

**ALLENTOWN WATER AND SEWER UTILITY SYSTEM
CONCESSION AND LEASE AGREEMENT**

OPERATING STANDARDS

REVISED: February 25, 2013

Table of Contents

<u>Section</u>	<u>Title</u>	<u>Page</u>
Introduction.....		1
PART A – WATER SYSTEM OPERATING STANDARDS		
1.0	General Requirements.....	3
2.0	Specialized Computer Software.....	5
3.0	General Operation and Management Standards	6
4.0	Water Treatment Plant and Water Quality Management.....	7
4.1	Performance Requirements.....	8
	4.1.1 City Water Quality Requirements	8
	4.1.1.2 Operational Liquidated Damages.....	9
	4.1.2 Partnership For Safe Water Optimization Goals	9
	4.1.2.1 Operational Liquidated Damages.....	9
	4.1.3 Fluoridation	10
	4.1.4 Permits and Regulatory Approvals – At Time of Closing and Future	10
	4.1.5 Annual Water Quality Report (Consumer Confidence Report (CCR)).....	10
	4.1.6 Operational Liquidated Damages.....	10
	4.1.7 Future Water Demands.....	10
5.0	Real Property Management and Maintenance	11
5.1	Maintenance Management.....	11
	5.1.1 Operating Procedures.....	11
	5.1.2 Maintenance Program	11
6.0	Distribution System Operations and Management	12
6.1	Partnership for Safe Water Distribution System Operations	13
6.2	Distribution System Performance Requirements.....	14
	6.2.1 Water System Pressure	14
	6.2.2 Flow Requirements	14
6.3	Distribution System Monitoring and Control	14
	6.3.1 Water Quality.....	14
	6.3.2 Sampling Plan.....	14
6.4	Disinfectant Residual Maintenance	15
	6.4.1 Disinfectant Residual Requirement.....	15
	6.4.2 Operational Liquidated Damages.....	15
6.5	Nitrification Control.....	16
6.6	Disinfection By-Product Monitoring and Control	16
6.7	Corrosion Monitoring and Control	16
6.8	Aesthetic Water Quality Parameters	17
6.9	Cross Connection Control and Backflow Prevention	17

Table of Contents (continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
6.10	Water Loss and Leak Detection.....	18
	6.10.1 Water Audit.....	18
	6.10.2 Leak Detection.....	18
	6.10.3 Documentation and Reporting.....	19
	6.10.4 Operational Liquidated Damages.....	19
6.11	Valve Exercising and Replacement.....	19
	6.11.1 Valve Exercise Program.....	19
	6.11.2 Documentation.....	20
	6.11.3 Operational Liquidated Damages.....	20
6.12	Hydrant Maintenance and Testing.....	21
	6.12.1 Hydrant Exercise Program.....	21
	6.12.2 Documentation.....	22
	6.12.3 Operational Liquidated Damages.....	22
6.13	Streets Program Participation.....	22
6.14	Sinkhole Responsibility.....	23
6.15	System Flushing.....	24
6.16	Metering.....	24
	6.16.1 Meter Requirements.....	25
	6.16.2 Meter Testing.....	25
	6.16.3 Meter Repair and Replacement.....	25
	6.16.4 Documentation and Reporting.....	25
6.17	Treated Water Storage Facilities.....	25
	6.17.1 Storage Capacity.....	25
	6.17.2 Inspection and Testing.....	26
	6.17.3 Maintenance.....	26
	6.17.4 Disinfection.....	26
	6.17.5 Documentation.....	26
6.18	Pump Station Operations and Maintenance.....	27
6.19	Pipeline Rehabilitation and Replacement.....	27
	6.19.1 Schantz Spring Transmission Line.....	27
	6.19.2 Evaluation and Replacement Requirements.....	27
	6.19.3 Operational Liquidated Damages.....	28
6.20	Disinfection of New or Repaired Pipes.....	28
6.21	PA One Call.....	28
6.22	Service Interruptions.....	28
	6.22.1 Response to Unplanned Disruptions of Service.....	28
	6.22.2 Planned Service Interruptions.....	29
	6.22.3 Reporting and Documentation.....	29
6.23	New User Connections.....	29
7.0	Laboratory Standards.....	29
8.0	Customer Service.....	29

Table of Contents (continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
8.1	Customer Service Center	29
8.2	Customer Call Protocol.....	30
8.3	Customer Survey Program.....	31
9.0	Operational Management Practices	31
9.1	Capital Improvement Planning	31
9.2	Energy Management and Sustainability	32
9.3	Housekeeping Procedures and Cleanliness.....	32
9.4	Record Keeping, Data Review, and Reporting Requirements.....	32
9.5	Materials, Supplies, and Quality Assurance	34
	9.5.1 Chemicals.....	34
	9.5.2 Materials and Equipment.....	34
9.6	Disinfection of System Facilities.....	35
9.7	Materials in Contact with Water	35
10.0	Source Water Management.....	35
10.1	State Water Plan.....	35
11.0	Site Safety and Security	35
12.0	Emergency Response Plan.....	36
12.1	Drought Emergency Response.....	37
12.2	Spill Prevention Plan and Notifications.....	37
13.0	Inspection of New Construction	37
14.0	Operator Training.....	38
15.0	Internal Annual Performance Review.....	38
16.0	Additional Requirements and Operational Liquidated Damages	38
17.0	Alternative Approaches	39
18.0	Annual Exceedence Credit.....	39
19.0	Transition Period.....	40

Table of Contents (continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
PART B – SEWER SYSTEM OPERATING STANDARDS		
1.0	General Requirements.....	41
1.1	General Operation and Maintenance Requirements	41
1.2	Specialized Computer Software.....	43
2.0	Standard Operating Procedures.....	44
3.0	Wastewater Treatment Plant Performance Standards.....	45
3.1	Regulatory Requirements.....	45
3.2	WWTP Effluent and Performance Standards	46
	3.2.1 NPDES Discharge Permit Effluent Limits and Performance Standards	46
	3.2.2 NPDES Permit Discharge Limits Operational Liquidated Damages.....	48
	3.2.3 Performance Standards Operational Liquidated Damages.	48
	3.2.4 Reuse of Treated Effluent.....	48
3.3	Process Control Monitoring/Sampling Plan	48
3.4	Sludge Management.....	49
	3.4.1 General Description of the Current Solids Management Program.....	49
	3.4.2 Dewatering Performance Standards.....	49
	3.4.3 Existing Biosolids Contracts.....	49
3.5	Certified Operators.....	50
3.6	Noise, Outside Lighting, and Odor Control.....	50
	3.6.1 General Requirements	50
	3.6.2 Odor Control.....	50
	3.6.3 Operational Liquidated Damages.....	51
3.7	Operator Training.....	51
3.8	Industrial Pretreatment Program	51
3.9	Septage and Hauled Wastes.....	52
4.0	Computerized Maintenance Management System.....	52
5.0	Sewer Utility System Maintenance.....	53
5.1	Wastewater Treatment Plant Maintenance	53
5.2	Collection and Conveyance Systems	54
	5.2.1 Pumping Station Monitoring.....	54
	5.2.2 Collection System Operation and Maintenance	54
	5.2.3 Operational Liquidated Damages.....	56
	5.2.4 Root Intrusion	56
	5.2.5 New User Connections.....	56
	5.2.6 Inspection of New Construction.....	56
	5.2.7 Streets Program Participation.....	57
	5.2.8 Sinkhole Responsibilities	57

Table of Contents (continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
5.3	Maintenance of Flood Protection Project	58
5.4	Capital Improvements	58
	5.4.1 General Requirements	58
	5.4.2 Capital Improvement Planning	58
	5.4.3 Energy Management and Sustainability	59
6.0	Wastewater Treatment Plant Laboratory Requirements	59
6.1	Requirement to Maintain a Laboratory at the WWTP	59
6.2	Laboratory Accreditation	59
6.3	Laboratory Supervisor	61
6.4	Quality Control Reporting	62
7.0	Customer Service	60
7.1	Customer Service Center	60
7.2	Customer Call Protocol	61
7.3	Customer Survey Program	62
8.0	Reporting Requirements	62
8.1	Record Keeping, Data Review, and Reporting Requirements	62
8.2	Discharge Monitoring Reports	64
8.3	PADEP Municipal Wasteload Management Annual Report	64
8.4	Contributing Municipalities Flow Reports	65
8.5	Act 537 Planning	65
8.6	Internal Annual Performance Review	65
9.0	Administrative Orders	65
10.0	Emergency Response Plan	66
11.0	Site Safety and Security Plan	67
12.0	Additional Requirements and Operational Liquidated Damages	68
13.0	Alternative Approaches	68
14.0	Annual Exceedence Credit	69
15.0	Transition Period	69

Tables

Title

A-1	City Water Quality Requirement	8
B-1	NPDES Discharge Permit Effluent Limitations	47
B-2	Performance Standards	47
B-3	Belt Filter Press Dewatering Performance History.....	49

Exhibits

Title

A	Reports to City
B	Software Packages
C	Permits and Approvals in Effect at the Time of Closing
D	Water Treatment Plant and Wastewater Treatment Plant Maintenance Contracts
E	Pump Operating Criteria and Tank Level Setpoints
F	Sampling Stations
G	Summary of Existing Valves by Size
H	Example WTP Monthly Report
I	Process Sampling of Monitoring Requirements
J	Sludge Process Sampling and Monitoring Requirements
K	Example WWTP Monthly Report
L	Example Contributing Municipalities Flow Report
M	Federal Flood Protection Project
N	Sludge Management Program Description

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards – Introduction**

February 25, 2013

Introduction

The City of Allentown (City) has included Operating Standards for both the water and sewer systems as part of the Water and Sewer Utility System Concession and Lease Agreement (Agreement) to ensure the quality of water delivered to City Water System customers, the protection of the water bodies receiving treated Sewer Utility System effluent, and for the long-term protection of the City's water and sewer infrastructure during the term of the Agreement. Operating Standards for the Water Plant and Distribution System (Water System) and Sewer System (Sewer System) (together the Water System and the Sewer System are sometimes referred to as the Systems) are provided herein as Part A and Part B, respectively. These Operating Standards are attached to and incorporated into the Agreement.

The Operating Standards set forth the Concessionaire's obligations with respect to operation and maintenance of the Water and Sewer Systems, and require the Concessionaire to submit regular reports to the City regarding system performance, operation and maintenance activities, capital improvements, customer service practices, and other activities. The Concessionaire will be subject to periodic evaluations with respect to the condition, operation, and improvement requirements for the System. To the extent required in the Agreement, the City's input and approval will be required prior to the Concessionaire initiating capital improvements to the Systems, and the City also maintains the right to inspect the facilities and review records, to ensure the long-term viability of the Systems.

The City intends to establish a City office responsible for oversight of the Water and Sewer Systems operation and maintenance and to facilitate, if necessary, customer service and customer satisfaction. The City shall receive a copy of all reports and other documentation submitted by the Concessionaire to any regulatory or oversight agency including, but not limited to United States Environmental Protection Agency (USEPA), Pennsylvania Department of Environmental Protection (PADEP), Delaware River Basin Commission (DRBC), and any other government or other oversight agency that may have jurisdiction, relative to the Systems. Such reports shall be provided to the City and shall include a brief executive summary of the document. The Concessionaire shall provide to the City a copy of any and all correspondence delivered to or received from regulatory and/or oversight agencies which might be of consequence to the City as Owner. The City shall maintain the right, as the owner of the Systems, to attend meetings and conference calls with regulatory and other agencies.

These Operating Standards shall be enforceable in accordance with the terms of the Agreement. The Concessionaire shall be responsible for any and all penalties assessed by regulatory or other agencies relative to the Systems during the term of the Agreement, provided such penalties were not caused by the City's action or inaction. In addition, in accordance with the terms of the Agreement, the City may assess operational liquidated damages for the failure of the Concessionaire to comply with the requirements of these Operating Standards, including, but not limited to, the failure to meet operating performance, maintenance, and/or reporting requirements. These operational liquidated damages are in addition to any obligations of the Concessionaire to indemnify the city for Losses under the Agreement. Knowingly falsifying documentation or omitting information to meet regulatory or City reporting and/or technical requirements may cause the City to take appropriate actions.

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards – Introduction**

February 25, 2013

The City will make available for the Concessionaire's reference, summaries of regulatory reports submitted by the City to various agencies. The City has also provided a summary of reports that shall be provided by the Concessionaire to the City to document compliance with the Operating Standards (Exhibit A). Such reports will be required in addition to regulatory reports the Concessionaire will be required to submit. The City has also made available to the Concessionaire a summary of existing software packages (Exhibit B) utilized as part of the operation and maintenance of each system and will make available existing Standard Operating Procedures (SOPs) and other technical information to facilitate the successful transition of operating responsibilities.

The City understands that compliance with certain Operating Standards may be difficult following the transition of operating responsibilities to the Concessionaire, that from time to time the Concessionaire may identify alternative approaches to more efficiently achieve the goals of the Operating Standards, and that relief from certain requirements or appeal of operational liquidated damages may be appropriate at times based on occurrences beyond the control of the Concessionaire. Therefore, Part A – Water System Operating Standards Sections 16.0 through 18.0 and Part B – Sewer System Operating Standards Sections 12.0 through 14.0 address procedures for assessment and appeal of operational liquidated damages, alternative approaches presented by the Concessionaire, and the phase-in of certain Operating Standards following the transition of operating responsibilities.

To facilitate the long-term success of the Concession Lease, to maintain a high level of customer service and satisfaction, to protect the long-term viability of City-owned assets, and, at the same time, to discuss any issues, concerns, or concepts that the Concessionaire might have, the Operating Standards require quarterly meetings of City and Concessionaire representatives.

Nothing set forth in these Operating Standards shall modify or alter the Concessionaire's obligation to manage and operate the Water and Sewer Systems in compliance with all applicable laws and the terms of the Agreement. Any capitalized terms not defined herein shall have the meaning set forth in the Agreement.

PART A – WATER SYSTEM OPERATING STANDARDS

1.0 General Requirements

The Concessionaire will be fully responsible for the operation, maintenance, and management of the Water Treatment Plant (WTP), water storage tanks, water distribution system, and all associated facilities of the Water System. The Concessionaire shall operate, maintain, and manage the Water System in accordance with the Agreement and applicable laws, regulations, and ordinances, as well as requirements of the City of Allentown (City). The continuous supply of water in compliance with all applicable regulations and, where more stringent, City water quality and other requirements, as defined herein, is of primary importance. The Concessionaire shall provide uninterrupted operation of the Water System and shall operate the Water System on a continuous basis, 24 hours per day, seven days per week throughout the term of the Agreement. The Concessionaire shall staff the Water Treatment Plant (WTP) 24 hours per day, seven (7) days per week during the entire term of the Agreement. The Concessionaire shall provide meter reading, billing, customer service, and other ancillary services associated with the operation of the System. In addition to activities directly associated with the treatment and distribution of water, the concessionaire's responsibilities also include all maintenance of grounds, landscaping, buildings, and equipment comprising the Water System. Specific responsibilities are further defined herein.

The Concessionaire shall, at all times, keep the Water System in good repair and working order and shall operate, maintain, and manage the Water System in a professional, efficient, and economical manner. Operational decision making shall always be based on the following overall objectives:

- Protection of health and welfare of the public.
- Protection of the health and safety of the Water System operating staff.
- Preservation of the long-term capability to provide water services in accordance with legal, regulatory, and customer service requirements.
- Protection of the environment.
- Protection and preservation of the Water System equipment and facilities.
- Maximization of Water System operational efficiency.
- Compliance with applicable regulations and requirements of Pennsylvania Department of Environmental Protection (PADEP), United States Environmental Protection Agency (USEPA), Delaware River Basin Commission (DRBC), the City, and other government or oversight agencies with applicable jurisdiction.
- Compliance with the City's current obligations in accordance with Agreements between the City and third parties, including other water service providers, in accordance with the Agreement.

The Concessionaire shall be required to perform the following, subject to the specific terms of the Agreement and the Operating Standards:

- Operate, maintain, and manage the Water System.

Concession and Lease Agreement**Operating Standards - Part A – Water System Operating Standards**

- Treat water to maintain regulatory water quality and other requirements and, where more stringent, City water quality and other requirements.
- Meet performance standards and permit, consent decree, and administrative consent order requirements, including those that pre-date the Agreement and those that occur during the term of the Agreement.
- Perform corrective, predictive, preventative, and ongoing maintenance of the Water System.
- Perform analytical sampling, testing, analyzing, and reporting.
- Maintain necessary records, including laboratory sampling and analysis results, in accordance with regulatory requirements.
- Provide emergency services associated with the Water System and Water System operation, as required.
- Maintain grounds and buildings.
- Keep facilities secure and correct/improve security measures as identified by the Concessionaire, regulatory agencies, or as part of other security evaluations.
- Keep facilities clean.
- Maintain records documenting compliance with applicable laws, regulations, and ordinances, as well as requirements of the City.
- Provide routine reports to the City.
- Make available, upon request by the City, information necessary to document compliance with applicable laws, regulations, and ordinances as well as compliance with these Operating Standards.
- Subject to the terms and conditions of the Agreement, identify and execute any necessary capital improvements to the Water System.

The City's existing permits/approvals for the Water System are listed in Exhibit C, for reference. The Agreement also provides a listing of existing permits and designates which permits are to be retained by the City, transferred to the Concessionaire, or have the Concessionaire added as co-permittee with the City. The Concessionaire shall be obligated, pursuant to the Agreement and as required by law, to fulfill all of the requirements of all such permits maintained by the City or the Concessionaire subject to the terms of the Agreement. The City will cooperate and participate with the application for required permits and permit renewals for construction and/or operation of the Water System in accordance with these Operating Standards and applicable law, as detailed in the Agreement. Failure to comply with permit conditions and/or the Operating Standards requirements set forth by the City may result in the assessment of operational liquidated damages, in accordance with the Agreement, in addition to those penalties levied by regulatory agencies.

The Operator shall be responsible for complying with all applicable federal, State, and local laws and regulations pertaining to the Water System and shall comply with all approvals, licenses, permits, and certifications governing the performance of its Services hereunder issued for or with respect to the System.

These Operating Standards establish the general requirements for the operation, maintenance, and management of the major Water System components. The provisions

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards – Part A Water System Operating Standards**

February 25, 2013

included are intended to address the major activities required, but all specific activities that are necessary for meeting the performance requirements set forth herein and/or applicable laws and regulations shall be the responsibility of the Concessionaire. The Concessionaire may adopt, in whole or in part, the City's O&M manuals, standard operating procedures (SOPs), computerized maintenance management system (CMMS), and/or other systems or procedures. Alternately, the Concessionaire may establish new procedures. Regardless of the origination of operating procedures, the Concessionaire shall be responsible for determining such specific activities and performing all necessary operation, maintenance, and management activities to meet the requirements defined herein, applicable laws and regulations, and maintain the condition and performance of the Water System.

The Concessionaire is responsible for maintaining procedures, records, and systems, as required, to facilitate reporting operational performance, service history data, and other records and data to the City as required by the Agreement and these Operating Standards. The Concessionaire shall provide the City a copy of all SOPs and proposed report forms during the transition period. The Concessionaire shall advise the City of any significant changes to SOPs throughout the term of the Agreement. The City reserves the right, upon reasonable notice and during normal business hours, to conduct onsite inspections of facilities, and the Concessionaire will provide, upon the City's request, performance, operation, maintenance, and/or other records pertaining directly to the operation and maintenance of the Water System.

The roles and responsibilities of the City and the Concessionaire are further specified herein and in the Agreement.

2.0 Specialized Computer Software

The City utilizes a variety of specialized software packages, as summarized for the Concessionaire's reference in Exhibit B. The software summary is considered to be a complete list, provided for the Concessionaire's information, but actual computer software packages used by the City staff may vary. The Concessionaire, with the cooperation of the City, shall be responsible for determining the applicability and status of licensing fees, operating fees, contractual obligations, and/or other requirements or obligations associated with continued use of each software system. These systems may be used to facilitate and accomplish the responsibilities and objectives of these Operating Standards or the Concessionaire may utilize other systems. Regardless of the software systems utilized, the Concessionaire shall be responsible for data migration, conversions to other software systems, and any similar activity related to computer software systems.

The City will provide an up-to-date Initial Geospatial Data Set of the Geographic Information System (GIS) in ESRI file geodatabase format to the Concessionaire within fifteen (15) days of Closing. The Concessionaire will be responsible for maintaining the Water System and Sewer System dataset in the GIS. The Concessionaire should use the data model schemas provided by the City as a basis for maintaining feature and attribute information. The City and the Concessionaire will maintain separate systems and will share data, as required. The Concessionaire and the City agree that the shared Geospatial Data Sets will be for use by the

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards – Part A Water System Operating Standards**

February 25, 2013

Concessionaire and the City within their respective organizations in the furtherance of their mission and approved work program.

At the time of return of the System to the City at the end of the term of the Agreement or at the time of termination of the Agreement, the Concessionaire will use its reasonable efforts to convey the software systems in use at that time, in their entirety if possible, to the City or the new System operator.

Equipment manufacturer information and maintenance information has been recorded in the CMMS systems for both the Water and Sewer Treatment Plants. All valve, equipment, and treatment components throughout the treatment facilities have been identified and assigned unique identifiers (loop tag numbers), and all maintenance function tasks have also been coded. Existing City SOPs are detailed utilizing the assigned loop tag numbers. Such information will be available for the Concessionaire's use. The Concessionaire shall maintain equipment maintenance task assignments established by the City, but may change or modify the system in place at the time of closing. The Concessionaire shall notify the City of any system or unique identifier changes, as it is the City's intent to utilize the coded system and assigned unique equipment identifiers to verify the Concessionaire's performance of maintenance activities in accordance with these Operating Standards.

3.0 General Operation and Management Standards

The Operating Standards described herein are intended to define the critical requirements for the operation and management of the water treatment plant, water storage facilities, and water distribution system, including maintaining water quality, system management programs, and operation and maintenance of facilities. Operation of the WTP is generally controlled by the Supervisory Control and Data Acquisition (SCADA) system in the control room. The Operating Standards are intended to establish specific criteria for operation and maintenance of the Water System in accordance with City criteria that may exceed the requirements of applicable law and/or industry standards. Unless more stringently specified herein, the Concessionaire shall operate and maintain the Water System in accordance with applicable law, regulations, and Prudent Industry Standards, as defined by the Agreement, regulatory agencies, and/or applicable AWWA Standards. General standards for the operation and management of water treatment plant and water distribution facilities shall follow the requirements of the following standards, as updated throughout the term of the Agreement, unless otherwise defined within these Standards or applicable law:

ANSI/AWWA Standard G100-11 (Water Treatment Plant Operation and Management).

ANSI/AWWA Standard G200-09 (Distribution Systems Operation and Management).

AWWA standards establish minimum recommended requirements for parts, materials, and practices in the production and conveyance of drinking water. The Concessionaire shall

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards - Part A – Water System Operating Standards**

February 25, 2013

follow regulatory requirements and the current version of AWWA standards, as a minimum requirement, for the construction, upgrade, replacement, and operation of the Water System. Such standards include, but are not limited to:

PADEP Regulations and Requirements

USEPA Regulations and Requirements

ANSI/AWWA C651 – Disinfecting Water Mains.

ANSI/AWWA C652 – Disinfection of Water Storage Facilities.

ANSI/AWWA C653 – Disinfection of Water Treatment Plants.

ANSI/AWWA C654 – Disinfection of Wells.

ANSI/AWWA G400 – Utility Management System.

APHA/AWWA/WEF – Standard Methods for the Examination of Water and Wastewater, latest edition.

4.0 Water Treatment Plant and Water Quality Management

The Concessionaire shall review the City's SOPs for equipment and plant production processes and establish a system to develop and update operation and maintenance manuals and SOPs. These procedures may be developed specifically for the WTP or may be taken from manufacturers' literature or other appropriate sources.

The Concessionaire shall satisfy applicable regulatory requirements, including but not limited to federal, State, and local ordinances, and codes that apply to the operation of the System. Regulatory requirements include, but are not limited to all water quality requirements, construction requirements, residuals handling requirements, chemical storage regulations, and operator certification requirements. Compliance with regulations applies to regulations existing at the time of execution of the Agreement and regulations that become applicable during the term of the Agreement. Financial responsibility related to compliance with future regulations is addressed in the Agreement. The Concessionaire shall demonstrate that, at a minimum, the WTP performance meets all applicable drinking water regulations and the conditions of applicable permits and shall submit a monthly report to the City summarizing all regulatory water quality reports and other applicable water quality data. A summary of applicable permits in effect at the time of the Agreement is provided, for reference, as Exhibit C. In addition, the City of Allentown has established a standard of water quality that exceeds certain regulatory requirements. The Concessionaire shall achieve and/or maintain the level of service benchmarks defined herein

4.1 Performance Requirements

In order to protect public health and enhance customer satisfaction, high quality water must be continuously produced regardless of source water changes or treatment plant component malfunctions. The System shall deliver the quantity of water sufficient to satisfy water demands and the quality of water to meet applicable regulatory requirements and, where more stringent, City water quality requirements, as well as satisfy the demands of customers related to aesthetic water quality. The responsibility for and/or recovery of costs that may result from Force Majeure events and/or the deterioration of raw water quality is indicated in the Agreement.

4.1.1 City Water Quality Requirements

The City has operated the System in a manner that has consistently achieved compliance with water quality regulations. The City has made the optimization of process operations and finished water quality a priority. As a result, the City’s water quality is considerably better than required by applicable regulations for certain key parameters. The Concessionaire shall maintain water quality, as measured by the parameters and requirements defined in Table A-1. The Concessionaire shall comply with the requirements of Table A-1 when these requirements are more stringent than applicable regulations and/or Partnership for Safe Water requirements. If at any time regulatory requirements or Partnership for Safe Water requirements become more stringent than those identified in Table A-1, the Concessionaire shall provide the City with a report containing an analysis and recommendations for compliance and summarizing the costs and effort required for compliance with the more stringent requirements. The City and the Concessionaire will negotiate revision of requirements and appropriate financial compensation to the Concessionaire for compliance with the more stringent requirements. If the City and the Concessionaire cannot reach agreement on the form of the new standards and the associated financial compensation, the requirements in Table A-1 shall remain in effect for the purposes of the Agreement.

Table A-1: City Water Quality Requirements

Parameter	Units	Requirement	Notes
Turbidity	NTU	<0.10	At least 95% of individual filter effluent samples collected at 15-minute intervals shall be less than 0.10 NTU, calculated monthly
Haloacetic Acids (HAA5)	µg/L	48	Maximum four-quarter running average calculated at each required distribution system sample location (LRAA)
Total Trihalomethanes (TTHM)	µg/L	64	Maximum four-quarter running average calculated at each required distribution system sample location (LRAA)

4.1.1.2 Operational Liquidated Damages

Absent evidence of actions or circumstances outside the Concessionaire's control or due to the fault of others, failure to achieve City water quality requirements will result in assessment by the City of operational liquidated damages of \$3,000 for the initial occurrence. Failure to correct operations and return to achievement of these requirements within three (3) months of the initial failure shall result in assessment of additional operational liquidated damages of \$1,000. Each quarter thereafter operational liquidated damages of \$1,000 per quarter for which the Concessionaire does not return to or maintain compliance with City water quality requirements will apply. If a year passes without the Concessionaire returning to compliance with the requirements, additional operational liquidated damages of \$6,000 will be assessed and any further quarterly operational liquidated damages will be doubled. Both quarterly and annual operational liquidated damages amounts will remain at these higher levels each and every time operational liquidated damages are assessed by the City following the initial occurrence. Such operational liquidated damages will be in addition to any penalties, fines, or other obligations levied by regulatory agencies for which the Concessionaire shall be responsible in accordance with the Agreement.

4.1.2 Partnership For Safe Water Optimization Goals

The WTP has been a Partnership for Safe Water Phase III plant in good standing for approximately five (5) years. A Partnership for Safe Water Phase III plant in good standing represents a facility operated to meet the water quality management aspects of this standard as they pertain to particulate removal and disinfection. The supply of high-quality water is of great importance to the City. The City has given priority to optimized WTP process operations and finished water quality, resulting in achieving and maintaining Partnership Phase III status. The Concessionaire shall maintain good standing as a Partnership for Safe Water Phase III facility. The Concessionaire shall submit Partnership for Safe Water reports to the City annually to demonstrate compliance with these requirements.

4.1.2.1 Operational Liquidated Damages

Absent evidence of actions or circumstances outside the Concessionaire's control or due to the fault of others, failure to achieve Partnership for Safe Water goals will result in assessment by the City of initial operational liquidated damages of \$3,000. Failure to correct operations and return to achievement of these goals within three (3) months of the initial failure shall result in an assessment of additional operational liquidated damages of \$1,000. Each quarter thereafter operational liquidated damages of \$1,000 per quarter for which the Concessionaire does not return to or maintain compliance with Partnership for Safe Water goals will apply. If a year passes without the Concessionaire returning to compliance with the requirements, operational liquidated damages of \$6,000 will be assessed, and any further quarterly operational liquidated damages assessments will be doubled. Both quarterly and annual operational liquidated damages amounts will remain at these higher levels each and every time operational liquidated damages are assessed by the City following the initial occurrence.

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards – Part A Water System Operating Standards**

February 25, 2013

4.1.3 Fluoridation

At the time of Closing, the City adds fluoride to the treated water to promote dental health. The Concessionaire shall, unless contrary to applicable laws and regulations, maintain the practice of fluoridation, with a target finished water fluoride concentration of 0.5 milligrams per liter (mg/L). The practice of fluoridation and/or target fluoride concentration and acceptable range of fluoride concentration can be modified or discontinued only with prior approval by the City and/or as required for compliance with applicable laws and regulations.

4.1.4 Permits and Regulatory Approvals – At Time of Closing and Future

The Concessionaire shall be responsible for compliance with permit requirements, penalties, corrective actions, and other activities and costs associated with permit compliance, non-compliance, applications, modifications, and/or other permit-related activities.

The Agreement provides a listing of existing permits and designates which Permits are to be retained by the City, transferred to the Concessionaire, or have the Concessionaire added as co-permittee with the City. Cooperation between the City and the Concessionaire may be required related to permit applications and/or renewals. The extent of such cooperation in such instances is defined in the Agreement.

4.1.5 Annual Water Quality Report (Consumer Confidence Report (CCR))

The Concessionaire shall be responsible for compliance with all regulatory requirements related to Annual Water Quality Reports, including, but not limited to, report preparation, distribution to customers, and advanced distribution of necessary information to bulk water customers.

4.1.6 Operational Liquidated Damages

Failure to achieve regulatory water quality requirements will result in assessment by the City of initial operational liquidated damages of \$5,000, in addition to any penalties assessed by regulatory or oversight agencies. Failure to correct operations and return to compliance with regulatory water quality requirements within 1 month of the initial failure shall result in an additional assessment by the City of operational liquidated damages of \$5,000. Operational liquidated damages of \$5,000 per month will be assessed by the City for each additional month for which the Concessionaire does not return to or maintain compliance with regulatory requirements.

4.1.7 Future Water Demands

Increased demand for finished water is anticipated in future years. Consequently, there will likely be an increased reliance on surface water supplies, the quality of which can be adversely impacted by weather events. The Concessionaire should continue the planning and development of appropriate treatment approaches including, but not limited to evaluation of chemical selection and usage, chemical application points, improved filtration, and other options that might be required to meet future demands and water quality requirements.

5.0 Real Property Management and Maintenance

5.1 Maintenance Management

The Concessionaire may adopt the City's existing CMMS, with modifications as necessary, or may develop a new system. Regardless of the origin of the maintenance management system, the Concessionaire shall have a maintenance management system with practices adequate to sustain plant performance, as defined herein. The CMMS shall document maintenance frequency requirements, actual maintenance frequency (dates), and shall include a system to establish corrective actions if the maintenance frequency requirements are not achieved. The maintenance frequency requirements shall include inspection frequency for the process units associated with plant operation.

Exhibit D summarizes the services for which the City contracts for maintenance at the WTP which will need to be continued by the Concessionaire. These contracts should be reviewed by the Concessionaire. The Concessionaire may self-perform or change vendors utilized for these services, but the scope of service and frequency of maintenance shall not be less than defined in the City's contracts.

The Concessionaire shall also be responsible for the City's obligations included in the Settlement Agreement dated November 17, 2005 between the City and Westmount L.P.

5.1.1 Operating Procedures

The Concessionaire shall establish written operating and maintenance procedures that document the functioning of every major piece of mechanical equipment for which it is responsible for the Water System, including the plant, distribution system, and related facilities. Operating logs or supervisory control and data acquisition (SCADA) systems shall be used to record operational conditions, such as inlet pressure, discharge pressure, individual run times, flow rate, and other operational variables. The Concessionaire may adopt or incorporate the City's existing operation and maintenance procedures.

5.1.2 Maintenance Program

The Concessionaire shall establish written maintenance procedures for every major piece of mechanical equipment describing frequency, procedures, and maintenance of records. Information shall include basic manufacturer operating/maintenance requirements. Records shall document inspections and any service performed.

The Concessionaire shall maintain a CMMS for managing, scheduling, and recording preventive and corrective maintenance for all Water System components, including equipment, buildings, and structures. The CMMS will contain essential maintenance, warranty, and baseline condition information generated from an audit of the equipment and historical repair records. The CMMS system shall perform, at a minimum, the following functions:

- a. Inventory of all equipment, buildings, and structures;
- b. Schedule preventive maintenance activities;
- c. Track repair warranties;

Concession and Lease Agreement

Operating Standards – Part A Water System Operating Standards

- d. Provide easily accessible records of installation date and maintenance history (including costs);
- e. Generate work orders; and
- f. Record maintenance activities.

All maintenance work performed shall be recorded in the CMMS, including equipment maintenance and inspections, test results, repairs and replacements, and work performed by subcontractors. Documentation for work completed shall be maintained as one record and shall include a detailed description of the work performed, who performed the work, and all parts and materials used.

The Concessionaire shall report to the City a tabulation of major equipment taken out of service, date taken out of service, reason the equipment was taken out of service, and date the equipment was returned to service, as part of monthly reports. The City shall also have the right, during normal business hours and with notice to the Concessionaire, to periodically conduct Water System inspections and request operations staff to demonstrate the maintenance history of selected equipment, provided such inspections and demonstrations do not interfere with the Concessionaire's operation of the Water System. The Concessionaire shall cooperate with inspections and requests for information by the City.

6.0 Distribution System Operations and Management

The Operating Standards described herein are intended to define the critical requirements for the operation and management of the water storage facilities and water distribution system, including maintaining water quality, system management programs, and operation and maintenance of facilities. The Operating Standards are intended to establish specific criteria for operation and maintenance of the Water System, including City criteria that may exceed the requirements of applicable law and/or industry standards. Unless more stringently specified herein, the Concessionaire shall operate and maintain the Water System in accordance with applicable law and industry standard practice, as defined by regulatory agencies and/or applicable AWWA Standards and Manuals of Practice. General standards for the operation and management of the water distribution facilities shall follow the requirements of the following standards, unless otherwise defined within these Operating Standards or applicable law:

ANSI/AWWA Standard G200-09 (Distribution Systems Operation and Management).

AWWA standards establish minimum recommended requirements for parts, materials, and practices in the production and conveyance of drinking water. The Concessionaire shall follow regulatory requirements and the current version of AWWA standards, as a minimum requirement, for the construction, upgrade, replacement, and operation of the Water System. Such standards include, but are not limited to:

ANSI/AWWA C651 – Disinfecting Water Mains.

ANSI/AWWA C652 – Disinfection of Water Storage Facilities.

ANSI/AWWA D102 – Coating Steel Water Storage Tanks.

ANSI/AWWA D103 – Factory-Coated Bolted Carbon Steel Tanks for Water Storage.

ANSI/AWWA C654 – Disinfection of Wells.

ANSI/AWWA G400 – Utility Management System.

APHA/AWWA/WEF – Standard Methods for the Examination of Water and Wastewater, latest edition.

AWWA Manual M6 – Water Meters: Selection, Installation, Testing, and Maintenance.

AWWA Manual M14 – Recommended Practice for Backflow Prevention and Cross-Connection Control.

AWWA Manual M17 – Installation, Field Testing, and Maintenance of Fire Hydrants.

AWWA Manual M22 – Sizing Water Service Lines and Meters.

AWWA Manual M31 – Distribution System Requirements for Fire Protection.

AWWA Manual M42 – Steel Water Storage Tanks.

AWWA Manual M44 – Distribution System Valves: Selection, Installation, Field Testing, and Maintenance.

NSF/ANSI 60 – Drinking Water Treatment Chemicals.

NSF/ANSI 61 – Drinking Water System Components.

6.1 Partnership for Safe Water Distribution System Operations

The City is a charter member of the Partnership for Safe Water Distribution System Optimization program (Program). The Program is patterned after the Partnership's Water Treatment Plant program, with the objective of optimizing distribution system operations and the water quality delivered to customer taps. The Concessionaire shall use reasonable efforts to achieve and maintain good standing in the Program and shall submit with the annual report to the City a summary of distribution system optimization efforts and the status related to the Program.

6.2 Distribution System Performance Requirements

6.2.1 Water System Pressure

The minimum residual pressure at curb stop under all operating conditions shall not be less than the greater of 20 psi or the minimum regulatory requirement. The Concessionaire shall monitor pressure at critical locations to be established and agreed to by the City and the Concessionaire. The Concessionaire shall notify the City as soon as practical if minimum pressures are not maintained and/or of the occurrence of an event that may have resulted in the failure to maintain the required minimum residual pressure. The Concessionaire should review the City's pump operating criteria and tank level setpoints, included as Exhibit E, for reference.

6.2.2 Flow Requirements

The Water System shall be designed and constructed, for any new construction or replacement/renewals, with the capacity to deliver maximum day demands and fire flow for individual and public requirements, while maintaining the minimum pressure requirements. New construction of system facilities shall be approved in advance by the City as set forth in the Agreement. The Concessionaire shall submit for review by the City, plans and engineering design information supporting the design of planned improvements.

6.3 Distribution System Monitoring and Control

6.3.1 Water Quality

The Concessionaire shall determine and document all local, State, federal, and/or other regulations pertaining to distribution system water quality, including those City requirements set forth herein, that apply to the Water System. The Concessionaire shall be responsible for maintaining distribution system water quality that meets or is better than the most stringent applicable requirements, and, in addition to required regulatory reports, shall submit a quarterly report to the City summarizing distribution system water quality monitoring results.

6.3.2 Sampling Plan

The Concessionaire shall initially utilize the City's PADEP-approved sampling plan and sampling stations. A list of sampling stations is included as Exhibit F. The Concessionaire may modify the routine distribution system sampling plan as necessary, in accordance with applicable regulations, but any modifications to the sampling plan shall, at a minimum, maintain compliance with the PADEP-approved sampling plan. The sampling plan shall be reviewed annually or more frequently if required for regulatory compliance, and modified, if necessary, based on changes in regulation/law, water use patterns, or other changes that may affect water quality. The Concessionaire shall analyze data trends and develop an action plan to respond to changes in water quality. The Concessionaire shall report to the City any and all sample results that do not comply with the more stringent of regulatory requirements or these Operating Standards.

Distribution system water quality sample reports to the City shall be made in accordance with PADEP public notification requirements for samples not in compliance with City or regulatory requirements. The Concessionaire shall identify issues, corrective action plans, and

report on corrective actions in subsequent reports to the City until the issues are corrected. At the time of the closing, the City collects distribution system water quality samples each month for regulatory compliance using dedicated sample hydrants. The Concessionaire shall be responsible for maintenance, repair, and replacement, as necessary, of the sample hydrants. The Concessionaire should review the City's sampling plan and incorporate the City's plan into future operations.

6.4 Disinfectant Residual Maintenance

6.4.1 Disinfectant Residual Requirement

The Concessionaire shall maintain a detectable disinfectant residual at all points in the distribution system at all times or achieve regulatory distribution system disinfectant residual and/or microbiological requirements, whichever are more stringent. The Concessionaire shall monitor and record disinfectant residual in accordance with the approved sampling plan and report results to appropriate regulatory agencies and the City, as required.

The minimum chlorine residual at all distribution system locations is 0.02 mg/L, to be measured as free chlorine. For samples that are less than 0.02 mg/L free chlorine residual, a sample from that same location must be immediately tested for heterotrophic plate count (HPC). An HPC result of greater than 500 colony forming units (CFU) per milliliter is considered the same as a coliform positive sample.

Any and all failures to maintain a detectable chlorine residual or the occurrence of a positive total or fecal coliform sample result in any distribution system water quality sample shall be reported to the City as soon as possible after the Concessionaire's receipt of the test results. When known, the Concessionaire shall advise the City of the suspected cause of failure and the corrective action(s) taken. The Concessionaire shall continue to update the City until the problem has been resolved. A written report detailing all pertinent information, an assessment of the cause of the problem, corrective actions taken, and the plan to prevent reoccurrence will be submitted by the Concessionaire to the City with the next monthly operating report due to the City.

The City has not been required to issue a boil water notice within the previous 10 years due to microbiological contamination. Should a boil water notice be necessary, the Concessionaire shall follow all mandatory regulatory procedures and perform all required public notification to advise the public of the situation and the corrective actions being undertaken.

6.4.2 Operational Liquidated Damages

Absent evidence of actions or circumstances outside the Concessionaire's control or due to the fault of others, such as a broken main, in addition to fines and other actions by regulatory agencies resulting from a boil water advisory, operational liquidated damages of \$5,000 will be assessed by the City for the first occurrence. The City will assess additional operational

liquidated damages of \$8,000 for a second occurrence within a period of 24 consecutive months, and the City will assess additional operational liquidated damages of \$10,000 for a third occurrence within 48 consecutive months. In the event of a boil water advisory, the Concessionaire shall also provide to the City, within 24 hours, a verbal report indicating the cause or likely cause of the issue and corrective actions. The Concessionaire shall continue to update the City until the problem has been resolved. A summary of the cause of the problem, corrective actions, and preventive actions shall be included in the next monthly operating report.

6.5 Nitrification Control

The City maintains a free chlorine residual in the water distribution system. If at any time the Concessionaire adds ammonia to the water as part of the disinfection process, the Concessionaire shall establish a nitrification control program, including, but not limited to:

- a. Monitoring of the free ammonia concentration prior to and after chloramination and controlling the weight ratio of chlorine to ammonia through monitoring and adjustment to minimize the presence of free ammonia in the system.
- b. Adjustment of the ammonia feed rate to minimize the presence of free ammonia in the system.
- c. Routine monitoring for key nitrification indicator parameters such as nitrite, nitrate, and free ammonia.
- d. Corrective action plan, including flushing and periods of free chlorine application to correct nitrification occurrences.
- e. Preventative action plan to prevent/minimize the occurrence of nitrification.

A summary of monitoring data, identified issues, corrective actions, and preventive actions shall be included in routine quarterly reports to the City.

6.6 Disinfection By-Product Monitoring and Control

The City utilizes PADEP-approved procedures, protocols, and sampling locations related to disinfection by-product (DBP) monitoring and control. The Concessionaire shall adopt the City's program or establish a PADEP-approved program to monitor and control disinfection by-products. The program shall establish goals for DBPs at critical points in the distribution system. The program shall include specific actions should DBP levels exceed established goals/requirements. The program shall also be designed to achieve regulatory requirements or City water quality requirements as defined herein, whichever are more stringent.

The Concessionaire shall report to the City, within seven (7) days of occurrence or the receipt of laboratory reports, any failure to comply with disinfection by-product monitoring and/or control requirements.

6.7 Corrosion Monitoring and Control

The City employs a PADEP-approved protocol, primarily utilizing natural hardness and alkalinity, for corrosion control. The Concessionaire shall adopt the City's existing approach utilizing the City's historic corrosion indices or establish a PADEP-approved prevention and

response plan to prevent, detect, and respond to both external and internal material corrosion and deposition problems in the distribution system, including, at a minimum:

- a. Monitoring and sampling for corrosion-related indicator parameters such as pH, alkalinity, conductivity, phosphates, silicates, calcium, metals, etc.
- b. The scale-forming potential shall be measured by Langlier Index and adjustments to finished water quality made to maintain the finished water corrosion index within a range proven to protect the system.
- c. Inspection, when exposed, of the condition of piping for perforations, tuberculation, and other conditions related to the integrity and hydraulic capacity of the Water System.
- d. Procedures to control lead and copper levels in accordance with the Lead and Copper Rule and/or other corrosion related regulations.
- e. Procedures/guidelines for controlling other corrosion-related by-products such as iron, color, zinc, and taste and odor, in the distribution system.

The Concessionaire shall notify the City of any corrosion control issues within seven (7) days of the time at which the Concessionaire becomes aware of such issues.

6.8 Aesthetic Water Quality Parameters

The Concessionaire shall have an action plan to address taste, odor, color, and staining problems, and similar complaints related to the aesthetic quality of the delivered water. Each complaint shall be investigated and logged, noting complainants name and contact information, time, nature, and location of delivered water in question. The Concessionaire can treat multiple, related complaints as an event, without the need to interview each complainant so long as the Concessionaire notifies the public of the event in accordance with then-current PADEP public notification requirements. Onsite testing shall be performed at the discretion of the Concessionaire upon the occurrence of other similar or potentially related complaints. Following the complaint investigation, the complainant shall be contacted within 48 hours to determine if the complaint has been resolved. The Concessionaire will include the information above as well as the Concessionaire's conclusions in the report mentioned below.

The Concessionaire shall report a summary of taste and odor complaints to the City quarterly. On an annual basis, the Concessionaire's report shall include data for the previous two (2) years, by category, for comparison purposes.

6.9 Cross Connection Control and Backflow Prevention

At the time of Closing the City requires new buildings to have an appropriate backflow prevention device, but does not have a program for installation of backflow prevention devices in existing buildings, nor is there a program to document verification/testing of existing devices. The Concessionaire should refer to the July 2012 PADEP Inspection Report in reference to identified needs related to cross-connection control and backflow prevention and with the full cooperation and assistance of the City will, within two (2) years after Closing, work with the City on implementing and maintaining the required program provided the City's adopts the necessary ordinances.

The Concessionaire shall establish cross-connection control and backflow prevention programs for the plant operations and for the distribution system. The program shall meet applicable regulatory requirements and the recommendations included in AWWA Manual M14 or as required by regulations.

- a. The plant will utilize isolation (plumbing) and containment strategies to protect the water supply and plant employees.
- b. Appropriate backflow prevention measures shall be required throughout the system. The program shall include verification and testing of backflow prevention devices at least annually or as required by local regulations.
- c. Summary reports of backflow prevention and testing activities shall be provided to the City as appropriate.

6.10 Water Loss and Leak Detection

The Concessionaire shall perform leak detection, system repairs, and perform an annual water audit, including water audits that may be required by regulatory/oversight agencies. With the exception of the 2012 report which will be prepared by the City, completion of the DRBC annual water audit and compliance with associated requirements shall thereafter be the Concessionaire's responsibility.

6.10.1 Water Audit

This audit requires the Concessionaire to monitor/record parameters on a monthly and daily basis and provides numerous performance indicators, including an infrastructure leakage index (ILI), which should be used to assess water loss control. The Concessionaire shall demonstrate efforts annually toward reducing the ILI, provided that year over year improvements shall not be required so long as the Concessionaire can demonstrate a longer term trend of reduction of leakage.

6.10.2 Leak Detection

The City has approximately 320 miles of distribution main at the time of the Agreement. The City has historically performed leak detection surveys covering the entire system every two (2) years. The Concessionaire shall be responsible for distribution system leak detection and repair, including:

- a. The Concessionaire shall perform leak detection investigation on 110 miles of pipe per year, minimum.
- b. The Concessionaire is advised that due to local soil types and geology, leakage can readily lead to soil subsidence and possibly sink holes. Consequently, identified leaks should be exposed as soon as possible after identification to determine the corrective action that will be necessary. The necessary remedial work should be scheduled accordingly.
- c. The Concessionaire shall report to the City, on a quarterly basis, activities associated with leak detection and repair activities, including, but not limited to miles of mains surveyed, location of identified leaks, pipe diameters, characteristics of the leaks,

dates of identification of the leaks, estimated volume of leakage, and dates of leak repair.

6.10.3 Documentation and Reporting

The Concessionaire shall provide reports to the City indicating:

- a. Water Audit (annual)
- b. Leak Detection and Repair (quarterly)

6.10.4 Operational Liquidated Damages

Absent evidence of actions or circumstances outside the Concessionaire's control or due to the fault of others, failure to achieve leak detection and water audit requirements as defined herein shall result in assessment by the City of operational liquidated damages of \$3,000 for the initial occurrence. Additional operational liquidated damages of \$1,000 will be assessed by the City if the leak detection and water audit requirements are not on schedule within three (3) months following the end of the year, and for each additional three (3) month period that the Concessionaire fails to achieve schedule recovery. If the work has not been completed for the current and preceding year, operational liquidated damages of \$6,000 will apply and quarterly operational liquidated damages assessments will be doubled. Both quarterly and annual operational liquidated damages will remain at these higher levels each and every time operational liquidated damages are assessed by the City following the initial occurrence.

6.11 Valve Exercising and Replacement

6.11.1 Valve Exercise Program

Exclusive of valves associated with fire hydrants, the City's valve exercise practices have included exercise of valves with a diameter of less than 16 inches every five (5) years. The Concessionaire shall continue the practice of exercising approximately one-fifth of these valves each year, such that each valve is exercised every five (5) years. At the discretion of the Concessionaire, individual valves may be exercised more frequently than once every five (5) years, but credit for exercising those valves will only be applied once within each five (5) year cycle. Valves 16-inch and larger have not been routinely exercised by the City and the exercise of these valves is at the option of the Concessionaire. A summary of existing valves, by size, is included as Exhibit G. The summary of valves includes valves associated with hydrants. For valves less than 16 inches in diameter, the Concessionaire shall establish a valve exercising program that follows AWWA Manual M44 and the valve manufacturer's recommended procedures, and includes at least the following elements.

- a. Exclusive of valves associated with hydrants, over a 5-year period at least one-fifth of the total number of valves less than 16-inch in diameter shall be exercised annually, such that all valves are exercised approximately every five (5) years.
- b. The Concessionaire shall give consideration to including the 16-inch and larger valves in the valve exercise program, but is not required to do so by these Operating Standards.

- c. The Concessionaire shall identify and report all valves requiring repair or replacement and shall be responsible for repair or replacement of such valves in a timely manner, but in all cases the time to repair or replace such valves shall not be greater than one (1) year from the initial date of identification of the repair or replacement need.
- d. Identification of critical valves and scheduling of more frequent exercising of critical valves.
- e. Water quality and isolation issues (avoiding service interruptions) shall be considered when developing the program.
- f. The valve exercise program should consider implementation of valve exercising in conjunction with the systematic flushing program and/or hydrant maintenance and testing program.
- g. The program shall be designed and executed such that system operation and emergency response, including the ability to isolate areas of the system or pipe segments, will not be compromised by one (1) or more broken valves.
- h. The Concessionaire shall establish a contingency plan prior to exercising critical valves. The plan shall be designed to ensure the continuity of system operation in the event that the valve is broken during exercise operations.
- i. The Concessionaire shall maintain records of valves exercised by the unique valve identifier to facilitate verification by the City of valve exercise work performed.

At the time of closing the City will provide the Concessionaire with a list of inoperable valves less than 16 inches in diameter. The Concessionaire will not be responsible for the cost of repair or replacement of these valves. Repair or replacement of valves less than 16 inches in diameter identified as inoperable at the time of closing will be the financial responsibility of the City.

6.11.2 Documentation

The Concessionaire shall provide quarterly reports to the City indicating:

- a. Number of valves exercised of each size.
- b. Number of valves inoperable or requiring maintenance, repair, or replacement by unique identifier, valve size, location, and date of inoperability.
- c. Summary of maintenance, repair, or replacement activities completed by unique identifier, valve size, location, and date of inoperability. Except for inoperable valves which required repair or replacement during the current quarter, this will be a continuation of earlier quarterly reports.

6.11.3 Operational Liquidated Damages

Absent evidence of actions or circumstances outside the Concessionaire's control or due to the fault of other, failure to achieve annual valve exercise requirements shall result in operational liquidated damages of \$3,000. Additional operational liquidated damages of \$1,000 will be assessed by the City if the valve exercise program is not on schedule within three (3) months following the end of the year and for each additional three (3) month period that the Concessionaire fails to achieve valve exercise schedule recovery. If the required number of

valves have not been exercised for the current and preceding year, operational liquidated damages of \$6,000 will apply and quarterly operational liquidated damages will be doubled. Both quarterly and annual operational liquidated damages will remain at these higher levels each and every time operational liquidated damages are assessed by the City following the initial occurrence.

The City will assess the Concessionaire operational liquidated damages of \$500 for each valve identified as requiring repair or replacement that is not appropriately repaired or replaced within one (1) year of identification of the maintenance or replacement need.

6.12 Hydrant Maintenance and Testing

6.12.1 Hydrant Exercise Program

The Water System includes approximately 1,800 hydrants at the time of the Agreement. Each hydrant has been assigned a unique identifier in the City GIS to facilitate hydrant maintenance tracking. The Concessionaire shall establish a hydrant maintenance and flow testing program, in accordance with the requirements of AWWA Manual M17 or the hydrant manufacturer's recommendations, that includes at least the following:

- a. At least 900 hydrants shall be inspected and tested annually, such that all hydrants are exercised every two (2) years on average, minimum. The approximately 900 hydrants not serviced in one year must be part of the 900 hydrants inspected and tested the following year.
- b. The program shall establish procedures for opening and closing hydrants to avoid damage to the Water System.
- c. Flow testing and recording requirements.
- d. Procedures to prevent damage to property.
- e. The program should consider implementation and coordination with the systematic flushing program and valve exercise program.
- f. All hydrants, including the hydrant lateral valve, identified as requiring repair or replacement shall be appropriately repaired or replaced within 6 months of identification of the need for repair or replacement.
- g. All hydrants requiring painting shall be painted at the time of inspection or painted as part of a dedicated painting program such that all hydrants identified as needing painting are painted within one (1) year of inspection and testing.
- h. Hydrants damaged by traffic shall be repaired or replaced within 90 days of the date of damage. The City will assist the Concessionaire in the recovery of the cost to repair or replace hydrants damaged by traffic from the party or parties responsible for the damage.
- i. The Concessionaire shall maintain records of hydrant maintenance, by the unique hydrant identifier, to facilitate verification by the City of hydrant inspection and testing work performed.

At the time of Closing, the City will provide the Concessionaire with a list of damaged or inoperable hydrants. The Concessionaire will not be responsible for the cost of repair or

replacement of these hydrants. Repair or replacement of hydrants identified as damaged or inoperable at the time of closing will be the financial responsibility of the City.

6.12.2 Documentation

The Concessionaire shall provide quarterly reports to the City indicating:

- a. Number of hydrants inspected and tested.
- b. Number and unique identifier of hydrants inoperable or requiring maintenance, repair, or replacement.
- c. Summary of maintenance, repair, or replacement activities completed by unique identifier, valve size, location, and date of identified inoperability or need for repair or replacement. Except for hydrants which required repair or replacement during the current quarter, this will be a continuation of earlier quarterly reports.

6.12.3 Operational Liquidated Damages

Absent evidence of actions or circumstances outside the Concessionaire's control or due to the fault of other, failure to achieve annual hydrant maintenance requirements shall result in operational liquidated damages of \$3,000. Additional operational liquidated damages of \$1,000 will be assessed by the City if the hydrant exercise program is not on schedule within three (3) months following the end of the year and for each additional three (3) month period. If the required number of hydrants have not been inspected, exercised, and maintained for the current and preceding year, operational liquidated damages of \$6,000 will apply and quarterly operational liquidated damages will be doubled. Both quarterly and annual operational liquidated damages will remain at these higher levels each and every time operational liquidated damages are assessed by the City following the initial occurrence. Failure to repair or replace hydrants identified as inoperable within six (6) months of identification will result in operational liquidated damages of \$500 per hydrant.

6.13 Streets Program Participation

Annually the City's Streets Program selects streets and/or alleys (hereinafter also referred to as streets) within the City for reconstruction or resurfacing. The Concessionaire shall attend the planning meeting and all progress meetings associated with the Streets Program and contribute to the discussion relative to the Concessionaire's obligations and objectives. A fundamental concept of the program is that once a street has been reconstructed or resurfaced as part of the program that the need to reopen the street for remedial infrastructure work will be minimized for an extended period of time. As such, it is imperative that underground utility maintenance, repair, and/or replacement is performed concurrently with the Streets Program, when the condition of underground utilities may require maintenance, repair, or replacement in the near term.

The Concessionaire shall be responsible for cleaning and televising the sewer lines in the selected streets. The Concessionaire shall be responsible for repair or replacement of damaged or leaking sections and associated facilities, as necessary. The repaired or replaced lines will be

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards – Part A Water System Operating Standards**

February 25, 2013

televised by the Concessionaire after the work has been completed to verify that work has been successfully completed.

All manhole and water valve elevations will be adjusted when necessary. The Concessionaire will supply, if necessary, and reset all manholes and water valve boxes to proper line and grade for all reconstructed streets and supply all necessary risers and rings for all overlaid streets. The Concessionaire will also provide these same materials for all City street improvement contracts. If in good condition, risers and manhole frame and cover assemblies may be reused.

The age, type of pipe, pipe break/leak history, and other relevant factors will be used to determine if the water lines in the selected street should be replaced as part of the Streets Program. If replacement is determined to be necessary in the judgment of the Concessionaire, the Concessionaire will be responsible for replacement of those sections of the pipe, which will be counted toward the Concessionaire's annual water main replacement requirements as part of these Operating Standards.

All valves and curb stops associated with the selected streets will be exercised and tested for functionality. All valves and curb stops found to be inoperable or of limited functionality will be replaced by the Concessionaire. All valves replaced will count as an exercised valve for the purposes of the Concessionaire's valve exercise requirements as part of these Operating Standards.

All lead service lines and any service lines that have been damaged or known to be of questionable integrity uncovered as part of the Streets Program shall be replaced by the Concessionaire.

In performing these activities associated with the Streets Program the Concessionaire will be responsible for all tasks normally associated with the work activities related to the Water and Sewer Systems. All work shall be completed in conformance with City codes and ordinances.

All pertinent information related to the maintenance, repair, and/or replacement of Water and Sewer System infrastructure associated with the Streets Program shall be entered into the City GIS system. The Concessionaire's participation and performance with respect to the Streets Program will be an agenda item during quarterly meetings

6.14 Sinkhole Responsibility

The Concessionaire shall immediately notify the City of any sinkholes identified by or brought to the attention of the Concessionaire. The Concessionaire will be fully and directly responsible for repairs, remediation, and replacement of all water and sewer system components damaged as a result of a sink hole within the curb lines of the street. Repairs and replacements will be backfilled in accordance with City Standards. All manhole and water valve elevations will be adjusted when necessary. The Concessionaire will supply, if necessary, and reset all manhole frame and cover assemblies and water valve boxes to proper line and grade for all reconstructed streets and supply all necessary risers and rings for all overlaid Streets. If in good

condition, manhole frame assemblies, risers, and valve boxes may be reused. All work will be coordinated with the City and other utility providers

All work shall be performed in conformance with City codes and ordinances, and all pertinent information will be entered into the City's GIS system.

6.15 System Flushing

The Concessionaire shall develop and implement a systematic distribution system flushing program. Development of the flushing program shall include consideration of the condition of the Water System, hydraulic capacity, treatment, water quality, specific customer requirements, water quality complaint trends, and other criteria as appropriate. The Concessionaire may adopt in whole or in part, the City's flushing program or may develop a new program, so long as the flushing program includes:

- a. A preventive approach to complete distribution system flushing at a frequency of no less than one (1) time each year.
- b. Preventative flushing at required frequencies to address localized water quality problems or complaint trends.
- c. Achievement of adequate flushing velocity, minimum 2.5 feet per second (fps), to address water quality concerns. Flushing velocity can be achieved using a conventional, uni-directional, or other flushing approach, as determined by the Concessionaire, as long as flushing is performed in a logical sequence required to force clean water into the flushing area.
- d. Written procedures addressing all activities associated with system flushing, including but not limited to, water quality and hydraulic monitoring; frequency, location, and duration of flushing; adherence to all regulatory requirements; and procedures to prevent property damage.
- e. The flushing program shall be provided to the City for review at least four (4) weeks prior to the planned initiation of routine/annual flushing.
- f. City review of a flushing plan is not required for reactive/corrective flushing to address customer complaints or water quality concerns.

The Concessionaire shall provide annual reports to the City summarizing flushing activities.

6.16 Metering

To the extent currently metered, the Concessionaire shall meter and record on a daily basis the volume of water entering the WTP from all sources, the volume of water utilized for filter backwash and other WTP uses, and the volume of water entering the distribution system. From the Closing Date until the end of the Term the Concessionaire shall accumulate historical data related to the volume of water used in the WTP and pumped to the system. All customer accounts and other water uses, including City properties, shall be metered.

6.16.1 Meter Requirements

All metering devices shall meet the requirements of AWWA or other applicable standards and shall be consistent and compatible with existing City metering equipment. At the time of the Agreement, the City has obtained PennVest funding for the installation of new radio read meters. The new metering system will have data collection capabilities, and the Concessionaire should become familiar with the features of the metering system and data acquisition system. The City utilizes Neptune T-10 positive displacement meters for services 5/8-inch through 2-inch and Sensus Omni meters for services 3-inch and larger. All meters are being equipped with Itron 100W ERTs. The Concessionaire shall consult with the City related to the existing PennVest loan and meter replacement project at the time of Closing relative to the status of the program.

6.16.2 Meter Testing

To ensure metering accuracy, the Concessionaire shall test or replace meters at the frequencies recommended in AWWA Manual M6 or as required by applicable regulations. The Concessionaire shall report to the City, on an annual basis, a summary of meters tested, meter test results, and meter replacements as well as other meter related actions.

The Concessionaire shall calibrate all raw water, plant discharge, filter backwash, and other plant usage meters, and Lehigh County Authority (LCA) interconnection meters annually, minimum, or more frequently if required by regulation or by questionable meter readings. The City shall be notified if any of these units are determined to be malfunctioning and shall be informed of the Concessionaire's plan and schedule for repair or replacement of the unit. The Concessionaire shall ensure that all interconnection/bulk water meters owned by the City are calibrated annually.

6.16.3 Meter Repair and Replacement

The Concessionaire shall establish a program to replace or repair defective meters. The program shall verify conformance with the defined guidelines of AWWA Manual M6 and the meter manufacturer's recommendations.

6.16.4 Documentation and Reporting

The Concessionaire shall submit to the City, on an annual basis, a report summarizing calibration activities and results associated with raw water, plant, and bulk water customer meters, as well as customer meter calibration, testing, replacement, and associated activities.

6.17 Treated Water Storage Facilities

6.17.1 Storage Capacity

The City's storage facility operating levels and pump operation set-points are set forth in Exhibit E. The Concessionaire may modify minimum operating levels in storage facilities based on pressure in the distribution system, fire flow requirements, emergency storage requirements, and other site-specific conditions, as required. The Concessionaire shall have written operating procedures, which address water level fluctuations in the storage facilities and water turnover rates. The procedures should minimize water age in the finished water storage facilities to

achieve water quality goals. The written policy shall establish the target turnover rate for each facility and minimum and maximum operating levels.

6.17.2 Inspection and Testing

The Concessionaire shall establish and execute a storage tank inspection program outlining inspection and maintenance frequencies, procedures, and maintenance of records. The inspection program shall include routine (daily/weekly), periodic (monthly/quarterly), and comprehensive (every 5 years) inspections. The Concessionaire shall hydrostatically test reservoirs each year, minimum.

6.17.3 Maintenance

The Concessionaire shall establish a storage tank maintenance program that includes periodic cleaning and refurbishing of facilities. Cleaning of finished water storage facilities shall be based on the results of internal inspections conducted every five (5) years or more frequently at the Concessionaire's option or as required by regulation. Full internal and external inspections shall be conducted in accordance with AWWA Manual M42. The Concessionaire shall conduct a formal external visual inspection of the storage facility at least annually to assess and repair environmental damage and verify the integrity of vents and screens. The inspection shall include an assessment of the physical security of the facility. Maintenance activities, such as coating or painting, shall be based on ANSI/AWWA Standards D102 and D103. The results of the storage tank inspection and maintenance program shall be included in the annual report to the City.

The Concessionaire should understand that, at the time of closing, communication equipment (cell carrier) is mounted on at least one treated water storage tank and the City's Communication Bureau has equipment on the East Side Reservoir. The Concessionaire shall comply with the requirements of any associated agreements and coordinate, as required, with the Owner of any equipment mounted on existing storage tanks, in accordance with the City's existing agreement(s) with the equipment owner(s).

6.17.4 Disinfection

Storage facilities shall be disinfected in accordance with ANSI/AWWA C652 if drained for inspection and/or other maintenance. Disposal of chlorinated water shall be performed in accordance with local, State, and federal regulations. If divers or remote operational vehicles are used, the divers and equipment shall be disinfected in accordance with ANSI/AWWA C652.

6.17.5 Documentation

The Concessionaire shall provide annual reports to the City documenting:

- a. Number and identification of tanks inspected and tested.
- b. Number and identification of tanks requiring maintenance, repair, or replacement.
- c. Schedule for maintenance, repair, or replacement.
- d. Summary of maintenance, repair, or replacement activities completed.
- e. Results of hydrostatic testing.
- f. Identification of maintenance, repair, or replacement required in the future based on the results of inspections.

6.18 Pump Station Operations and Maintenance

The City has existing operation and maintenance procedures for each pumping facility. The Concessionaire may modify the City's existing procedures, at the Concessionaire's option, and shall provide operating and maintenance procedures for each pumping facility to the City. Operating logs shall be used to record operational conditions, such as inlet pressure, discharge pressure, individual pump run times, flow rate, and other operational variables. Operating procedures will include pump start and stop routines and procedures for flow rate changes that minimize the occurrence of pressure surges. The Concessionaire shall monitor and record pump station operating data and maintenance activities.

6.19 Pipeline Rehabilitation and Replacement

6.19.1 Schantz Spring Transmission Line

In October 2008, the City contracted for leak detection of the Schantz Spring Transmission Line using Smart Ball technology. A report including the identification and general classification of identified leaks was provided to the City. The City has addressed leaks #14 and #20 in the Union Terrace area. The City's plan to continue with this project was delayed due to work on the 15th Street Bridge. Continuation of remedial action on the transmission line will become the responsibility of the Concessionaire. This item was identified in PADEP's July 2012 Inspection Report.

6.19.2 Evaluation and Replacement Requirements

The Concessionaire shall also establish a program for evaluating and replacing existing portions of the distribution system, as required based on the physical condition of the pipes as determined through inspections, leak/break records, flow testing results, and other criteria. The Concessionaire shall update the assessment annually, provide the assessment report to the City, and meet with the City to discuss pipeline rehabilitation and replacement needs. The Concessionaire shall replace at least 2 miles of existing pipe per year, with an initial focus on replacement of spun cast iron pipes, pipes that have been in service for greater than 100 years, and pipes identified as problematic or potentially problematic based on an evaluation of leak history and other data. In conjunction with the aforementioned pipeline replacement program, all lead and gray iron service piping from the main to the curb shall be replaced regardless of condition.

The City GIS includes information that may be used in identifying and prioritizing mains for replacement. The Concessionaire shall be responsible for the cost and implementation of all pipeline rehabilitation and replacement projects. The annual main replacement requirement may be reduced, with City approval, when leak history, leak survey results, annual water audit reports, and other data no longer supports the need for routine replacement at the defined level. The reduction of the annual main replacement requirement, if applicable, shall not take place before January 1, 2017. Any pipe replaced due to sinkhole repair or as part of the Streets Program shall be included as part of the Concessionaire's annual main replacement requirement.

6.19.3 Operational Liquidated Damages

Absent evidence of actions or circumstances outside the Concessionaire's control or due to the fault of others, failure to achieve annual pipeline replacement requirements shall result in an assessment by the City of operational liquidated damages of \$5,000. Additional operational liquidated damages of \$1,000 will be assessed by the City if the main replacement program is not on schedule within three (3) months following the end of the year and for each additional three (3) month period. If the pipeline replacement requirement has not been achieved for the second consecutive year, operational liquidated damages of \$8,000 will be assessed by the City and operational liquidated damages assessed at three (3) month intervals will be doubled. All operational liquidated damages will remain at these higher levels each and every time operational liquidated damages are assessed by the City following the initial occurrence.

6.20 Disinfection of New or Repaired Pipes

All new or repaired sections of pipe shall be protected from contamination and disinfected in accordance with the requirements of ANSI/AWWA C651 and applicable regulations and permit requirements. Chlorinated water shall be disposed of in accordance with local, State, and federal regulations.

6.21 PA One Call

The Concessionaire shall be responsible for response actions relative to marking of water and sewer utilities in accordance with PA One Call requests.

6.22 Service Interruptions

The Concessionaire shall have a system to document and respond to all planned and unplanned service interruptions. The Concessionaire shall adhere to regulatory requirements related to Public Notification in the event of service disruption, water quality issues, and other conditions that require public notification. The Concessionaire is responsible for notification. The Concessionaire shall also provide notification as soon as possible to the City Traffic Bureau in the event of a repair or any other event that will result in traffic disruption.

6.22.1 Response to Unplanned Disruptions of Service

- a. The Concessionaire shall establish a standardized system for recording and reporting pipeline leak or break information to the City. At a minimum, the data collected on a leak or break report shall include pipe location, pipe material, pipe size, pipe age, estimated quantity of water lost, date of break, apparent type of leak or break, visual assessment of surrounding soil type, pipe depth, and assessment of saturation conditions of the soil prior to break or proximity to water table. The information shall be provided to the City in an annual report.
- b. The Concessionaire shall utilize an automated notification system to notify impacted customers.
- c. Dependent upon the extent of the service interruption, the Concessionaire may utilize door to door notification or an automated notification system to notify impacted customers.

6.22.2 Planned Service Interruptions

The Concessionaire shall provide the City and impacted customers with notification at least 7 days in advance of project initiation and additional notification 48 hours in advance of the final connection shutdown for all planned service interruptions.

6.22.3 Reporting and Documentation

The Concessionaire shall submit quarterly reports to the City related to both planned and unplanned service interruptions.

6.23 New User Connections

The Concessionaire will install new connections to the Water System to serve new customers, or for existing customers who require a new connection. The connection will be constructed in accordance with the City's Standard Materials and Construction Specifications and Pennsylvania's Uniform Construction Code. The Concessionaire will document the location and depth of the connection and maintain that information as permanent record. The Concessionaire will provide a record of the installation to the City and provide the information as part of the GIS data sharing.

7.0 Laboratory Standards

The Concessionaire shall maintain or contract for services from an accredited water treatment plant laboratory, and the laboratory must be available to respond to distribution system water quality issues, in addition to performing routine water quality analyses. The Concessionaire shall provide quarterly reports to the City indicating that all quality assurance and quality control (QA/QC) and other requirements relating to the Certified Laboratory have been satisfactorily completed. Each report shall be certified by the responsible Laboratory Director.

The Concessionaire will be responsible for contracting with the outside laboratory and will be responsible for all costs associated with sampling and analysis.

8.0 Customer Service

8.1 Customer Service Center

The Concessionaire shall maintain a Customer Service Center (Service Center) with representatives who will be available Monday through Friday, except on Holidays, during normal business hours, to provide assistance to customers of the system for billing or service issues. The Service Center can serve both water and sewer system customers. The Concessionaire will dedicate office space for use as a Service Center. The Service Center shall be located in an area easily accessible to customers. The Service Center shall be equipped with telephones capable of accommodating a minimum of three (3) separate, simultaneous calls. A separate and distinct customer service telephone number will be established by the Concessionaire. In addition to the Service Center, the Concessionaire will establish a Call

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards – Part A Water System Operating Standards**

February 25, 2013

Center that will be available 24 hours per day, 7 days per week, including holidays, where customers can report emergencies or complaints.

8.2 Customer Call Protocol

The Concessionaire will record the following information regarding customer calls received at either Center:

- a. Customer's name and location;
- b. Complaint/issue or subject of the call;
- c. Time of call received;
- d. Time of response;
- e. Actions taken; and
- f. Customer call-back, if requested or appropriate.

The Concessionaire will maintain call records for a period of at least two (2) years. It is not necessary to provide copies of each individual report to the City. However, the Concessionaire shall provide a semi-annual report to the City that summarizes the information recorded and tabulates the customer calls by type (i.e. billing issue, blockage, taste, odor, or noise complaint, personnel complaints, etc.). A summary of the call records will also be included, tabulated by category, in the Annual Report submitted to the City, along with a summary of the records for the previous two (2) years.

The Concessionaire shall have an action plan to address taste, odor, color, and staining problems, and similar complaints related to the aesthetic quality of the delivered water. Each complaint shall be logged, noting complainants name and contact information, time, nature, and location of delivered water in question. Each complaint shall be investigated and shall include a customer interview and onsite testing upon the request of the complainant or the occurrence of other similar or potentially related complaints. The complainant shall be contacted within 48 hours to determine if the complaint has been resolved. Further investigation will be required if the problem has not been resolved to the satisfaction of the customer. The Concessionaire will submit a semiannual report to the City noting the information above and the Concessionaire's conclusions relative to the complaint.

The Concessionaire shall report a summary of taste and odor complaints to the City semiannually. Each semiannual report shall include data for the previous two (2) years, by category, for comparison purposes.

All complaints related to odors believed to be emanating from the WWTP will be directed to the Operator in Charge at the WWTP for investigation and follow-up. The City will be advised by the next working day after the Operator's investigation and follow-up and an individual report will be filed with the City noting the time and date of the complaint, the name and address of the complaining party, contact information for the complaining party, an account of the investigation noting any condition at the WWTP that may have been responsible for or contributed to the complaint.

8.3 Customer Survey Program

The Concessionaire shall develop and implement a customer survey program to monitor customer satisfaction with the way in which service calls or complaints are addressed by the Concessionaire. If the Concessionaire has an existing customer survey program in place, the City will consider acceptance of that program. The survey results, including independent follow-up by the City, will be discussed during quarterly meetings, as appropriate, and considered during the annual evaluation. The customer survey program shall include the following, at a minimum:

- a. The Concessionaire shall contract with an independent firm to perform a customer opinion survey on a semiannual basis to gauge customer satisfaction with respect to the way in which service calls or complaints were addressed by the Concessionaire. The Concessionaire's proposed survey approach and format for obtaining this information will be submitted to the City for approval during the transition period. During the term of the Agreement, the Concessionaire may propose changes to the customer survey program, subject to approval by the City. The customer survey must include a representative number of customers and, at a minimum, 25% of customers that have registered a complaint or have otherwise contacted customer service within the prior 9 months.
- b. A copy of the independent survey results shall be submitted directly to the City from the independent firm. If the Concessionaire has an existing customer survey system in place, the City will consider acceptance of that survey system pending review of the protocol, questions, response level, and other components. The survey results, including independent follow-up by the City, will be discussed during quarterly meetings with the Concessionaire and considered during the annual evaluation.

9.0 Operational Management Practices

9.1 Capital Improvement Planning

Capital Improvement Planning shall include a comprehensive facility inspection, system performance evaluation, and development/update of a long-term improvement plan including project cost estimates.

The Concessionaire shall implement a long-term master planning/capital improvement planning process. The Comprehensive Planning Study shall be performed at 5 year intervals. The Concessionaire shall either perform the study using its own engineer or contract with an outside professional engineer, registered in Pennsylvania, provided either engineer must have a minimum of 10 years experience conducting similar water system studies. The Concessionaire shall provide the final study report to the City, include the long-term planned capital improvements and associated activities in routine reports to the City, and routinely report on progress. The Concessionaire shall be responsible for executing Capital Improvements, with the City's approval, as defined in the Agreement. Progress related to ongoing capital projects will be an agenda item during quarterly meetings.

9.2 Energy Management and Sustainability

The Concessionaire shall establish a program to review and optimize energy usage and sustainability, including, at a minimum:

- a. Review of energy usage, identification of energy use trends, and cost or usage tracking versus time.
- b. Consideration of energy efficiency improvements and equipment and/or operational modifications.
- c. Consideration of energy costs in evaluation of new system facilities.
- d. All capital improvement projects related to system infrastructure and associated facilities shall incorporate concepts of sustainable design. Sustainable design approaches aim to maximize environmental as well as social and economic needs and benefits — the so-called "triple bottom line" goal – both now and throughout the life cycle of the project. All capital improvement projects that are deemed significant by the City shall achieve a minimum "Acknowledgement of Merit" rating through the Envision rating system coordinated by the Institute for Sustainable Infrastructure (ISI).
- e. The Concessionaire shall include sustainability, energy use, and the status of energy efficiency initiatives as part of routine monthly reports to the City.

9.3 Housekeeping Procedures and Cleanliness

The Water System, including the WTP, distribution system, and related facilities shall be maintained in a neat and orderly condition. Operation and maintenance functions should be conducted in such a manner that plant site safety and water quality are not compromised.

9.4 Record Keeping, Data Review, and Reporting Requirements

In addition to copies of all report submissions to regulatory and oversight agencies, the Concessionaire shall submit monthly, quarterly, and annual reports as defined in this section and throughout these Operating Standards. Several of the required reports will be similar to those being generated by City personnel at the time of closing. The monthly operating reports from each treatment facility are of particular importance to the City. The reports provided by the Concessionaire to the City shall provide similar information. An example WTP monthly report is included as Exhibit H, for reference. The Concessionaire may modify existing report formats, as necessary, for compliance with City requirements and the Concessionaire's use. For those reports that have not historically been prepared by City personnel, the Concessionaire shall be responsible for developing a report format. In all cases, within 120 of closing, the Concessionaire shall submit proposed report forms for approval by the City. The City will verify that the required and necessary information will be provided by the proposed report form in a manner that facilitates understanding of the material presented. Each report shall include a cover/summary sheet that includes the name of the report and the time period covered, and briefly summarizes and highlights critical information contained in the report. The Concessionaire may combine multiple reports, for convenience, and all reports may be submitted in electronic format, at the Concessionaire's option.

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards – Part A Water System Operating Standards**

February 25, 2013

The Concessionaire is responsible for maintaining procedures, records, and systems, as required, to facilitate reporting operational performance, service history data, and other records and data to the City as required by the Agreement. In addition to the required routine reports delivered to the City, the City reserves the right to conduct onsite inspections of facilities, and the Concessionaire is required to provide, upon the City's request, performance, operation, maintenance, and/or other records pertaining directly to the operation and maintenance of the System, to demonstrate compliance with the requirements of these Operating Standards.

All reports required herein shall be submitted to the City in a timely manner, as follows, and each shall have a separate cover describing the name of the report, time frame that the report covers, and any and all items that are deemed to be of significance to the City, as the owner of the system, or of possible consequence to the maintenance and operation of the System, particularly with respect to meeting the requirements of these Operating Standards.

The reporting deadlines are as follows:

- Monthly and Quarterly Reports 30 days after the end of the month or quarter
- Annual Reports April 1, each year for the preceding year

If a report will not be submitted in accordance with the criteria above, the Concessionaire shall provide two (2) days notice to the City, minimum. Late submittals or failure to submit a report will result in the City assessing operational liquidated damages upon the Concessionaire as follows:

- 2nd Occurrence within 12 consecutive months \$200
- 3rd Occurrence within 12 consecutive months \$300
- 4th Occurrence within 12 consecutive months \$500
- 5th Occurrence within 12 consecutive months \$1,000
- Further occurrences will result in operational liquidated damages based on pertinent factors. Operational liquidated damages are based on late filing of reports within one (1) week. Failure to file the report within one (1) week following the due date will result in doubling of operational liquidated damages. Operational liquidated damages are double for any regulatory report filed late or incomplete.

The City will evaluate the monthly and quarterly reports received during the initial six (6) months following Closing for content and format and advise the Concessionaire of its findings. The Concessionaire will have the opportunity at that time to offer suggestions to the City regarding format and content for these reports. The City will similarly evaluate the first Annual Report for content and format and advise the Concessionaire of its findings. The Concessionaire will have the opportunity at that time to offer suggestions to the City regarding format and content of the Annual Report. Following these initial evaluations, the City and the Concessionaire may, from time to time, review the scope of the reporting obligations and the report format and may agree to modify the format or reporting requirements as appropriate.

The Concessionaire should refer to ANSI/AWWA G400 for details on record keeping and data review.

The Concessionaire shall maintain the City's protocol or establish a City-approved protocol that is no less stringent, for complying with the reporting requirements of applicable regulations. The protocol shall designate who is responsible for the reports and the timing of submittal. The protocol shall include adequate lead time to acquire necessary approvals and meet the deadline for submitting the reports. The Concessionaire shall provide a copy of all reports and other documentation submitted to regulatory agencies to the City. All reports shall include a brief summary of the report.

9.5 Materials, Supplies, and Quality Assurance

9.5.1 Chemicals

- a. Water Treatment Chemicals shall be NSF/ANSI 60 Certified or be approved by the applicable regulatory agency.
- b. Water Treatment Chemicals shall comply with, as a minimum standard, AWWA Standards for individual chemicals.
- c. The Concessionaire should review the City's Chemical Specifications and incorporate the City's existing specifications into the Concessionaire's Standards.
- d. The Concessionaire shall establish protocols to establish/verify the quality of delivered chemicals. The requirement for verification of chemical quality shall be included in the applicable Chemical Specification.
- e. Testing requirements should, at a minimum, comply with requirements specified in applicable AWWA Standards for each chemical.
- f. The Concessionaire shall establish and maintain records verifying the quality of delivered chemicals.

9.5.2 Materials and Equipment

- a. Materials and equipment used in the Water System shall comply with applicable AWWA Standards, City requirements, and regulatory requirements.
- b. Drinking Water System Components shall be NSF/ANSI 61 Certified.
- c. Construction activities shall comply with City Construction Standards.
- d. Activities shall be performed in compliance with City of Allentown Codes and Ordinances.
- e. Water System construction shall be performed in accordance with the City's Water System Standard Specifications and Details.
- f. Ductile iron pipe shall be used for water main repairs and all new water main construction.
- g. Hydrants shall be provided with "Allentown Thread Pattern", consistent with existing hydrants.

9.6 Disinfection of Water System Facilities

Water System facilities, including plant and distribution system facilities, shall be disinfected in accordance with regulatory requirements and ANSI/AWWA C651, ANSI/AWWA C652, ANSI/AWWA C653, or ANSI/AWWA C654.

9.7 Materials in Contact with Water

Materials that are in contact with the water within the Water System (except waste lines and other situations where the water is not part of the distribution system and is not mingled with production water at any point) shall conform to AWWA standards and NSF/ANSI 61 unless the material is not covered by these standards. Other appropriate regulatory standards may apply in addition to these standards.

10.0 Source Water Management

The Concessionaire shall be responsible for grounds maintenance, including but not limited to grass mowing and snow removal at reservoirs, Schantz and Crystal Springs, booster pumping stations, storage tanks, and intakes, as well as the treatment facility. The Concessionaire shall be responsible for the source water protection protocols and existing programs and shall assume responsibility for the requirements of the City's Wren Grant related to source water protection.

10.1 State Water Plan

The Concessionaire shall prepare for the City's review and shall be responsible for submission, as required, of reports and other documentation related to registration and reporting of water withdrawals associated with the State Water Plan (Act 220) and related requirements.

11.0 Site Safety and Security

The City has an existing security program, including cameras, key cards, and other features, provided and maintained by ADT. The existing security system, or an equivalent system shall be maintained, in service, by the Concessionaire. The Concessionaire shall be responsible for assessing and maintaining the adequacy of the security program in accordance with regulatory requirements and ANSI/AWWA Standard G430-09 – Security Practices for Operation and Management, whichever is more stringent. The Concessionaire shall notify the City as soon as practicable and necessary given the nature of the breach, but no later than 12 hours after becoming aware of any security breach. The Concessionaire shall also be responsible for notifying PADEP, as required, relative to any security breach. The Concessionaire shall submit a report to the City related to the results of investigation of any security breach.

The Concessionaire shall take all precautions necessary to safeguard persons entering the facilities and to protect water quality and Water System properties. The Concessionaire shall develop and implement a Security Plan that will include, but not be limited to, the following goals:

- a. Prevent unauthorized entry;
- b. Prevent interference with treatment processes;
- c. Prevent injury to employees, visitors, or neighbors; and
- d. Prevent loss or damage to City property.

Security policies incorporated into the Security Plan shall include, but not be limited to, the following features.

- a. External facility doors will be locked at all times.
- b. Entrance gates will be securely locked during non-business hours.
- c. Fencing and gates will be periodically inspected and maintenance performed as needed.
- d. Building entry and fire alarm systems will be routinely monitored, inspected, tested, and maintenance performed as needed.
- e. Appropriate identification and documentation of authorization of all persons accessing the facilities will be required. Trespassing will not be tolerated and shall be referred to local law enforcement agencies. The City will cooperate in the prosecution of any offenders.
- f. A record will be made in a logbook of all persons accessing the facilities.
- g. Employees will report all suspicious observations to site management.
- h. Daily and monthly facility security checks will be conducted as part of normal operational rounds and will be documented in logbooks.
- i. Local enforcement agencies will be immediately notified in the event of an emergency situation.
- j. All security incidents will undergo review and corrective actions to prevent recurrence.
- k. Staff and contractors working on site will receive security training.

12.0 Emergency Response Plan

The City has an existing Emergency Response Plan (ERP). The Concessionaire shall review and update the ERP as required. The ERP shall be maintained in accordance with PADEP's *Guidelines for the Development and Implementation of Environmental Emergency Response Plans* (document number 400-2200-001). The plan will establish emergency response protocols to address, at a minimum, the following hazards and emergencies:

- a. Chemical Spills;
- b. Fire and explosions;
- c. Pipe, valve, or pump failures;
- d. Equipment or process failures;
- e. Power failures;
- f. Acts of God (i.e. floods, hurricanes, wind storms, etc.);
- g. Pipeline breaks; and
- h. Personnel emergencies.

In accordance with the PADEP Guidelines, the ERP will be reviewed and updated annually and shall contain, at a minimum, the following information:

- a. Description of the facility;
- b. Material and Waste inventory;
- c. Pollution incident history;
- d. Description of existing ERPs;
- e. Implementation Schedule for Plan Elements not in place at the time of closing;
- f. Organizational structure of facility for implementation;
- g. List of Emergency Coordinators;
- h. Duties and responsibilities of the Coordinator;
- i. Chain of command;
- j. Spill Leak Prevention and Response;
- k. Countermeasures to be taken by Facility and Contractors;
- l. Evacuation plan for plant personnel;
- m. Emergency equipment available for response;
- n. Emergency Spill Control Network;
 - i. Coordination with local ERP Agencies and Hospitals;
 - ii. Notification Lists; and
 - iii. Downstream notification requirements for storage tanks.

The Concessionaire shall also adhere to the guidelines established by the ANSI/AWWA Standard G440-11 – Emergency Preparedness Practices.

12.1 Drought Emergency Response

The Concessionaire shall be responsible for reviewing and updating the City's Drought Emergency Response Plan, as required, and implementing the plan whenever a drought advisory or drought emergency is declared for Lehigh County. The Concessionaire shall be responsible for coordinating and cooperating with the Lehigh County and Pennsylvania Drought Response programs.

12.2 Spill Prevention Plan and Notifications

The Concessionaire shall be responsible for maintenance, update, and other requirements associated with Spill Prevention Plans and related requirements, including annual updates and notifications.

13.0 Inspection of New Construction

The Concessionaire shall be responsible for inspection of construction work associated with the Water System, including new construction and repairs. The Concessionaire will insure that the construction methods and materials are consistent with City and state construction regulations. The Concessionaire will prepare and maintain record drawings for all Water System construction and shall record on one-line diagrams adequate information describing the location of new or repaired below-grade distribution system facilities. The Concessionaire shall

coordinate with the City relative to update of the City's GIS data to ensure that new construction and repaired or replaced system components are properly recorded in the GIS.

14.0 Operator Training

The Concessionaire is responsible for process safety, and health training for existing and newly hired employees. Process training will include familiarization with the SOPs and other operating protocols. Safety training will be conducted periodically for new and existing employees to familiarize the staff with potential dangers related to equipment and processes, particularly fire and explosion dangers, dangers associated with toxic or corrosive gases or liquids, and dangers related to electrical equipment. Training may be performed by in-house experts. However, industry experts should be used when in-house expertise is not available.

15.0 Internal Annual Performance Review

Beginning in 2016 and annually thereafter, the Concessionaire will perform an internal Review of the operation of the Water System and provide a detailed report to the City of its findings. The Review shall include an examination of all SOPs related to process operations and maintenance and will identify deficiencies and corrective measures taken to mitigate the deficiencies. The Review will note and identify any concerns or issues which the Concessionaire believes will prevent or impede compliance with the Operating Standards or the Agreement, and will include recommendations and/or a plan for addressing each concern. The Review will also examine customer service issues, and will discuss the success of measures taken to improve customer relations and service.

16.0 Additional Requirements and Operational Liquidated Damages

The City will issue a Notice of Violation to the Concessionaire for any failure to comply with the requirements of these Operating Standards. The Notice of Violation will include any associated operational liquidated damages amount. The Concessionaire shall have the right to appeal the Notice of Violation and operational liquidated damages and may provide information to the City to support the appeal. The Concessionaire must file a request for an appeal within seven (7) days of receipt of the Notice of Violation from the City. Unless appealed, payment of all operational liquidated damages will be due within 30 days of receipt of the Notice of Violation.

With respect to performance standards having annual requirements, the Concessionaire will consider the time of year and anticipated weather conditions when planning repairs and replacements. It is appreciated that unusual weather or possibly other factors beyond the control of the Concessionaire can adversely impact planned work activities.

If the Concessionaire believes that conditions beyond his control will result in a failure to comply with the requirements and possibly result in operational liquidated damages, the Concessionaire should advise the city in writing (electronic communication is acceptable) of the conditions which may cause the delay and the anticipated timing of the completion of the work.

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards – Part A Water System Operating Standards**

February 25, 2013

The City will give reasonable consideration for time extension based on the unanticipated nature and uncontrollability of the cause(s) of the delay and the Concessionaire's timeframe for completion of the work.

Allowances and relief from compliance with the Operating Standards will be made for events resulting from Force Majeure, as defined in the Agreement. In such event, the Concessionaire shall, as soon as practical, advise the City of the specific issues, impacts on compliance with any and all Operating Standards, actions being taken, and the schedule for returning to compliance. Force majeure relief from the requirements of the Operating Standards, relating to regulatory and permit requirements, will not apply for labor-related events, unless the applicable regulatory authority has specifically granted approval for such relief.

All operational liquidated damages noted in the Operating Standards will be increased every two (2) years, beginning on January 1, 2015, based on the Index and rounded up to the nearest \$50.

There will be quarterly meetings between the City and the Concessionaire to allow for open discussions between the Concessionaire and the City related to issues of concern.

17.0 Alternative Approaches

For all performance standards which have annual performance requirements, the City will allow alternative approaches to satisfying the goals of those requirements. The Concessionaire will provide the City with the details and the implementation schedule for the proposed alternative approach for the City's review and approval. The annual activity level of the proposed alternative approach will not be less than that stated as a performance requirement. The City will not unreasonably withhold approval of the proposed alternative approach. Ancillary requirements and associated operational liquidated damages may have to be redefined based upon the alternative approaches.

As an example, in the Water Supply section, the Concessionaire may propose to perform a leak survey of the entire distribution system initially to enjoy economies of scale and to identify and repair larger leaks sooner to reduce production costs. The City and the Concessionaire will mutually develop the associated repair and operational liquidated damages aspects of the alternative approach.

18.0 Annual Exceedence Credit

For performance standards with an annual performance requirement, such as number of valves exercised, if the Concessionaire's performance during any year exceeds the annual requirement, that exceedence of the annual requirement may be credited towards satisfying the annual requirement during the following year. Such credits do not apply to water quality requirements.

19.0 Transition Period

The period beginning with the date of closing and ending six (6) months later, shall herein be referred to as the Transition Period. The Concessionaire will submit for the City's review and approval all SOPs and reporting forms as required by the Operating Standards. The proposed drafts should be submitted within 120 days of closing to allow time for review by the City and subsequent modifications as might be necessary. The Concessionaire should give consideration to satisfying several reporting obligations by combining necessary information into a singular report. All relevant issues, including use of software for report generation and submission, should be addressed and finalized within this period.

During the Transition Period, the performance requirements for all Operating Standards with an annual requirement will not be in force.

During the first full year following the end of the Transition Period, the performance requirements for all Operating Standards with an annual requirement will be reduced to fifty percent (50%) of the performance requirements. The operational liquidated damages stated in the Operating Standards will remain in place.

Beginning with the second full year following the end of the Transition Period, and thereafter, all conditions, requirements, and operational liquidated damages in the Operating Standards will be in full effect.

PART B – SEWER SYSTEM OPERATING STANDARDS

1.0 General Requirements

1.1 General Operation and Maintenance Requirements

The Concessionaire will be fully responsible for the operation, maintenance, and management of the Wastewater Treatment Plant (WWTP), wastewater collection and conveyance systems, and all other components of the Sewer System. The Concessionaire shall operate, maintain, and manage the Sewer System in accordance with the Agreement and applicable laws, regulations, and ordinances, as well as requirements of the City of Allentown (City). The Concessionaire shall provide uninterrupted operation of the Sewer System and shall operate the Sewer System on a continuous basis, 24 hours per day, seven days per week throughout the term of the Agreement. The Concessionaire shall staff the WWTP 24 hours per day, 7 days per week during the entire period of the Agreement. The Concessionaire shall provide billing, customer service, and other ancillary services associated with the operation of the Sewer System. In addition to activities directly associated with the collection and treatment of wastewater, the Concessionaire's responsibilities also include all maintenance of grounds, landscaping, buildings, and equipment comprising the Sewer System. Specific responsibilities are further defined herein.

The Concessionaire shall, at all times, keep the Sewer System in good repair and working order and shall operate, maintain, and manage the Sewer System in a professional, efficient, and economical manner. Operational decision making shall always be based on the following overall objectives:

- Protection of health and welfare of the public.
- Protection of the health and safety of the Sewer System operating staff.
- Preservation of the long-term capability to provide wastewater services in accordance with legal, regulatory and customer service requirements.
- Protection of the environment.
- Protection and preservation of the Sewer System equipment and facilities.
- Maximization of Sewer System operational efficiency.
- Compliance with all Pennsylvania Department of Environmental Protection (PADEP), United States Environmental Protection Agency (USEPA), Delaware River Basin Commission (DRBC), the City, and other applicable regulations and requirements of these and other agencies with jurisdiction.
- Compliance with the City's obligations in accordance with Agreements between the City and others, including other sewer system providers, in accordance with the Agreement.

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards - Part B – Sewer System Operating Standards**

February 25, 2013

The Concessionaire shall be required to perform the following subject to the specific terms of the Agreement and the Operating Standards:

- Operate, maintain, and manage the Sewer System.
- Treat wastewater to maintain regulatory effluent quality and other requirements and, where more stringent, City of Allentown Performance Standards and other requirements.
- Meet all permit, consent decree, and administrative consent order requirements, including those that pre-date the Agreement and those that occur during the term of the Agreement.
- Perform all corrective, predictive, preventive, and ongoing maintenance of the Sewer System.
- Perform all analytical sampling, testing, analyzing, and reporting.
- Maintain all necessary records, including laboratory sampling and analysis results, in accordance with regulatory requirements.
- Provide emergency services associated with the Sewer System and Sewer System operation, as required.
- Maintain grounds and buildings.
- Keep facilities secure and correct/improve security measures as identified by the Concessionaire (or its agents) and/or regulatory agencies as part of required or other evaluations.
- Keep facilities clean.
- Maintain records documenting compliance with applicable laws, regulations, and ordinances, as well as requirements of the City.
- Provide routine reports to the City.
- Make available, upon request by the City, information necessary to document compliance with applicable laws, regulations, and ordinances as well as compliance with these Operating Standards.
- Subject to the terms and conditions of the Agreement, identify and execute any necessary capital improvements to the Sewer System.

The City's existing permits/approvals for the Sewer System are listed in Exhibit C, for reference. The Agreement also provides a listing of existing permits and designates which permits are to be retained by the City, transferred to the Concessionaire, or have the Concessionaire added as co-permittee with the City. The Concessionaire shall be obligated, pursuant to the Agreement and as permitted by law, to fulfill all of the requirements of all such permits maintained by the City and/or the Concessionaire subject to the terms of the Agreement. The City will cooperate and participate, as required of the Sewer System owner, with the application for required permits and permit renewals as required for construction and/or operation of the Sewer System in accordance with these standards and applicable law, as detailed in the Agreement. Failure to comply with permit conditions and/or the Operating Standards requirements set forth by the City may result in the assessment of operational liquidated damages by the City, in accordance with the Agreement, in addition to those penalties levied by regulatory agencies.

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards - Part B – Sewer System Operating Standards**

February 25, 2013

The Operator shall be responsible for complying with all applicable federal, State, and local laws and regulations pertaining to the Sewer System and shall comply with all approvals, licenses, permits, and certifications governing the performance of its Services hereunder issued for or with respect to the System.

These Operating Standards establish the general requirements for the operation, maintenance, and management of the major Sewer System components. The provisions included are intended to address the major activities required, but all specific activities that are necessary for meeting the performance requirements set forth herein and/or applicable laws and regulations shall be the responsibility of the Concessionaire. The Concessionaire may adopt, in whole or in part, the City's O&M manuals, standard operating procedures (SOPs), computerized maintenance management system (CMMS), and/or other systems or procedures. Alternately, the Concessionaire may establish new procedures. Regardless of the origination of operating procedures, the Concessionaire shall be responsible for determining such specific activities and performing all necessary operation, maintenance, and management activities to meet the requirements defined herein, applicable laws and regulations, and maintain the condition and performance of the Sewer System.

The Concessionaire is responsible for maintaining procedures, records, and systems, as required, to facilitate reporting operational performance, service history data, and other records and data to the City as required by the Agreement and Operating Standards. The Concessionaire shall provide the City a copy of all SOPs and proposed report forms during the transition period. The Concessionaire shall advise the City of any significant changes to SOPs throughout the term of the Agreement. The City reserves the right, upon reasonable notice and during normal business hours, to conduct onsite inspections of facilities, and the Concessionaire is required to provide, upon the City's request, performance, operation, maintenance, and/or other records pertaining directly to the operation and maintenance of the Sewer System.

The roles and responsibilities of the City and the Concessionaire are further specified herein and in the Agreement.

1.2 Specialized Computer Software

The City utilizes a variety of specialized software packages, as summarized for the Concessionaire's reference in Exhibit B. The software summary is considered to be a complete list, provided for the Concessionaire's information, but actual computer software packages used by the City staff may vary. The Concessionaire, with the cooperation of the City, shall be responsible for determining the applicability and status of licensing fees, operating fees, contractual obligations, and/or other requirements or obligations associated with continued use of each software system. However, these systems may be used to facilitate and accomplish the responsibilities and objectives of these Operating Standards. The Concessionaire shall be responsible for data migration, conversions to other software systems, and any similar activity related to computer software systems.

The City will provide an up-to-date Initial Geospatial Data Set of the Geographic Information System (GIS) in ESRI file geodatabase format to the Concessionaire within fifteen

(15) Days of closing. The Concessionaire will be responsible for maintaining the Water System and Sewer System dataset in the GIS. The Concessionaire should use the data model schemas provided by the City as a basis for maintaining feature and attribute information. The City and the Concessionaire will maintain separate systems and will share data as required. The Concessionaire and the City agree that the shared Geospatial Data Sets will be for use by the Concessionaire and the City within their respective organizations in the furtherance of their mission and approved work program.

At the time of return of the System to the City, either at the end of the term of the Agreement or at the time of termination of the Agreement, the Concessionaire will use its reasonable efforts to convey the software systems in use at that time, in their entirety if possible, to the City or the new System operator.

Equipment manufacturer information and maintenance information has been recorded in the CMMS) systems for both the Water and Sewer Treatment Plants. All valve, equipment, and treatment components throughout the treatment facilities have been identified and assigned unique identifiers (loop tag numbers), and all maintenance function tasks have also been coded. Existing City SOPs are detailed utilizing the assigned loop tag numbers. Such information will be available for the Concessionaire's use. The Concessionaire shall maintain equipment maintenance task assignments established by the City, but may modify the maintenance management system currently in place. The Concessionaire shall notify the City of any system or unique identifier changes, as it is the City's intent to utilize the coded system and assigned unique equipment identifiers to verify the Concessionaire's performance of maintenance activities in accordance with these Operating Standards.

2.0 Standard Operating Procedures

The Concessionaire shall maintain the existing or develop and implement SOPs relating to all aspects of Sewer System operation, including but not limited to the following general areas:

- a. Operation and Maintenance of the Influent Screens;
- b. Operation and Maintenance of the Raw Sewage Pumps;
- c. Operation and Maintenance of the Aerated Grit Chambers;
- d. Operation and Maintenance of the Primary Settling Tanks;
- e. Operation and Maintenance of the Intermediate Pumping Station;
- f. Operation and Maintenance of the First Stage Trickling Filters;
- g. Operation and Maintenance of the Intermediate Settling Tanks;
- h. Operation and Maintenance of the Second Stage Trickling Filters;
- i. Operations and Maintenance of the Final Settling Tanks;
- j. Operation and Maintenance of the Chlorination Process;
- k. Operation and Maintenance of the Effluent Pumping Station;
- l. Sludge Wasting and Management;
- m. Operation and Maintenance of the Anaerobic Digestion and Co-Generation Processes;
- n. Sludge Dewatering and Disposal;

- o. Valve and Piping Maintenance;
- p. Instrumentation Maintenance;
- q. Laboratory Sampling and Analytical Procedures;
- r. Laboratory Quality Manual;
- s. Security Protocols;
- t. Septage and Hauled Wastes Receiving and Handling Protocols; and
- u. Wet Weather Operating Protocols.

Detailed SOPs must be developed for all critical process and administrative functions. The City has developed and implemented SOPs related to WWTP operation and maintenance functions which the Concessionaire may adopt or revise. The Concessionaire shall review these existing SOPs during the transition period to determine which of the SOPs will be continued and which SOPs will be revised to reflect current operating strategies and ensure safety. New SOPs must be developed where needed, and operations personnel shall be trained in each new and revised SOP.

SOPs pertaining to the treatment processes shall include guidelines for the operations staff related to process control, equipment operation, and general maintenance. Reference can be made to manufacturer's operation and maintenance manuals and other readily available resources where applicable. The Laboratory SOPs shall provide sampling protocols, analytical procedures, equipment operation and maintenance guidelines, and records keeping protocols. City resources, including existing SOPs previously developed and implemented by the City, may be adopted to satisfy this requirement, or used as a reference in generating new SOPs.

3.0 Wastewater Treatment Plant Performance Standards

3.1 Regulatory Requirements

Wastewater treatment plant operation and performance are governed by State and federal regulations. The Concessionaire must comply with all applicable regulations. Statutes and regulations promulgated by the Commonwealth of Pennsylvania relating to wastewater treatment and sludge management which may be applicable include the following:

- a. Clean Streams Law (P.L. 1987, No. 394).
- b. Title 25 – Rules and Regulations of the Department of Environmental Protection.
 - 1. Chapter 91 - General Provisions
 - 2. Chapter 92a - NPDES Permitting, Monitoring, and Compliance
 - 3. Chapter 93 – Water Quality Standards
 - 4. Chapter 94 – Municipal Wasteload Management
 - 5. Chapter 95 – Wastewater Treatment Requirements
 - 6. Chapter 96 – Water Quality Standards Implementation
 - 7. Chapter 252 – Laboratory Accreditation
 - 8. Chapter 271 – Municipal Waste Management – General Provisions
 - 9. Chapter 273 – Municipal Waste Landfills
 - 10. Chapter 275 – Land Application of Sewage Sludge
 - 11. Chapter 302 – Administration of the Water and Wastewater Systems Operators' Certification Program

Federal regulations related to wastewater treatment and sludge management which may be applicable include the following:

- a. Clean Water Act (33 U.S.C. §1251 et seq.).
- b. Title 40 of the Code of Federal Regulations – Protection of the Environment.
 1. Part 122 – NPDES Regulations
 2. Part 125 – Technology Based Standards
 3. Part 129 – Toxic Pollutant Standards
 4. Part 131 – Water Quality Based Standards
 5. Part 133 – Sewage Secondary Treatment Regulations
 6. Part 135 – Citizen Suits
 7. Part 136 – Analytical Procedures
 8. Part 503 – Sewage Sludge Disposal Standards

Industrial Pretreatment Program (IPP) regulations are administered by EPA in Pennsylvania. Because the City was required to develop and implement an EPA approved IPP, the following regulations under Title 40 of the Code of Federal Regulations related to the development, implementation, and management of IPPs are applicable.

- a. Part 401 – General Effluent Guidelines and Standards.
- b. Parts 402 to 424 – Effluent Guidelines and Standards.
- c. Parts 425 to 471 – Effluent Guidelines and Standards.

Other laws and regulations may apply. It is the responsibility of the Concessionaire to determine which regulations are applicable and to comply fully with those regulations.

3.2 WWTP Effluent and Performance Standards

3.2.1 NPDES Discharge Permit Effluent Limits and Performance Standards

The WWTP operates under NPDES permit PA 0026000. The current NPDES permit has expired, but has been administratively extended. The permit will be reissued with nutrient removal requirements. The Concessionaire will be responsible for compliance with all current and future discharge limitations. The effluent limits in the current NPDES permit are summarized in Table B-1 below.

Table B-1: NPDES Discharge Permit Effluent Limitations

Parameter	Monthly Average Effluent Limit	Weekly Average Effluent Limit	Instantaneous (Daily) Maximum Effluent Limit
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	20 mg/L	30 mg/L	40 mg/L
Total Suspended Solids (TSS)	30 mg/L	45 mg/L	60 mg/L
Ammonia Nitrogen (NH ₃ -N) May 1 to October 31	5 mg/L	---	10 mg/L
Ammonia Nitrogen November 1 to April 30	15 mg/L	---	30 mg/L
Fecal Coliform May 1 to September 31	200/100 ml geometric mean		
Fecal Coliform October 1 to April 30	2,000/100 ml geometric mean		
Residual Chlorine	0.5 mg/L	---	---
pH	6.0 to 9.0 SU		
Dissolved Oxygen	5.0 mg/L minimum		

In addition to the effluent limits in Table B-1 above, the minimum percentage removal as a monthly average under 40 CFR 133 for BOD₅ and TSS is 85%. This summary does not replace the terms as set forth in the NPDES permit. In addition, the Concessionaire shall meet the performance standards set forth in Table B-2.

Table B-2: Performance Standards

Parameter	Monthly Average Effluent Concentration	Weekly Average Effluent Concentration
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	≤ 12 mg/L	mg/L
CBOD ₅ Percent Removal	≥ 90 %	---
Total Suspended Solids (TSS)	≤12 mg/L	mg/L
TSS Percent Removal	≥90 %	---
Ammonia Nitrogen (NH ₃ -N) May 1 to October 31	≤4.0 mg/L	---
Ammonia Nitrogen November 1 to April 30	≤12.4 mg/L	---
Fecal Coliform May 1 to September 31	≤200/100 ml geometric mean	
Fecal Coliform October 1 to April 30	≤2,000/100 ml geometric mean	
Residual Chlorine	≤0.5 mg/L	---
pH	6.0 – 9.0 SU	
Dissolved Oxygen	≥5.0 mg/L minimum	

The standards listed in Table B-2 are equivalent to two (2) times the previous three-year average effluent concentration for CBOD and TSS and two (2) times the highest monthly average for the previous three (3) years for Ammonia-Nitrogen. The chlorine, pH, fecal coliform, and dissolved oxygen standards are equivalent to the regulatory standard.

The City recognizes that performance may be impacted to some extent by the magnitude of WWTP influent flow and loadings. Should the flow and loadings to the WWTP increase appreciably beyond that which the City has experienced, the Concessionaire will so advise the City and provide documentation of the extent and duration of those increases. Based on the credibility of the information submitted, the Concessionaire will be granted temporary relief from the standards set forth in Table B-2 and may request that the performance standards listed in Table B-2 be renegotiated.

3.2.2 NPDES Permit Discharge Limits Operational Liquidated Damages

Absent evidence of actions or circumstances outside the Concessionaire's control or due to the fault of others, operational liquidated damages of \$10,000 will be assessed by the City for each regulatory discharge limit (refer to Table B-1) exceeded for every month in which an Exceedence occurs. The assessment of operational liquidated damages is separate from and in addition to any enforcement action taken by a regulatory agency. Also, the Concessionaire will be responsible for any fines or penalties, and/or any enforcement action assessed by a regulatory agency for noncompliance with any NPDES permit requirement.

3.2.3 Performance Standards Operational Liquidated Damages

Absent of evidence of actions or circumstances outside the Concessionaire's control or due to the fault of others, failure to comply with the Performance Standards in Table B-2 for CBOD, TSS, and ammonia-nitrogen will result in operational liquidated damages of \$1,000 per parameter for each month of noncompliance. If the annual average for any of these specific parameters exceeds the Performance Standard, additional operational liquidated damages of \$5,000 for each parameter shall be assessed by the City.

3.2.4 Reuse of Treated Effluent

Recognizing that the treated effluent is of sufficient quality that it could be used for certain industrial, commercial, recreation, or agricultural purposes, the Concessionaire is free to explore opportunities. Such an undertaking, before being finalized, would require further negotiation between the City and the Concessionaire to include revenue sharing and approval by the City.

3.3 Process Control Monitoring/Sampling Plan

To consistently achieve the level of performance specified in Table B-2, a comprehensive facilities maintenance program, as well as consistent and complete operational control protocols are required. Process control decisions need to be based on reliable plant operating data. Therefore, the Concessionaire shall develop and implement a sampling and monitoring program that will provide process performance and operational data needed to make proper process control decisions. Sampling and monitoring requirements for the wet-end treatment processes are summarized in Exhibit I. Sampling and monitoring requirements related to the sludge management process are summarized in Exhibit J. The data will be recorded and maintained

electronically for a period of no less than five (5) years, along with process control parameters developed from the monitoring data.

3.4 Sludge Management

3.4.1 General Description of the Current Solids Management Program

A description of the current sludge management program is included in Exhibit N for reference.

3.4.2 Dewatering Performance Standards

Table B-3 represents the 2011 average monthly dewatering output characteristics.

Table B-3: Belt Filter Press Dewatering Performance History

Performance Parameter	Monthly Average Value
Dewatered Biosolids Total Solids Content	18.6% to 22.5%
Solids Capture Rate	≥ 95%, by weight of dry solids

PADEP requires that filter cake must have a total solids content of 20% or greater for winter storage. The Delta Thermal Energy (DTE) contract requires a filter cake total solids content of 15% or greater. The values in Table B-3 are representative of performance history and operational goals and the Concessionaire will not be liable for operational liquidated damages if these goals cannot be achieved despite the reasonable efforts of the Concessionaire.

The solids capture rate is listed in Table B-3 to advise the Concessionaire that the filtrate and other recycle streams returned to the headworks, in sufficient strength and/or quantity, can adversely impact unit process treatment performance. Consideration will not be given by the City for relief from, or negotiation of, performance standards due to the impact of recycle streams on process performance. Impacts from waste streams from the DTE facility will receive separate consideration.

3.4.3 Existing Biosolids Contracts

The City has entered into contracts with Delta Thermal Energy (DTE), Enviro-Organic Technology, and Synagro related to various aspects of their biosolids management program. Under the contract with DTE, the City will provide dewatered biosolids to DTE to fuel a waste-to-energy recovery facility. The City is contracted with Synagro to apply Class B biosolids to agricultural land qualified by Synagro. Under this contract, the City transports dewatered biosolids to sites designated by Synagro. Synagro applies the biosolids to the qualified farmland and manages the land application program. Enviro-Organic Technology transports and disposes of alum sludge from the City’s water treatment plant after dewatering at the WWTP. The concessionaire will be responsible for satisfying the City’s obligations under these contracts. With regard to the Enviro-Organic Technology and Synagro agreements, the Concessionaire will be responsible to satisfy the City’s obligations until the end of the current term of those agreements and will then negotiate new agreements with these providers or other providers of similar services. To the extent that the Concessionaire has control over the discharge of metals to the Sewer System, and with the full cooperation of the City, the

Concessionaire will take all reasonable steps to maintain the Class B classification for the biosolids.

3.5 Certified Operators

The Concessionaire will comply with the requirements of Chapter 302 of Title 25 of the PADEP Rules and Regulations which currently require that process decisions be made by or under the supervision of a wastewater treatment plant operator certified to operate wastewater treatment plants in Pennsylvania. For a 40 mgd two-stage trickling filter plant, operators charged with making process control decisions must be certified at the A-2 level or higher. Therefore, the Concessionaire shall employ at least one (1) certified wastewater treatment plant operator for each shift, or have a certified operator on call to respond to process control issues that may arise at the WWTP or in the collection system.

3.6 Noise, Outside Lighting, and Odor Control

3.6.1 General Requirements

The Concessionaire shall operate the WWTP to minimize the potential for noise or excessive lighting. No odors shall persist off-site. To the extent possible, and without jeopardizing operational performance or flexibility, equipment should be operated during the day rather than at night, when the prevention of noise pollution is more critical. If necessary, noise abatement measures shall be implemented to reduce noise levels. Similarly, site or portable lighting should be controlled, as practicable, to minimize light trespass onto adjoining properties.

Noise, odor, and light trespass complaints must be investigated in a timely manner to identify the source(s) of the complaint. The time of the complaint, the atmospheric conditions (i.e. temperature, presence of precipitation, wind speed and direction, etc.) at the time of the complaint and any other relevant information regarding the complaint must be recorded. Steps to mitigate the offending noise, odor, or lighting must be implemented as soon as practicable. A follow-up investigation shall be made by the Concessionaire following implementation of a solution to determine the effectiveness of the solution. Further remediation steps shall be taken by the Concessionaire, if necessary.

3.6.2 Odor Control

Because of the WWTP's geographic location in the center of the City, odor control is a priority. There are odor control systems, procedures, and protocols in place to prevent odors from emanating from the site. The Concessionaire may continue to follow these systems, procedures, and protocols, or may propose alternate methods provided that no offsite odor complaints are generated. The City has not received an odor complaint in more than 10 years and expects the Concessionaire to continue this level of performance.

Offsite odors will not be tolerated. In the event that an odor complaint is received, the Concessionaire will immediately visit the area in which the odor was detected and interview the individual making the complaint. Following the interview, the Concessionaire will tour the WWTP to identify potential sources and causes for the odor. The Concessionaire will immediately take action to mitigate the source and/or cause(s) of the odor.

The Concessionaire shall notify the City the same day the odor complaint occurs, or the next business day if the complaint occurred after normal business hours. A detailed odor complaint report shall be prepared by the Concessionaire and submitted to the City, as described in the Customer Service section of these Operating Standards.

3.6.3 Operational Liquidated Damages

Based on the number and frequency of odor complaints and verification of the validity of the complaints, operational liquidated damages will be assessed in an amount up to \$2,000 per occurrence. The City shall advise the Concessionaire of the basis for the operational liquidated damages.

3.7 Operator Training

The Concessionaire is responsible for safety and health training for existing and newly hired employees. Process training will include familiarization with the SOPs and other operating protocols. Safety training will be conducted periodically for new and existing employees to familiarize the staff with potential dangers related to equipment and processes, particularly fire and explosion dangers, dangers associated with toxic or corrosive gases or liquids, and dangers related to electrical equipment. Training may be performed by in-house experts. However, industry safety professionals should be contracted to provide training when in-house expertise is not available.

3.8 Industrial Pretreatment Program

The Concessionaire will administer the City's EPA approved Industrial Pretreatment Program (IPP) in accordance with the City's ordinances and EPA IPP regulations. In that regard, the Concessionaire will be responsible for following tasks related to the City's IPP:

- a. Perform compliance sampling and monitoring of the permitted industrial users and any other users whose discharges may impact loading or performance of the WWTP;
- b. Review and record the results of self-monitoring performed by permitted users in the service area;
- c. Identify and recommend enforcement action to the City and contributing municipalities for users found to be in violation of the City's ordinances, EPA regulations, or the users' permits;
- d. Advise the City with respect to issuing permits to new users, and reissuing expiring permits to existing permitted users;
- e. Survey, with the City's cooperation, the WWTP service area to inventory and identify users that may warrant monitoring and/or permitting at least one (1) time every five (5) years, and provide a summary report to the City;
- f. Periodically update the City's local pretreatment limits in accordance with the IPP requirements in the WWTP NPDES discharge permit; and
- g. Prepare the annual reports required under the City's IPP and EPA regulations, including posting of user violations of the IPP as required by law.

The Concessionaire shall report the IPP activities performed to the City on an annual basis. The report will include:

- a. A summary of monitoring performed during the year;
- b. Enforcement actions recommended based on monitoring activities performed;
- c. A listing of new permits issued and existing permits renewed; and
- d. Any other activities performed in connection with the City's IPP.

3.9 Septage and Hauled Wastes

The City currently accepts approximately 2.0 million gallons of septage per year and 20 million gallons of landfill leachate per year from the Grand Central Sanitation landfill (referred to collectively as hauled wastes) at the WWTP from City-licensed haulers. The City currently restricts the volume of wastewater received from the landfill to 185,000 gallons per day and a maximum of 3 days per week due to concerns related to the color of the wastewater. The Concessionaire will continue to accept hauled wastes from the currently licensed haulers. The Concessionaire may not accept new haulers nor allow the volume of hauled wastes accepted at the WWTP to be increased over that established by City Ordinance 941 Section 3.4 titled Hauled Wastewater. No waste of a different type or nature than that being accepted at the time of closing will be permitted.

The Concessionaire will be responsible for monitoring the hauled wastes received to identify and reject any loads that might contain compounds that would be toxic or inhibitory to the WWTP processes, impact sludge end use options, or cause pass-through of a toxic or inhibitory substance to the receiving stream. The Concessionaire will be responsible for recording the volume of wastes delivered by each waste hauler and invoicing septage waste haulers in accordance with the City's current billing protocols until such time as billing procedures are changed. The Concessionaire shall negotiate directly with Grand Central Sanitation with respect to terms for hours of operation, truckers' responsibilities at the WWTP, leachate acceptance criteria, leachate constituents and concentration, payment, rates, and delivery of leachate from that facility. The Concessionaire shall report the volumes of wastes received to the City as part of the annual report.

4.0 Computerized Maintenance Management System

The Concessionaire shall develop and maintain a CMMS for managing, scheduling, and recording preventive and corrective maintenance for all wastewater treatment, conveyance, and collection systems equipment, buildings, and structures. The CMMS will contain essential maintenance, warranty, and baseline condition information generated from an audit of the equipment and historical repair records. The CMMS system shall perform the following functions:

- a. Inventory all equipment, buildings, and structures;
- b. Schedule preventive maintenance activities;
- c. Track repair warranties;
- d. Provide easily accessible records of installation date, and maintenance history;

- e. Generate work orders; and
- f. Record maintenance activities.

All maintenance work performed shall be recorded in the CMMS, including equipment maintenance and inspections, sewer pipe cleaning and televising, test results, repairs and replacements, and work performed by subcontractors. Documentation for work completed shall be maintained as one record and shall include a detailed description of the work performed, who performed the work, and all parts and materials used.

5.0 Sewer Utility System Maintenance

5.1 Wastewater Treatment Plant Maintenance

The Concessionaire will be responsible for all maintenance activities related to the Wastewater Treatment Plant including, but not limited to the following.

- a. All fixed and non-fixed equipment shall be operated and maintained in accordance with manufacturer's instructions, and the OMP.
- b. Valves shall be exercised regularly in accordance with the OMP and manufacturer's recommendations, at a frequency of not less than two (2) times per year.
- c. Instrumentation and control devices at the WWTP shall be calibrated in accordance with manufacturer's recommendations and at a frequency of not less than once annually. The Concessionaire will also verify that the flow meters measuring wastewater flow from the Signatories, the Borough of Emmaus, and Upper Macungie Township are calibrated annually. Certificates of calibration are required, and shall be provided to the City, to verify the performance of each flow meter.
- d. Surface damage and pitting of painted surfaces shall be properly prepared and repainted as soon as practical.
- e. Paint and coatings on all painted/coated surfaces, including building interiors and exteriors, equipment, tanks, etc., shall be maintained in good condition. Surfaces shall be repainted, as required, to maintain a completely intact surface coat and to protect the surface from rust, corrosion, rot, or further deterioration.
- f. Equipment, valve, pipe, and tank identification tags and markings shall be maintained and replaced, as required.
- g. Mechanical equipment preventive maintenance activities shall include, but not be limited to:
 - 1. Oil changes in accordance with equipment manufacturer's recommendations;
 - 2. Maintaining oil and grease levels in accordance with manufacturer's recommendations;
 - 3. Painting and maintaining surface coatings;
 - 4. Draining condensate;
 - 5. Inspecting and verifying proper operation; and
 - 6. Replacing normal wearing parts.
- h. The following tanks and vessels shall be drained and inspected at the frequency noted, or more frequently if required, to evaluate the condition of internal structures and equipment, and to remove accumulations of grit and other settled debris.

Within six (6) months of the date of closing, the Concessionaire shall provide to the City a schedule for performing this work. The Annual Report will include a section summarizing the inspection, any subsequent work performed, and work planned as a result of the conditions found during the inspection.

1. Grit chambers; wet wells; primary, intermediate and final clarifiers; and sludge thickeners – every 1 to 2 years.
 2. Digesters and sludge storage tanks – every 5 to 7 years.
- i. Sludge and chemical pipelines shall be drained and flushed when the process is removed from service for maintenance, or more often as required to prevent accumulation of debris in the pipeline that could impact operation of the pumping system or otherwise cause corrosion or degradation of the piping system. In addition, valves shall be serviced while associated tanks are out of service, as many are inaccessible when the vessel is full, e.g., isolation valves on the Anaerobic Digesters.
 - j. Spills shall be cleaned up promptly to maintain cleanliness, prevent unsafe conditions, and reduce the potential for odor generation.

Exhibit D summarizes the services for which the City contracts for maintenance at the WWTP which will need to be continued by the Concessionaire. These contracts should be reviewed by the Concessionaire. The Concessionaire may self-perform or change vendors utilized for these services, but the scope of service and frequency of maintenance shall not be less than defined in the City's contracts.

The Concessionaire shall include in the monthly report to the City a tabulation of major equipment taken out of service, the date that the equipment was taken off-line, reasons for taking the equipment off-line, and the date that the equipment was or is expected to be returned to service. The City shall also have the right during normal business hours and with notice to the Concessionaire, to periodically conduct inspections of the Sewer System and request operations staff to demonstrate the maintenance history of selected equipment. The Concessionaire shall cooperate with inspections and requests for information by the City.

5.2 Collection and Conveyance Systems

5.2.1 Pumping Station Monitoring

The City does not own or operate any wastewater pumping stations. However, the Concessionaire is responsible for monitoring the operation of the Lehigh County Authority (LCA) Park Pumping Station using the SCADA trending instrumentation in the Operations Control Room at the WWTP and notifying designated LCA operation staff of operational problems. Failures of this station during wet-weather and dry-weather conditions have historically caused Sanitary Sewer Overflows in the City's collection system.

5.2.2 Collection System Operation and Maintenance

The Concessionaire shall be responsible for all operation and maintenance activities associated with the City's collection system, and shall maintain the collection system to provide uninterrupted service. Operation and maintenance activities will include, but not be limited to the following:

Concession and Lease Agreement**Operating Standards - Part B – Sewer System Operating Standards**

- a. Respond to reports of blockages or other emergencies in a timely manner;
- b. Clean and flush sewer lines and manholes as required, particularly in those areas that historically have required regular periodic cleaning to clear or prevent obstruction to normal flow and to minimize the potential for odors to develop;
- c. Treat for root intrusion as required, particularly in those areas that historically have required regular periodic treatment;
- d. Repair or replace sanitary sewer lines that are damaged or collapsed;
- e. Replace broken or missing manhole lids and/or manhole frame assemblies as required;
- f. Install new or replace damaged or missing manhole inserts in those manholes determined to be subject to surface flooding and that allow surface water inflow through the manhole cover into the sanitary Sewer System; and
- g. Respond to all PA One Call requests.

It will be the responsibility of the Concessionaire to coordinate GIS issues with the City as defined herein. The GIS platform will remain with the City. Records of all maintenance activities will be maintained in the CMMS and GIS System where applicable.

The City has a preventive maintenance program in place for minimizing accumulations of fats, oils, and greases (FOG) in the collection system. The Concessionaire shall implement a FOG preventive maintenance program similar to the current City program.

The Concessionaire will also prepare and implement a Collection System Inspection and Maintenance Plan (CCIMP) that provides a systematic approach for inspecting, televising, cleaning, and flushing every manhole and sanitary sewer run in the City's Collection system. The preventive maintenance activities performed under the CCIMP are in addition to the maintenance activities described above. The intent of the work performed under the CCIMP is to identify and mitigate sources of infiltration and inflow (I/I) to the sanitary Sewer System, thereby reducing the potential for surcharging and overflows in the Sewer System and WWTP. In addition to the I/I reduction, damaged or partially blocked sections of sanitary sewer piping or manholes shall be identified and repaired, thereby improving the condition of the system and reducing the potential for flow obstruction and odor generation.

As part of the Concessionaire's CCIMP, the Concessionaire will be required to flush and televise at least 55,000 linear feet (LF) of collection system annually. The Concessionaire will identify any developing blockages that are encountered but cannot be dislodged at the time of flushing and televising. The Concessionaire will schedule removal of these blockages. Any areas with root intrusion will be identified and included as part of the root intrusion program. Any section of the collection system that shows significant leakage will be logged and incorporated into the Concessionaire's I/I remediation planning. If it appears that any segment of the collection system is in danger of collapsing, the Concessionaire will prioritize this section for repair or replacement. All televised lines will be recorded the GIS system.

The Concessionaire will provide quarterly reports noting the length of collection system televised, the location and date of developing blockages identified, the location and date of root

intrusion identified, the location and date of areas of significant leakage, and the location and date of any potentially collapsing lines.

5.2.3 Operational Liquidated Damages

Absent evidence of actions or circumstances outside the Concessionaire's control or due to the fault of others, failure to clean and televise 55,000 LF of sanitary sewer pipe annually will result in operational liquidated damages of \$3,000. Additional operational liquidated damages of \$1,000 will be assessed by the City if the cleaning and televising program is not on schedule within three (3) months following the end of the year and for each additional three (3) month period that the concessionaire fails to recover the program schedule.

If the required length of sewer pipe has not been cleaned and televised for the current and preceding year, operational liquidated damages of \$6,000 will apply and quarterly operational liquidated damages will be doubled. Both quarterly and annual operational liquidated damages will remain at these higher levels each and every time operational liquidated damages are assessed by the City following the initial occurrence.

5.2.4 Root Intrusion

The Concessionaire will review the City's current contract for root intrusion control in the collection system. The City has provided root intrusion control to 40,000 to 50,000 LF of sewer pipe annually. The current contract contains certain guarantees and protocols that shall be maintained, as the program has been successful. The Concessionaire may perform the work in-house or change vendors, but the goals and extent of the program must be maintained. The Concessionaire's annual report to the City shall include the length of sewer pipe receiving treatment.

5.2.5 New User Connections

The Concessionaire will install new connections to the sanitary Sewer Utility System to serve new customers, or for existing customers who require a new connection. The connection will be constructed in accordance with the City's Standard Materials and Construction Specifications and Pennsylvania's Uniform Construction Code. The Concessionaire will document the location and depth of the connection and maintain that information as permanent record. The Concessionaire will provide a record of the installation to the City and provide the information as part of the GIS data sharing.

5.2.6 Inspection of New Construction

The Concessionaire shall be responsible for inspection of construction work associated with the installation of new lateral or sanitary sewer pipe, or the repair of existing sanitary sewers and laterals within the City. The Concessionaire shall ensure that the construction methods and materials are consistent with City, State, and other applicable construction regulations. The Concessionaire will prepare and maintain on record one-line diagrams describing the location of new or repaired laterals. Construction inspection efforts will be detailed in the Concessionaire's monthly report to the City and appropriate data shall be entered into the City's GIS system.

5.2.7 Streets Program Participation

Annually the City's Streets Program selects streets and/or alleys within the City for reconstruction or resurfacing. The Concessionaire shall attend the planning meetings and all progress meetings associated with the Streets Program and contribute to the discussion relative to the Concessionaire's obligations and objectives. A fundamental concept of the program is that after a street has been reconstructed or resurfaced as part of the program, the need to reopen the street for remedial infrastructure work will be minimized for an extended period of time. As such, it is imperative that underground utility maintenance, repair, and/or replacement is performed concurrently with the Streets Program, when the condition of underground utilities may require maintenance, repair, or replacement in the near term.

The Concessionaire shall be responsible for cleaning and televising the sewer lines in the selected streets. The Concessionaire shall be responsible for repair or replacement of damaged or leaking sections and associated facilities, as necessary. The repaired or replaced lines shall be televised by the Concessionaire after the work has been completed to verify that the work has been successful.

All manhole elevations will be adjusted when necessary. The Concessionaire will supply, if necessary, and reset all manholes to proper line and grade for all reconstructed streets and supply all risers and rings for all overlaid Streets. The Concessionaire will also provide these same materials for all City contractor agreements. If in good condition, risers and manhole frame and cover assemblies may be reused.

The age, type of pipe, pipe break/leak history, and other relevant factors will be used to determine if the sanitary sewer pipes in the selected street should be replaced as part of the Streets Program. If replacement is determined to be necessary in the judgment of the Concessionaire, the Concessionaire will be responsible for replacement of those sections of the pipe.

In performing these activities associated with the Streets Program, the Concessionaire will be responsible for all tasks normally associated with the work activities related to the Sewer Utility System. All work shall be completed in conformance to City codes and ordinances and other applicable requirements.

All pertinent information related to the maintenance, repair, and/or replacement of Sewer System infrastructure associated with the Streets Program shall be entered into the GIS system. The Concessionaire's participation and performance with respect to the Streets Program will be an agenda item in the quarterly meetings.

5.2.8 Sinkhole Responsibilities

The Concessionaire shall immediately notify the City of any sinkholes identified by or brought to the attention of the Concessionaire. The Concessionaire will be fully and directly responsible for repairs, remediation, and replacement of all Sewer System components damaged as a result of a sinkhole within the curb lines of the street. Repairs and replacements will be backfilled in accordance with City Standards. All manhole and water valve elevations will be adjusted when necessary. The Concessionaire will supply, if necessary, and reset all manholes

and water valve boxes to proper line and grade for all reconstructed streets and supply all necessary risers and rings for all overlaid streets. If in good condition, risers and manhole frame and cover assemblies may be reused. All work will be coordinated with the City and other utility providers.

All work shall be performed in conformance with City codes and ordinances, and all pertinent information will be entered into the GIS system.

5.3 Maintenance of Flood Protection Project

The Concessionaire shall assume all maintenance and other requirements of the Federal Flood Protection Project, including the diked areas outside the treatment plant and other areas, as depicted on Exhibit M. At all times, vehicular access to the treatment plant outfall shall be maintained. During warm weather months, mowing of the diked areas is required. Application of herbicides may be required in certain areas to control vegetative growth. The US Army Corps of Engineers periodically inspects the flood protection project and issues reports noting areas that need to be addressed. The activities identified on these reports shall be the responsibility of the Concessionaire.

5.4 Capital Improvements

5.4.1 General Requirements

Capital improvements to the WWTP, collection system, and flood control assets will be the responsibility of the Concessionaire. Capital improvements will be constructed using methods and materials compliant with the City's ordinances and the UCC. The Concessionaire will advise the City of the need for the capital improvement and will be responsible for all engineering and design work associated with the project. All new improvements will be energy efficient and cost-effective. New construction and renovation work will be designed, constructed, and operated in accordance with the Energy Management and sustainability requirements defined herein.

5.4.2 Capital Improvement Planning

Capital Improvement Planning shall be performed by the Concessionaire and shall include a comprehensive facilities inspection, system performance evaluation, and development/update of a long-term improvement plan including project cost estimates. The Concessionaire shall implement a long-term master planning/capital improvement planning process. The Comprehensive Planning Study shall be performed at 5 year intervals. The Concessionaire shall either perform the study using its own engineer or contract with an outside professional engineer registered in Pennsylvania, provided either engineer must have a minimum of 10 years experience conducting similar studies. The Concessionaire shall provide the final study report to the City, include the long-term planned capital improvements and associated activities in routine reports to the City, and routinely report on progress. The Concessionaire shall be responsible for executing Capital Improvements, with the City's approval, as defined in the Agreement. Progress on ongoing Capital Projects will be an agenda item during quarterly meetings.

5.4.3 Energy Management and Sustainability

The Concessionaire shall establish a program to review and optimize energy usage, including at a minimum:

- a. Review of energy usage, identification of energy use trends, and cost or usage tracking versus time.
- b. Consideration of energy efficiency improvements and equipment and/or operational modifications.
- c. Consideration of energy costs in evaluation of new system facilities.
- d. All capital improvement projects related to system infrastructure and associated facilities shall incorporate concepts of sustainable design. Sustainable design approaches aim to maximize environmental as well as social and economic needs and benefits — the so-called "triple bottom line" goal – both now and throughout the life cycle of the project. All capital improvement projects that are deemed significant through determination by the City shall achieve a minimum "Acknowledgement of Merit" rating through the Envision rating system coordinated by the Institute for Sustainable Infrastructure (ISI).
- e. The Concessionaire shall include sustainability, energy use, and the status of energy efficiency initiatives as part of the routine monthly reports to the City.

6.0 Wastewater Treatment Plant Laboratory Requirements

6.1 Requirement to Maintain a Laboratory at the WWTP

The Concessionaire will maintain and staff a laboratory at the WWTP or contract with an outside laboratory capable of performing the analyses required for process control and sludge management as identified in these Operating Standards, as well as those analyses required to be reported for compliance with the NPDES permit. The Concessionaire will be responsible for all costs associated with operating and maintaining the laboratory, including but not limited to analytical and sampling equipment maintenance, quality control, training, and reagents and other materials required for performing the analyses.

The Concessionaire may contract with an outside laboratory. The Concessionaire will be responsible for contracting with the outside laboratory and will be responsible for all costs associated with sampling and analysis.

A Quality Manual has been developed by the City and is currently in use related to laboratory operations. The Concessionaire will review the Manual. The Concessionaire may continue to use the current Manual, or make revisions. If revisions to the Manual are made, the revised Manual must comply with the requirements for PADEP's laboratory accreditation program under Pa Title 25, Chapter 252.

6.2 Laboratory Accreditation

The WWTP laboratory is currently accredited by PADEP for the following analyses:

- a. Biochemical Oxygen Demand (BOD₅ and CBOD₅);
- b. Total Suspended Solids;

- c. Total Solids;
- d. Ammonia-Nitrogen;
- e. Fecal Coliform (membrane filter method);
- f. Residual Chlorine;
- g. pH; and
- h. Residual Dissolved Oxygen;

The Concessionaire shall maintain accreditation for those analyses for which the City currently has accreditation unless the Concessionaire has contracted with an outside lab for these services. The Concessionaire will be responsible for all costs associated with the accreditation process, including but not limited to proficiency testing, quality control, and fees payable to PADEP, as enumerated at PA Title 25 Chapter 252.204.

6.3 Laboratory Supervisor

If the Concessionaire maintains an accredited laboratory at the WWTP, the Concessionaire will retain an individual as Laboratory Supervisor. This individual will be a full-time employee at the WWTP and must satisfy the qualifications established under PA Title 25 Chapter 252.302. The Concessionaire will also retain a second individual meeting the requirements of PA Title 25 Chapter 252.302 who can perform the function of the Supervisor in the event that the Supervisor is absent for a period exceeding 16 consecutive calendar days. The Concessionaire will be responsible for making the notifications to PADEP required under PA Title 25 Chapter 252.

6.4 Quality Control Reporting

The Laboratory Supervisor will provide the following written certification to the City each month with the NPDES Discharge Monitoring Reports to be submitted to PADEP and EPA.

“I hereby certify that the analytical results reported in this NPDES Discharge Monitoring Report were obtained from analyses performed in accordance with the methods approved under 40 CFR 136, and that the appropriate quality control measures contained in the approved Quality Manual were strictly followed.”

The Concessionaire will report the results of proficiency testing performed in accordance with PA Title 25 Chapter 252 to the City. Any failed proficiency tests must be reported to the City, along with a detailed description of the measures taken to correct the deficiencies.

7.0 Customer Service

7.1 Customer Service Center

The Concessionaire shall maintain a Customer Service Center (Service Center) staffed with representatives who will be available Monday through Friday, except on Holidays, during normal business hours to provide assistance to customers of the system for billing or service issues. The Service Center can serve both water and wastewater customers. The Concessionaire will dedicate office space for use as a Service Center. The Service Center will be located in an area easily accessible to customers. The Service Center will be equipped with telephones capable of accommodating a minimum of three (3) separate, simultaneous calls. A separate and

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards - Part B – Sewer System Operating Standards**

February 25, 2013

distinct customer service telephone number will be established. In addition to the Service Center, the Concessionaire will establish a Call Center that will be available 24 hours per day, 7 days per week, including holidays, where customers can report emergencies or complaints.

7.2 Customer Call Protocol

The Concessionaire will record the following information regarding customer calls received at either Center:

- a. Customer's name and location;
- b. Complaint/issue or subject of the call;
- c. Time of call received;
- d. Time of response;
- e. Actions taken; and
- f. Customer call-back, if requested or appropriate.

The Concessionaire will maintain call records for a period of at least two (2) years. It is not necessary to provide copies of each individual report to the City. However, the Concessionaire shall provide a semi-annual report to the City that summarizes the information recorded and tabulates down the customer calls by type (i.e. billing issue, blockage, odor or noise complaint, personnel complaints, etc.). A summary of the call records will also be included, tabulated by category, in the Annual Report submitted to the City, along with a summary of the records for the previous two (2) years.

The Concessionaire shall have an action plan to address taste, odor, color, and staining problems, and similar complaints related to the aesthetic quality of the delivered water. Each complaint shall be logged, noting complainants name and contact information, time, nature, and location of delivered water in question. . Each complaint shall be investigated and shall include, a customer interview and onsite testing upon the request of the complainant or the occurrence of other similar or potentially related complaints. The complainant shall be contacted within 48 hours to determine if the complaint has been resolved. Further investigation will be required if the problem has not been resolved to the satisfaction of the customer. The Concessionaire will submit a semiannual report to the City noting the information above, and Concessionaire conclusions relative to the complaint.

The Concessionaire shall report a summary of taste and odor complaints to the City semiannually. Each semiannual report shall include data for the previous two (2) years, by category, for comparison purposes.

All complaints related to odors believed to be emanating from the WWTP will be directed to the Operator in Charge at the WWTP for investigation and follow-up. The City will be advised by the next working day after the Operator's investigation and follow-up and an individual report will be filed with the City noting the time and date of the complaint, the name and address of the complaining party, contact information for the complaining party, an account of the investigation noting any condition at the WWTP that may have been responsible for or contributed to the complaint.

7.3 Customer Survey Program

The Concessionaire will develop and implement a customer survey program to monitor customer satisfaction with the way in which service calls or complaints are addressed by the Concessionaire. If the Concessionaire has an existing customer survey program in place, the City will consider acceptance of that program. The survey results, including independent follow-up by the City (any such follow-up to be at the expense of the City), will be discussed during quarterly meetings, as appropriate, and considered during the annual evaluation.

- a. The Concessionaire shall contract with an independent firm to perform a customer opinion survey on a semiannual basis to gauge customer satisfaction with respect to the way in which service calls or complaints were addressed by the Concessionaire. The Concessionaire's proposed survey approach and format for obtaining this information will be submitted to the City for approval during the transition period. During the term of the Agreement, the Concessionaire may propose changes to the customer survey program, subject to approval by the City. The customer survey must include a representative number of customers and, at a minimum, 25% of customers that have registered a complaint or have otherwise contacted customer service within the prior 9 months.
- b. A copy of the independent survey results shall be submitted directly to the City from the independent firm. If the Concessionaire has an existing customer survey system in place, the City will consider acceptance of that survey system pending review of the protocol, questions, response level, etc. The survey results, including independent follow up by the City, will be discussed during quarterly meetings and considered during the annual evaluation.

8.0 Reporting Requirements

8.1 Record Keeping, Data Review, and Reporting Requirements

In addition to copies of all report submissions to regulatory and oversight agencies, the Concessionaire shall submit monthly, quarterly, and annual reports as defined in this section and throughout these Operating Standards. Several of the required reports will be similar to those being generated by City personnel at the time of closing. The monthly operating reports from each treatment facility are of particular importance to the City. The reports provided by the Concessionaire to the City shall provide similar information. An example WWTP monthly report is included as Exhibit K, for reference. The Concessionaire may modify existing report formats, as necessary, for compliance with City requirements and the Concessionaire's use. Other reports have not historically been prepared by City personnel and, in such cases, the Concessionaire shall be responsible for developing a report format. In all cases, within 120 days of closing, the Concessionaire shall submit proposed report forms for approval by the City. The City will verify that the required and necessary information will be provided by the proposed report form in a manner that facilitates understanding of the material presented. Each report shall include a cover/summary sheet that includes the name of the report and time period covered, and briefly summarizes and highlights critical information contained in the report. The Concessionaire may combine multiple reports, for convenience, and all reports may be submitted in electronic format, at the Concessionaire's option.

**Allentown Water and Sewer Utility System
Concession and Lease Agreement
Operating Standards - Part B – Sewer System Operating Standards**

February 25, 2013

The Concessionaire is responsible for maintaining procedures, records, and systems, as required, to facilitate reporting operational performance, service history data, and other records and data to the City as required by these Operating Standards and the Agreement. In addition to the required routine reports delivered to the City, the City reserves the right to conduct onsite inspections of facilities, and the Concessionaire is required to provide, upon the City's request, performance, operation, maintenance, and/or other records pertaining directly to the operation and maintenance of the System, to demonstrate compliance with the requirements of these Operating Standards.

All reports required herein shall be submitted to the City in a timely manner, as follows, and each shall have a separate cover describing the name of the report, time frame that the report covers, and any and all items that are deemed to be of significance to the City, as the owner of the system, or of possible consequence to the maintenance and operation of the System, particularly with respect to meeting the requirements of these Operating Standards.

The reporting deadlines are as follows:

- Monthly and Quarterly Reports 30 days after the end of the month or quarter
- Annual Reports April 1, each year for the preceding year

If a report will not be submitted in accordance with the criteria above, the Concessionaire shall provide two (2) days notice to the City, minimum.

Late submittals or failure to submit a report will result in the City assessing operational liquidated damages upon the Concessionaire as follows:

- 2nd Occurrence within 12 consecutive months \$200
- 3rd Occurrence within 12 consecutive months \$300
- 4th Occurrence within 12 consecutive months \$500
- 5th Occurrence within 12 consecutive months \$1,000
- Further occurrences will be subject to operational liquidated damages based on pertinent factors. Operational liquidated damages are based on late filing of reports within 1 week. Failure to file the report within 1 week following the due date will result in doubling of operational liquidated damages. Operational liquidated damages are double for any regulatory report filed late or incomplete.

The City will evaluate the monthly and quarterly reports received during the initial six (6) months following the date of Closing for content and format and advise the Concessionaire of its findings. The Concessionaire will have the opportunity at that time to offer suggestions to the City regarding format and content for these reports. The City will similarly evaluate the first Annual Report for content and format and advise the Concessionaire of its findings. The Concessionaire will have the opportunity at that time to offer suggestions to the City regarding format and content of the Annual Report. Following these initial evaluations, the City and the Concessionaire may, from time to time, review the scope of the reporting obligations and the report format and may agree to modify the format or reporting requirements as appropriate.

The Concessionaire shall maintain the City's protocol or establish a City-approved protocol that is no less stringent, for complying with the reporting requirements of applicable regulations. The protocol shall designate who is responsible for the reports and the timing of submittal. The protocol shall include adequate lead time to acquire necessary approvals and meet the deadline for submitting the reports. The Concessionaire shall provide a copy of all reports and other documentation submitted to regulatory agencies to the City. All reports shall include a brief summary of the report.

8.2 Discharge Monitoring Reports

The Concessionaire shall be responsible for preparing and submitting to the proper authorities in a timely manner the monthly Discharge Monitoring Reports (DMRs). The DMRs shall be prepared in accordance with State and federal regulations. A person in a supervisory or managerial position shall be appointed by the Concessionaire to sign the reports. All data and information required for completing the discharge monitoring reports shall be developed and maintained by the Concessionaire. Exceedances or any other violation shall be noted and a detailed report submitted to the City. The Concessionaire shall be financially responsible for any fines or costs resulting from enforcement actions taken by PADEP or EPA related to reporting or effluent quality violations, or any other violations related to operation and management of the WWTP in noncompliance with State or federal regulations or the NPDES discharge permit. Reports submitted to regulatory agencies shall also be submitted to the City on the same day.

8.3 PADEP Municipal Wasteload Management Annual Report

The Concessionaire will assist and coordinate with the City relative to the preparation of the Municipal Wasteload Management Annual Report, also referred to as the Annual Chapter 94 Report, required under Title 25 Chapter 94 of the PADEP Rules and Regulations. The Concessionaire will prepare the historical data and develop the graphs and exhibits detailing historical flows and loadings, and projected flows and organic loading based on growth projections provided by the City. The Concessionaire will also prepare the report sections related to the condition of the system, the Industrial Pretreatment Program, new construction, and maintenance efforts, particularly related to infiltration and inflow reduction. The Concessionaire will also be responsible for obtaining current and projected flow and loading information from the contributing municipalities, as well as information related to the condition of the contributing municipalities' respective systems, maintenance efforts performed particularly with respect to infiltration and inflow reduction efforts, and sanitary sewer extensions.

All reports submitted to the City, except for those specific exceptions provided for by Section 708 of the PA Right to Know Act (Act 3 of 2008), will be made available to the public, upon request, in accordance with the requirements of the Act.

For exceedances of effluent criteria related to regulatory discharge limits listed in Table B-1 or the Performance Standards listed in Tables B-2 and B-3, the report provided to the City will include the cause(s) of the noncompliance and measures taken to mitigate the violation and to prevent future violations

In addition to the monthly reports, the Concessionaire will meet quarterly with the City to review the Concessionaire's performance any issues related to the operation and maintenance of the system.

8.4 Contributing Municipalities Flow Reports

A separate report of the individual flows from the other contributing municipalities and the City, including a 12-month running average flow for the previous 24 month period, will be provided as a separate monthly report to the City. Copies of this report will be distributed to the other contributing municipalities and Authorities. An example Contributing Municipalities Flow Report is included as Exhibit L.

8.5 Act 537 Planning

The City is responsible for completing wastewater facilities needs assessments and planning required under PA Act 537 of 1966 (35 P.S. § 750, et seq) known as the Pennsylvania Sewage Facilities Act. The Concessionaire will assist the City with the completion of Act 537 Planning by providing applicable data.

8.6 Internal Annual Performance Review

Beginning in 2016 and annually thereafter, the Concessionaire will perform internal Review of the operation of the Sewer Utility System and provide a detailed report to the City of its findings. The Review will include an examination of all SOPs related to process operations and maintenance and will identify deficiencies and corrective measures taken to mitigate the deficiencies. The Review will note and identify any concerns or issues that the Concessionaire believes will prevent or impede compliance with the Operations Standards or the Agreement, and will include recommendations for addressing each concern. The Review will also examine customer service issues, and will discuss the success of measures taken to improve customer relations and service.

9.0 Administrative Orders

Two separate Administrative Orders (Orders) dated September 28, 2007, and September 28, 2009, have been issued to the City by the U.S Environmental Protection Agency (EPA). Both Orders relate to by-passed flow at the WWTP and sanitary sewer overflows in the collection systems owned by the City and by the contributing municipalities. The City has certain responsibilities under the Orders. The Concessionaire should review the orders and associated consultant and compliance progress reports which have been submitted to EPA. Copies of the Orders and the reports can be obtained from the City.

The Concessionaire will be fully and directly responsible for any and all activities, including capital improvements required in connection with the Orders, until such time as all requirements of the Orders have been satisfied and the City is released from the Orders, subject to the terms and conditions of the Agreement. The parties specifically acknowledge that the Concessionaire will not be responsible to eliminate discharges from SSOs by December 31, 2014. Coordination and cooperation with communities and Authorities whose sewage is ultimately treated by the City will be required. The Concessionaire will be required to prepare and submit to the City all quarterly, semi-annual, or annual reports as might be required by the

EPA under the Orders. The reports must be submitted to the City at least two (2) weeks before the reports are due to be submitted to EPA.

The Orders will be a standing agenda item for the quarterly meetings with the City. The Concessionaire and the City will discuss the status and progress made relative to the requirements of the Orders during each meeting.

10.0 Emergency Response Plan

The Concessionaire will develop and implement an Emergency Response Plan (ERP) for the WWTP. The ERP will be developed in accordance with PADEP's *Guidelines for the Development and Implementation of Environmental Emergency Response Plans* (document number 400-2200-001). The plan will establish emergency response protocols to address, at a minimum, the following hazards and emergencies:

- a. Sanitary sewer overflows;
- b. Chemical spills;
- c. Fire and explosions;
- d. Pipe, valve, or pump failures;
- e. Equipment or process failures;
- f. Power failures;
- g. Acts of God (i.e. floods, hurricanes, wind storms, etc.);
- h. Interceptor sewer force main collapse; and
- i. Personnel emergencies.

In accordance with the PADEP Guidelines, the ERP will contain, at a minimum, the following information:

- a. Description of the facility;
- b. Material and waste inventory;
- c. Pollution incident history;
- d. Description of existing ERPs;
- e. Implementation schedule for plan elements not currently in place;
- f. Organizational structure of facility for implementation;
- g. List of emergency coordinators;
- h. Duties and responsibilities of the Coordinator;
- i. Chain of command;
- j. Spill Leak Prevention and Response;
- k. Countermeasures to be taken by Facility and Contractors;
- l. Evacuation plan for WWTP personnel;
- m. Emergency equipment available for response; and
- n. Emergency Spill Control Network, including
 1. Coordination with local ERP Agencies and Hospitals;
 2. Notification Lists; and

3. Downstream notification requirements for storage tanks.

As a result of the City's use of ton containers of gas chlorine for disinfection and odor control, the facility maintains a Risk Management Plan (RMP); the Concessionaire must take full responsibility for maintaining compliance with the Clean Air Act and Amendments related to Section 112(r) Accidental Release Prevention/Risk Management Plan Rule.

11.0 Site Safety and Security Plan

The Concessionaire will take all precautions that are necessary to safeguard persons entering the facilities and to protect water quality and the WWTP property. A Security Plan shall be developed and implemented to include, but not be limited to, the following goals:

- a. Prevent unauthorized entry;
- b. Prevent interference with treatment processes;
- c. Prevent injury to employees, visitors, or neighbors; and
- d. Prevent loss or damage to municipal property.

Security policies incorporated into the Security Plan shall include, but not be limited to, the following features:

- a. Entrance gates will be securely locked during non-business hours.
- b. Fencing and gates will be periodically inspected and maintenance performed as needed.
- c. Building entry and fire alarm systems will be routinely monitored, inspected, tested, and maintenance performed as needed.
- d. Appropriate identification and documentation of authorization of all persons accessing the facilities will be required. Trespassing will not be tolerated, and will be referred to local law enforcement agencies.
- e. A record will be made in a logbook of all persons accessing the facilities.
- f. Employees will report all suspicious observations to site management.
- g. Daily and monthly facility security checks will be conducted as part of normal operational rounds and will be documented in logbooks.
- h. Local enforcement agencies will be immediately notified in the event of an emergency situation.
- i. All security incidents will undergo review and corrective actions shall be taken to prevent recurrence.
- j. Staff and contractors working on site shall receive security training.

The Concessionaire shall notify the City within 2 hours of any security breach. The Concessionaire shall also be responsible for notifying PADEP, as required, relative to any security breach. The Concessionaire shall submit a report to the City related to the results of investigation of any security breach.

12.0 Additional Requirements and Operational Liquidated Damages

The City will issue a Notice of Violation to the Concessionaire for any failure to comply with the requirements of these Operating Standards. The Notice of Violation will include any associated operational liquidated damages amount. The Concessionaire reserves the right to appeal the Notice of Violation and operational liquidated damages and may provide information to the City to support the appeal. The Concessionaire must file a request for an appeal within seven (7) days of receipt of the Notice of Violation from the City. Unless appealed by the Concessionaire, payment of the operational liquidated damages will be due to the City within 30 days of the Concessionaire's receipt of the Notice of Violation.

With respect to performance standards having annual requirements, it is expected that the Concessionaire shall consider the time of year and anticipated weather conditions when planning repairs and replacements. It is appreciated that unusual weather or possibly other factors beyond the control of the Concessionaire can adversely impact planned work activities.

If the Concessionaire believes that conditions beyond his control will result in a failure to comply with the requirements and possibly result in operational liquidated damages, the Concessionaire should advise the city in writing (electronic communication is acceptable) of the conditions which may cause the delay and the anticipated timing of the completion of the work.

The City will give reasonable consideration for time extension based on the unanticipated nature and uncontrollability of the cause(s) of the delay and the Concessionaire's timeframe for completion of the work.

Allowances and relief from compliance with the Operating Standards will be made for events resulting from Force Majeure, as defined in the Agreement. In such event, the Concessionaire shall, as soon as practical, advise the City of the specific issues, impacts on compliance with any and all Operating Standards, actions being taken, and the schedule for returning to compliance. Force Majeure relief from the requirements of the Operating Standards, relating to regulatory and permit requirements, will not apply for labor-related events, unless the applicable regulatory authority has specifically granted approval for such relief.

All operational liquidated damages noted in the Operating Standards will be increased every two (2) years, beginning on January 1, 2015, based on the Index and rounded up to the nearest \$50.

There will be quarterly meetings between the City and the Concessionaire to allow for open discussions between the Concessionaire and the City related to issues of concern.

13.0 Alternative Approaches

For all performance standards which have annual performance requirements, the City will allow alternative approaches to satisfying the goals of those requirements. The Concessionaire will provide the City with the details and the implementation schedule for the proposed alternative approach for the City's review and approval. The annual activity level of the proposed alternative approach will not be less than that stated as a performance requirement.

Concession and Lease Agreement

Operating Standards - Part B – Sewer System Operating Standards

The City will not unreasonably withhold approval of the proposed alternative approach. Ancillary requirements and associated operational liquidated damages will have to be redefined. As an example, in the Water Supply section, the Concessionaire may propose to perform a leak survey of the entire distribution system initially to enjoy economies of scale and to identify and repair larger leaks sooner to reduce production costs.

The City and the Concessionaire will mutually develop the associated repair and operational liquidated damages aspects of the alternative approach.

14.0 Annual Exceedence Credit

For performance standards with an annual performance requirement, such as number of valves exercised, if the Concessionaire's performance during any year exceeds the annual requirement, that exceedence of the annual requirement may be credited towards satisfying the annual requirement during the following year. Such credits do not apply to water quality requirements.

15.0 Transition Period

The period beginning with the date of closing and ending six (6) months later shall, herein be referred to as the Transition Period. The Concessionaire will submit for the City's review and approval all SOPs and reporting forms as required in the Operating Standards. The proposed drafts should be submitted with 120 days of closing to allow time for review by the City and subsequent modifications as might be necessary. The Concessionaire should give consideration to satisfying several reporting obligations by combining necessary information into a singular report. All relevant issues, including use of software for report generation and submission, should be addressed and finalized within this period.

During the Transition Period, the performance requirements for all performance standards with an annual requirement will not be in force.

During the first full year following the end of the Transition Period, the performance requirements for all Operating Standards with an annual requirement will be reduced to fifty percent (50%) of the performance requirements. The operational liquidated damages stated in the Operating Standards will remain in effect.

Beginning with the second full year following the end of the Transition Period, and thereafter, all conditions, requirements, and operational liquidated damages in the Operating Standards will be in full effect.

EXHIBIT A
CONCESSIONAIRE REPORTS TO CITY – FOR REFERENCE ONLY

REPORT DESCRIPTION	REPORTING FREQUENCY
Regulatory Reports	As Required
Partnership for Safe Water (WTP)	Annual
Partnership for Safe Water (Distribution System)	Annual
Distribution System Pressure Monitoring Data	Quarterly
Plans and Engineering Design for Dist. System Improvements	As Needed
Distribution System Water Quality	Quarterly
Distribution System Positive Total or Fecal Coliform Sample Result or Chlorine Residual Less than Detectable Concentration	Notification within 4 Hours of Receipt of Results; Report to Follow
Nitrification Monitoring and Control Report (if applicable)	Quarterly
DBP Monitoring and Control Report	Quarterly
Corrosion Control Monitoring and Control Report	Quarterly
Customer Complaint Report	Quarterly
Cross Connection Control and Backflow Prevention Program Report	As appropriate
Water Audit	Annual
Leak Detection and Repair Report	Quarterly
Valve Maintenance Program Report	Quarterly
Hydrant Maintenance Program Report	Quarterly
Flushing Program	Annual
Meter Testing and Calibration Report	Annual
Treated Water Storage Facility Inspection and Maintenance Report	Annual
Pipeline Rehabilitation and Replacement Report	Annual
Emergency Repair/Service Interruption Report	Annual
Comprehensive Planning Study	5 Years
Energy Management Report	Quarterly
Equipment out of Service Report	Monthly
Security Breach Report	Notification within 12 Hours of Occurrence; Report to Follow
Customer Opinion Survey	semi-Annually
WTP Operating Report	Monthly
WWTP Operating Report	Monthly
Aesthetic Water Quality Complaints	Quarterly with Annual Summary
Annual Water Quality Report (CCR)	Annually
Pump Station Operation and Maintenance Report	Quarterly
Industrial Pretreatment Program Report	Quarterly
Hauled Waste Report	Quarterly
Sewer System Televising Report	Quarterly
Internal Performance Review	Annually

**EXHIBIT B
SOFTWARE PACKAGES**

Function	Acronym	Product Name	Manufacturer	Version
Laboratory Information Management System	LIMS	Labworks	PerkinElmer	6.3.0.271
Water Information Management Solutions	WIMS	Hach WIMS	HACH	7.3.3
Computerized Maintenance Management System	CMMS	Cass Works	rjngroup	
CCTV-Truck Software	n/a	PipeTech	Peninsular Technologies	5.8.977
Geographic Information System	GIS	ArcGIS	esri	9.3 sp1
Asset Management System	n/a	Lucity	Lucity, Inc.	7.3 sp1
WWTP Supervisory Control And Data Acquisition System	SCADA	RSLogix	Rockwell Software	4.00.00 CPR7
WFP Supervisory Control And Data Acquisition System	SCADA	Dynac	Transdyn, Inc.	DYNAC OS64
WWTP and WFP Operations Log Books	n/a	SharePoint	Microsoft	
Financial Management Software	n/a	Eden	Tyler Technologies	
Automated Public Emergency Notification System	n/a	FirstCall	FirstCall Network Inc.	
Dist Multi-Vendor Reading System	MVRS	MV-RS	Itron, Inc.	8.3.2
Dist Field Deployment Manager	FDM	FDM	Itron, Inc.	
ADT Security System	WinPak	WinPak Pro 2005	Honeywell Access Systems	Build 563
CCTV Security System	n/a	DIVAR	Bosch	2.32
WWTP PLC Programming Software	n/a	RSLogix500	Rockwell Software	6.00.00
WFP PLC Programming Software	n/a	RSLogix5	Rockwell Software	6.00.00
WFP/WWTP PLC Communications Software	n/a	RSlinx	Rockwell Software	2.41.00 Build 10
Operator Interface Programming Software	n/a	PanelBuilder32	Allen Bradley	3.80.00 Build 22
Operator Interface Programming Software	n/a	EZTouch	EZ Automation	4.3-B
WFP SCADA Historical Data Server	n/a	SQL Server 2005	Microsoft	9.00.1399.00
WFP Supervisory Control And Data Acquisition System	SCADA	Open VMS	Hewlett Packard	8.3
WFP Operator Workstation Connectivity Software	n/a	EXCEED	Hummingbird	Exceed 2008
By-Pass meter downloading software	n/a	Profile	ADS	V3.2 IT5

EXHIBIT C
WATER SYSTEM PERMITS – FOR REFERENCE ONLY

Public Water Supply Permit (Operating)
Water Allocation Permit
Public Water Supply Permit

Permit No. 3390024
Permit No. 39-204D
Permit No. 3390024
(Updated for 4-log disinfection at
EP-101 (Schantz Spring) and
EP-102 (Crystal Spring))

EXHIBIT E
PUMP OPERATING CRITERIA AND TANK LEVEL SETPOINTS

East Side Res- H- 19.0 ft; low 16.0ft
South Mtn res- H23.5ft;low 16.0ft
Huckleberry Rid Res- H-25.0ft;low16.oft
Schantz Spring-H10.0ft;low7.5ft

Current pump settings:

Halstead Tank 0-27 feet:
Lead Pump on at 19.0 ft. – 70% full

28th Street Tank 0-27 feet:
Lead Pump on at 19.0 ft. – 70% full

16th Ward Tank 0-14.5 feet:
Lead Pump on at 10.0 ft. – 69% full

19th Ward Tank 0-20 feet:
Lead Pump on at 15.5 ft. – 78% full

EXHIBIT F
Sample Station Hydrant List

LIMS CODE	LOCATION	Area
HYD_14001	St Elmo & Reading Road	Deep West
HYD_14002	127 N. 30th St. (between Park & Turner)	Deep West
HYD_14003	412 Chestnut St. (Between 4th & 5th Sts., 1/2 block N. of Linden)	Center
HYD_14004	16th & Tilghman Streets	West
HYD_14005	3rd St. (corner of 3rd & Chew; between Turner & Gordon)	Center
HYD_14006	Gordon Street (Jordan & American Parkway)	Center
HYD_14007	1116 Liberty St. (off of Popular between 11th & 12th Sts.)	Center
HYD_14008	Silk Street (off of Allen between 7th & 8th)	Center
HYD_14009	402 N 8th St. (8th & Gordon Streets)	Center
HYD_14010	1922 E. Livingston Street (behind A-treat)	East
HYD_14011	509 N. Carlisle St. (left off Hanover by Cookies, left on Dauphin St.)	East
HYD_14012	750 N. Godfrey St.	East
HYD_14013	970 E. Fairview St.	East
HYD_14014	850 N 5th St. (5th & Greenleaf 4 blocks N. of Tilghman)	Center
HYD_14015	427 N 28th St. (Between Gordon & Liberty Sts.)	Deep West
HYD_14016	Crest Ave. South (Rt. Off Hamilton by Cedar Crest College)	Deep West
HYD_14017	1234 W Tioga St.	South
HYD_14018	1014 S Madison St. (left off Wyoming St.)	South
HYD_14019	601 South 6th St. (off Emmaus Ave by library)	South
HYD_14020	30th St. & Reading Road	Deep West
HYD_14021	1326 N 19th St. (19th & Roth Ave.)	West
HYD_14022	412 N Jasper St. (S. off Hanover behind Our Lady Helping Christians Church)	East
HYD_14023	602 Skyline Drive (Left onto Filbert from Susquehanna to Whittier Drive)	South
HYD_14024	2928 Pearl Ave (turn rt. onto Pearl Ave. from Oxford Drive)	South
HYD_14025	3301 Tilghman St. (A-town Mun. Golf Course next to Maintenance Barn)	Deep West
HYD_14026	803 E. Union & Halstead St (by East Side Reservoir)	East
HYD_14027	15th St. (Between Hamilton & Walnut Sts; across from Hotel Taylor)	Center
HYD_14028	1635 Airport Rd.	East
HYD_14029	440 S 15th St. (Off of South 15th St.)	Center
HYD_14030	401 Harrison St. (Rt. on Basin, left on Auburn, by Trout Creek Park)	South
HYD_14031	271 E. South St. (E. on Hamilton over bridge, rt on Bradford, left on South)	East
HYD_14032	2100 Linden St. (In front of Parks Maintenance)	Deep West

HYD_14033	1428 Linden St. (Between 14th & 15th, Linden & Hamilton)	Center
HYD_14034	828 Cedar St. (Cross Sumner, from 17th St. past Washington)	West
HYD_14035	624 N St. Cloud St. (Between 17th & 18th off Tilghman by Walgreen's)	West
HYD_14036	300 W Cedar St. (Between Washington & Greenleaf)	Center
HYD_14037	926 N Fountain St. (Between 9th & 10th Sts., Gordon & Chew)	Center
HYD_14038	726 N 25th St. (near Tilghman St.)	Deep West
HYD_14039	1149 Pennsylvania St.	Deep West
HYD_14040	1140 Club Ave.	East
HYD_14041	2848 Highland St.	Deep West
HYD_14042	1202 E. Tremont St. (N. of Union Blvd., between Kiowa & Maxwell)	East
HYD_14043	602 W. Cumberland St. (off of So. 6th St.)	South
HYD_14044	938 So. Armour St. (Left off Susquehanna after 7-11)	South
HYD_14045	2223 South Poplar St. (off of Devonshire, near Mack)	South
HYD_14046	2305 SW 28th St. (West on Emmaus Ave., right onto 28th)	South
HYD_14047	1311 Highland St. (West on Roth Ave., right on Highland)	West
HYD_14048	814 31st St. (Cedar Crest past Tilghman, make right on Washington)	Deep West
HYD_14049	1301 N. 16th St. (Across Roth Ave.)	West
HYD_14050	2210 Elm St. (West on Martin Luther, right on 22nd, left on Elm)	Deep West
HYD_14051	1313 South 9th St.	South
HYD_14052	2210 Gordon St. (Near Muhlenberg College)	West
HYD_14053	3030 Huron St. (West on Emmaus, left onto 31st SW, left onto Huron)	South
HYD_14054	575 Union St.	Center
HYD_14055	600 Block of No. 40th St. (Behind Wegman's)	Deep West
HYD_14056	129 N 12th St. (Between Turner & Linden Sts.)	Center
HYD_14057	1406 E. Washington St. (left off Hanover on N. Maxwell St. by Walgreens)	East
HYD_14058	1902 Greenleaf (On corner of 19th St., 4 blocks N. of Tilgman)	West
HYD_14059	916 No. 23rd St. (Between Greenleaf & Livingston on 23rd)	Deep West
HYD_14060	1111 East Cedar St. (north on Irving, make right past Dieruff)	East
HYD_14061	1100 Block. Catasaqua Ave. (right off Fullerton at Syrian church)	Center
HYD_14062	843 N Wahneta St. (East on Hanover, turn left at light by Bennett Toyota)	East
HYD_14063	525 S. Ott St. (West on MLK, turns into E. Texas Blvd., right on S. Ott)	Deep West
HYD_14064	2509 Appel St. (West on Emmaus Ave., left on 26th SW, left on Fernor)	South
HYD_14065	3928 Salisbury Dr.(n on Oxford, left before underpass,rt on Marshall)	South
HYD_14066	300 Cedar Crest Blvd (Park in small lot at light at Cedar Crest & Chew)	Deep West
HYD_14067	413 N. Fulton St. (No. on 15th, left. on Gordon, rt. on Fulton)	West
HYD_14068	2002 S. Albert St. (So. on S. 4th, left. Emmaus Ave., rt. on S. Albert)	South
HYD_14069	1965 S. Hall St. (W. on Emmaus, rt. 8th, rt. Baker, lt. S Del, rt. Mohawk)	South

HYD_14070	2430 W. Union & Muhlenberg Street	Deep West
HYD_14071	400 N Law Street (420-422 Block Liberty to Gordon Sts)	Center
HYD_14072	Washington & New Sts. (between 9th & 10th)	Center
HYD_14073	2370 So. Carbon St (Ethel to Lumber Sts.)	South
HYD_14074	101 E. Lexington St. (Bradford to Lynnwood Sts.)	East
HYD_14075	1224 Gilmore St. (Juniata to Susquehanna Sts.)	South
HYD_14076	Genesse St (Donald to Camp Sts.)	South
HYD_14077	133 Liberty St.	Center
HYD_14078	So. 7th (off of Dixon St by the Humane society)	South
HYD_14079	Lehigh Parkway So. 1600 block west of Coronado St.	South
HYD_14080	500 Blk. Cardon St (Lft. off Basin, veer left, follow Maaco signs)	South
HYD_14081	500 Blk. Greenwood St. (Off of So. Law St.)	South
HYD_14082	200 W Montgomery St.	South
HYD_14083	169 Oak St.	Center
HYD_14084	N. Albert St. @ East Side Dump	East
HYD_14085	200 Blk. Ester St.	South
HYD_14086	1000 Blk. Harrison St.	South
HYD_14087	3120 Devonshire Rd.	South
HYD_14088	2039 Vultee St.	South
HYD_14089	2400 Lehigh Parkway So.	South
HYD_14090	2540 Lehigh ST.(On SW26th near playtime boutique)	South
HYD_14091	Eaton & So 3rd Sts. (Off of Kohl lane line for 19th ward tank)	South
HYD_14092	Lehigh Parkway North (In Parkway off of bridle path on west end of park)	South
HYD_14093	2301 SW 26th St (North off Emmaus Ave.)	South
HYD_14094	N. Plymouth & Pennsylvania Sts. (Union Blvd left onto N. Plymouth)	East
HYD_14095	SW 28th St & Rhonda Lane (near 28th St booster Station)	South
HYD_14096	Broad & Livingston Streets	West
HYD_14097	941 N. 8th Street	Center
HYD_14098	2868 Mosser Street (South St left onto Mosser)	West
HYD_14099	108 Bridge Street (Left off of Front St near Holy Spirit School)	Center
HYD_14100	700 N. Fenwick (on corner of St James)	East
HYD_14101	1235 N. Irving near the Woodlawn Cemetery	East
HYD_14102	585 Business Park Land and American Parkway	East
HYD_14103	1895 E. Columbia (Off Union Blvd turn left onto Sherman St.)	East
HYD_14104	1700 East Allen St.	East
HYD_14105	1154 Ulster ST. (off of Union Blvd near Midway Manor)	East
HYD_14106	410 N. Filbert St (Behind Ice Palace)	East

HYD_14107	417 N. Maxwell St.	East
HYD_14108	South Ellsworth and East Fairview Sts.	East
HYD_14109	132 East Lynwood St	South
HYD_14110	1920 So. 3rd St.	South
HYD_14111	2349 So. Fountain St.	South
HYD_14112	3152 Arcadia Ave.	South
HYD_14113	804 E. Cumberland St.	South
HYD_14114	1439 Mack Blvd.	South
HYD_14115	240 E. Cumberland St.	South
HYD_14116	1127 Keck St.	South
HYD_14117	1235 So 3rd St.	South
HYD_14118	2800 Arcadia Ave.	South
HYD_14119	South 4th & Mountain Rd. (S.E corner 300 Block)	South

EXHIBIT G

Allentown Distribution System Valves - size and count Info from City GIS

Valve Size (")	Count
4	546
6	3,355
8	2,605
10	30
12	1,382
16	7
18	59
20	33
30	3
36	8
Total valves between 4"-36"	8028

30 Records with no
valve Size

Exhibit H-Example WTP Monthly Report

WATER FILTRATION PLANT JULY 2012

MONTHLY REPORT



**CITY OF ALLENTOWN
 WATER FILTRATION PLANT
 MONTHLY REPORT -
 July 2012
 SUMMARY SHEET/DAILY AVERAGES**

RAW WATER INTAKE (MGD)

COA SCHANTZ SPRING		2.0931
LCA SCHANTZ SPRING		2.0150
TOTAL SCHANTZ SPRING		4.1081
CRYSTAL SPRING		3.8933
LEHIGH RIVER	0.0571	0.0571
LITTLE LEHIGH CREEK	<u>8.6241</u>	<u>8.6241</u>

SUB-TOTAL	8.6812	
TOTAL		16.6826

FINISHED WATER (MGD)

NORTH DISCHARGE		4.4568
SOUTH DISCHARGE		8.7981
CRYSTAL DISCHARGE		<u>1.2268</u>

TOTAL		14.4817
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MINIMUM DISCHARGE YEAR TO DATE:	27-Jul	5.74
MAXIMUM DISCHARGE YEAR TO DATE:	29-May	20.55

TREATMENT CHEMICALS

	PPM	LBS/DAY
CARBON	1.83	132
ALUM	31.56	2303
SODIUM HYDROXIDE	6.62	483
POLYMER	0.00	0
FLUORIDE	0.39	47
SODIUM HYPOCHLORITE:		
FILTER PLANT	2.44	178
SCHANTZ SPRING	1.00	18
CRYSTAL SPRING	0.85	28

	MONTHLY TOTAL	DAILY AVERAGE
IN PLANT USAGE BEFORE DISCHARGE (MG)		
TOTAL USAGE (ESTIMATE)	2.3281	0.0751
LEVEL DIFFERENCE (ESTIMATE)	<u>-0.0026</u>	<u>-0.0001</u>
SUB-TOTAL	2.3256	0.0750

IN PLANT USAGE FROM DISTRIBUTION (MG)		
BACKWASH	6.6838	0.2156

TOTAL USAGE	9.0094	0.2906
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UTILITIES (KWH)

PP&L METER		
FEEDS 16-1	387,600	12,503
FEEDS 16-3	258,000	8,323

FUEL USAGE

UGI GAS	CU./FT (C.C.F. USED)	98	3
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**CITY OF ALLENTOWN
WATER FILTRATION PLANT
MONTHLY REPORT
July 2012
WATER SOURCES (MGD)**

DATE	PERMIT # WA 39-304C									TOTALS (mgd)
	BIG	BIG	LITTLE	LITTLE	SUB	CRYSTAL	COA	LCA	TOTAL	
	LEHIGH (mgd)	LEHIGH (400 CFS min)	LEHIGH (mgd)	LEHIGH (16 CFS min)	TOTAL	SPRING (mgd)	SCHANTZ SPRING (mgd)	SCHANTZ SPRING (mgd)	SCHANTZ SPRING (mgd)	
7/1/2012	0.0000	844	6.6110	112	6.6110	3.8975	4.5341	2.0702	6.6043	17.1128
7/2/2012	0.0000	831	8.2546	107	8.2546	3.8784	4.5111	2.0386	6.5498	18.6828
7/3/2012	0.0000	860	7.5092	106	7.5092	3.8838	4.8552	1.9026	6.7577	18.1507
7/4/2012	0.0000	850	8.3414	104	8.3414	3.9170	4.5735	2.0705	6.6440	18.9024
7/5/2012	0.0000	884	4.0348	117	4.0348	3.9699	4.6841	2.0709	6.7550	14.7597
7/6/2012	0.0000	837	0.0000	115	0.0000	3.9802	5.0011	2.0676	7.0687	11.0489
7/7/2012	0.0000	799	10.1004	99	10.1004	4.0087	4.6766	2.0700	6.7466	20.8557
7/8/2012	0.0000	1054	12.8667	99	12.8667	3.9220	3.7998	2.0685	5.8683	22.6570
7/9/2012	0.0000	1054	10.2788	98	10.2788	3.8791	1.3572	2.0727	3.4299	17.5878
7/10/2012	0.0000	744	6.6001	100	6.6001	3.8694	4.7748	2.0687	6.8435	17.3130
7/11/2012	0.0000	718	6.4057	98	6.4057	3.8647	4.1272	2.0600	6.1872	16.4576
7/12/2012	0.9600	708	8.3151	94	9.2751	3.9410	4.6239	2.0705	6.6944	19.9105
7/13/2012	0.0000	680	6.4266	95	6.4266	3.9254	4.3808	2.0708	6.4516	16.8036
7/14/2012	0.0000	692	6.3588	96	6.3588	3.9229	3.9482	2.0702	6.0184	16.3001
7/15/2012	0.0000	720	6.6252	130	6.6252	3.9299	3.7854	1.7888	5.5742	16.1293
7/16/2012	0.0000	947	6.5690	180	6.5690	3.8678	1.2520	1.8997	3.1517	13.5885
7/17/2012	0.0000	1012	14.2124	106	14.2124	3.8593	0.0000	1.4758	1.4758	19.5475
7/18/2012	0.0000	894	13.0769	111	13.0769	3.8939	0.0000	1.7548	1.7548	18.7256
7/19/2012	0.0000	801	12.0072	102	12.0072	3.7698	0.0000	2.0713	2.0713	17.8483
7/20/2012	0.0000	1071	5.7853	259	5.7853	3.8652	0.0000	2.0701	2.0701	11.7206
7/21/2012	0.0000	907	6.8498	155	6.8498	3.8277	0.0000	2.0688	2.0688	12.7463
7/22/2012	0.0000	1085	12.5171	114	12.5171	3.9312	0.0000	2.0721	2.0721	18.5204
7/23/2012	0.0000	1011	14.2606	103	14.2606	3.9241	0.0000	2.0698	2.0698	20.2545
7/24/2012	0.0000	694	9.2672	108	9.2672	3.7896	0.0000	2.0703	2.0703	15.1271
7/25/2012	0.8100	657	11.3816	102	12.1916	3.7877	0.0000	2.0635	2.0635	18.0428
7/26/2012	0.0000	732	10.2934	142	10.2934	3.8013	0.0000	2.0686	2.0686	16.1633
7/27/2012	0.0000	792	2.3149	192	2.3149	3.9145	0.0000	2.0709	2.0709	8.3003
7/28/2012	0.0000	810	13.7400	109	13.7400	3.8438	0.0000	2.0703	2.0703	19.6541
7/29/2012	0.0000	1464	14.0090	147	14.0090	3.9299	0.0000	2.0709	2.0709	20.0098
7/30/2012	0.0000	1308	6.8077	125	6.8077	3.9426	0.0000	2.0710	2.0710	12.8213
7/31/2012	0.0000	1298	5.5268	143	5.5268	3.9548	0.0000	1.9376	1.9376	11.4192
TOTAL	1.7700	27,758	267.3473	3,768	269.1173	120.6931	64.8850	62.4661	127.3511	517.1615
AVERAGE	0.0571	895	8.6241	122	8.6812	3.8933	2.0931	2.0150	4.1081	16.6826
MINIMUM	0.0000	657	0.0000	94	0.0000	3.7698	0.0000	1.4758	1.4758	8.3003
MAXIMUM	0.9600	1,464	14.2606	259	14.2606	4.0087	5.0011	2.0727	7.0687	22.6570
MINIMUM WITHDRAWAL YEAR TO DATE:				7/27/2012	8.3003	MG				
MAXIMUM WITHDRAWAL YEAR TO DATE:				7/8/2012	22.6570	MG				

**CITY OF ALLENTOWN
WATER FILTRATION PLANT
MONTHLY REPORT
July 2012
WATER SOURCES TRACKING DATA REPORT**

DATE	BIG LEHIGH (mgd)	BIG LEHIGH (400 cfs min)	LITTLE LEHIGH (mgd)	LITTLE LEHIGH (16 cfs min)	LITTLE LEHIGH MAXIMUM NTU	LITTLE LEHIGH MAXIMUM COLOR	PRECIPITATION RAIN
7/1/2012	0.0000	844	6.6110	112	5	25	0.00
7/2/2012	0.0000	831	8.2546	107	5	28	0.00
7/3/2012	0.0000	860	7.5092	106	5	27	0.00
7/4/2012	0.0000	850	8.3414	104	6	35	0.20
7/5/2012	0.0000	884	4.0348	117	8	53	Trace
7/6/2012	0.0000	837	0.0000	115	4	28	0.00
7/7/2012	0.0000	799	10.1004	99	14	46	0.06
7/8/2012	0.0000	1,054	12.8667	99	6	46	0.01
7/9/2012	0.0000	1,054	10.2788	98	7	35	0.00
7/10/2012	0.0000	744	6.6001	100	6	34	0.00
7/11/2012	0.0000	718	6.4057	98	6	31	0.00
7/12/2012	0.9600	708	8.3151	94	7	33	0.00
7/13/2012	0.0000	680	6.4266	95	6	35	Trace
7/14/2012	0.0000	692	6.3588	96	7	31	0.10
7/15/2012	0.0000	720	6.6252	130	25	149	0.63
7/16/2012	0.0000	947	6.5690	180	23	154	Trace
7/17/2012	0.0000	1,012	14.2124	106	10	78	0.00
7/18/2012	0.0000	894	13.0769	111	8	58	0.20
7/19/2012	0.0000	801	12.0072	102	8	54	0.06
7/20/2012	0.0000	1,071	5.7853	259	43	282	1.28
7/21/2012	0.0000	907	6.8498	155	13	95	0.00
7/22/2012	0.0000	1,085	12.5171	114	7	47	0.00
7/23/2012	0.0000	1,011	14.2606	103	7	39	0.03
7/24/2012	0.0000	694	9.2672	108	6	34	0.00
7/25/2012	0.8100	657	11.3816	102	7	37	0.00
7/26/2012	0.0000	732	10.2934	142	21	204	0.75
7/27/2012	0.0000	792	2.3149	192	21	150	0.07
7/28/2012	0.0000	810	13.7400	109	9	59	0.47
7/29/2012	0.0000	1,464	14.0090	147	10	61	Trace
7/30/2012	0.0000	1,308	6.8077	125	8	53	0.16
7/31/2012	0.0000	1,298	5.5268	143	6	40	0.00
AVERAGE	0.0571	895	8.6241	122	10	67	0.13
MAXIMUM	0.9600	1,464	14.2606	259	43	282	1.28

**CITY OF ALLENTOWN
WATER FILTRATION PLANT
MONTHLY REPORT
July 2012
PUMPAGE (MGD)**

DATE	NORTH DISCHARGE	SOUTH DISCHARGE	CRYSTAL DISCHARGE	TOTAL DISCHARGE
7/1/2012	9.3433	5.6525	0.0000	14.9958
7/2/2012	10.2768	6.3110	0.0000	16.5878
7/3/2012	10.0373	6.1629	0.0000	16.2002
7/4/2012	10.3002	6.5110	0.0000	16.8112
7/5/2012	7.5098	3.4112	1.7789	12.6999
7/6/2012	4.9463	0.0000	4.0035	8.9498
7/7/2012	9.8549	4.4774	3.8871	18.2194
7/8/2012	11.0532	7.6426	1.7556	20.4514
7/9/2012	5.4833	10.0569	0.0000	15.5403
7/10/2012	9.3324	5.9183	0.0000	15.2507
7/11/2012	8.9325	5.4379	0.0291	14.3995
7/12/2012	11.0129	7.0287	0.0000	18.0415
7/13/2012	9.1285	5.6771	0.0000	14.8056
7/14/2012	8.9293	5.4444	0.0000	14.3737
7/15/2012	8.9555	5.4490	0.0000	14.4045
7/16/2012	3.0633	7.6714	0.7678	11.5026
7/17/2012	0.0000	14.8566	2.8052	17.6618
7/18/2012	0.0000	14.1718	2.2424	16.4142
7/19/2012	0.0000	15.4404	0.0000	15.4404
7/20/2012	0.0001	7.9632	1.7152	9.6785
7/21/2012	0.0000	8.8436	1.5013	10.3449
7/22/2012	0.0000	15.5387	0.6802	16.2190
7/23/2012	0.0000	13.8250	3.8776	17.7026
7/24/2012	0.0000	11.1398	1.4151	12.5550
7/25/2012	0.0000	14.7741	1.1271	15.9012
7/26/2012	0.0000	13.1487	0.5970	13.7458
7/27/2012	0.0000	1.9714	3.7682	5.7396
7/28/2012	0.0000	16.5890	0.5573	17.1462
7/29/2012	0.0000	17.6233	0.0000	17.6233
7/30/2012	0.0000	8.7744	1.8321	10.6065
7/31/2012	0.0000	5.2287	3.6914	8.9201
TOTAL	138.1596	272.7410	38.0321	448.9330
AVERAGE	4.4568	8.7981	1.2268	14.4817
MINIMUM	0.0000	0.0000	0.0000	5.7396
MAXIMUM	11.0532	17.6233	4.0035	20.4514
MINIMUM DISCHARGE YEAR TO DATE:			7/27/2012	5.7396 MG
MAXIMUM DISCHARGE YEAR TO DATE:			5/29/2012	20.5515 MG

**CITY OF ALLENTOWN
WATER FILTRATION PLANT
MONTHLY REPORT
July 2012
DISTRIBUTION SYSTEM (MGD)**

DATE	HALSTEAD STREET	16TH WARD	28TH STREET	19TH WARD
7/1/2012	0.0839	0.3424	0.1625	0.1211
7/2/2012	0.0759	0.4278	0.1144	0.1222
7/3/2012	0.0908	0.3669	0.1172	0.1163
7/4/2012	0.0878	0.3600	0.1691	0.1016
7/5/2012	0.0862	0.3363	0.1278	0.1081
7/6/2012	0.0611	0.3632	0.1696	0.0992
7/7/2012	0.0565	0.4381	0.0988	0.1255
7/8/2012	0.0984	0.2854	0.1847	0.0963
7/9/2012	0.0706	0.3505	0.1080	0.1218
7/10/2012	0.0731	0.3462	0.1278	0.1146
7/11/2012	0.0893	0.3032	0.1308	0.1155
7/12/2012	0.0942	0.3240	0.1582	0.1224
7/13/2012	0.0687	0.3388	0.1132	0.0851
7/14/2012	0.0743	0.3221	0.1216	0.1106
7/15/2012	0.0686	0.3292	0.1527	0.1119
7/16/2012	0.0681	0.3192	0.1429	0.1074
7/17/2012	0.0823	0.2920	0.1553	0.0986
7/18/2012	0.0594	0.2565	0.1231	0.0862
7/19/2012	0.0638	0.3006	0.1089	0.1030
7/20/2012	0.0924	0.2719	0.1299	0.0690
7/21/2012	0.0710	0.2533	0.1464	0.0973
7/22/2012	0.0711	0.2718	0.1416	0.0791
7/23/2012	0.0613	0.2742	0.1308	0.1032
7/24/2012	0.0718	0.2927	0.1144	0.0817
7/25/2012	0.0558	0.2721	0.1283	0.1115
7/26/2012	0.0781	0.2413	0.1483	0.0732
7/27/2012	0.0593	0.2202	0.0914	0.1030
7/28/2012	0.0828	0.2775	0.1448	0.1087
7/29/2012	0.0605	0.2780	0.1178	0.0791
7/30/2012	0.0685	0.2594	0.1358	0.0719
7/31/2012	0.0640	0.1610	0.1297	0.1024
TOTAL	2.2896	9.4758	4.1458	3.1475
AVERAGE	0.0739	0.3057	0.1337	0.1015
MINIMUM	0.0558	0.1610	0.0914	0.0690
MAXIMUM	0.0984	0.4381	0.1847	0.1255

**CITY OF ALLENTOWN
WATER FILTRATION PLANT
MONTHLY REPORT
July 2012
SOLIDS PRODUCTION**

DATE	FLOW WEIGHTED TURBIDITY NTU	THEOR. SOLIDS PRODUCED LBS	TRANSPORT GALLONS TO WWTP	DRY LBS SOLIDS	RECYCLE GALLONS TO WWTP	RAIN
7/1/2012	4.50	925	0	0	448,571	0.00
7/2/2012	4.00	1,142	4,800	841	656,847	0.00
7/3/2012	4.00	1,031	4,800	841	539,714	0.00
7/4/2012	4.50	1,196	0	0	443,926	0.20
7/5/2012	7.30	527	0	0	413,639	Trace
7/6/2012	0.00	0	0	0	33,817	0.00
7/7/2012	4.90	1,449	0	0	72,471	0.06
7/8/2012	4.30	2,378	0	0	266,835	0.01
7/9/2012	4.70	1,708	4,800	961	1,002,027	0.00
7/10/2012	4.80	1,066	0	0	291,526	0.00
7/11/2012	4.90	908	0	0	107,216	0.00
7/12/2012	4.80	1,307	0	0	531,701	0.00
7/13/2012	4.90	835	4,800	1,081	622,839	Trace
7/14/2012	5.25	843	0	0	16,060	0.10
7/15/2012	8.54	1,299	0	0	273,849	0.63
7/16/2012	15.70	2,369	0	0	354,095	Trace
7/17/2012	6.50	4,818	4,800	841	274,170	0.00
7/18/2012	6.10	4,397	4,800	1,161	476,024	0.20
7/19/2012	5.63	4,162	4,800	921	636,061	0.06
7/20/2012	10.07	2,074	4,800	1,081	396,868	1.28
7/21/2012	6.80	1,339	0	0	292,125	0.00
7/22/2012	5.79	2,735	0	0	332,829	0.00
7/23/2012	5.13	3,181	4,800	1,161	436,950	0.03
7/24/2012	5.42	1,565	4,800	1,081	314,150	0.00
7/25/2012	4.46	2,461	48,000	7,606	305,683	0.00
7/26/2012	5.00	1,560	62,400	10,929	428,294	0.75
7/27/2012	8.00	249	0	0	153,615	0.07
7/28/2012	6.00	3,235	0	0	438,485	0.47
7/29/2012	10.00	4,181	0	0	293,604	Trace
7/30/2012	6.50	1,183	0	0	141,271	0.16
7/31/2012	4.00	556	0	0	369,184	0.00
TOTAL		56,676	158,400	28,505	11,364,446	4.02
AVERAGE	5.89	1,828	5,110	920	366,595	0.13
MINIMUM	0.00	0	0	0	16060	0.00
MAXIMUM	15.70	4,818	62,400	10929	1,002,027	1.28

**CITY OF ALLENTOWN
WATER FILTRATION PLANT
MONTHLY REPORT
July 2012
CHEMICAL USAGE PG 1**

DATE	COMBINED RAW FLOW	ALUM	COMBINED RAW NTU	CARBON	SODIUM HYDROXIDE	POLYMER	RAIN
7/1/2012	6.6110	1,073	4.5	100	212	0	0.00
7/2/2012	8.2546	1,274	4.0	127	307	0	0.00
7/3/2012	7.5092	1,168	4.0	113	270	0	0.00
7/4/2012	8.3414	1,296	4.5	129	313	0	0.20
7/5/2012	4.0348	396	7.3	32	114	0	Trace
7/6/2012	0.0000	0	0.0	0	0	0	0.00
7/7/2012	10.1004	1,408	4.9	139	418	0	0.06
7/8/2012	12.8667	2,599	4.3	207	826	0	0.01
7/9/2012	10.2788	1,718	4.7	163	558	0	0.00
7/10/2012	6.6001	1,078	4.8	93	342	0	0.00
7/11/2012	6.4057	898	4.9	96	245	0	0.00
7/12/2012	9.2751	1,243	4.8	198	315	0	0.00
7/13/2012	6.4266	825	4.9	98	193	0	Trace
7/14/2012	6.3588	810	5.3	97	193	0	0.10
7/15/2012	6.6252	1,244	8.5	103	301	0	0.63
7/16/2012	6.5690	1,967	15.7	88	752	0	Trace
7/17/2012	14.2124	5,347	6.5	243	1987	0	0.00
7/18/2012	13.0769	5,975	6.1	225	1475	0	0.20
7/19/2012	12.0072	5,009	5.6	205	1690	0	0.06
7/20/2012	5.7853	2,013	10.1	50	854	0	1.28
7/21/2012	6.8498	1,696	6.8	77	297	0	0.00
7/22/2012	12.5171	4,365	5.8	209	438	0	0.00
7/23/2012	14.2606	5,276	5.1	235	542	0	0.03
7/24/2012	9.2672	2,182	5.4	117	287	0	0.00
7/25/2012	12.1916	4,081	4.5	236	384	0	0.00
7/26/2012	10.2934	2,372	5.0	135	190	0	0.75
7/27/2012	2.3149	170	8.0	10	27	0	0.07
7/28/2012	13.7400	5,218	6.0	234	539	0	0.47
7/29/2012	14.0090	6,231	10.0	238	656	0	Trace
7/30/2012	6.8077	1,675	6.5	62	182	0	0.16
7/31/2012	5.5268	772	4.0	44	66	0	0.00
TOTAL	269.1173	71,379		4,103	14,973	0	4.02
AVERAGE	8.6812	2,303	5.89	132	483	0	0.13
MINIMUM	0.0000	0	0.00	0	0	0	0.00
MAXIMUM	14.2606	6,231	15.70	243	1,987	0	1.28

**CITY OF ALLENTOWN
WATER FILTRATION PLANT
MONTHLY REPORT
July 2012
CHEMICAL USAGE PG 2**

DATE	SODIUM HYPOCHLORITE (LBS)				TOTALS	FLUORIDE TOTAL
	COMBINED RAW FLOW	FILTER PLANT	*SCHANTZ SPRING	CRYSTAL SPRING		
7/1/2012	6.6110	151	38	26	215	49
7/2/2012	8.2546	176	37	27	240	54
7/3/2012	7.5092	176	39	27	243	53
7/4/2012	8.3414	182	36	29	247	55
7/5/2012	4.0348	53	42	31	126	42
7/6/2012	0.0000	0	56	31	87	30
7/7/2012	10.1004	188	39	30	257	61
7/8/2012	12.8667	310	28	29	367	67
7/9/2012	10.2788	214	19	29	262	50
7/10/2012	6.6001	135	39	28	202	49
7/11/2012	6.4057	142	34	30	206	47
7/12/2012	9.2751	200	37	31	268	59
7/13/2012	6.4266	139	33	29	201	48
7/14/2012	6.3588	142	29	28	199	46
7/15/2012	6.6252	175	29	29	233	47
7/16/2012	6.5690	204	8	30	242	38
7/17/2012	14.2124	340	0	25	365	60
7/18/2012	13.0769	306	0	27	333	57
7/19/2012	12.0072	288	0	27	315	53
7/20/2012	5.7853	100	0	25	125	32
7/21/2012	6.8498	128	0	25	153	36
7/22/2012	12.5171	274	0	27	301	54
7/23/2012	14.2606	232	0	27	259	59
7/24/2012	9.2672	152	0	26	178	41
7/25/2012	12.1916	238	0	25	263	51
7/26/2012	10.2934	153	0	26	178	44
7/27/2012	2.3149	16	0	27	43	20
7/28/2012	13.7400	271	0	28	299	51
7/29/2012	14.0090	303	0	29	333	48
7/30/2012	6.8077	75	0	29	104	30
7/31/2012	5.5268	61	0	30	91	27
TOTAL	269.1173	5,524	543	867	6,935	1,458
AVERAGE	8.6812	178	18	28	224	47
MINIMUM	0.0000	0	0	25	43	20
MAXIMUM	14.2606	340	56	31	367	67

* .5 MG/L FEED RATE @ SCHANTZ SPRING GATEHOUSE-100% HYPOCHLORITE GENERATION SYSTEM

**CITY OF ALLENTOWN CONCESSION AND LEASE AGREEMENT
STANDARDS OF PRACTICE
EXHIBIT I - PROCESS SAMPING AND MONITORING REQUIREMENTS**

Sampling/Monitoring Location	Flow	Temp.	Settleable Solids	TSS	BOD5	TKN	Ammonia	DO	Total Solids	Volatile Solids	Volatile Solids Reduction	Total Alkalinity	Volatile Acids	Digester Gas Production	pH	Total Chlorine Residual	Free Chlorine Residual	Chlorine Demand	Fecal Coliform
	mgd	F°	ml/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	mg/L	mg/L	cu ft/day	Std Units	mg/L	mg/L	mg/L	col/100 ml
WWTP Influent	Daily	Daily	Daily	Daily	Daily	Daily	Daily					Daily			Daily				
Primary Clairifer																			
Influent	Daily	Daily	Daily	Daily	Daily	Daily	Daily												
Effluent	Daily	Daily	Daily	Daily	Daily	Daily	Daily												
Plastic Media Trickling Filter Return	Daily			Daily	Daily	Daily	Daily												
Rock Media Trickling Filter Return	Daily			Daily	Daily	Daily	Daily												
Intermediate Settling Tanks		Daily		Daily	Daily	Daily	Daily					Daily							
Plant Effluent		Daily	Daily	Daily	Daily	Daily	Daily	Daily				Daily			Daily	Daily	Daily	Daily	Daily

**CITY OF ALLENTOWN CONCESSION AND LEASE AGREEMENT
STANDARDS OF PRACTICE**

EXHIBIT J - SLUDGE PROCESS SAMPLING AND MONITORING REQUIREMENTS

Sampling/Monitoring Location	Flow	Temp.	Settleable	TSS	BOD5	TKN	Ammonia	DO	Total	Volatile	Volatile	Total	Volatile	Digester	pH
	gpd	F°	ml/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Alkalinity	Acids	Gas	Std Units
											Reduction	mg/L	mg/L	Production	
Waste Sludge															
Primary Clarifiers	Daily								Daily	Daily					
Intermediate Settling Tanks	Daily								Daily	Daily					
Final Settling Tanks	Daily								Daily	Daily					
Primary Digester Sludge		Daily							Daily	Daily	Daily	Daily	Daily	Daily	Daily
Secondary Digester Sludge		Daily							Daily	Daily	Daily	Daily	Daily	Daily	Daily
Thickeners															
Waste Sludge to Thickeners	Daily								Daily	Daily					
Thickened Sludge to Digestion	Daily								Daily	Daily					
Belt Filter Press #1 (1)															
Feed Sludge	Daily								Daily	Daily					
Dewatered Cake	Daily (2)								Daily	Daily					
Belt Filter Press #2 (1)															
Feed Sludge	Daily								Daily	Daily					
Dewatered Cake	Daily (2)								Daily	Daily					
Belt Filter Press #3 (1)															
Feed Sludge	Daily								Daily	Daily					
Dewatered Cake	Daily (2)								Daily	Daily					
Internal Plant Recycles (1)															
BFP Pressate	Daily			Daily	Daily	Daily	Daily								
Thickener Recycle	Daily			Daily	Daily	Daily	Daily								
Digester Supernatant	Daily			Daily	Daily	Daily	Daily								

- (1) Monitoring required only on days dewatering process is operating.
(2) Record cake production as lbs dry solids/day.

EXHIBIT K
EXAMPLE WWTP MONTHLY REPORT

CITY OF ALLENTOWN

WATER RESOURCES WASTEWATER TREATMENT



MONTHLY REPORT
JULY 2012



CITY OF ALLENTOWN
WATER RESOURCES
WASTEWATER TREATMENT

Voice (610) 437-7641
 Fax (610) 437-8790

MONTHLY SUMMARY REPORT
 JULY 2012

	DAILY AVERAGE	PERMIT	
WASTEWATER FLOWS			
INFLUENT	29.62	< 40.0	mgd
MAXIMUM (AVERAGE OF)	43.2		mgd
MINIMUM (AVERAGE OF)	20.4		mgd
SOLIDS DEWATERING RETURN	1.6		mgd
PLASTIC MEDIA RECIRCULATION	8.1		mgd
ROCK MEDIA RECIRCULATION	3.6		mgd
SUSPENDED SOLIDS			
INFLUENT	160		mg/L
EFFLUENT	3	<30	mg/L
REMOVAL	98		%
BIOCHEMICAL OXYGEN DEMAND			
INFLUENT	137		mg/L
EFFLUENT	3	<20	mg/L
REMOVAL	98		%
AMMONIA NITROGEN			
INFLUENT	17.3		mg/L
EFFLUENT	1.2	<5	mg/L
REMOVAL	93		%
EFFLUENT PARAMETERS			
MINIMUM DISSOLVED OXYGEN	6.5	>5.0	mg/L
FREE RESIDUAL CHLORINE	0.05		mg/L
TOTAL RESIDUAL CHLORINE	0.37	<0.5	mg/L
MAXIMUM TOTAL RESIDUAL CHLORINE	0.60		mg/L
FECAL COLIFORMS	<6	<200	#/100 ml
MINIMUM pH	7.0	>6	Std. Units
MAXIMUM pH	7.4	<9	Std. Units

MONTHLY SUMMARY REPORT
SOLIDS PROCESSING
JULY 2012

DAILY AVERAGES

DIGESTER LOADING	PRI. No.1	PRI. No.2	SEC.
RAW PRIMARY SLUDGE, Gals.	34,956	36,658	
TOTAL SOLIDS, %	4.37	4.15	
POUNDS, Dry Wt.	12,749	12,703	
 HUMUS SLUDGE, Gals.	 23,650	 25,003	
TOTAL SOLIDS, %	3.06	2.74	
POUNDS, Dry Wt.	5,998	5,676	
 DIGESTER PERFORMANCE	 PRI. No.1	 PRI. No.2	 SEC.
TEMPERATURE, Degrees F	99.52	99.57	
TOTAL SOLIDS, %	1.87	1.87	2.36
ALKALINITY, mg/l	4,053	3,942	4,201
VOLATILE ACIDS, mg/l	298	276	284
RATIO V.A./ALK	0.07	0.07	0.07
VOLATILE SOLIDS, %	71.54	65.23	70.72
VOLATILE SOLIDS REDUCTION, %	59.07	62.35	
HYDRAULIC DETENTION TIME, Days	20.8	19.8	9.7
 DIGESTER GAS PRODUCTION			
FIRED TURBINES, Cu. Ft.		0	
FIRED BOILERS, Cu. Ft.		77,961	
FLARED, Cu. Ft.		271,137	
TOTAL GAS PRODUCED, Cu. Ft.		349,098	
 SOLIDS DEWATERING	 BFP No.1	 BFP No.2	 BFP No.3
SLUDGE FEED, Gals.	39,545	50,239	64,267
TOTAL SOLIDS, %	2.5	2.1	1.9
SLUDGE REMOVED, Dry Lbs.	8,109	8,680	9,937
POLYMER, % Dry Wt.	0.72	0.75	0.76
CAKE TOTAL SOLIDS, %	17.38	17.21	18.52
OPERATING HOURS	8.5	10.2	13.9
PRODUCTION RATE, Dry Lbs. / Hr.	975	846	717
 TOTAL GRIT REMOVED, Cu. Yds.		6.83	
 TOTAL SCREENINGS REMOVED, Cu. Ft.		1,674	
 TOTAL SLUDGE REMOVED, Lbs.		395,068	

PROCESS CONTROL REPORT

PART 1

DATE	SEWAGE FLOWS MGD			RETURN	PMTF	RMTF	OXYGEN	EFF	EFF	CCT	APPLIED	CL2	CL2	CL2
	TOTAL	MAX	MIN	FLOW MGD	FLOW MGD	FLOW MGD	APPLIED CUFT	DO MG/L	pH SU	CL2 LBS	DOSAGE MG/L	FREE MG/L	TOTAL MG/L	DEMAND MG/L
JULY 2012														
1	28.23	38.4	19.3	1.4	8.4	4.7	37122	8.4	7.3	350	1.5	0.05	0.36	1.1
2	27.01	44.3	18.9	1.7	7.6	4.0	37122	8.2	7.3	286	1.3	0.05	0.37	0.9
3	28.56	40.3	20.4	1.7	9.4	3.3	29698	7.7	7.1	323	1.4	0.07	0.44	0.9
4	27.90	37.7	21.9	1.4	9.0	4.7	24748	7.6	7.1	340	1.5	0.05	0.49	1.0
5	29.48	38.6	24.0	1.7	8.7	3.2	19798	7.8	7.3	424	1.7	0.05	0.40	1.3
6	28.67	44.5	23.1	1.6	9.0	3.7	49496	7.7	7.3	327	1.4	0.04	0.25	1.1
7	28.83	47.9	18.7	1.4	8.8	4.0	37125	7.5	7.3	339	1.4	0.04	0.29	1.1
8	30.33	40.4	21.3	1.4	8.4	2.8	37125	7.8	7.4	398	1.6	0.05	0.30	1.3
9	31.10	44.4	22.2	1.7	7.3	3.0	24750	7.6	7.0	414	1.6	0.05	0.60	1.0
10	29.46	41.9	21.1	1.6	8.4	3.5	32172	7.7	7.3	321	1.3	0.06	0.28	1.0
11	28.82	39.5	20.5	1.7	8.5	4.0	32172	7.7	7.3	326	1.4	0.04	0.29	1.1
12	29.42	43.5	21.8	1.9	8.1	3.6	24750	7.7	7.2	400	1.6	0.04	0.22	1.4
13	29.80	44.2	19.5	1.8	8.1	3.3	34650	7.9	7.3	442	1.8	0.04	0.30	1.5
14	27.05	37.9	19.4	1.5	9.0	5.5	49500	8.0	7.3	442	2.0	0.03	0.20	1.8
15	29.09	47.3	19.2	1.9	8.0	4.0	37122	7.9	7.2	518	2.1	0.05	0.32	1.8
16	30.25	43.4	20.7	2.0	7.7	3.1	54446	7.8	7.2	340	1.3	0.04	0.48	0.9
17	30.20	41.5	17.4	1.8	7.1	3.9	51970	7.6	7.3	314	1.2	0.07	0.49	0.8
18	31.64	48.9	22.5	1.7	7.2	2.5	54446	7.5	7.3	309	1.2	0.04	0.31	0.9
19	29.59	45.8	21.6	1.8	8.1	3.6	47021	7.0	7.3	295	1.2	0.04	0.37	0.8
20	35.46	45.8	22.5	1.7	5.4	1.0	19799	7.2	7.3	364	1.2	0.04	0.45	0.8
21	29.63	45.4	18.7	1.4	8.1	3.8	27222	7.1	7.3	324	1.3	0.06	0.40	0.9
22	28.21	38.7	19.5	1.5	8.2	5.1	39597	7.7	7.2	351	1.5	0.04	0.32	1.2
23	30.20	45.2	20.5	1.8	7.7	3.4	27223	8.2	7.2	395	1.6	0.09	0.32	1.2
24	29.45	40.7	20.1	1.7	8.7	3.2	49496	6.5	7.2	340	1.4	0.04	0.37	1.0
25	28.94	46.2	21.0	1.7	8.7	3.7	49496	7.0	7.3	342	1.4	0.05	0.36	1.1
26	30.76	47.5	19.0	1.7	7.4	3.6	34647	7.2	7.3	382	1.5	0.05	0.39	1.1
27	31.58	45.5	18.5	1.6	7.3	2.5	34647	7.5	7.2	361	1.4	0.05	0.29	1.1
28	29.14	38.9	19.6	1.4	8.1	4.4	37122	7.6	7.2	326	1.3	0.07	0.43	0.9
29	28.25	38.0	20.0	1.5	8.4	4.8	29698	6.7	7.2	357	1.5	0.03	0.38	1.1
30	30.07	43.3	20.0	1.7	7.5	3.7	34647	7.4	7.2	406	1.6	0.04	0.47	1.1
31	31.06	54.4	20.4	1.7	7.4	3.0	24748	7.8	7.2	320	1.2	0.04	0.44	0.8
MINIMUM	27.01	37.7	17.4	1.4	5.4	1.0	19798	6.5	7.0	286	1.2	0.03	0.20	0.8
MAXIMUM	35.46	54.4	24.0	2.0	9.4	5.5	54446	8.4	7.4	518	2.1	0.09	0.60	1.8
TOTAL	918.18			51.1	249.7	112.6	1123575			11176				
AVERAGE	29.62	43.2	20.4	1.6	8.1	3.6	36244	7.6	7.2	361	1.5	0.05	0.37	1.1

SOLIDS ANALYSES REPORT

Part 2

DATE	<u>SETTLEABLE SOLIDS</u>				<u>SUSPENDED SOLIDS</u>							
	RETURN	INF	EFF	%REM	RETURN	INF	PRI	PMTF	IST	EFF	%REM	
JULY												
2012												
1	0.2	7.5	0.1	99	142	140	59	52	12	3	98	
2	1.1	7.5	0.1	99	97	172	62	51	15	2	99	
3	0.6	8.0	0.1	99	87	180	62	53	14	3	98	
4	0.4	8.5	0.1	99	54	143	55	57	13	3	98	
5	0.5	7.0	0.1	99	79	99	60	51	10	3	97	
6	0.2	7.5	0.1	99	48	158	56	57	17	3	98	
7	0.8	9.0	0.1	99	95	188	62	63	18	3	98	
8	0.2	8.5	0.1	99	48	160	51	53	11	4	98	
9	0.3	8.0	0.1	99	85	170	59	60	18	3	98	
10	0.6	8.5	0.1	99	68	158	42	58	14	3	98	
11	1.0	7.0	0.1	99	94	162	71	59	16	3	98	
12	1.4	8.5	0.1	99	91	174	49	54	20	3	98	
13	1.2	9.0	0.1	99	86	165	52	40	16	2	99	
14	0.6	7.0	0.1	99	60	144	53	54	13	3	98	
15	0.7	7.5	0.1	99	78	169	56	48	13	3	98	
16	0.9	6.0	0.1	98	76	161	54	56	17	4	98	
17	0.8	8.0	0.1	99	92	183	60	53	14	3	98	
18	0.2	9.0	0.1	99	53	179	58	64	14	3	98	
19	0.5	7.0	0.1	99	78	160	61	47	11	3	98	
20	1.0	7.5	0.1	99	69	188	63	56	17	3	98	
21	0.8	8.0	0.1	99	98	136	55	47	13	3	98	
22	0.2	7.0	0.1	99	67	136	51	48	14	3	98	
23	0.2	7.5	0.1	99	69	165	62	53	16	3	98	
24	0.2	8.0	0.1	99	61	152	56	51	16	3	98	
25	0.3	8.0	0.1	99	53	168	60	54	16	3	98	
26	0.2	8.0	0.1	99	48	178	73	67	20	3	98	
27	0.7	7.0	0.1	99	68	165	71	56	18	4	98	
28	0.1	6.0	0.1	98	52	148	56	67	22	3	98	
29	0.4	7.0	0.1	99	97	170	59	46	16	2	99	
30	1.5	8.5	0.1	99	119	161	57	57	20	2	99	
31	1.5	6.5	0.1	98	97	140	49	63	17	3	98	
MINIMUM	0.1	6.0	0.1	98	48	99	42	40	10	2	97	
MAXIMUM	1.5	9.0	0.1	99	142	188	73	67	22	4	99	
AVERAGE	0.6	7.7	0.1	99	78	160	58	55	16	3	98	

BIOLOGICAL PERFORMANCE REPORT

Part 3

DATE	<u>BIOCHEMICAL OXYGEN DEMAND</u>						<u>AMMONIA NITROGEN</u>						<u>FECAL COLIFORMS</u>
	RETURN Mg/L	INF Mg/L	PRI Mg/L	IST Mg/L	EFF Mg/L	%REM %	TKN Mg/L	INF Mg/L	PRI Mg/L	IST Mg/L	EFF Mg/L	%REM %	^/100 ml
2012													
1	60	126	81	17	2	98	32.6	14.8	12.2	3.7	0.2	99	1
2	98	150	82	22	3	98	35.2	18.0	16.7	7.0	0.7	96	11
3	69	153	106	40	4	97	33.4	20.3	16.6	7.9	2.5	88	1
4	45	129	70	17	3	98	29.2	16.3	12.6	5.7	1.1	93	1
5	69	101	79	22	3	97	33.0	20.1	15.8	6.3	0.4	98	1
6	43	137	72	18	4	97	31.6	17.9	16.9	6.4	1.1	94	15
7	54	158	78	25	3	98	29.0	15.8	13.6	4.4	0.5	97	8
8	56	150	83	19	5	97	30.7	17.3	15.4	4.9	0.2	99	27
9	113	166	95	34	3	98	34.8	20.6	18.4	8.0	1.4	93	7
10	59	144	72	22	3	98	30.3	17.8	12.5	6.9	1.9	89	21
11	57	140	101	28	4	97	29.4	16.5	14.2	5.3	0.9	95	22
12	69	153	77	23	4	97	30.6	17.2	13.8	5.4	0.6	97	25
13	53	151	76	20	3	98	30.4	16.7	13.8	5.2	0.6	96	127
14	58	144	85	28	3	98	25.9	14.2	12.4	3.9	0.4	97	319
15	62	144	82	24	3	98	28.7	15.9	13.7	4.2	0.4	97	420
16	82	126	75	21	3	98	31.5	18.9	15.8	7.2	1.2	94	5
17	47	125	84	23	2	98	29.7	18.6	15.5	8.5	1.9	90	5
18	41	125	74	17	3	98	30.0	17.7	15.6	7.7	1.8	90	13
19	54	115	66	17	3	97	30.7	18.4	16.3	7.8	2.0	89	1
20	42	127	69	25	3	98	26.2	16.2	15.9	7.4	1.7	90	6
21	47	126	71	27	4	97	23.8	14.1	13.0	4.7	0.9	94	4
22	57	125	81	29	3	98	26.4	15.3	13.8	4.5	0.4	97	1
23		160	91	33	4	98	31.9	19.8	18.0	8.2	1.8	91	10
24	49	144	83	32	4	97	31.5	18.5	16.7	8.4	2.4	87	2
25	36	139	82	18	3	98	30.8	17.1	15.9	7.0	2.1	88	1
26	34	145	82	24	3	98	31.1	17.2	16.0	7.3	1.8	90	1
27	39	133	82	30	4	97	28.3	16.5	14.7	7.2	2.4	85	2
28	39	150	81	33	3	98	26.3	14.3	12.7	5.3	1.4	90	1
29	55	68	68	19	3	96	23.6	15.2	13.5	4.6	0.4	97	1
30	91	153	88	29	3	98	35.6	20.4	17.5	7.7	1.1	95	1
31	75	150	85	26	5	97	28.6	18.3	15.6	7.1	2.1	89	9
MINIMUM	34	68	66	17	2	96	23.6	14.1	12.2	3.7	0.2	85	1
MAXIMUM	113	166	106	40	5	98	35.6	20.6	18.4	8.5	2.5	99	420
AVERAGE	58	137	81	25	3	98	30.0	17.3	15.0	6.3	1.2	93	<6

BOLD NUMBERS INDICATE NON DETECT RESULTS

TRICKLING FILTER SLUDGE PROCESSING REPORT

PART 4

DATE	<u>IST SLUDGE REMOVAL</u>						<u>FST SLUDGE REMOVAL</u>						
	GALLONS	GALLONS	GALLONS	TOTAL	SOLIDS	POUNDS	GALLONS	GALLONS	GALLONS	GALLONS	TOTAL	SOLIDS	POUNDS
JULY	1	2	3				1	2	3	4			
2012													
1	281760	278020	279850	839630	0.12	8403	62770	41640	46270	116790	267470	0.05	1115
2	289980	286910	290560	867450	0.12	8681	63670	44840	50750	127290	286550	0.05	1195
3	290050	288440	289950	868440	0.33	23901	62960	47560	56010	129060	295590	0.32	7889
4	287560	288760	288640	864960	0.33	23805	61860	48160	58590	128500	297110	0.11	2726
5	285470	287890	292100	865460	0.33	23819	61360	48150	58550	127700	295760	0.11	2713
6	285500	285620	295680	866800	0.33	23856	60940	46880	51870	126880	286570	0.11	2629
7	288700	285640	291040	865380	0.33	23817	60370	46610	51830	125970	284780	0.11	2613
8	287640	284940	291600	864180	0.33	23784	60390	46570	51730	125940	284630	0.11	2611
9	288060	285010	291140	864210	0.33	23785	97740	47430	50740	122480	318390	0.11	2921
10	290640	289100	288200	867940	0.16	11582	111270	47410	49470	119210	327360	0.15	4095
11	288410	286330	287220	861960	0.16	11502	73500	47290	49160	119090	289040	0.15	3616
12	286770	289320	287430	863520	0.16	11523	164400	64490	46880	118850	394620	0.15	4937
13	289970	289330	288710	868010	0.16	11583	104610	46990	49240	118390	319230	0.15	3994
14	290630	289760	283320	863710	0.16	11525	53610	47220	49630	118410	268870	0.15	3364
15	285470	287720	287560	860750	0.16	11486	195350	68100	46610	118290	428350	0.15	5359
16	289770	288760	287290	865820	0.16	11554	119960	68420	49340	68880	306600	0.15	3836
17	273870	274080	273330	821280	0.06	4110	130280	46330	54000	148060	378670	0.05	1579
18	286640	286490	288900	862030	0.06	4314	80380	45100	53240	118960	297680	0.05	1241
19	287580	290290	289690	867560	0.06	4341	81470	44390	52630	119490	297980	0.05	1243
20	285450	288100	286570	860120	0.06	4304	81850	44130	51880	118940	296800	0.05	1238
21	285690	287220	285350	858260	0.06	4295	81460	43500	51220	119010	295190	0.05	1231
22	286260	289380	294460	870100	0.06	4354	80840	42950	50570	118420	292780	0.05	1221
23	288190	289710	289750	867650	0.06	4342	80500	37310	50270	125810	293890	0.05	1226
24	286840	287270	292840	866950	0.17	12292	80100	44790	50000	126060	300950	0.15	3765
25	285010	286750	294990	866750	0.17	12289	79350	44610	49880	125700	299540	0.15	3747
26	288520	275770	289650	853940	0.17	12107	78790	44600	49990	94800	268180	0.15	3355
27	287690	250630	282030	820350	0.17	11631	78580	45120	50320	94520	268540	0.15	3359
28	287420	290070	285740	863230	0.17	12239	78020	44400	49920	125620	297960	0.15	3727
29	285150	287820	354500	927470	0.17	13150	77270	44460	49880	126140	297750	0.15	3725
30	287180	286280	292750	866210	0.17	12281	76560	44420	49790	126860	297630	0.15	3723
31	288500	286510	290600	865610	0.17	12273	75750	44250	49810	127800	297610	0.15	3723
MINIMUM	273870	250630	273330	820350	0.06	4110	53610	37310	46270	68880	267470	0.05	1115
MAXIMUM	290640	290290	354500	927470	0.33	23901	195350	68420	58590	148060	428350	0.32	7889
TOTAL	8896370	8847920	9011440	26755730		392926	2655960	1468120	1580070	3727920	9432070		93714
AVERAGE	286980	285417	290692	863088	0.18	12675	85676	47359	50970	120255	304260	0.12	3023

SLUDGE PROCESSING REPORT

PRIMARY SLUDGE TO DIGESTERS

THICKENED SLUDGE TO DIGESTERS

DATE	GALLONS		TOTAL SOLIDS		POUNDS		GALLONS		TOTAL SOLIDS		POUNDS	
	1	2	1	2	1	2	1	2	1	2	1	2
2012												
1	33440	34950	4.26	3.56	11888	10362	22640	25500	3.38	2.83	6387	6013
2	36050	37440	3.98	4.39	11951	13716	23640	25820	3.22	2.75	6339	5916
3	34200	37160	4.37	4.03	12464	12474	22960	25730	3.06	2.65	5864	5681
4	36070	36900	4.36	3.81	13123	11717	21600	25720	3.10	2.62	5584	5625
5	29380	37510	3.39	4.00	8294	12521	21560	25760	3.05	2.62	5489	5623
6	36020	36730	4.16	3.59	12482	10997	21540	25720	3.02	2.65	5430	5690
7	34230	36660	4.08	3.62	11633	11068	21560	25800	3.20	2.74	5758	5885
8	36390	37140	3.98	3.72	12087	11523	21570	25770	3.09	2.63	5554	5658
9	34180	36180	4.17	4.31	11880	12998	21940	25980	2.97	2.61	5430	5650
10	36020	36300	4.11	4.22	12339	12783	22990	26960	2.91	2.44	5584	5486
11	34300	36630	4.52	4.22	12923	12884	25420	29510	2.71	2.44	5745	5993
12	36290	36530	4.30	4.09	13022	12445	28490	29990	2.65	2.61	6303	6534
13	34390	36900	4.28	4.35	12283	13372	29450	29620	2.80	2.61	6865	6441
14	36240	36540	4.49	4.41	13563	13439	29500	29600	2.86	2.68	7024	6610
15	34430	36570	4.16	4.18	11931	12756	29520	29170	2.99	2.73	7367	6641
16	36180	36810	4.60	4.17	13865	12802	29420	27520	2.98	2.71	7312	6220
17	34240	36720	4.54	4.02	12972	12303	27540	26690	2.73	2.57	6270	5721
18	36310	36860	4.82	4.36	14581	13403	25520	25660	2.85	2.56	6061	5479
19	34400	36890	4.96	4.19	14237	12883	22710	22770	2.86	2.69	5412	5104
20	35250	36710	4.85	4.32	14244	13234	21690	21750	2.88	2.93	5201	5306
21	34270	36590	4.71	4.66	13462	14228	20590	20660	3.08	2.84	5285	4889
22	35540	36660	4.33	4.16	12842	12704	21830	21950	3.24	2.89	5899	5281
23	36060	36620	4.58	4.44	13766	13545	23510	23590	3.21	2.96	6294	5814
24	34300	36740	4.08	4.30	11657	13176	22840	22920	3.21	2.82	6105	5395
25	35790	37010	4.26	4.23	12708	13041	21880	22020	3.16	2.82	5766	5174
26	34360	36320	4.57	4.26	13089	12896	21510	21610	3.24	2.80	5817	5042
27	35930	36630	4.99	4.58	14938	13976	21500	21550	3.36	3.06	6020	5491
28	33780	36450	4.88	4.29	13755	13026	21540	21520	3.22	2.84	5780	5093
29	36310	36420	4.07	4.10	12325	12453	21560	21550	3.28	2.99	5902	5374
30	34320	36180	4.25	4.10	12165	12371	21470	21680	3.41	3.01	6101	5447
31	35950	36610	4.33	3.98	12982	12137	20880	21040	3.40	2.96	5925	5194
MINIMUM	29380	34950	3.39	3.56	8294	10362	20590	20660	2.65	2.44	5201	4889
MAXIMUM	36390	37510	4.99	4.66	14938	14228	29520	29990	3.41	3.06	7367	6641
TOTAL	1048670	1099750			382468	381098	709490	750090			179949	170276
AVERAGE	34956	36658	4.37	4.15	12749	12703	23650	25003	3.06	2.74	5998	5676

SLUDGE PROCESSING REPORT

PART 6

DATE	<u>TOTAL LOADINGS TO DIGESTER 1</u>		<u>TOTAL LOADINGS TO DIGESTER 2</u>		<u>COMBINED FEED</u>	
	GALLONS	POUNDS	GALLONS	POUNDS	GALLONS	POUNDS
JULY	1	1	2	2		
2012						
1	56080	18274	60450	16375	116530	34650
2	59690	18290	63260	19632	122950	37922
3	57160	18329	62890	18155	120050	36484
4	57670	18708	62620	17343	120290	36051
5	50940	13783	63270	18145	114210	31928
6	57560	17912	62450	16687	120010	34599
7	55790	17392	62460	16953	118250	34345
8	57960	17641	62910	17180	120870	34821
9	56120	17310	62160	18647	118280	35957
10	59010	17924	63260	18270	122270	36193
11	59720	18668	66140	18877	125860	37545
12	64780	19324	66520	18980	131300	38304
13	63840	19148	66520	19813	130360	38961
14	65740	20587	66140	20049	131880	40636
15	63950	19298	65740	19398	129690	38696
16	65600	21177	64330	19022	129930	40198
17	61780	19242	63410	18024	125190	37266
18	61830	20642	62520	18882	124350	39523
19	57110	19649	59660	17987	116770	37636
20	56940	19444	58460	18540	115400	37984
21	54860	18746	57250	19117	112110	37864
22	57370	18741	58610	17985	115980	36726
23	59570	20060	60210	19359	119780	39419
24	57140	17762	59660	18571	116800	36333
25	57670	18474	59030	18215	116700	36690
26	55870	18906	57930	17938	113800	36844
27	57430	20958	58180	19467	115610	40425
28	55320	19535	57970	18119	113290	37654
29	57870	18227	57970	17827	115840	36055
30	55790	18266	57860	17818	113650	36085
31	56830	18907	57650	17331	114480	36238
MINIMUM	50940	13783	57250	16375	112110	31928
MAXIMUM	65740	21177	66520	20049	131880	40636
TOTAL	1758160	562417	1849840	551374	3608000	1113792
AVERAGE	58605	18747	61661	18379	120267	37126

PRIMARY DIGESTER PERFORMANCE REPORT

DATE	PRIMARY DIGESTER 1							PRIMARY DIGESTER 2						
	TEMP	%T.S.	pH	ALKA	VOL ACIDS	VA/ALK	VOL SOLIDS	TEMP	%T.S.	pH	ALKA	VOL ACIDS	VA/ALK	VOL SOLIDS
JULY														
2012														
1	99.50	1.86	7.20	3940	315	0.08		99.70	1.85	7.18	3900	285	0.07	
2	99.52	1.99	7.17	4060	315	0.08		99.56	1.7	7.19	3980	285	0.07	
3	99.53	1.97	7.12	4000	315	0.08	71.88	99.56	1.69	7.15	3940	285	0.07	70.15
4	99.52	1.92	7.24	4000	315	0.08		99.65	1.99	7.20	3960	300	0.08	
5	99.54	1.84	7.20	4020	330	0.08		99.74	1.84	7.14	3920	300	0.08	
6	99.53	1.76	7.15	4080	285	0.07		99.59	1.76	7.10	3840	255	0.07	
7	99.52	1.87	7.17	3940	300	0.08		99.68	1.73	7.14	3760	270	0.07	
8	99.52	1.79	7.20	3940	300	0.08		99.56	1.91	7.13	3820	270	0.07	
9	99.52	1.88	7.20	4090	300	0.07		99.63	1.8	7.09	3860	270	0.07	
10	99.52	1.58	7.25	4000	225	0.06	71.60	99.55	1.7	7.18	3940	270	0.07	71.62
11	99.53	1.98	7.12	4090	300	0.07		99.56	1.95	7.04	3900	285	0.07	
12	99.53	2.01	7.17	4080	315	0.08		99.61	1.85	7.09	3900	270	0.07	
13	99.52	1.91	7.19	4030	315	0.08		99.54	1.83	7.11	3890	285	0.07	
14	99.51	1.80	7.12	4000	285	0.07		99.62	1.77	7.06	3900	255	0.07	
15	99.51	1.92	7.12	4050	285	0.07		99.57	1.82	7.06	3920	285	0.07	
16	99.52	1.81	7.19	4080	300	0.07		99.61	1.72	7.10	3920	270	0.07	
17	99.53	1.71	7.21	3980	330	0.08	73.26	99.54	1.79	7.07	3930	285	0.07	71.01
18	99.52	1.90	7.13	4060	315	0.08		99.52	1.73	7.06	3930	285	0.07	
19	99.53	1.90	7.13	4080	300	0.07		99.60	1.65	7.10	3920	270	0.07	
20	99.52	1.76	7.16	4110	300	0.07		99.51	1.67	7.10	3960	285	0.07	
21	99.53	1.86	7.24	4000	285	0.07		99.54	1.65	7.19	3920	285	0.07	
22	99.52	1.78	7.21	4060	285	0.07		99.52	1.99	7.14	3940	270	0.07	
23	99.53	1.95	7.14	4080	285	0.07		99.51	2.03	7.12	3980	255	0.06	
24	99.52	1.91	7.21	4060	300	0.07	70	99.54	2.02	7.16	4020	255	0.06	58.62
25	99.52	1.87	7.19	4080	330	0.08		99.53	2.2	7.08	4020	300	0.07	
26	99.52	2.27	7.17	4080	285	0.07		99.51	2.03	7.11	4030	270	0.07	
27	99.51	2.00	7.18	4160	315	0.08		99.52	2.25	7.13	4040	255	0.06	
28	99.52	1.82	7.17	4120	270	0.07		99.52	1.63	7.13	4060	270	0.07	
29	99.52	1.77	7.22	4160	270	0.06		99.52	1.83	7.15	4020	270	0.07	
30	99.52	1.75	7.14	4120	270	0.07		99.52	2.22	7.11	4060	270	0.07	
31	99.53	1.87	7.32	4080	300	0.07	70.97	99.54	2.28	7.29	4020	300	0.07	54.76
MINIMUM	99.50	1.58	7.12	3940	225	0.06	70	99.51	1.63	7.04	3760	255	0.06	54.76
MAXIMUM	99.54	2.27	7.32	4160	330	0.08	73.26	99.74	2.28	7.29	4060	300	0.08	71.62
AVERAGE	99.52	1.87	7.18	4053	298	0.07	71.54	99.57	1.87	7.13	3942	276	0.07	65.23

DIGESTER PERFORMANCE REPORT

	PERCENT VOLATILE SOLIDS REDUCTION			VOLATILE SOLIDS RATIO TS/V5 DAY			HYDRAULIC DETENTION TIME DAYS			VOLATILE SOLIDS LOADING LBS / FT3		
	DIG #1	DIG #2	SEC	DIG #1	DIG #2	SEC	DIG #1	DIG #2	SEC	DIG #1	DIG #2	SEC
Aug-10	59.60	65.23		10.6	10.4		18.3	19.4	9.0	0.098	0.093	
Sep-10	60.65	64.25		10.7	10.8		19.8	20.6	9.7	0.099	0.096	
Oct-10	62.36	65.39		11.4	11.7		20.1	20.6	9.8	0.094	0.093	
Nov-10	61.24	63.34		11.6	12.5		20.0	20.9	9.8	0.092	0.087	
Dec-10	61.60	62.08		10.3	11.7		19.7	20.9	9.7	0.095	0.086	
Jan-11	63.11	65.11		10.9	11.8		20.2	22.0	10.1	0.090	0.088	
Feb-11	63.80	66.00		9.6	10.8		18.9	20.1	9.3	0.097	0.097	
Mar-11	62.18	63.06		11.6	12.3		19.1	20.2	9.4	0.085	0.082	
Apr-11	59.78	60.08		10.3	11.2		18.1	18.6	8.8	0.101	0.095	
May-11	59.71	59.49		10.3	11.5		17.7	19.3	8.8	0.108	0.096	
Jun-11	59.77	60.96		10.2	10.6		18.3	19.3	9.0	0.110	0.101	
Jul-11	59.93	62.62		11.3	11.7		20.3	21.1	9.9	0.098	0.093	
Aug-11	59.71	63.49		11.8	11.7		20.4	20.8	9.9	0.094	0.094	
Sep-11	59.25	61.39		12.7	14.0		20.5	21.4	10.1	0.083	0.080	
Oct-11	62.10	62.41		10.8	12.5		21.3	21.7	10.3	0.093	0.090	
Nov-11	65.75	65.05		11.1	13.2		20.8	21.9	10.2	0.092	0.087	
Dec-11	64.90	65.11		11.3	11.7		20.6	20.8	9.9	0.092	0.089	
Jan-12	63.46	65.21		10.0	9.8		19.5	19.1	9.3	0.099	0.094	
Feb-12	64.46	65.19		9.7	9.7		20.1	19.8	9.6	0.099	0.096	
Mar-12	63.99	65.10		9.9	9.4		19.2	18.8	9.1	0.104	0.104	
Apr-12	61.75	63.78		10.4	9.7		19.3	18.9	9.2	0.103	0.102	
May-12	60.45	63.06		10.7	10.1		19.5	19.3	9.3	0.104	0.100	
Jun-12	59.85	64.40		11.6	10.8		20.5	19.9	9.7	0.098	0.096	
Jul-12	59.07	62.35		12.0	12.1		20.8	19.8	9.7	0.098	0.097	

SECONDARY DIGESTER PERFORMANCE REPORT

% TOTAL SOLIDS									
DATE	8FT	12FT	18FT	26FT	pH	ALKA	VOL	VA/ALK	VOL
JULY							ACIDS		SOLIDS
2012									
1	2.32	0.42	0.39	0.31	7.30	4040	300	0.07	
2	2.28	0.59	0.30	0.51	7.42	4140	285	0.07	
3	2.31	0.34	0.36	0.37	7.38	4140	285	0.07	72.04
4	2.43	0.33	0.42	0.62	7.32	4120	300	0.07	
5	2.46	0.30	0.37	0.35	7.32	4140	285	0.07	
6	2.23	0.24	0.29	0.31	7.32	4220	285	0.07	
7	2.68	0.30	0.26	0.44	7.36	4120	285	0.07	
8	2.44	0.44	0.40	0.42	7.37	4100	285	0.07	
9	2.38	0.93	0.45	0.47	7.29	4200	285	0.07	
10	2.25	0.77	0.42	0.52	7.36	4230	270	0.06	70.93
11	1.95	0.76	0.49	0.64	7.25	4160	270	0.06	
12	2.03	0.44	0.46	0.73	7.31	4150	285	0.07	
13	1.88	0.77	0.30	0.77	7.29	4110	285	0.07	
14	3.36	0.58	0.44	0.59	7.30	4120	270	0.07	
15	2.56	0.63	0.52	0.40	7.31	4240	270	0.06	
16	2.34	0.88	0.64	0.33	7.16	4220	285	0.07	
17	1.75	0.78	0.59	0.34	7.26	4210	285	0.07	71.25
18	2.07	0.82	0.68	0.40	7.33	4200	270	0.06	
19	2.58	0.85	0.65	0.46	7.35	4240	270	0.06	
20	1.97	0.72	0.66	0.43	7.43	4200	270	0.06	
21	2.40	0.85	0.39	0.51	7.37	4240	285	0.07	
22	2.40	0.83	0.68	0.45	7.32	4220	270	0.06	
23	2.64	0.93	0.78	0.67	7.33	4180	285	0.07	
24	2.78	0.97	0.83	0.69	7.30	4140	285	0.07	69.37
25	2.37	0.99	0.86	0.87	7.33	4280	315	0.07	
26	1.68	0.93	0.77	0.86	7.30	4340	270	0.06	
27	2.69	0.69	0.77	1.15	7.40	4320	300	0.07	
28	2.35	0.90	0.69	0.46	7.37	4340	285	0.07	
29	2.43	0.90	0.52	0.40	7.26	4280	300	0.07	
30	2.87	0.97	0.81	0.69	7.32	4320	300	0.07	
31	2.17	0.95	0.77	0.88	2.32	4260	285	0.07	70.00
MINIMUM	1.68	0.24	0.26	0.31	2.32	4040	270	0.06	69.37
MAXIMUM	3.36	0.99	0.86	1.15	7.43	4340	315	0.07	72.04
TOTAL									
AVERAGE	2.36	0.70	0.55	0.55	7.16	4201	284	0.07	70.72

SLUDGE DEWATERING REPORT FOR BELT FILTER PRESS NO.1

PART 10

DATE	FEED GALLONS	% TOTAL SOLIDS	SLUDGE POUNDS	POLYMER POUNDS	TOTAL OUTPUT POUNDS	TOTAL WET POUNDS	POLYMER % WT	CAKE % T.S.	FILTRATE % T.S.	FILTRATE GALLONS	FILTRATE POUNDS	OPER HOURS	PROD RATE
JULY 2012													
7/1/2012													
7/2/2012	18144	3.4	5145	30	5175	30034	0.58	17.23	0.09	14543	109	4.2	1225
7/3/2012	42804	1.7	6069	51	6120	35956	0.83	17.02	0.09	38493	289	8.7	698
7/4/2012													
7/5/2012	38868	2.3	7456	51	7507	47935	0.68	15.66	0.07	33120	193	7.9	944
7/6/2012	33090	2.7	7451	52	7503	42900	0.69	17.49	0.08	27946	186	6.9	1080
7/7/2012													
7/8/2012													
7/9/2012	65988	2.3	12658	82	12740	73091	0.64	17.43	0.09	57224	430	14.1	898
7/10/2012	59796	2.7	13465	64	13529	80866	0.47	16.73	0.08	50100	334	12.4	1086
7/11/2012	25800	1.6	3443	47	3490	20408	1.30	17.10	0.10	23353	195	5.0	689
7/12/2012													
7/13/2012													
7/14/2012													
7/15/2012													
7/16/2012													
7/17/2012													
7/18/2012	26550	3.5	7750	41	7791	41977	0.53	18.56	0.08	21517	144	5.9	1314
7/19/2012													
7/20/2012													
7/21/2012													
7/22/2012													
7/23/2012	61320	2.1	10740	82	10822	59821	0.76	18.09	0.10	54147	452	14.6	736
7/24/2012	54480	2.8	12722	70	12792	77528	0.55	16.50	0.08	45184	301	12.4	1026
7/25/2012	30996	2.6	6721	47	6768	37664	0.69	17.97	0.10	26480	221	6.3	1067
7/26/2012	29250	1.7	4147	41	4188	23987	0.98	17.46	0.08	26374	176	6.5	638
7/27/2012													
7/28/2012													
7/29/2012													
7/30/2012													
7/31/2012	27000	3.4	7656	47	7703	41304	0.61	18.65	0.08	22048	147	6.0	1276
MINIMUM	18144	1.6	3443	30	3490	20408	0.47	15.66	0.07	14543	109	4.2	638
MAXIMUM	65988	3.5	13465	82	13529	80866	1.30	18.65	0.10	57224	452	14.6	1314
TOTAL	514086		105422	705	106127	613471				440528	3177	110.9	
AVERAGE	39545	2.5	8109	54	8164	47190	0.72	17.38	0.09	33887	244	8.5	975

SLUDGE DEWATERING REPORT FOR BELT FILTER PRESS NO.2

PART 11

DATE	FEED GALLONS	% TOTAL SOLIDS	SLUDGE POUNDS	POLYMER POUNDS	TOTAL OUTPUT POUNDS	TOTAL WET POUNDS	POLYMER % WT	CAKE % T.S.	FILTRATE % T.S.	FILTRATE GALLONS	FILTRATE POUNDS	OPER HOURS	PROD RATE
JULY 2012													
7/1/2012													
7/2/2012	69372	1.9	10993	71	11064	63621	0.64	17.39	0.09	61744	463	14.1	780
7/3/2012													
7/4/2012													
7/5/2012													
7/6/2012													
7/7/2012													
7/8/2012													
7/9/2012													
7/10/2012													
7/11/2012													
7/12/2012	52800	1.8	7926	70	7996	48200	0.88	16.59	0.08	47021	314	10.0	793
7/13/2012	30096	1.9	4769	47	4816	29153	0.98	16.52	0.08	26600	177	5.7	837
7/14/2012													
7/15/2012													
7/16/2012	61200	2.2	11229	73	11302	65519	0.65	17.25	0.08	53344	356	12.0	936
7/17/2012	24000	2.2	4404	41	4445	26377	0.92	16.85	0.09	20837	156	5.0	881
7/18/2012													
7/19/2012	40290	1.8	6048	41	6089	35673	0.67	17.07	0.08	36013	240	7.9	766
7/20/2012	46440	1.9	7359	58	7417	43146	0.78	17.19	0.09	41267	310	9.9	743
7/21/2012													
7/22/2012													
7/23/2012													
7/24/2012													
7/25/2012													
7/26/2012													
7/27/2012													
7/28/2012													
7/29/2012	67200	2.0	11209	79	11288	62607	0.70	18.03	0.08	59693	398	14.0	801
7/30/2012	60750	2.8	14186	79	14265	79164	0.55	18.02	0.09	51258	385	13.2	1075
7/31/2012													
MINIMUM	24000	1.8	4404	41	4445	26377	0.55	16.52	0.08	20837	156	5.0	743
MAXIMUM	69372	2.8	14186	79	14265	79164	0.98	18.03	0.09	61744	463	14.1	1075
TOTAL	452148		78123	559	78682	453459				397776	2800	91.8	
AVERAGE	50239	2.1	8680	62	8742	50384	0.75	17.21	0.08	44197	311	10.2	846

SLUDGE DEWATERING REPORT FOR BELT FILTER PRESS NO.3

PART 12

DATE	FEED GALLONS	% TOTAL SOLIDS	SLUDGE POUNDS	POLYMER POUNDS	TOTAL OUTPUT POUNDS	TOTAL WET POUNDS	POLYMER % WT	CAKE % T.S.	FILTRATE % T.S.	FILTRATE GALLONS	FILTRATE POUNDS	OPER HOURS	PROD RATE
JULY 2012													
7/1/2012													
7/2/2012	65960	1.9	10452	71	10523	56850	0.67	18.51	0.09	59143	444	14.1	741
7/3/2012	68820	1.7	9757	71	9828	54210	0.72	18.13	0.09	62320	468	14.9	655
7/4/2012													
7/5/2012	69710	2.0	11628	71	11699	67661	0.61	17.29	0.09	61597	462	14.9	780
7/6/2012	70890	1.7	10051	71	10122	53583	0.70	18.89	0.09	64465	484	15.0	670
7/7/2012													
7/8/2012													
7/9/2012	64080	2.3	12292	82	12374	65713	0.66	18.83	0.10	56201	469	14.1	872
7/10/2012	69540	1.6	9279	82	9361	53956	0.88	17.35	0.09	63070	473	14.9	623
7/11/2012	68710	1.5	8596	82	8678	46579	0.94	18.63	0.09	63125	474	14.6	589
7/12/2012	67490	1.7	9569	82	9651	54309	0.85	17.77	0.09	60978	458	14.4	664
7/13/2012	71460	1.7	10132	82	10214	59175	0.80	17.26	0.09	64365	483	14.7	689
7/14/2012													
7/15/2012													
7/16/2012	62370	2.2	11444	76	11520	61867	0.66	18.62	0.08	54952	367	13.5	848
7/17/2012	56860	2.0	9484	70	9554	55259	0.73	17.29	0.09	50234	377	12.4	765
7/18/2012	65130	1.6	8691	79	8770	46898	0.90	18.70	0.08	59507	397	14.3	608
7/19/2012	37030	1.8	5559	41	5600	30401	0.73	18.42	0.08	33385	223	7.7	722
7/20/2012	69670	1.6	9297	71	9368	52836	0.76	17.73	0.09	63335	475	14.9	624
7/21/2012													
7/22/2012													
7/23/2012	61860	2.1	10834	82	10916	55160	0.75	19.79	0.09	55246	415	14.5	747
7/24/2012	68080	2.1	11924	82	12006	61190	0.68	19.62	0.09	60743	456	14.8	806
7/25/2012	65950	2.3	12651	82	12733	64111	0.64	19.86	0.08	58263	389	14.9	849
7/26/2012	47260	1.7	6701	58	6759	34874	0.86	19.38	0.09	43079	323	9.9	677
7/27/2012													
7/28/2012													
7/29/2012	64900	2.0	10825	79	10904	57940	0.72	18.82	0.08	57953	387	14.1	768
7/30/2012	65300	1.8	9803	79	9882	51414	0.80	19.22	0.09	59135	444	13.9	705
7/31/2012	68540	1.7	9718	82	9800	51877	0.84	18.89	0.08	62320	416	14.9	652
MINIMUM	37030	1.5	5559	41	5600	30401	0.61	17.26	0.08	33385	223	7.7	589
MAXIMUM	71460	2.3	12651	82	12733	67661	0.94	19.86	0.10	64465	484	15.0	872
TOTAL	1349610		208684	1575	210259	1135865				1213415	8883	291.4	
AVERAGE	64267	1.9	9937	75	10012	54089	0.76	18.52	0.09	57782	423	13.9	717

SOLIDS DISPOSAL REPORT

PART 13

DATE	<u>SCREENINGS</u>	<u>GRIT REMOVED</u>		<u>SLUDGE TO THE BELT FILTER PRESSES</u>			
	JULY	AGC NO.1	AGC NO.2	NO.1	NO.2	NO.3	TOTAL
	CU.FT.	CU.YD.	CU.YD.	LBS	LBS	LBS	LBS
2012							
7/1/2012	54						
7/2/2012	54			5175	11064	10523	26762
7/3/2012	54			6120		9828	15948
7/4/2012	54						
7/5/2012	54			7507		11699	19205
7/6/2012	54		1.33	7503		10122	17625
7/7/2012	54						
7/8/2012	54						
7/9/2012	54			12740		12374	25114
7/10/2012	54			13529		9361	22890
7/11/2012	54	3.00		3490		8678	12167
7/12/2012	54				7996	9651	17647
7/13/2012	54				4816	10214	15030
7/14/2012	54						
7/15/2012	54						
7/16/2012	54				11302	11520	22822
7/17/2012	54				4445	9554	13999
7/18/2012	54		0.83	7791		8770	16561
7/19/2012	54				6089	5600	11689
7/20/2012	54				7417	9368	16785
7/21/2012	54						
7/22/2012	54						
7/23/2012	54			10822		10916	21738
7/24/2012	54			12792		12006	24798
7/25/2012	54			6768		12733	19501
7/26/2012	54	1.67		4188		6759	10947
7/27/2012	54						
7/28/2012	54						
7/29/2012	54				11288	10904	22192
7/30/2012	54				14265	9882	24147
7/31/2012	54			7703		9800	17503
MINIMUM	54	1.67	0.83				
MAXIMUM	54	3.00	1.33	13529	14265	12733	26762
TOTAL	1674	4.67	2.16	106127	78682	210259	395068
AVERAGE	54	2.34	1.08	8164	8742	10012	18813

ALUM SLUDGE DEWATERING REPORT

PART 14

DATE	FEED GALLONS	% TOTAL SOLIDS	SLUDGE POUNDS	POLYMER POUNDS	PRESS NUMBER	TOTAL	TOTAL	POLYMER % WT	CAKE % T.S.	FILTRATE % T.S.	FILTRATE GALLONS	FILTRATE POUNDS	OPER HOURS	PROD RATE
						OUTPUT POUNDS	WET POUNDS							
2012														
7/1/2012														
7/2/2012														
7/3/2012														
7/4/2012														
7/5/2012														
7/6/2012														
7/7/2012														
7/8/2012														
7/9/2012														
7/10/2012														
7/11/2012														
7/12/2012														
7/13/2012														
7/14/2012														
7/15/2012														
7/16/2012														
7/17/2012														
7/18/2012														
7/19/2012	14400	3.5	4203	20	1	4223	24441	0.47	17.28	0.07	11469	67	4.8	876
7/19/2012	9360	3.3	2576	12	2	2588	13650	0.46	18.96	0.07	7723	45	2.6	991
7/19/2012	22270	3.5	6501	41	3	6542	30341	0.63	21.56	0.08	18632	124	7.0	929
7/20/2012														
7/21/2012														
7/22/2012														
7/23/2012														
7/24/2012														
7/25/2012														
7/26/2012	16200	3.0	4053	35	2	4088	24048	0.86	17.00	0.05	13316	56	4.5	901
7/26/2012	15840	3.0	3963	35	3	3998	18223	0.88	21.94	0.05	13655	57	4.5	881
7/27/2012														
7/28/2012														
7/29/2012														
7/30/2012														
7/31/2012														
MINIMUM	9360	3.0	2576	12		2588	13650	0.46	17.00	0.05	7723	45	2.6	876
MAXIMUM	22270	3.5	6501	41		6542	30341	0.88	21.94	0.08	18632	124	7.0	991
TOTAL	78070		21296	143		21439	110704				64796	349	23.4	
AVERAGE	15614	3.3	4259	29		4288	22141	0.66	19.35	0.06	12959	70	4.7	915

ENERGY INPUT / OUTPUT REPORT

DATE	<u>UGI NATURAL GAS</u>				<u>ELECTRIC POWER</u>			<u>ANAEROBIC DIGESTER GAS</u>			
	SLM scf	DEWATERING scf	MPH scf	TOTAL scf	PURCHASED kwh	PRODUCED kwh	TOTAL USED kwh	TURBINES scf	BOILERS scf	WASTE scf	TOTAL scf
2012											
1	330	0	100	430	32400	0	32400	0	78340	254800	333140
2	370	0	100	470	32400	0	32400	0	86050	264710	350760
3	340	0	100	440	30600	0	30600	0	81410	274110	355520
4	330	0	100	430	32400	0	32400	0	72900	276480	349380
5	360	0	100	460	34200	0	34200	0	68880	262540	331420
6	380	0	100	480	30600	0	30600	0	87210	264400	351610
7	360	0	100	460	34200	0	34200	0	64880	279230	344110
8	340	0	0	340	30600	0	30600	0	79550	271580	351130
9	360	0	100	460	32400	0	32400	0	72110	273010	345120
10	360	0	100	460	30600	0	30600	0	85980	261890	347870
11	390	0	100	490	32400	0	32400	0	82330	262220	344550
12	390	0	100	490	34200	0	34200	0	72270	271460	343730
13	370	0	100	470	32400	0	32400	0	93020	263740	356760
14	300	0	0	300	30600	0	30600	0	72030	277120	349150
15	360	0	100	460	32400	0	32400	0	96430	261570	358000
16	320	0	100	420	32400	0	32400	0	76810	280520	357330
17	350	0	100	450	30600	0	30600	0	75930	280320	356250
18	410	0	100	510	32400	0	32400	0	78270	275160	353430
19	380	0	100	480	34200	0	34200	0	71280	275760	347040
20	380	0	100	480	32400	0	32400	0	91810	260180	351990
21	320	0	100	420	28800	0	28800	0	80130	274990	355120
22	380	0	100	480	32400	0	32400	0	77810	277560	355370
23	370	0	100	470	32400	0	32400	0	75770	275320	351090
24	400	0	100	500	34200	0	34200	0	73100	276050	349150
25	340	0	100	440	28800	0	28800	0	70600	274190	344790
26	380	0	100	480	30600	0	30600	0	77270	269930	347200
27	350	0	100	450	32400	0	32400	0	73280	276490	349770
28	330	0	100	430	32400	0	32400	0	75740	273980	349720
29	350	0	100	450	30600	0	30600	0	78860	272760	351620
30	350	0	100	450	32400	0	32400	0	72150	274490	346640
31	390	0	200	590	30600	0	30600	0	74590	268690	343280
MINIMUM	300	0	0	300	28800	0	28800	0	64880	254800	331420
MAXIMUM	410	0	200	590	34200	0	34200	0	96430	280520	358000
TOTAL	11140	0	3000	14140	990000	0	990000	0	2416790	8405250	10822040
AVERAGE	359	0	97	456	31935	0	31935	0	77961	271137	349098

ENVIRONMENTAL CONDITIONS REPORT

PART 16

DATE	AIR TEMP	INF TEMP	FST TEMP	PRECIPITATION
JULY	DEG F	DEG F	DEG C	INCHES
2012				
1	80	66	72	0.00
2	76	66	71	0.00
3	76	66	73	0.00
4	83	66	73	0.20
5	82	67	73	trace
6	78	66	73	0.00
7	85	67	74	0.06
8	81	67	74	0.01
9	78	67	73	0.00
10	75	67	73	0.00
11	78	69	73	0.00
12	78	67	73	trace
13	77	67	73	0.00
14	77	67	73	0.10
15	79	67	73	0.63
16	79	68	74	trace
17	81	68	75	0.00
18	86	69	75	0.20
19	75	69	75	0.06
20	66	68	73	1.28
21	71	68	72	0.00
22	73	68	72	0.00
23	79	68	74	0.03
24	82	69	75	0.00
25	74	68	74	0.00
26	77	69	74	0.75
27	79	69	74	0.07
28	78	68	75	0.47
29	75	68	74	trace
30	77	69	74	0.16
31	75	69	0	0.00
MINIMUM	66	66	0	0.00
MAXIMUM	86	69	75	1.28
TOTAL				4.02
AVERAGE	78	68	71	0.13

Pennsylvania Department of Environment Protection Discharge Monitoring Report (DMR)

FACILITY: ALLENTOWN CITY WWTP **PERMIT NUMBER:** PA0026000 **REGION:** EP NE Rgnl Off Wilkes Barre
PERMITTEE: ALLENTOWN CITY LEHIGH CNTY **OUTFALL:** 001 **COUNTY:** Lehigh
 112 W UNION ST From: 2012-07-01 **CITY:** ALLENTOWN
ADDRESS: ALLENTOWN, PA 18102-4912 **MONITORING PERIOD:** To: 2012-07-31 **NO DISCHARGE FROM SITE:** ()

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
		Value	Value		Value	Value	Value				
Dissolved Oxygen Parameter Code: 00300 Stage Code: 1	Sample Measurement	*****	*****		6.5	*****	*****	mg/L	0	1/day	Grab
	Permit Requirement	*****	*****		5.0 Minimum	*****	*****		1/day	Grab	
pH Parameter Code: 00400 Stage Code: 1	Sample Measurement	*****	*****		7.0	*****	7.4	S.U.	0	1/day	Grab
	Permit Requirement	*****	*****		6.0 Minimum	*****	9.0 Maximum		1/day	Grab	
Total Suspended Solids Parameter Code: 00530 Stage Code: 1	Sample Measurement	735	808	lbs/day	*****	3	3	mg/L	0	1/day	24-Hr Composite
	Permit Requirement	10008 Average Monthly	15012 Weekly Average		*****	30.0 Average Monthly	45.0 Weekly Average		1/day	24-Hr Composite	
Ammonia-Nitrogen Parameter Code: 00610 Stage Code: 1	Sample Measurement	309	*****	lbs/day	*****	1.2	*****	mg/L	0	1/day	24-Hr Composite
	Permit Requirement	1668 Average Monthly	*****		*****	5.0 Average Monthly	*****		1/day	24-Hr Composite	
Flow (mgd) Parameter Code: 50050 Stage Code: 1	Sample Measurement	29.62	35.46	MGD	*****	*****	*****		0	Continuous	Recorded
	Permit Requirement	Report Average Monthly	Report Daily Maximum		*****	*****	*****		Continuous	Recorded	
Total Residual Chlorine (TRC) Parameter Code: 50060 Stage Code: 1	Sample Measurement	*****	*****		*****	0.37	*****	mg/L	0	1/day	Grab
	Permit Requirement	*****	*****		*****	0.50 Average Monthly	*****		1/day	Grab	
Fecal Coliform Parameter Code: 74055 Stage Code: 1	Sample Measurement	*****	*****		*****	<6	*****	CFU/100 mL	0	1/day	Grab
	Permit Requirement	*****	*****		*****	200 Geometric Mean	*****		1/day	Grab	
Name/Title of Principal Executive Officer Or Authorized Agent	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).						Signature of Principal Executive Officer Or Authorized Agent	Telephone No	Date		
Robert Kerchusky Manager of Operations							E-DMR PIN SIGNATURE PROVIDED	610-437-7641	2012-08-16		

Report all violations during the reporting period on a Non-Compliance Reporting Form, as an attachment to your eDMR submission.

Page 1

GENERAL REPORT COMMENT:

Fecal coliform, Total Cl2, DO and pH parameters are analyzed at a minimum interval of one time per day as per the requirements of Allentown's NPDES permit. One grab sample is collected per day at Outfall 001 from which all listed parameters are analyzed. On 7/13/12, two grab samples were collected and analyzed. Two results obtained per parameter were averaged for the day. Thus all 32 results obtained in July have been incorporated into the calculations for the dmr. See attached data for July.

PARAMETER SPECIFIC COMMENTS:

Exhibit L-Example Contributing Municipalities Flow Report

CITY OF ALLENTOWN
BUREAU OF WATER RESOURCES/WASTEWATER

SEWAGE FLOW JULY 2012

BOROUGH OF EMMAUS: 1.40 M.G.D

Fox Street	1,704,800
Meters No. 2, 3, & 4	25,365,100

27,069,900	Gallons / 31 = 0.87 M.G.D.
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SALISBURY TOWNSHIP: 2.09 M.G.D

Flow	34,481,500 *
LESS Emmaus Fox Street Meter	(1,704,800)

32,776,700	Gallons / 35 = 0.94 M.G.D.
------------	----------------------------

SOUTH WHITEHALL TOWNSHIP: 3.00 M.G.D

MS51 Cedar Crest Meter	24,640,000 ***
MS52 Glenwood Street Meter	7,632,000
MS53 Jonathan Street Meter	9,072,000
MS54 Golf Course Meter	17,100,000 ***
MS55 Hamilton Blvd. Meter	10,224,000
MS56 Quail Hollow Meter	7,286,000
LESS Lower Macungie	(8,344,270)

67,609,730	Gallons / 31 = 2.18 M.G.D.
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LEHIGH COUNTY AUTHORITY: 10.68 M.G.D 214,062,300 Gallons / 31 = 7.05 M.G.D.

LOWER MACUNGIE TOWNSHIP: .25 M.G.D

Phase II	3,971,270
Brookside Rd. Diversion	4,373,000

8,344,270	Gallons / 35 = 0.11 M.G.D. **
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* Meter 10 - malfunctioned 2 days; Out-of Service 3 days

** MGD based on Phase II consumption ONLY - Brookside Rd Diversion is included in LCA's MGD Per LCA

***Estimation per Don Lichty

COPLAY-WHITEHALL SEWER AUTHORITY: 3.76 M.G.D.

Lehigh River Meter	33,502,000		
Jordan Creek Meter	41,419,000		
Direct Flows (Estimated)	700,000		
LESS South Whitehall: Jonathan & Quail Hollow Meters	(16,358,000)		
	<u>59,263,000</u>	Gallons / 35 =	<u>1.69</u> M.G.D.
PLANT FLOWS	29.62		M.G.D.
LESS SIGNATORIES	(12.84)		M.G.D.
ALLENTOWN	<u>16.78</u>		M.G.D.
PRECIPITATION	4.02	Inches	

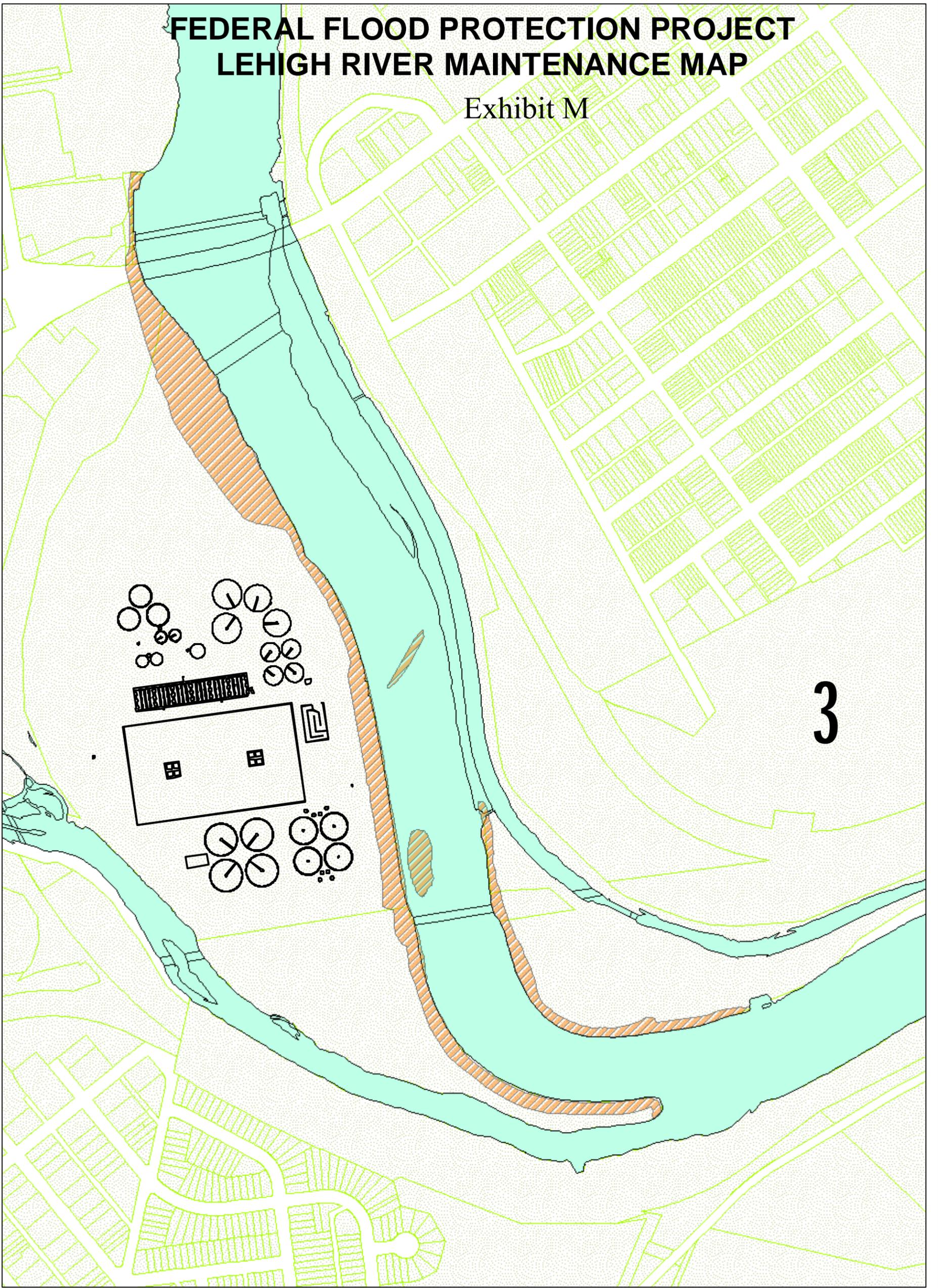
SUBMITTED BY: Marge Roberts DATE: 21-Aug-12

xc: Richard Young, P.E, Director of Public Works, City of Allentown
Donald Lichty, P.E., Utility Engineer, City of Allentown
Chris Cope, Manager Industrial Waste, City of Allentown
Robert Kerchusky, Manager Operations, City of Allentown
John Parsons, Manager Program Development, City of Allentown
David Harleman, Coplay-Whitehall Authority
John Andreas, Salisbury Township
Ms. Donna Lederer, South Whitehall Township
Doug Young, Lehigh County Authority
Lee Lichtenwalner, Lower Macungie Township

		ALLOCATION AS OF 06/01/09															
		18.82		3.00		2.09		3.76		1.40		10.68		0.25		40.00	
		ALLETOWN		SOUTH WHITEHALL		SALISBURY		COPLAY WHITEHALL		EMMAUS		L C A		LOWER MACUNGIE		PLANT TOTAL	
MONTH/YR	PRECIP	MGD	12 MO AVG MGD	MGD	12 MO AVG MGD	MGD	12 MO AVG MGD	MGD	12 MO AVG MGD	MGD	12 MO AVG MGD	MGD	12 MO AVG MGD	MGD	12 MO AVG MGD	MGD	12 MO AVG MGD
Jul-10	8.87	17.68	17.72	2.57	2.37	1.05	1.25	1.74	2.04	0.96	1.21	6.90	7.46	0.09	0.08	30.99	32.12
Aug-10	1.70	16.33	17.65	2.35	2.36	1.03	1.22	1.69	2.01	0.89	1.18	6.25	7.38	0.09	0.08	28.63	31.88
Sep-10	7.48	17.92	17.65	2.14	2.36	0.84	1.21	2.00	2.01	1.04	1.18	6.22	7.33	0.09	0.08	30.25	31.81
Oct-10	4.86	18.37	17.72	2.68	2.41	1.21	1.23	2.12	2.02	1.16	1.18	7.30	7.36	0.08	0.08	32.92	32.01
Nov-10	2.99	15.87	17.69	2.41	2.45	0.97	1.21	2.03	2.02	1.05	1.18	6.27	7.34	0.10	0.08	28.70	31.97
Dec-10	2.92	16.74	17.55	2.26	2.43	1.06	1.17	2.02	2.00	1.13	1.15	6.66	7.23	0.12	0.09	29.99	31.62
Jan-11	2.67	15.85	17.47	2.04	2.40	0.97	1.14	1.84	1.98	0.98	1.13	5.97	7.09	0.12	0.09	27.77	31.31
Feb-11	3.53	17.22	17.54	2.55	2.42	1.15	1.12	1.88	1.98	1.50	1.16	6.96	7.07	0.12	0.09	31.38	31.38
Mar-11	6.43	20.50	17.62	2.76	2.39	1.53	1.13	3.07	2.04	1.75	1.16	10.68	7.21	0.14	0.10	40.43	31.63
Apr-11	5.98	19.52	17.64	3.00	2.46	1.45	1.13	2.47	2.06	1.52	1.19	10.39	7.38	0.13	0.11	38.48	31.96
May-11	4.37	19.21	17.72	2.62	2.48	1.25	1.13	2.27	2.08	1.20	1.18	8.62	7.43	0.12	0.11	35.29	32.13
Jun-11	4.76	17.38	17.72	2.85	2.52	0.99	1.13	1.98	2.09	0.98	1.18	7.19	7.45	0.12	0.11	31.49	32.19
Jul-11	3.94	16.79	17.64	2.89	2.55	0.82	1.11	1.71	2.09	0.86	1.17	6.32	7.40	0.12	0.11	29.51	32.07
Aug-11	13.47	19.44	17.90	3.42	2.64	1.04	1.11	2.22	2.13	1.13	1.19	8.09	7.56	0.14	0.12	35.48	32.64
Sep-11	12.99	23.44	18.36	4.14	2.80	1.68	1.18	3.92	2.29	1.90	1.26	11.85	8.03	0.15	0.12	47.08	34.04
Oct-11	4.50	20.43	18.53	3.21	2.85	1.33	1.19	2.58	2.33	1.35	1.28	9.59	8.22	0.12	0.13	38.61	34.52
Nov-11	4.90	19.52	18.84	3.64	2.95	1.36	1.22	2.57	2.38	1.46	1.31	9.53	8.49	0.12	0.13	38.20	35.31
Dec-11	4.18	18.60	18.99	3.20	3.03	1.26	1.24	2.59	2.43	1.39	1.34	11.24	8.87	0.12	0.13	38.40	36.01
Jan-12	2.96	18.40	19.20	2.59	3.07	1.20	1.26	2.03	2.44	1.24	1.36	8.62	9.09	0.11	0.13	34.19	36.55
Feb-12	1.11	16.44	19.14	2.44	3.06	0.90	1.23	1.99	2.45	1.06	1.32	7.45	9.13	0.11	0.13	30.39	36.46
Mar-12	1.00	16.06	18.77	2.57	3.05	0.79	1.17	1.62	2.33	1.00	1.26	7.02	8.83	0.11	0.12	29.17	35.52
Apr-12	2.92	16.24	18.50	2.68	3.02	0.87	1.12	1.74	2.27	0.99	1.21	6.82	8.53	0.11	0.12	29.45	34.77
May-12	5.63	17.81	18.38	2.81	3.04	1.08	1.11	1.79	2.23	1.15	1.21	7.44	8.43	0.11	0.12	32.19	34.51
Jun-12	4.43	18.97	18.51	2.50	3.01	1.15	1.12	1.95	2.23	1.12	1.22	8.33	8.53	0.12	0.12	34.14	34.73
Jul-12	4.02	16.78	18.51	2.18	2.95	0.94	1.13	1.69	2.22	0.87	1.22	7.05	8.59	0.11	0.12	29.62	34.74

FEDERAL FLOOD PROTECTION PROJECT LEHIGH RIVER MAINTENANCE MAP

Exhibit M



john_parsons.mxd

1 inch equals 350 feet



Legend

- mapmaker.GIS.wtank296_arc selection
- Lehigh River Maintenance Area
- mapmaker.GIS.streams

EXHIBIT N

SLUDGE MANAGEMENT PROGRAM DESCRIPTION

The Kline's Island WWTP is geographically located in Center City Allentown. Therefore the generation of odors is of significant concern at this facility. The management of sludge inventory in settling tanks at the facility has been found to play a key role in the generation of odorous gases dissolved in the liquid phase of these unit processes which in turn affects the amount of odor generated by the trickling filters as wastewater is applied to the media. Thus, sludge inventory in the primary settling tanks is controlled through the measure of total solids on a daily basis and sludge blanket measurements on a weekly or daily basis, as required.

A high molecular weight cationic polymer is added to the three gravity thickeners to aid in densification of the trickling filter humus before it is pumped to the anaerobic digesters for stabilization. In addition, a small amount of chlorine solution is added to the gravity thickeners to control odors in the recycle from this process.

The facility has been constructed with two primary and one secondary anaerobic digester; the two primary digesters are heated and temperature is maintained in the mesophilic range, target temperature (99.5°F). There are three forms of mixing in the Primary Digesters: recirculation chopper pumps, Scumbusters, and Pearth Systems. Annual average detention time and volatile solids reduction are approximately 19 days and 61% respectively. The secondary digester is unheated and the mixing is provided only by a Scumbuster to control the scum blanket at the liquid/gas interface. The digested solids satisfy the PADEP and EPA requirements for a Class B biosolid.

Typically, biosolids are pulled directly from the cone of the Secondary Digester by Penn Valley double disc pumps and conveyed to three Ashbrook Simon and Hartley Belt Filter Presses, two shifts per day, five days per week, for dewatering. The City owns several tractors and aluminum dump body trailers which City employees currently operate to haul the biosolids to farm fields for use as soil amenity through a contract with Synagro. A cationic polymer is used as a coagulant for dewatering on the belt presses and potassium permanganate solution is added to control hydrogen sulfide in the dewatering building and prevent degradation of the presses by corrosion. Filtrate from the Belt Filter Presses is routed through a set of two Elutriation Tanks which are piped in series to control the recycle loading from this unit process on the treatment plant. In addition, decant from the Secondary Digester is routed through these tanks when the presses are not in operation in order to capture additional solids before the digester liquor is recycled to the plant headworks. The Elutriation Tanks also play a key role during the digester cleanings, which the City staff currently does in-house.

Water Filtration Plant alum sludge is transported by City tanker trucks and discharged into a dedicated gravity thickener located at the WWTP. The solids are currently dewatered on the three Belt Filter Presses approximately once every two weeks. The dewatered alum sludge is stored on a pad located on the south side of the WWTP until it is picked up for land application by Enviro-Organic Technology's trucks.