAS COMPILED FROM THE DAILY READINGS TAKEN
FROM THE DREXELBROOK FLOW TOTALIZING METERS.

SINCERELY,

A handwritten signature in black ink, appearing to read 'A E King', with a stylized flourish at the end.

Andrew E. King
HSE Specialist



295 Brown Street
Elizabethtown, PA 17022
(717) 367-1500 Phone
(717) 367-0311 Fax

**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: APRIL 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	1,713,354	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	57,112	250,000	GAL
EFFLUENT PH (MIN.)	(7.18) 0.00	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	8.05	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	67	250	MG/L
EFFLUENT COD (AVERAGE)	104	-----	MG/L
EFFLUENT BOD (AVERAGE)	15	250	MG/L
EFFLUENT TEMP (AVERAGE)	60	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	7.69	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	0.00	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	11.87	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	<3.80	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR

C. FREEMAN

HSE SPECIALIST

A. KING *AK*

COPIES:

EFFLUENT TREATMENT PLANT COORDINATOR

C. SOWERS

SITE FILE COPY

F. DISORI

CHIEF OPERATOR-BOROUGH

D. BAIR



295 Brown Street
Elizabethtown, PA 17022
(717) 367-1500 Phone
(717) 367-0311 Fax

**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: MAY 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	1,890,673	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	60,989	250,000	GAL
EFFLUENT PH (MIN.)	7.21	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	8.04	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	52	250	MG/L
EFFLUENT COD (AVERAGE)	85	-----	MG/L
EFFLUENT BOD (AVERAGE)	7	250	MG/L
EFFLUENT TEMP (AVERAGE)	66	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	8.57	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	6.66	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	10.50	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	<3.80	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR

C. FREEMAN

HSE SPECIALIST

A. KING 

COPIES:

EFFLUENT TREATMENT PLANT COORDINATOR

C. SOWERS

SITE FILE COPY

F. DISORI

CHIEF OPERATOR-BOROUGH

D. BAIR

MARS WRIGLEY

confectionery

June 21, 2019

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Elizabethtown Borough
600 South Hanover Street
Elizabethtown, PA 17022

RE: Mars Wrigley Confectionery – Elizabethtown Plant Spill Prevention Response
Annual Notification

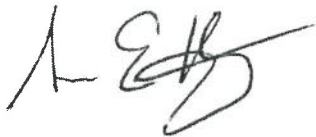
Dear Supervisor,

Pursuant to the requirements of the Pennsylvania “Storage Tank and Spill Prevention Act”, 25 PA Code Ch. 245, this is the annual written notification of downstream facilities that Mars Wrigley Confectionery – Elizabethtown Plant is in compliance with the Act.

Pursuant to the Act, we are notifying you that our facility maintains a 25,000 gallon tank containing the regulated substance, #2 fuel oil, for the purpose of supplying fuel to our boilers and our emergency generator.

Should you require additional information, please contact me directly at 717-367-0995.

Sincerely,



Andrew E. King
HSE Specialist

Attachment



295 Brown Street
Elizabethtown, PA 17022
(717) 367-1500 Phone
(717) 367-0311 Fax

**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: JUNE 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	2,220,961	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	76,585	250,000	GAL
EFFLUENT PH (MIN.)	7.47	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	7.89	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	40	250	MG/L
EFFLUENT COD (AVERAGE)	110	-----	MG/L
EFFLUENT BOD (AVERAGE)	11	250	MG/L
EFFLUENT TEMP (AVERAGE)	71	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	8.49	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	5.52	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	10.27	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	<3.90	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR

C. FREEMAN

HSE SPECIALIST

A. KING *AK*

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C. SOWERS

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CHIEF OPERATOR-BOROUGH

D. BAIR



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Elizabethtown, PA 17022
(717) 367-1500 Phone
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**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: JULY 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	1,785,708	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	61,576	250,000	GAL
EFFLUENT PH (MIN.)	7.20	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	8.24	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	39	250	MG/L
EFFLUENT COD (AVERAGE)	96	-----	MG/L
EFFLUENT BOD (AVERAGE)	11	250	MG/L
EFFLUENT TEMP (AVERAGE)	76	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	9.40	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	7.36	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	13.00	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	<3.70	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR

C. FREEMAN

HSE SPECIALIST

A. KING *AK*

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C. SOWERS

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D. BAIR



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Elizabethtown, PA 17022
(717) 367-1500 Phone
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**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: AUGUST 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	2,169,037	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	69,969	250,000	GAL
EFFLUENT PH (MIN.)	(7.24) 0.00	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	7.89	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	31	250	MG/L
EFFLUENT COD (AVERAGE)	80	-----	MG/L
EFFLUENT BOD (AVERAGE)	10	250	MG/L
EFFLUENT TEMP (AVERAGE)	69	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	8.20	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	0.00	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	11.41	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	<4.20	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR

C. FREEMAN

HSE SPECIALIST

A. KING 

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D. BAIR



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(717) 367-1500 Phone
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**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: SEPTEMBER 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	1,863,181	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	62,106	250,000	GAL
EFFLUENT PH (MIN.)	6.79	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	8.07	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	35	250	MG/L
EFFLUENT COD (AVERAGE)	95	-----	MG/L
EFFLUENT BOD (AVERAGE)	12	250	MG/L
EFFLUENT TEMP (AVERAGE)	70	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	8.20	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	9.27	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	7.18	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	<3.70	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR
HSE SPECIALIST

C. FREEMAN
A. KING *AK*

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F. DISORI
D. BAIR

RONI RYAN
BOROUGH MANAGER
BOROUGH OF ELIZABETHTOWN
600 SOUTH HANOVER STREET
ELIZABETHTOWN, PA 17022

THE TOTAL DISCHARGE FROM THE MARS WRIGLEY, LLC ELIZABETHTOWN PLANT TO THE MUNICIPAL SEWER SYSTEM DURING THE THREE MONTH PERIOD OF:

October 1, 2019
THROUGH
December 31, 2019

WAS
6,173,460 GALLONS.

THE TOTAL DISCHARGE IS COMPRISED OF **5,981,013** GALLONS FROM THE PROCESS EFFLUENT PRETREATMENT PLANT AND **192,447** GALLONS FROM THE SANITARY DISCHARGE LINE. THE ABOVE DATA WAS COMPILED FROM THE DAILY READINGS TAKEN FROM THE DREXELBROOK FLOW TOTALIZING METERS.

SINCERELY,

A handwritten signature in black ink, appearing to read 'A. E. King', with a stylized flourish at the end.

Andrew E. King
HSE Specialist



295 Brown Street
Elizabethtown, PA 17022
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**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: OCTOBER 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	2,100,657	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	67,763	250,000	GAL
EFFLUENT PH (MIN.)	7.24	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	8.07	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	45	250	MG/L
EFFLUENT COD (AVERAGE)	78	-----	MG/L
EFFLUENT BOD (AVERAGE)	27	250	MG/L
EFFLUENT TEMP (AVERAGE)	62	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	11.01	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	7.48	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	13.76	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	<3.90	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR
HSE SPECIALIST

C. FREEMAN

A. KING *AK*

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**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: NOVEMBER 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	1,992,471	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	66,416	250,000	GAL
EFFLUENT PH (MIN.)	7.01	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	7.75	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	36	250	MG/L
EFFLUENT COD (AVERAGE)	119	-----	MG/L
EFFLUENT BOD (AVERAGE)	13	250	MG/L
EFFLUENT TEMP (AVERAGE)	62	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	12.25	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	8.89	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	14.42	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	<3.70	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR

C. FREEMAN

HSE SPECIALIST

A. KING *AK*

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**PROCESS EFFLUENT PRETREATMENT FACILITY
MONTHLY OPERATION SUMMARY REPORT
SUBMITTED TO THE ELIZABETHTOWN BOROUGH**

MONTH OF: DECEMBER 2019

	<u>Result</u>	<u>Limit</u>	
EFFLUENT TOTAL GALLONS	1,843,074	7,750,000	GAL
DAILY EFFLUENT AVERAGE FLOW	61,436	250,000	GAL
EFFLUENT PH (MIN.)	7.36	6.5 - 8.5	PH
EFFLUENT PH (MAX.)	7.86	6.5 - 8.5	PH
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	51	250	MG/L
EFFLUENT COD (AVERAGE)	106	-----	MG/L
EFFLUENT BOD (AVERAGE)	16	250	MG/L
EFFLUENT TEMP (AVERAGE)	45	< 150	DEG. F.
EFFLUENT DISSOLVED OXYGEN (AVERAGE)	12.37	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MIN.)	7.89	-----	MG/L
EFFLUENT DISSOLVED OXYGEN (MAX.)	14.55	-----	MG/L
EFFLUENT OIL AND GREASE (MAX.)	<3.70	80	MG/L

FOR APPROVALS:

PLANT DIRECTOR

C. FREEMAN

HSE SPECIALIST

A. KING 

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C. SOWERS

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CHIEF OPERATOR-BOROUGH

D. BAIR



ATTACHMENT 7

Flow Meter Calibration Reports



LRM, Inc

Instrumentation & Disinfection Systems

Calibration Date

4/24/2019

User

Elizabethtown Borough
600 S. Hanover St.

Elizabethtown WWTP

Job Site

Elizabethtown, Pa. 17022

Attn Dennt Bair

Instrument Model No.

Instrument S/N

Endress Hauser FMU90

E90065150E6

Instrument Loop

Input Type

Miller Flow Meter

Ultrasonic

Primary Signal Producer

Calibrated Range

9in Parshall Flume

0-4.385 MGD

Instrument Settings

Found

Changed To

Zero	Span
31.9375 in	4.385 MGD

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0.00 MGD	4.00 mADC	0.00%
50 %	2.19 MGD	12.00 mADC	0.00%
100 %	4.39 MGD	20.00 mADC	0.00%

Equipment Used Multimeter Stick Rule Isco Standards Book

Adjustments / Actions Taken : None

Comments :

Service Representative Michael Sollazzo

Date 4/29/2019

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



LRM, Inc

Instrumentation & Disinfection Systems

Calibration Date

4/24/2019

User

Elizabethtown Borough
600 S. Hanover St.

Elizabethtown WWTP

Job Site

Elizabethtown, Pa. 17022

Attn Denny Bair

Instrument Model No.

Instrument S/N

Endress-Hauser FMU90

N200C6150E6

Instrument Loop

Input Type

Plant Effluent Meter

Ultrasonic

Primary Signal Producer

Calibrated Range

60in Constricted Rectangular
Weir

0-18.57 MGD

Instrument Settings

Found

Changed To

Zero	Span
45.072 in	18.57 MGD

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0.00 MGD	4.00 mADC	0.00%
50 %	9.29 MGD	12.01 mADC	0.08%
100 %	18.57 MGD	20.02 mADC	0.10%

Equipment Used Multimeter

Stick Rule

Isco Standards
Book

Adjustments / Actions Taken :

None

Comments :

Service Representative Michael Sollazzo

Date 4/29/2019

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



LRM, Inc

Instrumentation & Disinfection Systems

Calibration Date

4/24/2019

User

Elizabethtown Borough
600 S. Hanover St.

Elizabethtown WWTP

Job Site

Elizabethtown, Pa. 17022

Attn Denny Bair

Instrument Model No.

Instrument S/N

Milltronics OCM3

020501101PB

Instrument Loop

Input Type

Canoy Creek Flow Meter

Ultrasonic

Primary Signal Producer

Calibrated Range

120in Rectangular Weir

0-38.35 MGD

Instrument Settings

Found

Changed To

Zero	Span
84.10 in	38.35 MGD

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0.00 MGD	4.00 mADC	0.00%
50 %	19.18 MGD	12.01 mADC	0.08%
100 %	38.35 MGD	20.01 mADC	0.05%

Equipment Used Multimeter Stick Rule Isco Standards Book

Adjustments / Actions Taken :

Comments :

Note at flows over 10in (16.24 MGD) the weir starts to surcharge and the readings will be incorrect.

Service Representative Michael Sollazzo

Date 4/29/2019

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



LRM, Inc

Instrumentation & Disinfection Systems

Calibration Date

4/24/2019

User

Elizabethtown Borough
600 S. Hanover St.

Job Site

Elizabethtown WWTP

Elizabethtown, Pa. 17022

Attn Denny Bair

Instrument Model No.

Milltronics

Multiranger Plus

Instrument S/N

120031147VQ

Instrument Loop

Bossler Flow Meter

Input Type

Ultrasonic

Primary Signal Producer

10in Palmer - Bowlus Flume

Calibrated Range

0-0.7234 MGD

Instrument Settings

Found

Zero	Span
29.875 in	0.7234 MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0.00 MGD	4.00 mADC	0.00%
50 %	0.36 MGD	12.01 mADC	0.08%
100 %	0.72 MGD	20.02 mADC	0.10%

Equipment Used Multimeter

Stick Rule

Isco Standards
Book

Adjustments / Actions Taken :

None

Comments :

Service Representative Michael Sollazzo

Date 4/29/2019

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



LRM, Inc

Instrumentation & Disinfection Systems

Calibration Date

4/24/2019

User

Elizabethtown Borough
600 S. Hanover St.

Job Site

Elizabethtown WWTP

Elizabethtown, Pa. 17022

Attn Denny Bair

Instrument Model No.

Instrument S/N

Endress-Hauser FMU90

L2007A150E6

Instrument Loop

Input Type

Canoy Influent Meter

Ultrasonic

Primary Signal Producer

Calibrated Range

18in Parshall Flume

0-11.26 MGD

Instrument Settings

Found

Zero	Span
37.1875 in	11.26 MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0.00 MGD	4.00 mADC	0.00%
50 %	5.63 MGD	12.00 mADC	0.00%
100 %	11.26 MGD	20.00 mADC	0.00%

Equipment Used Multimeter

Stick Rule

Isco Standards
Book

Adjustments / Actions Taken :

None

Comments :

Service Representative Michael Sollazzo

Date 4/29/2019

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



LRM, Inc

Instrumentation & Disinfection Systems

Calibration Date

4/24/2019

User

Elizabethtown Borough
600 S. Hanover St.

Job Site

Elizabethtown WWTP

Elizabethtown, Pa. 17022

Attn Denny Bair

Instrument Model No.

Instrument S/N

Endress-Hauser FMU90

K30043150E6

Instrument Loop

Input Type

Total Influent Meter

Ultrasonic

Primary Signal Producer

Calibrated Range

3ft Parshall Flume

0-14.63 MGD

Instrument Settings

Found

Zero	Span
3.64 ft	14.63 MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0.00 MGD	4.00 mADC	0.00%
50 %	7.32 MGD	12.00 mADC	0.00%
100 %	14.63 MGD	20.00 mADC	0.00%

Equipment Used Multimeter Stick Rule Isco Standards Book

Adjustments / Actions Taken : None

Comments :

Service Representative Michael Sollazzo

Date 4/29/2019

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



LRM, Inc

Instrumentation & Disinfection Systems

Calibration Date

4/24/2019

User

Elizabethtown Borough
600 S. Hanover St.

Job Site

Elizabethtown WWTP

Elizabethtown, Pa. 17022

Attn Denny Bair

Instrument Model No.

Milltronics

Multiranger Plus

Instrument S/N

120301170VQ

Instrument Loop

Plant Overflow Meter

Input Type

Ultrasonic

Primary Signal Producer

Rectangular Weir

Calibrated Range

0-20.00 MGD

Instrument Settings

Found

Zero	Span
29.62 in	20.00 MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0.00 MGD	4.00 mADC	0.00%
50 %	10.00 MGD	12.01 mADC	0.08%
100 %	20.00 MGD	20.02 mADC	0.10%

Equipment Used Multimeter

Stick Rule

Isco Standards
Book

Adjustments / Actions Taken :

None

Comments :

Service Representative Michael Sollazzo

Date 4/29/2019

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



LRM, Inc
Instrumentation & Disinfection Systems

Calibration Date
11/05/2019

User **ELIZABETHTOWN BOROUGH**
600 South Hanover Street
Elizabethtown, PA 17022

Job Site **Waste Water Treatment Plant**

Instrument Manufacturer/Model No:

MILLTRONICS / MULTIRANGER PLUS

Instrument S/N:

120031147VQ

Instrument Loop:

BOSSLER Influent Flow Meter

Input Type:

ULTRASONIC

Primary Signal Producer:

10" PALMER-BOWLUS FLUME

Calibrated Range:

0-0.7234 MGD

Instrument Settings:

Found

Zero	Span
29.875in	0.7234 MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0 MGD	4.00 ma	0.00
50 %	.3617 MGD	12.00 ma	0.00
100 %	0.7234 MGD	20.00 ma	0.00

Equipment Used: Milltronics Programmer

Adjustments / Actions Taken: None

Comments:

Service Representative: Tony Grbas

Date: 11/05/2019

WO #: 113



LRM, Inc
Instrumentation & Disinfection Systems

Calibration Date
11/05/2019

User

ELIZABETHTOWN BOROUGH
600 South Hanover
Street Elizabethtown
PA 17022

Job Site

Waste Water Treatment Plant

Instrument Manufacturer/Model No:

MILLTRONICS / MULTIRANGER OCM3

Instrument S/N:

020501101PB

Instrument Loop:

CANOY CREEK Flow Meter

Input Type:

ULTRASONIC

Primary Signal Producer:

120" RECTANGULAR WEIR

Calibrated Range:

0-38.35 MGD

Instrument Settings:

Found

Zero	Span
84.10 in	38.38 MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0 MGD	4.00 ma	0.00
50 %	19.19 MGD	12.00 ma	0.00
100 %	38.38 MGD	20.00 ma	0.00

Equipment Used: Stick Rule, Multimeter

Adjustments / Actions Taken: None

Comments:

Service Representative: Tony Grbas

Date: 11/05/2019

WO #: 119



LRM, Inc
Instrumentation & Disinfection Systems

Calibration Date
11/05/2019

User

ELIZABETHTOWN BOROUGH
600 South Hanover
Street Elizabethtown
PA 17022

Job Site

Waste Water Treatment Plant

Instrument Manufacturer/Model No:

ENDRESS & HAUSER / FMU90

Instrument S/N:

L2007A150E6

Instrument Loop:

CANOE Influent Flow Meter

Input Type:

ULTRASONIC

Primary Signal Producer:

18" PARSHALL FLUME

Calibrated Range:

0-11.26 MGD

Instrument Settings:

Found

Zero	Span
37.125in	11.26MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0 MGD	4.00 ma	0.00
50 %	5.63 MGD	12.00 ma	0.00
100 %	11.26 MGD	20.00 ma	0.00

Equipment Used: Stick Rule, Multimeter

Adjustments / Actions Taken: None

Comments:

Service Representative: Tony Grbas

Date: 11/05/2019

WO #: 114



LRM, Inc
Instrumentation & Disinfection Systems

Calibration Date
11/05/2019

User

ELIZABETHTOWN BOROUGH
600 South Hanover
Street Elizabethtown
PA 17022

Job Site

Waste Water Treatment
Plant

Instrument Manufacturer/Model No:

ENDRESS & HAUSER / FMU90

Instrument S/N:

E90065150E6

Instrument Loop:

MILLER Influent Flow Meter

Input Type:

ULTRASONIC

Primary Signal Producer:

9" PARSHALL FLUME

Calibrated Range:

0-4.385 MGD

Instrument Settings:

Found

Zero	Span
31.938in	4.385 MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0 MGD	4.00 ma	0.00
50 %	2.1925 MGD	12.00 ma	0.00
100 %	4.385 MGD	20.00 ma	0.00

Equipment Used: Stick Rule, Multimeter

Adjustments / Actions Taken: None

Comments:

Service Representative: Tony Grbas

Date: 11/05/2019

WO #: 115



LRM, Inc
Instrumentation & Disinfection Systems

Calibration Date
11/05/2019

User

ELIZABETHTOWN BOROUGH
600 South Hanover
Street Elizabethtown
PA 17022

Job Site

Waste Water Treatment Plant

Instrument Manufacturer/Model No:

ENDRESS & HAUSER / FMU90

Instrument S/N:

K30043150E6

Instrument Loop:

TOTAL Influent Flow Meter

Input Type:

ULTRASONIC

Primary Signal Producer:

3' PARSHALL FLUME

Calibrated Range:

0-14.63 MGD

Instrument Settings:

Found

Zero	Span
3.640 ft	14.63 MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0 MGD	4.00 ma	0.00
50 %	7.315 MGD	12.00 ma	0.00
100 %	14.63 MGD	20.00 ma	0.00

Equipment Used: Stick Rule, Multimeter

Adjustments / Actions Taken: None

Comments:

Service Representative: Tony Grbas

Date: 11/05/2019

WO #: 116



LRM, Inc
Instrumentation & Disinfection Systems

Calibration Date
11/05/2019

User

ELIZABETHTOWN BOROUGH
600 South Hanover
Street Elizabethtown
PA 17022

Job Site

Waste Water Treatment Plant

Instrument Manufacturer/Model No:

ENDRESS & HAUSER / FMU90

Instrument S/N:

N200C6150E6

Instrument Loop:

PLANT Effluent Flow Meter

Input Type:

ULTRASONIC

Primary Signal Producer:

60" CONSTRICTED RECTANGULAR WEIR

Calibrated Range:

0-18.57 MGD

Instrument Settings:

Found

Zero	Span
45.072 in	18.57 MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0 MGD	4.00 ma	0.00
50 %	9.285 MGD	12.00 ma	0.00
100 %	18.57 MGD	20.00 ma	0.00

Equipment Used: Stick Rule, Multimeter

Adjustments / Actions Taken: None

Comments:

Service Representative: Tony Grbas

Date: 11/05/2019

WO #: 117



LRM, Inc
Instrumentation & Disinfection Systems

Calibration Date
11/05/2019

User

ELIZABETHTOWN BOROUGH
600 South Hanover
Street Elizabethtown
PA 17022

Job Site

Waste Water Treatment Plant

Instrument Manufacturer/Model No:

MILLTRONICS / MULTIRANGER PLUS

Instrument S/N:

12031170VQ

Instrument Loop:

PLANT OVERFLOW Flow Meter

Input Type:

ULTRASONIC

Primary Signal Producer:

RECTANGULAR WEIR

Calibrated Range:

0-20 MGD

Instrument Settings:

Found

Zero	Span
29.62 in	20.00 MGD

Changed To

Zero	Span
N/A	N/A

Calibration Data

Input %	Input Value	Output Value	% Error After Calibration
0 %	0 MGD	4.00 ma	0.00
50 %	10.00 MGD	12.00 ma	0.00
100 %	20.00 MGD	20.00 ma	0.00

Equipment Used: Stick Rule, Multimeter

Adjustments / Actions Taken: None

Comments:

Service Representative: Tony Grbas

Date: 11/05/2019

WO #: 118



ATTACHMENT 8

Elizabethtown Regional Sewer Authority (ERSA) Report

2019 ANNUAL CHAPTER 94 REPORT

ELIZABETHTOWN REGIONAL
SEWER AUTHORITY

Lancaster County, Pennsylvania

March 2020



CHAPTER 94 MUNICIPAL WASTELOAD MANAGEMENT ANNUAL REPORT

For Calendar Year: 2019

- ☐ Permittee is owner and/or operator of a POTW or other sewage treatment facility
☒ Permittee is owner and/or operator of a collection system tributary to a POTW not owned/operated by permittee

GENERAL INFORMATION

Permittee Name:	Elizabethtown Regional Sewer Authority	Permit No.:	NA
Mailing Address:	235 ERSA Drive	Effective Date:	
City, State, Zip:	Elizabethtown, PA 17022	Expiration Date:	
Contact Person:	Nick Viscome	Renewal Due Date:	
Title:	Authority Manager	Municipality:	Elizabethtown
Phone:	717-367-5947	County:	Lancaster
Email:	nick@ersapa.com	Consultant Name:	CDM Smith

CHAPTER 94 REPORT COMPONENTS

1. Attach to this report a line graph depicting the monthly average flows (expressed in MGD) for each month for the past 5 years and projecting the flows for the next 5 years. The graph must also include a line depicting the hydraulic design capacity per the WQM permit. (25 Pa. Code § 94.12(a)(1))

Check the appropriate boxes:

- ☐ Line graph for flows attached (**Attachment**)
☐ DEP Chapter 94 Spreadsheet used (**Attachment**)
☒ Section 1 is not applicable (report is for a collection system).

2. Attach to this report a line graph depicting the monthly average organic loads (express as lbs BOD5/day) for each month for the past 5 years and projecting the organic loads for the next 5 years. The graph must also include a line depicting the organic design capacity of the treatment plant per the WQM permit. (25 Pa. Code § 94.12(a)(2))

Check the appropriate boxes:

- ☐ Line graph for organic loads attached (**Attachment**)
☐ DEP Chapter 94 Spreadsheet used (**Attachment**)
☒ Section 2 is not applicable (report is for a collection system).

3. If the DEP Chapter 94 Spreadsheet was not used to determine projections, discuss the basis for the hydraulic and organic projections. In all cases, include a description of the time needed to expand the plant to meet the load projections, if necessary, and data used to support the projections should be included in an appendix to this report. (25 Pa. Code § 94.12(a)(3))

Refer to the sections, figures, and tables titled "Hydraulic Loading" found on pages 1 through 3.

4. Attach a map showing all sewer extensions constructed within the past calendar year, sewer extensions approved or exempted in the past year in accordance with Act 537 and Chapter 71, but not yet constructed, and all known proposed projects which require public sewers but are in the preliminary planning stages. The map must be accompanied by a list summarizing each extension or project and the population to be served by the extension or project. If a sewer extension approval or proposed project includes schedules describing how the project will be completed over time, the listing should include that information and the effect this build-out-rate will have on populations served. (25 Pa. Code § 94.12(a)(4))

Check the appropriate boxes:

- ☒ Map showing sewer extensions constructed, approved/exempted but not yet constructed, and proposed projects attached (**Attachment B**)
- ☒ List summarizing each extension or project attached (**Page 9-10**)
- ☐ Schedules describing how each project will be completed over time and effects attached (**Attachment**)

Comments:

Refer to the sections titled "Extensions to the Sewer System During 2019" & "New Connections" on page 9 & 10, Tables 2 & 3 on pages 4 and 5 and to the Index Map in Attachment B.

5. Discuss the permittee's program for sewer system monitoring, maintenance, repair and rehabilitation, including routine and special activities, personnel and equipment used, sampling frequency, quality assurance, data analyses, infiltration/inflow monitoring, and, where applicable, maintenance and control of combined sewer regulators during the past year. Attach a separate sheet if necessary. (25 Pa. Code § 94.12(a)(5))

Refer to the section titled "Sewer System Monitoring" & "Maintenance, Repair and Rehabilitation" on pages 10 and 13 .

6. Discuss the condition of the sewer system including portions of the system where conveyance capacity is being exceeded or will be exceeded in the next 5 years and portions where rehabilitation or cleaning is needed or is underway to maintain the integrity of the system and prevent or eliminate bypassing, CSOs, SSOs, excessive infiltration and other system problems. Attach a separate sheet if necessary. (25 Pa. Code § 94.12(a)(6))

Check the appropriate boxes:

- ☒ System experienced capacity-related bypassing, SSOs or surcharging during the report year. On a separate sheet, list the date, location, and reason for each bypass, SSO or surcharge event.
- ☐ System did not experience capacity-related bypassing, SSOs or surcharging during the report year.

Comments:

Refer to sections "Conditions of the Wastewater Collection System", "Condition of the Pumping Stations" and "Plan to Reduce Projected Overloads" on pages 6, 13 & 14 . Attachment A should be referred to for the "I/I Identification and Removal Program". Attachment C of should be referenced for the "Annual Report on the Condition of Sewerage Facilities".

7. Attach a discussion on the condition of sewage pumping (pump) stations. Include a comparison of the maximum pumping rate with present maximum flows and the projected 2-year maximum flows for each station. (25 Pa. Code § 94.12(a)(7))

Check the appropriate boxes:

- ☐ The collection system does not contain pump stations
- ☒ The collection system does contain pump stations (Number – 15)
- ☒ Discussion of condition of each pump station attached (**Attachment C**)

8. If the sewage collection system receives industrial wastes (i.e., non-sanitary wastes), attach a report with the information listed below. (25 Pa. Code § 94.12(a)(8))

- a. A copy of any ordinance or regulation governing industrial waste discharges to the sewer system or a copy of amendments adopted since the initial submission of the ordinance or regulation under Chapter 94, if it has not previously been submitted.
- b. A discussion of the permittee's or municipality's program for surveillance and monitoring of industrial waste discharges into the sewer system during the past year.
- c. A discussion of specific problems in the sewer system or at the plant, known or suspected to be caused by industrial waste discharges and a summary of the steps being taken to alleviate or eliminate the problems. The discussion shall include a list of industries known to be discharging wastes which create problems in the plant or in the sewer system and action taken to eliminate the problem or prevent its recurrence. The report may describe pollution prevention techniques in the summary of steps taken to alleviate current problems caused by industrial waste dischargers and in actions taken to eliminate or prevent potential or recurring problems caused by industrial waste dischargers.

Check the appropriate boxes:

- ☐ Industrial waste report as described in 8 a., b. and c. attached (**Attachment**)
- ☐ Industrial pretreatment report as required in an NPDES permit attached (**Attachment**)

9. Existing or Projected Overload.

Check the appropriate boxes:

- ☐ This report demonstrates an existing hydraulic overload condition.
☐ This report demonstrates a projected hydraulic overload condition.
☐ This report demonstrates an existing organic overload condition.
☐ This report demonstrates a projected organic overload condition.

If one or more boxes above have been checked, attach a Corrective Action Plan (CAP) to reduce or eliminate present or projected overloaded conditions under §§ 94.21 and/or 94.22 (relating to existing overload and projected overload). (25 Pa. Code § 94.12(a)(9))

- ☐ Corrective Action Plan attached (**Attachment**)

10. Where required by the NPDES permit, attach a Sewage Sludge Management inventory that demonstrates a mass balance of solids coming in and leaving the facility over the previous calendar year.

- ☐ Sewage Sludge Management Inventory attached (**Attachment**)

11. For facilities with CSOs and where required by the NPDES permit, attach an Annual CSO Report (including satellite combined sewer systems).

- ☐ Annual CSO Report attached (**Attachment**)

12. For POTWs, attach a calibration report documenting that flow measuring, indicating and recording equipment has been calibrated annually. (25 Pa. Code § 94.13(b))

- ☐ Flow calibration report attached (**Attachment**)

RESPONSIBLE OFFICIAL CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Nick Viscome, Authority Manager

Name of Responsible Official

717-367-5947

Telephone No.



Signature

3/23/2020

Date

PREPARER CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared by me or otherwise under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Byrne E. Remphrey, P.E., BCEE

Name of Preparer

Signature

717-560-7500

Telephone No.

3/23/2020

Date

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Annual Chapter 94 Report

1.1 GENERAL

In January of 2012 West Donegal Township Authority (WDTA) and Mount Joy Township Authority (MJTA) combined their respective sanitary sewer systems to form the Elizabethtown Regional Sewer Authority (ERSA). ERSA provides wastewater conveyance services to portions of West Donegal Township, Mount Joy Township and a small portion of Conoy Township. The Authority's facilities consist of gravity sewers ranging in size from 8-in through 15-in, low pressure sewer mains ranging in size from 2-in through 3-in, force mains ranging in size from 4-in through 10-in, three metering chambers and fifteen sewage pumping stations originally designed for average daily flows of 20 to 980 gallons per minute (GPM). Wastewater from the ERSA service area is treated at the Borough of Elizabethtown Wastewater Treatment Plant (WWTP) located near the intersection of Amosite and Bainbridge Roads in West Donegal Township.

1.2 HYDRAULIC LOADING

The hydraulic loading graph was prepared from flow measurements that were continuously recorded at the Turnpike Road No. 2, Miller Road, Bossler Road No. 2 pumping stations and the Mill Road, Kiwanis and Radio Road metering chambers. Figure 1 shows the average daily flows and annual average flows for the past five years, annual average projected flows for the next five years and the ERSA allocated flow at the Elizabethtown Borough WWTP. These flows are also summarized in Table 1. The annual average daily ERSA flow for 2019 was 1.155 million gallons per day (MGD). The base flow used in the future flow projections is an average of the average daily flows over the last five years. This approach was taken to limit the fluctuation in flows based on wet or dry weather and provide the most accurate representation of future flows.

1.3 FUTURE CONNECTIONS

Table 2 lists all of the current or proposed developments that currently have plans on file with ERSA and the status of each development that has been granted capacity by ERSA as of the end of 2017. Table 3 presents projected future connections for the Authority.

Table 3 summarizes the projected connections for the ERSA system over the next five years. The projected annual growth rate as shown in Table 1 was obtained from the projections indicated on Table 3. The ERSA EDU has been calculated as 235 gpd, in accordance with Act 57 regulations. For planning purposes, the Authority is using 275 gpd/EDU, which is slightly conservative when compared with actual flows (170-200 gpd/EDU). This annual increase was then added to the previous year's flow to obtain projected flows beginning with the year 2019.

Figure 1

Elizabethtown Regional Sewer Authority
Hydraulic Loading

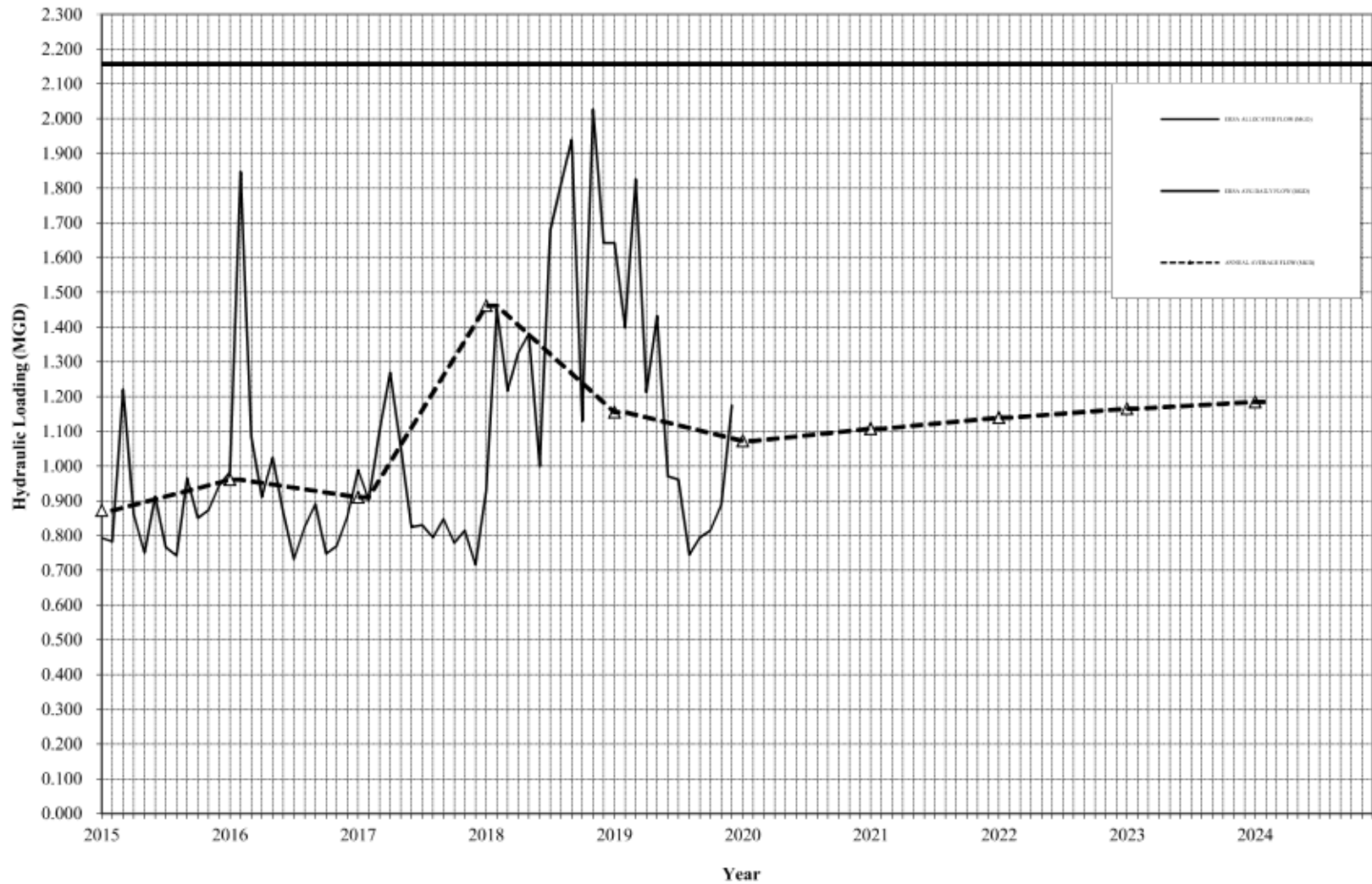


Table 1

**Elizabethtown Regional Sewer Authority
Hydraulic Loading**

Month	YEAR	TURNPIKE ROAD NO. 2 FLOW (MG)	MILLER ROAD FLOW (MG)	BOSSLER ROAD NO. 2 FLOW (MG)	MILL RD. METER FLOW (MG)	KIWANIS METER FLOW (MG)	RADIO RD. METER FLOW (MG)	UNMETERED CUSTOMERS (MG)	TOTAL ERS MONTHLY FLOW (MG)	DAYS/ MONTH	ERSA AVG DAILY FLOW (MG/D)	ANNUAL AVERAGE FLOW (MG/D)	ERSA ALLOCATED FLOW (MG/D)	ANNUAL GROWTH RATE (EDU%/YEAR)	PROJECTED GROWTH RATE (EDU%/YEAR)
January		1.523	8.392	2.677	1.951	4.123	4.989	0.928	24.582	31.000	0.793	0.872	2.157	19	
February		1.153	8.153	2.392	1.822	3.212	4.351	0.838	21.920	28.000	0.783		2.157		
March		3.289	11.355	4.404	2.731	7.300	7.810	0.928	37.816	31.000	1.220		2.157		
April		1.674	8.526	3.014	2.032	4.601	5.126	0.903	25.875	30.000	0.862		2.157		
May	2	1.066	8.412	2.617	1.859	3.831	4.573	0.933	23.291	31.000	0.751		2.157		
June	0	1.701	9.804	3.062	2.198	4.420	5.283	0.903	27.371	30.000	0.912		2.157		
July	1	1.183	8.578	2.602	1.806	3.992	4.618	0.977	23.755	31.000	0.766		2.157		
August	5	1.046	8.612	1.557	1.818	4.156	4.861	0.977	23.025	31.000	0.743		2.157		
September		1.033	8.149	2.409	1.765	5.095	5.532	0.945	28.929	30.000	0.964		2.157		
October		1.513	8.520	2.731	1.943	5.346	5.391	0.928	26.371	31.000	0.851		2.157		
November		1.413	8.163	2.676	1.748	5.109	5.206	0.898	26.211	30.000	0.874		2.157		
December		2.068	10.149	2.552	2.100	5.712	5.786	0.928	29.294	31.000	0.945		2.157		
January		2.254	9.819	3.201	2.039	6.463	5.745	0.933	30.454	31.000	0.982	0.901	2.157	40	
February		4.841	16.134	6.593	3.497	10.935	10.686	0.873	53.560	29.000	1.847		2.157		
March		2.411	11.083	4.431	2.230	6.172	6.369	0.933	33.577	31.000	1.083		2.157		
April		1.970	9.053	3.578	2.088	4.724	4.972	0.940	27.324	30.000	0.911		2.157		
May	2	2.714	10.555	4.474	2.138	5.934	4.950	0.971	31.735	31.000	1.024		2.157		
June	0	1.397	8.969	3.096	2.142	4.462	4.961	0.940	25.968	30.000	0.866		2.157		
July	1	1.335	8.335	2.819	1.639	3.741	3.846	0.987	22.702	31.000	0.732		2.157		
August	6	1.592	9.289	3.172	1.910	4.014	4.618	0.987	25.581	31.000	0.875		2.157		
September		1.164	8.392	2.546	1.554	3.602	3.500	0.956	26.713	30.000	0.890		2.157		
October		1.197	8.492	2.671	1.658	3.870	4.356	0.939	23.182	31.000	0.748		2.157		
November		0.977	8.393	2.688	1.569	3.736	4.841	0.908	23.112	30.000	0.770		2.157		
December		1.437	8.892	3.321	1.917	4.320	5.636	0.939	26.470	31.000	0.854		2.157		
January		2.159	10.089	3.661	2.143	5.291	6.379	0.922	30.643	31.000	0.988	0.910	2.157	18	
February		1.692	8.577	2.887	1.736	4.383	5.154	0.833	25.260	28.000	0.902		2.157		
March		3.055	10.632	4.242	2.295	6.175	6.814	0.922	34.135	31.000	1.101		2.157		
April		3.265	10.938	4.730	2.397	8.070	7.749	0.903	38.052	30.000	1.268		2.157		
May	2	2.574	9.812	4.010	2.351	6.246	6.785	0.933	32.711	31.000	1.055		2.157		
June	0	1.430	8.213	2.892	1.717	4.443	5.130	0.903	24.728	30.000	0.824		2.157		
July	1	1.623	8.681	2.927	1.836	4.546	5.206	0.933	25.752	31.000	0.831		2.157		
August	7	1.442	8.391	2.754	1.750	4.426	4.944	0.933	24.641	31.000	0.795		2.157		
September		1.637	8.427	2.670	1.762	5.033	4.996	0.903	25.427	30.000	0.848		2.157		
October		1.223	8.419	2.695	1.787	4.753	4.298	0.977	24.151	31.000	0.779		2.157		
November		1.449	8.651	2.739	1.743	4.967	3.956	0.945	24.449	30.000	0.815		2.157		
December		1.122	8.183	2.490	1.566	4.218	3.668	0.977	22.223	31.000	0.717		2.157		
January		1.865	10.280	3.285	2.137	5.526	4.838	0.922	28.854	31.000	0.931	1.461	2.157	144	
February		4.375	11.837	4.941	9.158	2.614	6.940	0.833	40.696	28.000	1.453		2.157		
March		4.827	11.065	4.677	7.876	2.491	5.886	0.922	37.744	31.000	1.218		2.157		
April		4.411	11.313	5.167	8.406	2.836	6.741	0.903	39.776	30.000	1.326		2.157		
May	2	4.115	11.855	5.982	9.285	2.987	7.645	0.933	42.802	31.000	1.381		2.157		
June	0	2.419	9.218	4.003	6.220	2.100	5.134	0.903	29.996	30.000	1.060		2.157		
July	1	3.236	17.055	5.372	11.060	2.915	11.471	0.933	52.042	31.000	1.679		2.157		
August	8	3.732	20.941	5.358	13.200	2.824	9.221	0.933	56.209	31.000	1.813		2.157		
September		4.099	19.841	5.613	13.335	2.906	10.847	0.903	58.144	30.000	1.938		2.157		
October		2.904	10.759	4.483	7.685	2.372	5.812	0.977	34.991	31.000	1.129		2.157		
November		6.124	18.189	7.870	14.060	3.562	10.025	0.945	60.774	30.000	2.026		2.157		
December		4.892	14.916	7.299	11.580	3.222	8.720	0.977	50.905	31.000	1.642		2.157		
January		4.668	14.948	7.596	3.449	11.176	8.099	0.922	50.909	31.000	1.642	1.155	2.157	96	
February		3.928	10.371	6.209	8.842	2.688	6.307	0.833	39.178	28.000	1.399		2.157		
March		4.922	14.791	7.632	12.266	7.188	8.846	0.922	56.566	31.000	1.825		2.157		
April		3.059	10.074	6.164	7.997	2.534	5.636	0.903	36.368	30.000	1.212		2.157		
May	2	4.047	11.927	6.888	10.377	3.093	7.123	0.933	44.388	31.000	1.432		2.157		
June	0	2.619	7.599	4.398	6.367	2.176	5.040	0.903	29.102	30.000	0.970		2.157		
July	1	2.003	9.222	4.137	6.099	2.161	5.216	0.933	29.771	31.000	0.960		2.157		
August	9	1.159	7.435	3.049	4.722	1.712	4.087	0.933	23.697	31.000	0.745		2.157		
September		1.145	8.120	3.032	4.616	1.741	4.288	0.903	23.845	30.000	0.795		2.157		
October		1.247	8.545	3.073	4.982	1.897	4.533	0.977	25.253	31.000	0.815		2.157		
November		1.883	8.290	3.430	5.599	1.948	4.584	0.945	26.679	30.000	0.889		2.157		
December		2.698	11.730	4.288	7.665	2.842	6.184	0.977	36.383	31.000	1.174		2.157		
2020												1.072	2.157		176
2021												1.108	2.157		131
2022												1.140	2.157		115
2023												1.166	2.157		95
2024												1.185	2.157		70

1 EDU = 275 gpd

Notes: (1) The projected annual average flow for 2020 was calculated based on annual flow averaged from 2015, 2016, 2017, 2018 and 2019.

Table 2

Elizabethtown Regional Sewer Authority
Development Status Report

Development	Total EDUs	Permits Issued Prior to 2019	Permits Issued In 2019	EDUs In Service	Estimated Capacity (GPD)	Unused Capacity (GPD)	Pumping Station/ Connection Point
Timber Villa - ALP	30	0	--	0	8,250	8,250	Boss. 2
M. Wenger Trust - Rheems Fire Co.	3	0	--	0	825	825	Miller
M. Wenger Trust - Martin Winters	3	0	--	0	825	825	Miller
Ketterline	13	0	--	2	3,575	3,025	Colebrook
Koser Subdivision	7	0	--	0	1,925	1,925	Turnpike 2
Hickory Run	12	0	--	0	3,300	3,300	
Radio Road Subdivision	45	0	--	0	12,375	12,375	Conn. Pt 3
Donegal Meadows	84	82	--	82	23,100	550	Nolt
Ed Hixon Subdivision	6	4	--	4	1,650	550	Nolt
Maple Glen	70	70	--	65	19,250	1,375	Boss. 1
Conoy Crossing	20	0	11	8	5,500	3,300	Connoy Interceptor
David Good Property	7	6	--	6	1,925	275	
West Ridge Estates Lot #111	2	1	--	1	550	275	Miller
Woods Edge	58	48	4	48	15,950	2,750	Miller
Bishop Woods (formerly Donegal Woods)	114	60	9	45	31,350	18,975	Boss. 1/Wilkens
Summitt at Stone Mill	23	8	6	21	6,325	550	Miller
Sylvester Walters	4	0	--	0	1,100	1,100	Pioneer Hills
Dave Abel Property	4	3	--	3	1,100	275	Conn. Pt 4
Shellenberger Property	3	0	--	1	825	550	Colebrook
Stoney Brook	317	64	16	68	87,175	68,475	Miller
Featherton Crossing	361	265	15	256	99,275	28,875	Schwanger
Westbrooke IV	221	50	--	0	60,775	60,775	SchwangerColebrook
Hoffler Tract	55	0	--	0	15,125	15,125	Schwanger
Sheaffer Ridge Condos	18	4	--	13	4,950	1,375	Schwanger
Miscellaneous Bossler #1	4	4	1	4	1,100	0	Boss. 1
Miscellaneous Bossler #2	1	1	--	1	275	0	Boss. 2
Miscellaneous Cameron	2	0	--	2	550	0	Cameron
Miscellaneous Colebrook	4	5	--	3	1,100	275	Colebrook
Miscellaneous Conewago	1	1	--	0	275	275	Conewago
Miscellaneous Hershey	3	3	--	3	825	0	Hershey
Miscellaneous Miller Residential	60	60	--	52	16,500	2,200	Miller
Additional Miller Nonresidential (1)	11 (1)	11	--	7	3,025	1,100	Miller
Miscellaneous Nolt	1	1	--	0	275	275	Nolt
Miscellaneous Turnpike #1	1	1	--	0	275	275	Turnpike 1
Miscellaneous Wilkens	1	2	--	1	275	0	Wilkens
Miscellaneous Connection Points	20	10 (2)	10	15	5,500	1,375	
	1,589	764	72	711	436,975	241,450	

Notes:

- (1) EDUs represent 3 EDUs from Longenecker's Hatchery; 1 EDU from Risser Automotive; 1 EDU from Nitrate Removal System added to Lot 15 of Timber Villa; 1 EDU from home salon; 1 EDU for Waste Management office; 1 EDU for Kettering Medical office; 1 EDU for Companion Animal Hospital; 1 EDU for Member's 1st FCU.
- (2) Permit #4046 for Ironstone Ranch represents 4 EDUs
- (3) Flow is based upon 275 gpd/EDU.

TABLE 3

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
PROJECTED FUTURE CONNECTIONS

Development	Total Planned EDUs	EDUs In Service 1/1/2019	EDUs Remaining 1/1/2019	EDUs Connected 2019	EDUs Remaining 12/31/2019	Projected EDU connections				
						2020	2021	2022	2023	2024
Timber Villa - ALP	30	0	30	0	30	--	--	15	15	0
M. Wenger Trust - Rheems Fire Co.	3	0	3	0	3	--	--	--	--	--
M. Wenger Trust - Marlin Winters	3	0	3	0	3	3	--	--	--	--
Ketterline	13	0	13	2	11	5	6	--	--	--
Koser Subdivision	7	0	0	0	0	7	--	--	--	--
Hickory Run	12	0	12	0	12	6	6	--	--	--
Radio Road Subdivision	45	0	45	0	45	15	15	15	--	--
Donegal Meadows	84	82	2	0	2	2	--	--	--	--
Ed Hixon Subdivision	6	4	2	0	2	3	--	--	--	--
Maple Glen	70	65	5	0	5	5	--	--	--	--
Conoy Crossing	20	0	20	8	12	12	--	--	--	--
David Good Property	7	6	1	0	1	1	--	--	--	--
West Ridge Estates Lot #111	2	1	1	0	1	1	--	--	--	--
Woods Edge	58	40	18	8	10	5	5	--	--	--
Bishop Woods (formerly Donegal Woods)	114	36	78	9	69	15	15	15	15	15
Summitt at Stone Mill	23	15	8	6	2	2	--	--	--	--
Sylvester Walters	4	0	4	0	4	--	4	--	--	--
Dave Abel Property	4	2	2	1	1	1	--	--	--	--
Shellenberger Property	3	1	2	0	2	1	1	--	--	--
Stoney Brook	317	40	277	28	249	25	25	25	25	25
Featherton Crossing	361	233	128	23	105	25	20	20	20	20
Westbrooke IV	221	0	221	0	221	10	10	10	10	10
Hoffer Tract	55	0	55	0	55	15	15	15	10	--
Sheaffer Ridge Condos	18	8	10	5	5	3	2	--	--	--
Miscellaneous Bossler #1	4	3	1	1	0	--	--	--	--	--
Miscellaneous Bossler #2	1	1	0	0	0	--	--	--	--	--
Miscellaneous Cameron	2	2	0	0	0	--	--	--	--	--
Miscellaneous Colebrook	4	3	1	0	1	1	--	--	--	--
Miscellaneous Conewago	1	0	1	0	1	1	--	--	--	--
Miscellaneous Hershey	3	3	0	0	0	--	--	--	--	--
Miscellaneous Miller Residential	60	52	8	0	8	5	3	--	--	--
Additional Miller Nonresidential (1)	11	7	4	0	4	2	2	--	--	--
Miscellaneous Nolt	1	0	1	0	1	1	--	--	--	--
Miscellaneous Turnpike #1	1	0	1	0	1	1	--	--	--	--
Miscellaneous Wilkens	1	1	0	0	0	--	--	--	--	--
Miscellaneous Connection Points	20	10	10	5	5	3	2	--	--	--
Total EDUs	1589	615	967	96	871	176	131	115	95	70

Notes:

- (1) EDUs represent 3 EDUs from Longenecker's Hatchery; 1 EDU from Risser Automotive; 1 EDU from Nitrate Removal System added to Lot 15 of Timber Villa; 1 EDU from home salon; 1 EDU for Waste Management office; 1 EDU for Kettering Medical office; 1 EDU for Companion Animal Hospital; 1 EDU for Member's 1st FCU.
- (2) Flow is based upon 275 gpd/EDU.

1.4 PLAN TO REDUCE PROJECTED OVERLOAD CONDITIONS

1.4.1 Sewage Treatment Capacity Allocation

The Authority participated in the upgrade and expansion of the Elizabethtown Borough WWTP from 3.0 MGD to 4.5 MGD. The expansion project provided for an increase in the reserved capacity for ERSA to its current 2.157 MGD (0.811MGD from the former WDTA and 1.346 MGD from the former MJTA). The plant expansion eliminated the projected overload condition and allowed the Authority to grant capacity for future requests. Figure 1 shows that projected annual average ERSA flows will not exceed the 2.157 MGD hydraulic capacity allocation during the next five years.

WDTA and MJTA both negotiated an amendment to their respective Intermunicipal Agreements with Elizabethtown Borough. The intent of this amendment was to incorporate provisions related to new nitrogen and phosphorous nutrient loading requirements associated with the Borough's NPDES permit. Elizabethtown Borough and ERSA met in 2018 to discuss ERSA's allocation agreement and ensure their capacity would not exceed compliance. The Borough and ERSA determined that their capacity would not exceed its allocation at the treatment plant or its conveyance allocations with the Elizabethtown Borough system during the next five years. The agreement was finalized in Fall 2018 and includes procedures for capital project funding for the shared facilities.

In recent years, the Borough of Elizabethtown identified a projected hydraulic overload within its Radio Road Interceptor. It is worth noting that ERSA has a conveyance allocation within this Interceptor (noted as Connection Point #3). Recent flow records, including a flow monitoring study performed by the Borough in 2016, indicate that the Authority is well within its average daily flow conveyance allocation. ERSA has been made aware of several hundred EDUs worth of potential development tributary to this Interceptor. ERSA understands that the Borough has investigated the Interceptor and identified multiple defects that will require a combination of repair and replacement to address, and that an improvement project would be performed as needed to accommodate development and conveyance needs. It is anticipated that the Borough and ERSA will determine in the near future what repairs and improvements are required to meet long-term development needs.

1.4.2 Infiltration and Inflow Program Status Report

ERSA continues to perform I/I investigation and elimination work. Attachment 1 contains a report on the I/I removal activities in progress.

As a result of significant and persistent wet weather during 2018, the Authority televised the Nolt Avenue Pumping Station drainage basin in December 2018. The televising identified multiple broken laterals and leaking manholes, which were promptly repaired. In 2019, the Authority focused its investigative efforts in the Bossler Road No. 1, Turnpike Road No. 1 and 2 and Wilkens Street basins, repairing approximately 200 LF of 8" main and repairing several broken laterals.

1.4.3 Future Planning Needs

ERSA participated with the Borough of Elizabethtown to expand the Elizabethtown WWTP. There is an Intermunicipal Agreement amongst the parties that established the various contributions to be made by each of the parties for the upgrade and expansion of the treatment plant. Additional treatment capacity secured by ERSA in the Elizabethtown WWTP will provide sufficient hydraulic capacity for projected growth within West Donegal and Mount Joy Townships. ERSA also continues to work toward the identification and reduction of excessive I/I.

During Fall 2004, the Authority completed construction of a force main project that diverted flow from the Bossler Road No. 1 pumping station away from the Turnpike Road No. 1 and No. 2 pumping stations. Approximately 1,380 feet of force main were installed to convey the diverted flow to the Bossler Road No. 2 drainage basin. As a result of this project, overflow conditions previously experienced at the Turnpike Road No. 2 pumping station have been eliminated. In addition, the pumping capacity of the Bossler Road No. 1 pumping station was increased as a result of a reduction in headloss from pipe friction. This increase in pumping capacity has improved the ability of the Bossler Road No. 1 pumping station to convey wet weather flows. The original force main from the Bossler Road No. 1 pumping station to the Turnpike Road No. 1 drainage basin can still be utilized to provide flexibility in operations and maintenance.

The Authority has also initiated the development of a capital improvement plan to address the need for upgrading sewage conveyance facilities. The Authority performed an initial evaluation of the impact of projected sewage flows identified in the Township's draft Act 537 Plan. As a result of this evaluation, the Authority identified three pumping stations that require expansion: Bossler Road No. 1, Bossler Road No. 2, and Miller Road. In addition, the Authority recognizes that the age of many of the Authority's other pumping stations warrants a more complete review of the condition of those facilities to determine if upgrades are necessary. Therefore, the Authority continually evaluates potential upgrades to extend the useful life of these pumping stations. Following the merger and formation of ERSA, the Authority updated its capital improvements plan in 2012 to reflect the future needs for the combined service area. The Authority continues to reevaluate the capital improvement plan on a regular basis as development dictates.

During 2005, the Authority executed a developer's agreement for the proposed Bishop Woods (formerly Donegal Woods) development and is in the beginning stages of construction. The agreement includes provisions for significant upgrades and expansions of the Bossler Road No. 1 and No. 2 pumping stations and respective force mains, as well as the expansion of a section of gravity sewer interceptor. However, the concept of the Bishop Woods development was revised during 2009 to a significantly smaller project (460 units reduced to 114 units). As a result, it was not financially viable to proceed with the same concept for the expansion of Authority facilities. Therefore, the Authority negotiated revised developer's agreements for the Bishop Woods and Timber Villa -ALP projects, which included provisions for smaller scale, phased upgrades and expansions to the Bossler Road No. 1, Bossler Road No. 2 and Turnpike Road No. 2 pumping stations. Improvements to the Bossler Road No. 2 pumping station, which were required prior to the construction of the Timber Villa-ALP project and the

completion of the first phase of Bishop Woods (approximately 31 EDUs), were completed in 2015. In conjunction with the construction of the third phase of Bishop Woods (approximately 28 EDUs), the Authority is planning to make improvements to the Bossler Road No. 1 Pumping Station. Design and permitting efforts were completed in 2019 for the Bossler Road No. 1 improvements and currently is in the construction phase. Finally, prior to the construction of the remaining EDUs of Bishop Woods, the Authority will make improvements to the Turnpike Road No. 2 Pumping Station, the design for which is anticipated to commence in 2020.

In 2006 the Authority constructed a new 10-inch force main for the Schwanger Road Pumping Station, which was put into service in 2007 and discharges to the Kiwanis metering chamber. Additionally, due to the increased pressure to develop the area within the Schwanger Road Pump Station drainage basin, the Schwanger Road Pump Station expansion project was completed in late 2007. The upgraded pump station facility is currently operational with an expanded capacity of 1.4 MGD. This expansion will address the growth in the Schwanger Road Drainage basin in the next 20 years.

In 2010 the 6-inch ductile iron pipe (DIP) force main from Hershey Road Pumping Station failed at two (2) locations along S.R. 743 near Route 283. Both failures were repaired, but an investigation found DIP corrosion on the pipe exterior which led to ERSA's decision to contract for replacement of approximately 900 feet of force main and 1,200 feet of 8-inch gravity sewer primarily within PennDOT right-of-way of Route 283. Construction began in 2010 and was completed in 2011.

The Authority has also identified that its Miller Road PS will need to be expanded to accommodate all tributary development located in West Donegal and Mount Joy Townships. Based upon current development trends in the ERSA system, the Authority began survey and planning of the improvements to the Miller Road PS and force main in 2017. Design is anticipated to be completed in 2020, with construction of the improvements following thereafter. The expansion and upgrade of the Miller Road Pumping Station was approved during the update of the Intermunicipal Agreement between ERSA and Elizabethtown Borough.

As noted above, the Authority has been informed of potential development that would be tributary to the Borough of Elizabethtown's Radio Road Interceptor, a facility presently under Corrective Action Plan by the Borough. The Borough performed a flow monitoring study in 2016 to confirm actual peak hour flow contributions to the Interceptor from the ERSA and Borough systems, respectively. The Borough's preliminary report indicated that ERSA can accommodate some projected development within its conveyance allocation in the Radio Road Interceptor, but it also noted the need for a combination of rehabilitation and replacement to address known defects in the Interceptor. It is anticipated that ERSA and the Borough will agree upon the scope of an improvement project as potential development and the benefits of I/I reduction efforts are better understood.

In addition, depending on how projected development connects to the existing ERSA system, it is also possible that the Hershey Road Pumping Station would be impacted and require

upgrades. ERSA will continue to monitor the projected development and the Borough's evaluation of the Radio Road Interceptor as part of its own planning efforts.

1.5 INDUSTRIAL WASTE REPORT

WDTA was requested by the Borough of Elizabethtown to provide a status report on the Authority's Industrial Waste Program and a list of current industrial waste permittees. During its formation, the Authority originally adopted an Industrial Waste Resolution, modeled after the Borough's Industrial Waste Ordinance in place at that time. WDTA also agreed to adopt a revised Industrial Waste Permit/ Application Program similar to the latest version currently used in the Borough. WDTA identified and met with potential industrial waste dischargers. The industrial facilities did not contribute wastes that the Authority found to be harmful or have any deleterious effect upon the wastewater conveyance or treatment system. MJTA incorporated the Borough of Elizabethtown Industrial Ordinance by resolution in 2006.

Currently under the jurisdiction of ERSA, new non-residential customers with the potential to discharge industrial waste are required to provide information relative to the nature of their business and characteristics of the waste. Following a review of the application, the Authority will determine whether an Industrial Waste Permit is required. In the event a permit is issued, it will specify the nature and frequency of sampling required to insure compliance with the industrial waste program. The permitted user will then submit quarterly reports to the Authority, who in turn will provide the Borough with an annual summary of industrial waste reports. Should the Borough revise their current industrial waste ordinance, the Authority will review and update their resolution to be consistent with the Borough's prior to implementation.

In 2019 ERSA renewed two industrial wastewater permits from non-residential customers Greiner Industries and Wenger Feed Mills for a 5-year term. The renewal process involved a site inspection of the facility as well as sampling of their wastewater discharge to ensure compliance.

- On June 27, 2019 CDM Smith and ERSA took part in a site inspection of the Wenger Feed Mill's Facilities.
- On July 22, 2019 CDM Smith and ERSA took part in a site inspection of the Greiner Industries Facilities.

On July 24, 2019 as part of an O&M agreement between Advanced disposal (previously Veolia) annual sampling of industrial waste discharge took place. On June 30, 2021 the industrial waste permit for Advanced Disposal is set to expire.

1.6 EXTENSIONS TO THE SEWER SYSTEM DURING 2019

Extensions to the Authority's system for the Bishop Woods Phases 2 & 3, StoneyBrook Phases 1B & 1C and Featherton Crossing Phase IV developments were initiated in 2018 but none of

these extensions have been dedicated to date. The other following developments which have not begun construction or are awaiting dedication include Elizabethtown Crossing, Woods Edge developments, Radio Road Subdivision, Koser Subdivision, Ketterline Subdivision, and Hickory Run subdivision.

Other potential development that could begin in 2020 include the Sylvester Walters, Hoffer Tract, Westbrook IV and StoneyBrook Phase 2 developments. All of the above referenced developments are identified on the Index Map attached to this report.

1.7 NEW CONNECTIONS

During calendar year 2019, 96 EDUs were connected to the ERSA service area. The number of EDUs now being serviced is approximately 5,245 EDUs as of the end of 2019.

Table 2 includes a listing of all of the developments which currently have preliminary or final development plans on file with ERSA and proposed developments that have requested capacity. This table is updated on a regular basis and is provided as part of this report.

1.8 SEWER SYSTEM MONITORING

The ERSA wastewater conveyance system includes fifteen sewage pumping stations and four-meter pits. All sewage flows from the Nolt Road, Colebrook Road, Cameron Street, and Pioneer Hills pumping stations are discharged to the Miller Road pumping station. All flows from the Turnpike Road No. 1 and Wilkens Street pumping stations are discharged to Turnpike Road No. 2 pumping station. The majority of the flow from the Bossler Road No. 1 pumping station is discharged to the Bossler Road No. 2 pumping station, but a portion of the flow is conveyed to the Turnpike Road No. 1 pumping station. Wastewater from the Miller Road and Bossler Road No. 2 pumping stations are pumped directly to the Elizabethtown WWTP. Flow from Conewago Pumping Station goes to Aberdeen Pumping Station, which goes to Hershey Road Pumping Station, which goes to the Radio Road metering chamber. Wastewater from Turnpike Road No. 2 pumping station is pumped to the Masonic Village interceptor for conveyance to the Elizabethtown WWTP. The total flow from ERSA service area is determined by combining flow meter readings from the Miller Road, Turnpike Road No. 2, Bossler Road No. 2, Mill Road, Radio Road and Kiwanis meter readings; and unmetered connections. Flows are also metered at the Schwanger Road and Hershey Road Pumping Stations. The Authority's system operators record these flow meter readings on a daily basis.

Flows at 10 of the pumping stations are not metered. Estimates of flows from these stations were made using pump run hour meter readings and the pumping capacities of the pumps at

the various stations. Table 4 summarizes the average daily and maximum monthly average pumping station flows for 2019, the pumping capacities, and the projected 2-year maximum hourly flow for each of the pumping stations. A peaking factor had to be established before the 2-year maximum hourly flow could be calculated. For the Bossler Road No. 1, Bossler Road No. 2, Turnpike Road No. 1, Turnpike Road No. 2, Wilkens Street, and Miller Road pumping stations, a peaking factor was estimated based on historical flows records. A

peaking factor of 2.5 was assumed for the remaining stations. The projected 2-year maximum hourly flow for each station was obtained in the following manner. First, the number of EDUs projected to be connected over the next two years was determined for each development in Table 3. The total number of EDUs over the next two years entering a particular pumping

station was multiplied by 275 GPD per EDU to obtain the projected two-year increase in flow at each pumping station. The 2-year increase was then added to the average daily flows to obtain a 2-year average daily flow. Next, the 2-year average daily flow was multiplied by the peaking factor to obtain the projected 2-year maximum hourly flow.

As can be seen on Table 4, the projected 2-year peak hourly flow at the Bossler Road No. 1, Hershey Road, Turnpike Road No. 2, Nolt Road and Miller Road pumping stations are approaching the respective tested capacities of the stations. In the Nolt Road drainage basin the Authority conducted an I/I investigation in 2013 and concluded the major source of excessive flow is due to homeowner sump pumps. It should be noted that the Nolt Road drainage basin has effectively been “built” out. In addition, the Authority is nearly complete with design for the Miller Road and Bossler No. 1 pumping stations is currently under construction. For 2019, the Authority will be finalizing improvement designs for Miller Road Pumping Station along with design of improvements to Turnpike Rd No. 2 Pumping Station being initiated. Lastly, the Authority will continue to monitor the Hershey Road pumping station and coordinate its expansions with proposed development in West Donegal and Mount Joy Townships.

As stated previously, the Authority recognizes that additional I/I removal efforts are necessary. During 2004, the Authority initiated a sewer inspection program whereby a portion of the system is visually inspected each year. This program includes the televising of sewer mains and laterals and wet-weather manhole inspections. The Authority also coordinated the areas to be televised with the Township’s road paving program so that sewers located within identified roads are inspected prior to repaving. In 2018 I/I investigations took place in the Nolt Avenue drainage area, as well as manhole inspections throughout the system. The Authority continued I/I investigations with the Bossler No. 1, Turnpike No. 1, and Wilkens Street drainage areas in 2019, including the replacement of approximately 200 LF of 8-in sewer main and several laterals, along with inspection of manholes throughout the system. In 2020, additional I/I investigations are scheduled to take place in Conewago and Hershey Road drainage basins.

Table 4

Elizabethtown Regional Sewer Authority
Recorded Pumping Station Flows

PUMPING STATION	DESIGN PUMP CAPACITY		TESTED PUMP CAPACITY			2019 AVERAGE DAILY FLOW (MGD)	2019 MAX. MONTHLY AVERAGE (MGD)	PROJECTED 2-YEAR MAX. HOURLY FLOW (MGD)
	(MGD)	(GPM)	(MGD)	(GPM)				
Mill Road	0.288	200	0.433	301	(1)	0.098	0.156	0.245
Aberdeen	0.130	90	0.288	200	(4)	0.027	0.043	0.068
Conewago	0.029	20	0.071	49	(4)	0.008	0.012	0.021
Hershey Road	0.259	180	0.235	163	(1)	0.098	0.125	0.245
Schwanger Road	1.411	980	-	-	(3)	0.140	0.196	0.418
Bossier Road No. 1	0.295	205	0.304	211	(4)	0.077	0.142	0.313
Turnpike Road No. 1	0.158	110	0.248	172	(4)	0.036	0.065	0.111
Wilkens Street	0.144	100	0.232	161	(4)	0.023	0.041	0.124
Turnpike Road No. 2	0.243	169	0.259	180	(1)	0.091	0.159	0.408
Bossier Road No. 2	0.576	400	-	-	(2)	0.164	0.246	0.503
Pioneer Hills	0.288	200	0.212	147	(4)	0.015	0.029	0.040
Nolt Road	0.144	100	0.213	148	(1)	0.065	0.089	0.141
Colebrook Road	0.576	400	0.639	444	(1)	0.091	0.141	0.238
Cameron Street	0.742	515	0.881	612	(1)	0.145	0.215	0.373
Miller Road	1.022	710	1.123	780	(1)	0.337	0.484	0.945

Notes:

- (1) Tested pump capacity performed on January 10, 2019.
 (2) Pump capacity test not performed since pumping station upgrade in December, 2015.
 (3) Schwanger Rd pump capacity test not completed because of the low amount of capacity being used and this station monitors flow via a totalizer instead of pump hours.
 (4) Tested pump capacity performed on January 20-21 and February 27, 2015.

1.9 SANITARY SEWAGE OVERFLOWS

In 2019 the authority's system experienced one system overflow that was a direct result of inflow and infiltration from excessive rainfall. The Authority has sought to address these overflows through their annual system televising and rehabilitation efforts. The authority is currently upgrading their Bossler No. 1 Pumping station and the Authority intends to upgrade their Miller Road and Turnpike No. 2 pumping stations within the next 2-years to address projected capacity needs. The Authority will also continue its efforts to reduce I/I in the system. A detailed report regarding the I/I investigations and reparations is included with this report.

1.10 MAINTENANCE, REPAIR AND REHABILITATION

The ERSA system operators perform normal operation and maintenance of all pumping stations and a summary of recent repair efforts can be found in Attachment 3. It should be noted that several of the Authority's pumping stations are at or near their predicted design life. Though maintenance and major repair items have been limited to date, the frequency of repairs has been increasing, and there is the potential for major repair and rehabilitation items as the pumping stations continue to age. The Authority should expect to spend more time and money to maintain the aging pumping stations and collection system. As stated previously, the Authority has evaluated the pumping stations to identify the need for upgrade and expansion of facilities and is continuing its I/I identification and removal program. Continued maintenance beyond this program is critical to the overall effectiveness of the system.

In 2015, ERSA completed construction of and relocated to a new office and maintenance facility that centralizes day-to-day operation of the system near the geographic center of its service area.

In 2018, ERSA continued to address day to day issues in the system. The more notable repairs included the installation of manhole inserts, manhole liners in two locations, and the repair of four broken laterals.

In 2019, ERSA continued to address day to day issues in the system. The more notable repairs included the installation of manhole inserts, manhole liners in two locations, manhole grout repair, the repair of several broken laterals and the replacement of 200 LF of crushed sewer main. These repairs help to address the excessive I/I of the system and achieve the Authority's long-term plan to reduce the I/I of the system and lower treatment costs.

1.11 CONDITION OF THE WASTEWATER COLLECTION SYSTEM

The majority of the ERSA wastewater collection system was constructed from the late 1970's to the late 1980's and is generally in fair to good condition. Certain parts of the sewer system

have experienced infiltration and inflow problems during excessive wet weather periods. The Authority's I/I program is discussed in a previous section of this report.

1.12 CONDITION OF THE PUMPING STATIONS

All of the pumping stations in the ERSA service area are in fair to good condition. Extreme weather events in recent years have raised the average daily flows at the pumping stations, and without adjusting peaking factors a few of the pumping stations are nearing their tested pump capacity in the next two years. The Authority has plans to upgrade and expand several stations (Bossler Road No. 1, Turnpike Road No. 2 and Miller Road) in conjunction with ongoing development, as outlined above, and all stations will continue to be monitored. It appears that the Bossler Road No. 1 force main relocation project and the CIPP lining project in the Turnpike Road No. 2 drainage have helped to address earlier overload condition at the Turnpike Road No. 2 Pumping Station, but the Authority will continue to pursue manhole rehabilitation and potentially service line inspections to further improve the condition of the facilities. An Annual Report on Condition of Sewerage Facilities is included in Attachment 3 of this report.

Attachment A

I/I Identification and Removal Program

(Immediately following this page)

Elizabethtown Regional Sewer Authority

I/I IDENTIFICATION AND REMOVAL PROGRAM

I/I Removal Plan Update – March 2020

Manhole Inspections and Repairs

The Authority has installed manhole inserts at key locations that were witnessed to have substantial inflow during rain events. The Authority's long-term goal is to install inserts in all manholes located in paved areas.

The Authority performed a post-rehabilitation flow monitoring program in 2003 in conjunction with the CAP. The results of the post-rehabilitation flow monitoring indicated that certain parts of the sewer system require further I/I investigation and rehabilitation. Therefore, the Authority performed additional wet weather manhole inspections to identify areas of excessive I/I. During 2003, the Authority identified and repaired seven leaking manholes discovered in the Bossler Road No. 1 and Turnpike Road No. 2 basins. During 2004, the Authority repaired six leaking manholes identified in the Nolt Road drainage basin. The Authority monitored I/I in the Bossler Road No. 1 drainage basin during 2009 by visually inspecting the manholes. The Authority continued to identify manhole leaks grouting manholes as needed and installing manhole inserts where missing throughout the system during 2019.

The Authority intends to continue to inspect manholes for defects and incorporate repairs into a rehabilitation project during 2020.

House Inflow Inspections

Authority personnel plan to perform house inspections to confirm that illegal connections have been disconnected. In order to enforce sump pump removal, the Authority adopted a resolution that prohibits discharge of any source other than permitted sanitary sewer to the Authority conveyance system and imposes financial penalties that increase with each quarter that an illegal discharge is not properly terminated. In 2019, the Authority focused on the Bossler Road No. 1, Turnpike Road No. 1, and Wilkens Street drainage basins. In 2020, the authority intends to focus on the Conewago and Hershey road drainage basin.

Sewer Televising and Repair

The Authority has a sewer televising program in which they annually televise a section of the sewer system so that every 5 to 10 years, the entire sewer system is televised. As a result of this televising, the Authority identifies areas where sewer line remedial activities are required.

In 2010 the Authority televised approximately 4,700 linear feet of truss pipe in the Bossler No. 1 drainage basin. Based upon the results of the televising, the Authority rehabilitated approximately 4,350 linear feet of pipe with cured-in-place pipe (CIPP) which has shown to have significantly reduced I/I within the drainage basin.

In 2011 the Authority purchased a portable flow monitoring device, a “flow poke,” to monitor I/I in the entire Turnpike Road No. 2 drainage basin. Based on this I/I investigation the Authority rehabilitated approximately 6,642 LF of truss pipe and 85 laterals utilizing CIPP technology which has shown reduction in I/I throughout the basin.

In late 2013 and early 2014, the Authority investigated the flow in the sewers along Mt. Gretna Road and within the Nolt Ave. Pumping Station drainage basin to develop a sense of the I/I present in the area and make repair decisions based on the findings of the investigation. Preliminary indications are that there are likely sources of I/I in the sewers in and around Mt. Gretna Road.

In late 2018, the Authority again investigated the Nolt Ave. drainage basin and located two broken laterals and two leaking manholes. The Authority promptly repaired the defects, and wet weather flows have since improved at the station.

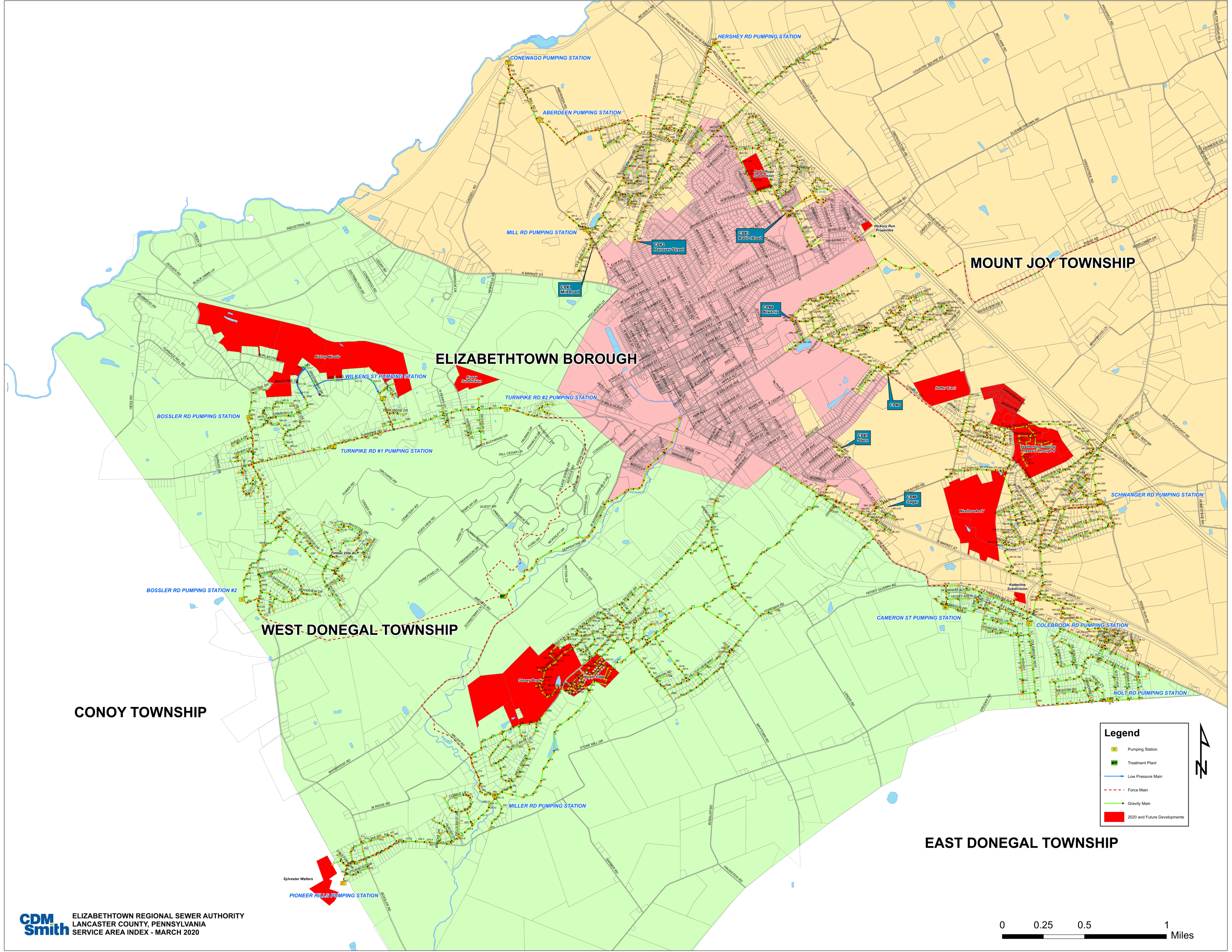
In 2019, the authority investigated the Bossler Road No. 1, Turnpike Road No. 1, and Wilkens Street drainage basins. The authority located three leaking manholes, one broken lateral and a crushed section of mainline. The Authority repaired the leaks and noticed a reduction of wet weather flows at the stations.

In 2020, additional I/I investigations are scheduled to take place in Conewago and Hershey Road drainage basins.

Attachment B

Master Sewer Index Map

(Immediately following this page)



Attachment C

Annual Report on the Condition of Sewerage Facilities
(Immediately following this page)

ELIZABETHTOWN REGIONAL AUTHORITY

Lancaster County, Pennsylvania

Annual Report on the Condition of Sewerage Facilities

March 2020

GENERAL

On February 13, 2020, Byrne Remphrey and Abraham King of CDM Smith Inc. reviewed the condition of the Elizabethtown Regional Sewer Authority's pumping stations and sewer system. The following report summarizes the review.

PUMPING STATIONS

Mill Road

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.098 MGD and the maximum monthly average flow was 0.156 MGD. The design capacity of this station is 0.433 MGD.

The Authority completed the following items during 2019:

1. New vent pipe on wet well installed.
4. Clearances were adjusted on pumps.
5. Motor was replaced on one pump.
6. New belts were installed
7. New 100-amp breaker installed.
8. Pumps were serviced.
9. Belts were laser aligned.
10. New piping and check valves were installed.
11. New soft start was installed.
12. New ventilation fan was installed in drywell.
13. New motor control relays were installed.

Aberdeen

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.027 MGD and the maximum monthly average flow was 0.043 MGD. The tested capacity of this station is 0.288 MGD.

The Authority completed the following items during 2019:

1. Grouting was performed in the valve pit to reduce I/I.
2. Replaced all floats.
3. Generator transfer switch was repaired.
4. Installed new automatic transfer switch.

Valve vault should be cleaned, and mechanical piping should be coated.

Conewago

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.008 MGD and the maximum monthly average flow was 0.012 MGD. The tested capacity of this station is 0.071 MGD.

The Authority completed the following items during 2019:

1. Block heater replaced on generator.
2. New breakers installed in switch panel.
3. Three new resistors installed on generator.
4. New APC battery backup installed.
5. New 24-volt battery tender installed for generator.
6. Battery was replaced for generator.
7. Omni site crystal ball alarm installed.
8. All floats replaced.

Hershey Road

This station is in good condition and operating satisfactorily. The 2018 average daily flow at this station was 0.098 MGD and the maximum monthly average flow was 0.125 MGD. The design capacity of this station is 0.235 MGD.

The Authority completed the following items during 2019:

1. Replaced motor on one pump.
2. New motor control relays were installed.
3. All floats cleaned.
4. Transducer cleaned.
5. New hour meter installed.
6. Adjusted level transducer.
7. Installed new fan motor in generator building.

Louvers on generator building should be cleaned and painted.

Schwanger Road

This station is in good condition and operating satisfactorily. The 2018 average daily flow at this station was 0.140 MGD and the maximum monthly average flow was 0.196 MGD. The design capacity of this station is 1.411 MGD.

The Authority completed the following items during 2019:

1. New suction site glass installed on pumps
2. Replaced omni site battery.

3. Replaced alternating relay.
4. Installed new motor contactor kit on all pumps.
5. Replaced check valve.

Discharge should be cleaned and recoated.

Bossler Road No. 1

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.077 MGD and the maximum monthly average flow was 0.142 MGD. The tested capacity of this station is 0.304 MGD. The tested capacity of this station exceeds the present maximum flows but does not surpass the projected 2-year max flow of 0.313 MGD. The projected 2-year max includes projected developments. An upgrade is currently underway for Bossler Road No. 1 pumping station to address projected capacity needs. The Authority will also continue its efforts to reduce I/I in the system.

The Authority completed the following items during 2019:

1. Replaced roll pins on check valve arm.
2. Installed new generator.

Some post supports on site fencing are exposed due to streambank erosion.

This site is currently being upgraded per the Authority's capital project plan to address capacity and I/I issues.

Turnpike Road No. 1

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.036 MGD and the maximum monthly average flow was 0.065 MGD. The tested capacity of this station is 0.248 MGD.

The Authority completed the following items during 2019:

1. Installed new 100 (3) pole breakers.

Some post supports on site fencing are exposed due to streambank erosion.

A few louver slats on generator building are out of place.

Paint is missing and showing signs of rust on pump #2 and should be recoated.

Wilkens Street

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.023 MGD and the maximum monthly average flow was 0.041 MGD. The tested capacity of this station is 0.232 MGD.

The Authority completed the following items during 2019:

1. Installed new battery backup on Omni site.

Siding on generator building has gap near front right corner.

A few louver slats on generator building are out of place.

Turnpike Road No. 2

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.091 MGD and the maximum monthly average flow was 0.159 MGD. The tested capacity of this station is 0.259 MGD. The tested capacity of this station exceeds the present maximum flows but does not surpass the projected 2-year max flow of 0.408 MGD. The projected 2-year max includes projected developments. An upgrade is currently planned for design in 2020 for Turnpike Road No. 2 pumping station to address projected capacity needs. The Authority will also continue its efforts to reduce I/I in the system.

The Authority completed the following item during 2019:

1. Contacts on both motors were replaced.
2. Motor controls were replaced on both motors.

The generator in this facility is outdated and in need of replacement. This station upgrade is to be designed in 2020.

Bossler Road No. 2

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.164 MGD and the maximum monthly average flow was 0.246 MGD. The design capacity of this station is 0.576 MGD.

The Authority completed the following items during 2019:

1. New bubbler line compressor installed.
2. Area was regraded to correct stormwater flow on property.
3. Block heater was repaired.
4. Water pump, thermostat, gaskets and belts replaced on generator.
5. Battery replaced for generator.

A few of the cross rails are out of place and should be replaced.

Pioneer Hills

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.015 MGD and the maximum monthly average flow was 0.029 MGD. The tested capacity of this station is 0.212 MGD.

The Authority completed the following items during 2019:

1. Four capacitors were replaced in the add-a-phase converter.
2. Three diodes replaced in generator.
3. Two roll pins replaced on check valve.
4. New motor control relays installed.
5. New heater blower motor installed in generator building.
6. Battery replaced for generator.

Nolt Road

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.065 MGD and the maximum monthly average flow was 0.089 MGD. The tested capacity of this station is 0.213 MGD. The tested capacity of this station exceeds the present maximum flows but does not surpass the projected 2-year max flow of 0.167 MGD. The Authority recognizes that the pumping station almost built out and will plan to expand the station if future development is proposed for the drainage basin. The Authority will also continue its efforts to reduce I/I in the system.

The Authority completed the following items during 2019:

1. New heater installed in generator building.
2. New soft start installed.

Top of pump rails showing age, should be monitored and replaced if necessary.

Colebrook Road

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.091 MGD and the maximum monthly average flow was 0.141 MGD. The tested capacity of this station is 0.639 MGD.

No repairs or improvements were needed at this station during 2019.

Cameron Street

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.145 MGD and the maximum monthly average flow was 0.215 MGD. The tested capacity of this station is 0.881 MGD.

The Authority completed the following items during 2019:

1. Fuel return connections for diesel generator lines replaced.
2. New D8 battery installed.
3. Installed new check valve assembly.
4. Replaced hanger for ultrasonic level transducer.

Miller Road

This station is in good condition and operating satisfactorily. The 2019 average daily flow at this station was 0.337 MGD and the maximum monthly average flow was 0.484 MGD. The tested capacity of this station is 1.123 MGD.

The Authority completed the following items during 2019:

1. New heater installed in generator building.
2. Pump pulled and impeller cleaned out.

This station is currently in design for an upgrade. The project will be bid in 2020 with ongoing construction going into 2021.

All Pumping Stations

Overall, the pumping stations are fairly well maintained. The stations are checked on a regular basis. The pump station dry wells and the generator buildings are clean. All of the flow meters were calibrated twice within the year. The Authority has a contract with an outside firm to perform generator maintenance and service, including changing generator oil and antifreeze. The Authority replaces generator fuel hoses, oil pans, etc. as needed and installed screening over all fuel vent lines in 2008 to prevent problems with insects. In order to provide better security, the Authority replaced many of the locks in 2009 and cleared brush and vines from the fencing at each pump station as needed; most recently in 2011. In 2013 the Authority added "No Trespassing" signs to all Mount Joy Township Authority pumping stations. In 2016, the Authority moved all pump hour meters at the West Donegal Township stations into the generator buildings to reduce the need for confined space entries.

At all the steel tank dry well pumping stations the Authority intends on performing reconditioning work on the dry well floors because of corrosion concerns. Cathodic protection was originally provided when the pumping stations began operation but is likely no longer present. In 2017, The Authority had the steel floors at Bossler Rd #1, Cameron and Colebrook pumping stations coated with Sprayroq, a polyurethane-based protective coating. The authority is also moving forward with upgrading several of their dry well pumping stations with submersible stations to get for safety reasons. Bossler Road No. 1, Turnpike Road No. 1 and Miller Road pumping stations are all in the process of being upgraded.

The Authority completed the following items at all pumping stations during 2019:

1. All check valves cleaned regularly.
2. All pumps greased four times.
3. All wet wells cleaned at least twice.
4. All generators serviced by Dynatech.
5. All flow meters at pump stations calibrated twice (see attached service reports).
6. Branches removed from fences around stations as required.
7. New locks were provided to all stations.
8. Installed new 4G upgrade kits in all omni site locations.

9. All dry well dehumidifiers were serviced.

It is recommended that the following be performed on a regular basis:

1. Vacuum cleaning of the wet wells to remove grease, grit, and other deposits. The operators use a degreaser regularly to minimize grease buildup. All wet wells were vacuum cleaned at least twice during 2019. Certain wet wells may require more frequent cleaning to minimize buildup of grease and debris.
2. Pumping station capacity tests. These tests will confirm pumping capacities, evaluate the efficiency of each pump, and provide a basis of comparison for maintenance purposes. A drop-in pumping capacity often signals a problem in the pump or elsewhere in that system. Pump capacity tests were performed at 7 of the 15 pumping stations during January 2019. Drawdown capacity tests should be performed again in 2020/2021.
3. It is important that the measuring flumes at the metered pumping stations be kept clean of debris. The buildup of debris will result in recording artificially high flows.
4. The following items are not critical but can be completed on a time available basis:
5. Portions of the older pumping stations such as the concrete meter pits and wet wells are showing signs of decay. It is recommended that a concrete sealer be applied, or the concrete be rehabilitated, as appropriate.
6. The original pumping station dry wells have, on occasion, shown signs of leaking at the seams in the metal. These seams should be resealed if water seepage into the dry wells becomes a problem.
7. Several of the stations do not have mesh covering the generator exhaust pipe. Mesh covering should be installed to prevent animals and debris from entering.

In addition, some of the emergency generators at the pumping stations are showing signs of their age. In some cases, the availability of spare parts to maintain the generators and their associated switchgear is decreasing over time. The Authority has implemented a generator replacement program and should continue replacing 1-2 generators per year.

It should also be noted that the Authority is currently in the process of evaluating potential upgrades to pumping stations not slated for expansion or abandonment. The intent of these upgrades would be to significantly extend the useful life of the stations. Anticipated improvements would include upgrade of existing controls and replacement of cathodic protection for the buried steel dry wells. Once the upgrades have been identified, the Authority plans to incorporate that work into its long-term capital improvement plan.

METER PITS

The Authority has four-meter pits throughout the system: Radio Road, Foxbury, Kiwanis, and Bradfield meter pits. These pits consist of a measuring flume and an ultrasonic level sensor. All meter pits are operating satisfactorily. The Foxbury meter pit was affected by a lightning strike in 2012 and was replaced. A new data logger was installed at the Radio Road meter pit in 2017. The control box at Radio Road is rusted along the corners and showing signs of moisture within. Replacement of this control box should be considered. A new transducer was installed at the Bradfield meter pits in 2019.

SEWER SYSTEM REVIEW

Upon reviewing the sewer system with the operators, the following items were noted:

- The Authority has an I/I program that is discussed in the Chapter 94 report. It is very important that this program continues and that the appropriate repairs are made to the system. Defects in a sewer system will only get worse with time if not repaired.
- In 2004, the Authority began a televising inspection program whereby a portion of the system is inspected each year. The Authority is urged to continue with the physical inspection of at least 10%-20% of the sewer system every year. This inspection should include televising, walking the length of every sewer in a particular area, and noting the condition of the manholes, manhole lids, sinkholes or stream banks near the line, etc. Manhole inserts should be installed in manholes that might be exposed to large volumes of stormwater. If not already installed, watertight manhole lids should be installed in manholes that are subject to inundation from streams.
- The Authority collection system includes two inverted siphons within the Miller Road drainage basin. These sections of sewer have periodically clogged. Therefore, they should be inspected on a regular basis and flushed as needed to remove grease buildup.
- In 2013 and 2014, the Authority investigated the flow in sewers along Mt. Gretna Road and within the Nolt Ave. Pumping Station drainage basin using visual inspection of manholes, flow analysis with ISCO flow meter, and CCTV inspection to develop a sense of the I/I present in the area.
- In 2018, the Authority again investigated the Nolt Ave. drainage basin and located multiple broken laterals and leaking manholes. The Authority promptly repaired the defects, and wet weather flows have since improved at the station.
- In 2019, the Authority plans to further investigate manholes and service connections in the collection system (predominantly in the Bossler Road No. 1, Turnpike Road No. 1 and 2, and Wilkens Street drainage basins) to identify sources of I/I for removal.

- In 2020, the authority intends to further investigate manholes and service connections in the collection system (predominantly in the Conewago and Hershey road drainage basins) to identify sources of I/I for removal.

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
5 MUNICIPAL DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: APRIL 09, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)
LOCATION: TURNPIKE 2
METER #: C3064 AA

PRIMARY: FLUME LEOPOLD LAGCO 8
MAXIMUM CAPACITY: 350,000 GPD

METER: BADGER **MODEL #:** 2100
RECORDER: BADGER **MODEL #:** 3000+

SERIAL #: 3825
SERIAL #: 955955

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: -0.02 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: -10%, -10%, -10%	TOLERANCE: $\pm 1\%$
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0%	TOLERANCE: $\pm 1\%$
CHECKED AT: 0%, 50%, 100%		

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): JACOB BROWN, JERRY LAWREY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
5 MUNICIPAL DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: APRIL 09, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)
LOCATION: MILLER ROAD
METER #: C3064 AB

PRIMARY: FLUME LEOPOLD LAGCO 15
MAXIMUM CAPACITY: 1.5 MGD

METER: BADGER	MODEL #: 2100	SERIAL #: 2379
RECORDER: ENDRESS+HAUSER	MODEL #: RSG-35	SERIAL #: N703F223426

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: -0.01 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: $\pm 1\%$
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0%	TOLERANCE: $\pm 1\%$
CHECKED AT: 0%, 50%, 100%		

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): JACOB BROWN, JERRY LAWREY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
5 MUNICIPAL DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: APRIL 09, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)

LOCATION: FOXBURY

METER #: C3064 AC

PRIMARY: FLUME PARSHALL 3

MAXIMUM CAPACITY: 850 GPM

METER: SIEMENS

RECORDER:

MODEL #: HYDRO RANGER 200

MODEL #: N/A

SERIAL #: PBD/C6130649

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: -0.07 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS

RECORDER CALIBRATION

ERROR: N/A

TOLERANCE: N/A

CHECKED AT: N/A

TOTALIZER CALIBRATION

ERROR: 0%

TOLERANCE: $\pm 1\%$

CHECKED AT: 0%, 50%, 100%

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
ADJUSTED EQUIPMENT
VERIFIED TOTALIZER (PASSED)
CLEANED PRIMARY
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): KYLE RANKIN, JERRY LAWREY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
5 MUNICIPAL DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: APRIL 09, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)
LOCATION: BOSSLER ROAD
METER #: C3064 AD

PRIMARY: FLUME LEOPOLD LAGCO 10
MAXIMUM CAPACITY: 200 GPM

METER: BADGER	MODEL #: 2100	SERIAL #: 946005
RECORDER: ENDRESS+HAUSER	MODEL #: RSG-35	SERIAL #: N703F023428

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: -0.05 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: $\pm 1\%$
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0%	TOLERANCE: $\pm 1\%$
CHECKED AT: 0%, 50%, 100%		

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): JACOB BROWN, JERRY LAWREY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
5 MUNICIPAL DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: APRIL 09, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)
LOCATION: RADIO ROAD
METER #: C3064 AE

PRIMARY: FLUME PARSHALL 6
MAXIMUM CAPACITY: 1800 GPM

METER: BADGER **MODEL #:** 2100 **SERIAL #:** 421522
RECORDER: ENDRESS+HAUSER **MODEL #:** RSG-35 **SERIAL #:** M503F623428

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0.00 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: $\pm 1\%$
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0%	TOLERANCE: ± 1
CHECKED AT: 0%, 50%, 100%		

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): KYLE RANKIN, JERRY LAWREY

WG Malden

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PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
5 MUNICIPAL DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: APRIL 09, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)
LOCATION: KIWANIS
METER #: C3064 AG

PRIMARY: FLUME PARSHALL 6
MAXIMUM CAPACITY: 1754 GPM
METER: MILLTRONICS
RECORDER:

MODEL #: ENVIORANGER ERS500 **SERIAL #:** PBD/T0110062
MODEL #: N/A **SERIAL #:** N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0.00 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: N/A	TOLERANCE: N/A
CHECKED AT: N/A		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: $\pm 1\%$
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): KYLE RANKIN, JERRY LAWREY

WG Malden

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*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
5 MUNICIPAL DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: APRIL 09, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)
LOCATION: BRADFIELD
METER #: C3064 AH

PRIMARY: FLUME PARSHALL 3
MAXIMUM CAPACITY: 850 GPM
METER: MILLTRONICS
RECORDER:

MODEL #: ENVIORANGER ERS 500 **SERIAL #:** PBD/U3130433
MODEL #: N/A **SERIAL #:** N/A

*** WORK PERFORMED ***

METER CALIBRATION METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS	ERROR: 0.01 INCHES	TOLERANCE: ± 0.125 INCHES
RECORDER CALIBRATION CHECKED AT: N/A	ERROR: N/A	TOLERANCE: N/A
TOTALIZER CALIBRATION CHECKED AT: 0%, 50%, 100%	ERROR: 0%	TOLERANCE: $\pm 1\%$

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): KYLE RANKIN, JERRY LAWREY

WG Malden

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*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: JUNE 06, 2019 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: RADIO ROAD
METER #: C3064 AE

PRIMARY: FLUME PARSHALL 6
MAXIMUM CAPACITY: 1800 GPM

METER: BADGER

MODEL #: 2100

SERIAL #: 421522

RECORDER: ENDRESS+HAUSER

MODEL #: RSG-35

SERIAL #: M503F623428

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS

RECORDER CALIBRATION

ERROR: 0%, 0%, 0%

TOLERANCE: $\pm 1\%$

CHECKED AT: 0%, 50%, 100%

TOTALIZER CALIBRATION

ERROR: 0%

TOLERANCE: ± 1

CHECKED AT: 0%, 50%, 100%

*** TECHNICIAN COMMENTS ***

REQUESTED SERVICE TO DOWNLOAD DATA AND REPORT GENERATION
FOUND CORRUPT DATA FILE
CORRECTED
DOWNLOADED DATA AND GENERATED REPORTS
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: JULY 17, 2019 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: MILLER ROAD
METER #: C3064 AB

PRIMARY: FLUME LEOPOLD LAGCO 15
MAXIMUM CAPACITY: 1.5 MGD

METER: BADGER	MODEL #: 2100	SERIAL #: 2379
RECORDER: ENDRESS+HAUSER	MODEL #: RSG-35	SERIAL #: N703F223426

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		

*** TECHNICIAN COMMENTS ***

REQUESTED SERVICE
DOWNLOADED DATA
GENERATED REPORT
CHANGED LOGGING INTERVAL FROM 1 MINUTE TO 15 MINUTES
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: JULY 17, 2019 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: BOSSLER ROAD
METER #: C3064 AD

PRIMARY: FLUME LEOPOLD LAGCO 10
MAXIMUM CAPACITY: 200 GPM

METER: BADGER	MODEL #: 2100	SERIAL #: 946005
RECORDER: ENDRESS+HAUSER	MODEL #: RSG-35	SERIAL #: N703F023428

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		

*** TECHNICIAN COMMENTS ***

REQUESTED SERVICE
DOWNLOADED DATA
GENERATED REPORT
CHANGED LOGGING INTERVAL FROM 1 MINUTE TO 15 MINUTES
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER

WG Malden

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PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: JULY 17, 2019 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: RADIO ROAD
METER #: C3064 AE

PRIMARY: FLUME PARSHALL 6
MAXIMUM CAPACITY: 1800 GPM

METER: BADGER	MODEL #: 2100	SERIAL #: 421522
RECORDER: ENDRESS+HAUSER	MODEL #: RSG-35	SERIAL #: M503F623428

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		

*** TECHNICIAN COMMENTS ***

REQUESTED SERVICE
DOWNLOADED DATA
GENERATED REPORT
CHANGED LOGGING INTERVAL FROM 1 MINUTE TO 15 MINUTES
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
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*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: OCTOBER 07, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)
LOCATION: TURNPIKE 2
METER #: C3064 AA

PRIMARY: FLUME LEOPOLD LAGCO 8
MAXIMUM CAPACITY: 350,000 GPD

METER: BADGER **MODEL #:** 2100
RECORDER: BADGER **MODEL #:** 3000+

SERIAL #: 3825
SERIAL #: 955955

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: -0.05 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		

RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		

TOTALIZER CALIBRATION	ERROR: 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER, JACOB BROWN

WG Malden

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PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: OCTOBER 07, 2019 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: MILLER ROAD
METER #: C3064 AB

PRIMARY: FLUME LEOPOLD LAGCO 15
MAXIMUM CAPACITY: 1.5 MGD

METER: BADGER	MODEL #: 2100	SERIAL #: 2379
RECORDER: ENDRESS+HAUSER	MODEL #: RSG-35	SERIAL #: N703F223426

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0.01 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
DOWNLOADED DATA
MONTHLY REPORT GENERATION
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER, JACOB BROWN

WG Malden

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*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: OCTOBER 07, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)
LOCATION: FOXBURY
METER #: C3064 AC

PRIMARY: FLUME PARSHALL 3
MAXIMUM CAPACITY: 850 GPM
METER: SIEMENS
RECORDER:

MODEL #: HYDRO RANGER 200
MODEL #: N/A

SERIAL #: PBD/C6130649
SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS	ERROR: -0.02 INCHES	TOLERANCE: ± 0.125 INCHES
RECORDER CALIBRATION CHECKED AT: N/A	ERROR: N/A	TOLERANCE: N/A
TOTALIZER CALIBRATION CHECKED AT: 0%, 50%, 100%	ERROR: 0%	TOLERANCE: ± 1.000 %

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
NO ADJUSTMENT NEEDED
FOUND BLOCKAGE IN THROAT OF FLUME, CLEARED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER, JACOB BROWN

WG Malden

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*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: OCTOBER 07, 2019 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: BOSSLER ROAD
METER #: C3064 AD

PRIMARY: FLUME LEOPOLD LAGCO 10
MAXIMUM CAPACITY: 200 GPM

METER: BADGER	MODEL #: 2100	SERIAL #: 946005
RECORDER: ENDRESS+HAUSER	MODEL #: RSG-35	SERIAL #: N703F023428

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0.00 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
DOWNLOADED DATA
MONTHLY REPORT GENERATION
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER, JACOB BROWN

WG Malden

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*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: OCTOBER 07, 2019 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: RADIO ROAD
METER #: C3064 AE

PRIMARY: FLUME PARSHALL 6
MAXIMUM CAPACITY: 1800 GPM

METER: BADGER

RECORDER: ENDRESS+HAUSER

MODEL #: 2100

MODEL #: RSG-35

SERIAL #: 421522

SERIAL #: M503F623428

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: 0.02 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS

RECORDER CALIBRATION

ERROR: 0%, 0%, 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

TOTALIZER CALIBRATION

ERROR: 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
DOWNLOADED DATA
MONTHLY REPORT GENERATION
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER, JACOB BROWN

WG Malden

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*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: OCTOBER 07, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)
LOCATION: KIWANIS
METER #: C3064 AG

PRIMARY: FLUME PARSHALL 6
MAXIMUM CAPACITY: 1754 GPM
METER: MILLTRONICS
RECORDER:

MODEL #: ENVIORANGER ERS500 **SERIAL #:** PBD/T0110062
MODEL #: N/A **SERIAL #:** N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0.00 INCHES	TOLERANCE: ±0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS		
RECORDER CALIBRATION	ERROR: N/A	TOLERANCE: N/A
CHECKED AT: N/A		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ±1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER, JACOB BROWN

WG Malden

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*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: OCTOBER 07, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)

LOCATION: BRADFIELD

METER #: C3064 AH

PRIMARY: FLUME PARSHALL 3

MAXIMUM CAPACITY: 850 GPM

METER: MILLTRONICS

RECORDER:

MODEL #: ENVIORANGER ERS 500 **SERIAL #:** PBD/U3130433

MODEL #: N/A

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: 0.00 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS

RECORDER CALIBRATION

ERROR: N/A

TOLERANCE: N/A

CHECKED AT: N/A

TOTALIZER CALIBRATION

ERROR: 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

*** TECHNICIAN COMMENTS ***

PERFORMED SEMI-ANNUAL CALIBRATION
CLEANED PRIMARY
VERIFIED TOTALIZER (PASSED)
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): DENNIS WEIDNER, JACOB BROWN

WG Malden

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*** SERVICE REPORT ***

ELIZABETHTOWN REGIONAL SEWER AUTHORITY
235 ERSA DRIVE
ELIZABETHTOWN, PA 17022

SERVICE DATE: DECEMBER 09, 2019 **SERVICE CONTRACT:** SEMI-ANNUAL (S4)

LOCATION: BRADFIELD

METER #: C3064 AH

PRIMARY: FLUME PARSHALL 3

MAXIMUM CAPACITY: 850 GPM

METER: MILLTRONICS

RECORDER:

MODEL #: ENVIORANGER ERS 500 **SERIAL #:** PBD/U3130433

MODEL #: N/A

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND FLOW CHECKS

RECORDER CALIBRATION

ERROR: N/A

TOLERANCE: N/A

CHECKED AT: N/A

TOTALIZER CALIBRATION

ERROR: 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

*** TECHNICIAN COMMENTS ***

REQUESTED SERVICE
METER NOT WORKING
FOUND SENSOR BAD
REPLACED SENSOR
CALIBRATED EQUIPMENT
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): JACOB BROWN, DENNIS WEIDNER



ATTACHMENT 9

Sludge Production and Disposal

SLUDGE GENERATION CALCULATION

Facility Name: **Elizabethtown Borough Wastewater Treatment Plant**

Permit Number: **PA0023108**

Date of Calculation: **3/24/2020**

Required Information For Calculation

Average Daily Flow (mgd): **2.554**

Digester Capacity (gal): **440000**

Influent BOD (mg/l): **166**

%Solids of Outgoing Sludge: **15.4**

Effluent BOD (mg/l): **2.6**

Monitoring Period (days): **365**

Wastewater Treatment Processes

Place an "X" in the box beside the corresponding treatment process. Select a maximum of Primary Clarification and one other treatment process.

Primary Clarification ☐

Contact Stabilization ☐

RBC ☐

Conventional Activated Sludge ☒

SBR ☐

ABF ☐

Extended Aeration ☐

Trickling Filter ☐

Small Plant with low SOR ☐

(<500 gpd/sq ft)

Operational Information

BOD Removed (lbs/day): **3480**

TSS Removed (lbs/day): **2958**

Digester Information

Type of Digester

Place an "X" in the box beside the corresponding treatment process.

Aerobic Digestion ☒

Anaerobic Digestion ☐

None ☐

Sludge Feed Rate to Digesters (gpd): **59120.843**

Digester Hydraulic Detention Time (days): **7**

Estimated Total Solids Reduction (%): **0.2**

Sludge Generation

dry lbs/day **2367**

wet lbs/day **15368**

dry tons/monitoring period **432**

wet tons/monitoring period **2805**

gal/day **1843**

gal/monitoring period **672596**

Amount of Sludge Reported as Being Generated by the Facility

wet tons/monitoring period **0**

OR

dry tons/monitoring period **510**

Enter only one of the above values. The remaining value should be "0".

Is the amount reported by the generator within 15% of the calculated value? **NO**

NO explanation: **GREATER THAN 15% RANGE**

What type of information was used to calculate the above information: **In House and Commercial Laboratory test results**

Dates used: **1.1.2019** TO **12.31.2019**

Name of person performing the calculation: **Logan M Jury**



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUPPLEMENTAL REPORT SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PL
Municipality: ELIZABETHTOWN County: LANCASTER
Watershed: 7-G

Month: January Year: 2019
NPDES Permit No.: PA0023108
Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

☐ Check here if there were no off-site removal events during the month

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

Date	Liquid Sewage Sludge/Biosolids			Dewatered Sewage Sludge/Biosolids			Sewage Sludge/Biosolids		
	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	% Solids	Dry Tons
1/2/19				16.73	14.60	2.44			
1/3/19				18.05	14.60	2.64			
1/4/19				17.42	14.60	2.54			
1/8/19				36.84	14.60	5.38			
1/9/19				16.23	14.60	2.37			
1/10/19				16.95	14.60	2.47			
1/15/19				17.67	14.60	2.58			
1/16/19				16.73	14.60	2.44			
1/17/19				16.92	14.60	2.47			
1/18/19				17.68	14.60	2.58			
1/23/19				15.70	14.60	2.29			
1/29/19				14.90	14.60	2.18			
TOTAL:									

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION (Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Frey Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality				
County	York	Lancaster	Lancaster	Lancaster
DEP Permit No.	PA100113	PA101389	PA400592	PA602247
Type of Material*		biosolids		
Dry Tons Applied/Disposed		32.386		
Type of Disposal/Use*		landfill		
Hauler Name		Republic Services		

* See Instructions for explanation.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Prepared By: David E. Hudzick
Title: Assistant WWTP Supervisor

License No.: T2963
Date: February 8, 2019



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUPPLEMENTAL REPORT SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLA
Municipality: ELIZABETHTOWN County: LANCASTER
Watershed: 7-G

Month: February Year: 2019
NPDES Permit No.: PA0023108
Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

☐ Check here if there were no off-site removal events during the month

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

Date	Liquid Sewage Sludge/Biosolids			Dewatered Sewage Sludge/Biosolids			Sewage Sludge/Biosolids		
	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	% Solids	Dry Tons
2/5/19				19.06	15.50	2.95			
2/7/19				17.42	15.50	2.70			
2/8/19				16.91	15.50	2.62			
2/15/19				17.39	15.50	2.70			
2/18/19				17.12	15.50	2.65			
2/19/19				16.11	15.50	2.50			
2/20/19				17.36	15.50	2.69			
2/21/19				17.32	15.50	2.68			
2/22/19				17.19	15.50	2.66			
2/25/19				15.27	15.50	2.37			
2/26/19				17.14	15.50	2.66			
2/27/19				17.50	15.50	2.71			
2/28/19				17.04	15.50	2.64			
TOTAL:				TOTAL:			TOTAL:		
							34.539		

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION

(Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Fry Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality				
County	York	Lancaster	Lancaster	Lancaster
DEP Permit No.	PA100113	PA101389	PA400592	PA602247
Type of Material*		biosolids		
Dry Tons Applied/Disposed		34.5		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		LCSWA	LCSWA	

* See Instructions for explanation.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Prepared By: David E. Hudzick
Title: Assistant WWTP Supervisor

License No.: T2963
Date: March 8, 2019

**SUPPLEMENTAL REPORT
 SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL**

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PL
 Municipality: ELIZABETHTOWN County: LANCASTER
 Watershed: 7-G

Month: March Year: 2019
 NPDES Permit No.: PA0023108
 Renewal application due 180 days prior to expiration
 This permit will expire on: June 30, 2021

☐ Check here if there were no off-site removal events during the month

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

Date	Liquid Sewage Sludge/Biosolids		Dewatered Sewage Sludge/Biosolids		Sewage Sludge/Biosolids	
	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered % Solids	Dry Tons	Tons Dewatered % Solids
3/1/19				17.69	15.80	2.80
3/4/19				16.71	15.80	2.64
3/5/19				16.51	15.80	2.61
3/6/19				16.16	15.80	2.55
3/7/19				16.80	15.80	2.65
3/8/19				18.05	15.80	2.85
3/11/19				18.16	15.80	2.87
3/12/19				17.06	15.80	2.70
3/13/19				16.63	15.80	2.63
3/14/19				15.32	15.80	2.42
3/15/19				18.09	15.80	2.86
3/18/19				17.01	15.80	2.69
3/19/19				16.60	15.80	2.62
3/20/19				16.28	15.80	2.57
3/21/19				17.11	15.80	2.70
TOTAL:					40.160	TOTAL:

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION
 (Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Cresswell Landfill	LCSWMA Incinerator	ACC Composting
Municipality				
County	York	Lancaster	Lancaster	Lancaster
DEP Permit No.		PA101389	PA400592	
Type of Material*		biosolids		
Dry Tons Applied/Disposed		40.2		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		LCSWA	LCSWA	

* See Instructions for explanation.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Prepared By: David E. Hudzick
 Title: Assistant WWTP Supervisor

License No.: T2963
 Date: April 8, 2019

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Watershed:

County: LANCASTER

Year: 2010

This permit will expire on: **June 30, 2021**

☐ Check here if there were no off-site removal events during the month

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION
(Identify all sites where biosolids or ash were disposed or land applied)

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION
(Identify all sites where biosolids or ash were disposed or land applied)

* See Instructions for explanation.

April 8, 2019

**SUPPLEMENTAL REPORT
SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL**

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLA
 Municipality: ELIZABETHTOWN County: LANCASTER
 Watershed: 7-G

Month: April Year: 2019
 NPDES Permit No.: PA0023108
 Renewal application due 180 days prior to expiration
 This permit will expire on: June 30, 2021

☐ Check here if there were no off-site removal events during the month

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

Date	Liquid Sewage Sludge/Biosolids		Dewatered Sewage Sludge/Biosolids		Sewage Sludge/Biosolids	
	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	Hauled Off-site % Solids	Dry Tons
4/1/19				16.16	15.80	2.55
4/2/19				17.30	15.80	2.73
4/3/19				16.35	15.80	2.58
4/4/19				16.70	15.80	2.64
4/5/19				17.17	15.80	2.71
4/8/19				17.04	15.80	2.69
4/9/19				17.37	15.80	2.74
4/10/19				16.86	15.80	2.66
4/11/19				16.15	15.80	2.55
4/12/19				16.93	15.80	2.67
4/15/19				17.02	15.80	2.69
4/16/19				17.00	15.80	2.69
4/17/19				16.09	15.80	2.54
4/18/19				16.47	15.80	2.60
4/19/19				16.97	15.80	2.68
TOTAL:				TOTAL: 39.750		

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION
 (Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Fry Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality	York	Lancaster	Lancaster	Lancaster
County				
DEP Permit No.		PA101389	PA400592	
Type of Material*		biosolids	biosolids	
Dry Tons Applied/Disposed		39.8		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		Republic Services		

* See Instructions for explanation.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Prepared By: David E. Hudzick License No.: T2963
 Title: Assistant WWTP Supervisor Date: May 8, 2019

Watershed:

County: LANCASTER

This permit will expire on: June 30, 2021

☐ Check here if there were no off-site removal events during the month

TOTAL:

TOTAL:	18.925
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TOTAL:

(Identify all sites where biosolids or ash were disposed or land applied)

* See Instructions for explanation.

Prepared By: **David E. Hudzick**

License No.:

T3962

Title:

Data:

May 8, 2019

**SUPPLEMENTAL REPORT
SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL**

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLANT
 Municipality: ELIZABETHTOWN County: LANCASTER
 Watershed: 7-G

Month: May Year: 2019
 NPDES Permit No.: PA0023108
 Renewal application due 180 days prior to expiration
 This permit will expire on: June 30, 2021

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

☐ Check here if there were no off-site removal events during the month

Date	Liquid Sewage Sludge/Biosolids			Dewatered Sewage Sludge/Biosolids			Sewage Sludge/Biosolids		
	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	Hauled Off-site % Solids	Dry Tons	Dewatered and Incinerated On-site % Solids	Dry Tons	
5/1/19				18.07	15.00	2.71			
5/2/19				17.06	15.00	2.56			
5/3/19				17.70	15.00	2.66			
5/6/19				17.26	15.00	2.59			
5/7/19				17.26	15.00	2.59			
5/8/19				17.31	15.00	2.60			
5/9/19				18.68	15.00	2.80			
5/10/19				15.12	15.00	2.27			
5/13/19				16.51	15.00	2.48			
5/14/19				16.49	15.00	2.47			
5/15/19				15.30	15.00	2.30			
5/16/19				17.47	15.00	2.62			
5/17/19				17.09	15.00	2.56			
TOTAL:						33.198			TOTAL:

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION
 (Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Frey Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality				
County	York	Lancaster	Lancaster	Lancaster
DEP Permit No.	PA100113	PA101389	PA400592	PA602247
Type of Material*		biosolids	biosolids	
Dry Tons Applied/Disposed		33.2		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		Republic Services		

* See Instructions for explanation.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Prepared By: David E. Hudzick License No.: T2963
 Title: Assistant WWTP Supervisor Date: June 17, 2019

Month: May Year: 2019
NPDES Permit No.: PA0023108
Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

☐ Check here if there were no off-site removal events during the month

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION
(Identify all sites where biosolids or ash were disposed or land applied)

* See instructions for explanation.

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License No.: T2963
Date: June 17, 2019



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUPPLEMENTAL REPORT SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLANT
Municipality: ELIZABETHTOWN County: LANCASTER
Watershed: 7-G

Month: June Year: 2019
NPDES Permit No.: PA0023108
Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

☐ Check here if there were no off-site removal events during the month

Date	Liquid Sewage Sludge/Biosolids			Dewatered Sewage Sludge/Biosolids			Sewage Sludge/Biosolids		
	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	% Solids	Dry Tons
6/3/19				17.72	16.10	2.85			
6/4/19				16.84	16.10	2.71			
6/5/19				15.54	16.10	2.50			
6/6/19				17.44	16.10	2.81			
6/7/19				17.71	16.10	2.85			
6/10/19				16.07	16.10	2.59			
6/11/19				18.43	16.10	2.97			
6/12/19				17.68	16.10	2.85			
6/13/19				17.78	16.10	2.86			
6/14/19				15.48	16.10	2.49			
6/17/19				16.41	16.10	2.64			
6/20/19				16.67	16.10	2.68			
6/21/19				17.63	16.10	2.84			
6/25/19				17.22	16.10	2.77			
6/27/19				15.44	16.10	2.49			
TOTAL:				TOTAL: 40.904			TOTAL:		

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION

(Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Frey Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality				
County	York	Lancaster	Lancaster	Lancaster
DEP Permit No.	PA100113	PA101389	PA400592	PA602247
Type of Material*		biosolids	biosolids	
Dry Tons Applied/Disposed		40.9		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		Republic Services	LCSWA	

* See Instructions for explanation.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Prepared By: David E. Hudzick
Title: Assistant WWTP Supervisor

License No.: T2963
Date: July 15, 2019

Month: June Year: 2019
NPDES Permit No.: PA0023108

Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

☐ Check here if there were no off-site removal events during the month

[illegible]

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION

(Identify all sites where biosolids or ash were disposed or land applied)

(Inventory all sites where biosolids or dslr were disposed or land applied)				
Site Name	Modern Landfill	Frey Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality				
County	York			
DEP Permit No.	PA100113	Lancaster PA101389	Lancaster PA400592	Lancaster PA602247
Type of Material*		biosolids	biosolids	
Dry Tons Applied/Disposed		2.9		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		Republic Services	LCSWMA	

* See Instructions for explanation.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

License No.: T2963
Date: July 15 2019



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUPPLEMENTAL REPORT SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLAN
Municipality: ELIZABETHTOWN County: LANCASTER
Watershed: 7-G

Month: July Year: 2019
NPDES Permit No.: PA0023108
Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

☐ Check here if there were no off-site removal events during the month

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

Date	Liquid Sewage Sludge/Biosolids			Dewatered Sewage Sludge/Biosolids			Sewage Sludge/Biosolids		
	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	% Solids	Dry Tons
7/1/19				18.13	16.00	2.90			
7/2/19				15.49	16.00	2.48			
7/3/19				17.45	16.00	2.79			
7/5/19				15.31	16.00	2.45			
7/8/19				16.53	16.00	2.64			
7/9/19				18.24	16.00	2.92			
7/10/19				16.77	16.00	2.68			
7/11/19				15.08	16.00	2.41			
7/12/19				16.23	16.00	2.60			
7/15/19				16.33	16.00	2.61			
7/16/19				17.75	16.00	2.84			
7/19/19				17.97	16.00	2.88			
7/22/19				16.86	16.00	2.70			
7/23/19				17.82	16.00	2.85			
7/25/19				17.92	16.00	2.87			
TOTAL:						40.621			TOTAL:

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION (Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Frey Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality	York	Lancaster	Lancaster	Lancaster
County	York	Lancaster	Lancaster	Lancaster
DEP Permit No.	PA100113	PA101389	PA400592	PA602247
Type of Material*		biosolids	biosolids	
Dry Tons Applied/Disposed		40.6		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		Replublic Services	LCSWA	

* See Instructions for explanation.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Prepared By: David E. Hudzick
Title: Assistant WWTP Supervisor

License No.: T2963
Date: August 13, 2019

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLANT
Municipality: ELIZABETHTOWN County: LANCASTER
Watershed: 7-G

Month: July Year: 2019
NPDES Permit No.: PA0023108
Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

☐ Check here if there were no off-site removal events during the month.

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION
(Identify all sites where biosolids or ash were disposed or land applied)

* See Instructions for explanation.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Prepared By: **David E. Hudzick**
Title: **Assistant WWTP Supervisor**

License No.: T2963
Date: August 13, 2019



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUPPLEMENTAL REPORT SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLANT
Municipality: ELIZABETHTOWN County: LANCASTER
Watershed: 7-G

Month: August Year: 2019
NPDES Permit No.: PA0023108
Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

☐ Check here if there were no off-site removal events during the month

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

Liquid Sewage Sludge/Biosolids				Dewatered Sewage Sludge/Biosolids		Sewage Sludge/Biosolids			
Date	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	Hauled Off-site % Solids	Dry Tons	Dewatered Tons Dewatered	% Solids	Dry Tons
8/1/19				15.98	15.10	2.41			
8/2/19				18.42	15.10	2.78			
8/5/19				17.99	15.10	2.72			
8/6/19				17.60	15.10	2.66			
8/9/19				17.06	15.10	2.58			
8/12/19				16.17	15.10	2.44			
8/13/19				17.59	15.10	2.66			
8/14/19				16.45	15.10	2.48			
8/16/19				15.23	15.10	2.30			
8/19/19				16.95	15.10	2.56			
8/20/19				18.64	15.10	2.81			
8/21/19				16.95	15.10	2.56			
8/26/19				17.36	15.10	2.62			
8/28/19				16.14	15.10	2.44			
8/29/19				15.97	15.10	2.41			
8/30/19				16.28	15.10	2.46			
TOTAL:									

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION (Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Frey Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality	York	Lancaster	Lancaster	Lancaster
County	York	Lancaster	Lancaster	Lancaster
DEP Permit No.	PA100113	PA101389	PA400592	PA602247
Type of Material*			biosolids	
Dry Tons Applied/Disposed		40.9		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		Republic		

* See Instructions for explanation.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Prepared By: David E. Hudzick
Title: Assistant WWTP Supervisor

License No.: T2963
Date: September 10, 2019



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUPPLEMENTAL REPORT SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLANT
Municipality: ELIZABETHTOWN County: LANCASTER
Watershed: 7-G

Month: October Year: 2019
NPDES Permit No.: PA0023108
Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

☐ Check here if there were no off-site removal events during the month

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

Date	Liquid Sewage Sludge/Biosolids			Dewatered Sewage Sludge/Biosolids			Sewage Sludge/Biosolids		
	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	Dewatered and Incinerated On-site % Solids	Dry Tons
10/1/19				15.22	15.30	2.33			
10/4/19				15.22	15.30	2.33			
10/7/19				16.15	15.30	2.47			
10/8/19				15.85	15.30	2.43			
10/10/19				17.72	15.30	2.71			
10/11/19				18.39	15.30	2.81			
10/15/19				16.71	15.30	2.56			
10/21/19				15.83	15.30	2.42			
10/23/19				17.26	15.30	2.64			
10/24/19				17.00	15.30	2.60			
10/25/19				17.00	15.30	2.60			
10/30/19				15.42	15.30	2.36			
10/31/19				17.87	15.30	2.73			
TOTAL:						32.993			TOTAL:

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION (Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Frey Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality	York	Lancaster	Lancaster	Lancaster
County	York	Lancaster	Lancaster	Lancaster
DEP Permit No.	PA100113	PA101389	PA400592	PA602247
Type of Material*		biosolids	biosolids	
Dry Tons Applied/Disposed		33.0		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		LCSWA	LCSWA	

* See Instructions for explanation.

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Prepared By: David E. Hudzick
Title: Assistant WWTP Supervisor

License No.: T2963
Date: November 11, 2019



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DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUPPLEMENTAL REPORT SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLAN
Municipality: ELIZABETHTOWN County: LANCASTER
Watershed: 7-G

Month: November Year: 2019
NPDES Permit No.: PA0023108
Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

☐ Check here if there were no off-site removal events during the month

Date	Liquid Sewage Sludge/Biosolids		Dewatered Sewage Sludge/Biosolids		Sewage Sludge/Biosolids	
	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered % Solids	Dry Tons	Tons Dewatered % Solids
11/1/19				16.06	15.20	2.44
11/5/19				17.42	15.20	2.65
11/8/19				36.16	15.20	5.50
11/12/19				33.45	15.20	5.08
11/14/19				17.97	15.20	2.73
11/15/19				17.79	15.20	2.70
11/18/19				18.57	15.20	2.82
11/19/19				15.98	15.20	2.43
11/21/19				17.23	15.20	2.62
11/25/19				15.70	15.20	2.39
11/26/19				16.65	15.20	2.53
11/27/19				16.83	15.20	2.56
11/29/19				17.81	15.20	2.71
TOTAL:					39.158	
						TOTAL:

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION

(Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Frey Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality				
County	York	Lancaster	Lancaster	Lancaster
DEP Permit No.	PA100113	PA101389	PA400592	PA602247
Type of Material*		biosolids	biosolids	
Dry Tons Applied/Disposed		39.2		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		LCSWA	LCSWA	

* See instructions for explanation.

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Prepared By: David E. Hudzick
Title: Assistant WWTP Supervisor

License No.: T2963
Date: December 9, 2019



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DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUPPLEMENTAL REPORT SEWAGE SLUDGE / BIOSOLIDS PRODUCTION AND DISPOSAL

Facility Name: ELIZABETHTOWN BOROUGH WASTEWATER TREATMENT PLAN
Municipality: ELIZABETHTOWN County: LANCASTER
Watershed: 7-G

Month: December Year: 2019
NPDES Permit No.: PA0023108
Renewal application due 180 days prior to expiration
This permit will expire on: June 30, 2021

SEWAGE SLUDGE / BIOSOLIDS PRODUCTION INFORMATION (Identify each off-site removal event and incineration event)

☐ Check here if there were no off-site removal events during the month

Date	Liquid Sewage Sludge/Biosolids			Dewatered Sewage Sludge/Biosolids			Sewage Sludge/Biosolids		
	Gallons	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	Hauled Off-site % Solids	Dry Tons	Tons Dewatered	% Solids	Dry Tons
12/3/19				15.81	14.10	2.23			
12/4/19				17.84	14.10	2.52			
12/5/19				16.27	14.10	2.29			
12/6/19				17.85	14.10	2.52			
12/9/19				16.66	14.10	2.35			
12/10/19				16.32	14.10	2.30			
12/12/19				17.33	14.10	2.44			
12/16/19				16.47	14.10	2.32			
12/17/19				18.26	14.10	2.57			
12/19/19				17.16	14.10	2.42			
12/23/19				15.98	14.10	2.25			
12/24/19				17.16	14.10	2.42			
12/27/19				16.95	14.10	2.39			
12/30/19				15.97	14.10	2.25			
12/31/19				16.92	14.10	2.39			
TOTAL:						35.666			TOTAL:

SEWAGE SLUDGE / BIOSOLIDS AND INCINERATOR ASH DISPOSAL AND BENEFICIAL USE INFORMATION

(Identify all sites where biosolids or ash were disposed or land applied)

Site Name	Modern Landfill	Frey Farm Landfill	LCSWMA Incinerator	ACC Composting
Municipality				
County	York	Lancaster	Lancaster	Lancaster
DEP Permit No.	PA100113	PA101389	PA400592	PA602247
Type of Material*		biosolids	biosolids	
Dry Tons Applied/Disposed		35.7		
Type of Disposal/Use*		landfill	Incinerator	
Hauler Name		LCSWA	LCSWA	

* See Instructions for explanation.

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Prepared By: David E. Hudzick
Title: Assistant WWTP Supervisor

License No.: T2963
Date: January 12, 2020