

Lower Bucks County Joint Municipal Authority



NEWSLETTER

WINTER 1988

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Your Municipal Authority Board



*Standing from left to right: Micky Pirolli, Treasurer; Jack Kelly, Chairman.
Seated: Michael Pirolli, Secretary; Joseph Marrare, Asst. Treasurer; Alice
Demi, Asst. Secretary; Edward Hunt, Vice Chairman.*

We hope this publication will be informative and of interest to our customers. We will make every attempt to address issues that affect the public and to keep you informed of the important projects underway.

Joseph F. Pantano
Managing Engineer

Welcome!

The board of directors, management and staff of the Lower Bucks County Joint Municipal Authority are pleased to present our first periodic newsletter. The purpose of this publication is to keep the rate payors of this Authority informed on the projects and activities of their water and sewer Authority. There have been many changes, additions and capital improvements made to both the water and wastewater systems over the past several years. In this first newsletter we will summarize the major projects undertaken by this Authority. In addition, a brief description of the water and wastewater treatment system will be presented in order for our readers to more clearly understand the various capital projects that were undertaken. A more detailed discussion on the operation of the systems will be presented in future issues of the newsletter.

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Wastewater Treatment System

The Lower Bucks County Joint Municipal Authority wastewater treatment plant is a 10 million gallon-per-day conventional activated sludge plant. There are over 220 miles of sewer collection system piping ranging from 8-36 inches in diameter.

The treatment at the wastewater plant consists of primary and secondary treatment. Primary treatment consists mainly of natural settling. Wastewater flows slowly through a series of settling tanks where the majority of heavier or settleable solids settle to the bottom. The solids (or sludge) are then collected for further processing. The wastewater, now called primary effluent, is then channeled into the secondary effluent process.

Secondary treatment uses biological solids to treat the dissolved organics and remaining solids in the primary effluent. The biological solids used in secondary treatment are made up of a variety of living organisms that feed on the organic contaminants. Much of the effort in operating the wastewater treatment system is geared toward maintaining a healthy population of the living organisms.

After the treatment in the secondary process, the wastewater, now called "mixed liquor," is again allowed to flow slowly through secondary settling tanks in order to settle out the living organisms that have treated the wastewater. The remaining water is now clear and over 95% free of organic matter. This final effluent is then chlorinated prior to discharge into the river.

The settled sludges from both the primary and secondary

treatment systems are collected and thickened in the dissolved air flotation thickeners. This is done in order to reduce the volume. The solids are then anaerobically (without air) treated to stabilize the solids and to further reduce the volume.

The solids are then dewatered to approximately 20% solids and disposed of at a landfill.

Water Treatment System

The Authority supplies water to about 115,000 residents in Levittown, Tullytown, and portions of Bristol, Falls, and Middletown Townships.

The water treatment facilities are located on the Delaware river in Tullytown. These include a 16 million-gallon-a-day river treatment plant and a 4 million-gallon-a-day well field.

The water passes through several treatment processes including disinfection, coagulation, and filtration. Fluoride has been added since 1958 to help prevent dental cavities.

The finished water is pumped under high pressure directly into the distribution piping. Every street has its own water main ranging in size from six to twenty-four inches. Water enters each house through individual copper service lines. Every service line has a water meter to measure the water consumed for billing purposes.

Attached to the water mains are 1,300 hydrants for fire fighting.

There are five water storage tanks providing extra water whenever needed. Water used from the tanks is replaced during the night when the demand is low.

Infiltration and Inflow—Everyone's Problem

Infiltration and inflow (I/I) is an ongoing problem faced not by only your Lower Bucks County Joint Municipal Authority, but Municipal Authorities across the country.

By definition (I/I) is the entrance of ground or surface water into the sewer system from undesirable sources. Usually this occurs through leaks in manhole covers, cracks in underground pipes, and through deteriorated joint connections. Another contributing cause is illegal connections or roof leaders and sump pumps to the system by home and business owners.

Whatever the cause, I/I adds extra flow to the collection and treatment systems and may result in an overload to both. While detecting and eliminating this water from all possible sources is expensive, the cost of overloading the system by pumping and treating I/I is even greater.

To combat the problem, your Authority conducted an extensive study in 1984 aimed at identifying the major areas of infiltration and inflow. Since then, using available funds, we have been taking steps to correct problem areas.

Although much work has been done relating to both Infiltration and Inflow, the major emphasis at this time has been on

inflow. Inflow is considered to be that portion of the excess water relating to specific rainfalls. The inflow work relates primarily to manholes and illegal roof leader connections.

Along with the rehabilitation work, underground television inspection of portions of the sewer system was conducted. This is both a high tech yet simple procedure.

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Inflow from an illegal connection.

Capital Improvement Update

Several years ago your Authority floated a bond to fund capital improvements. This was done not to increase the capacity of our plants, but to guarantee to our customers that both water and wastewater were receiving adequate treatment.

Since that time we have been involved in an ongoing capital improvement emphasis throughout our service area. The following is a list of projects funded under the bond issue and with other funds on hand.

Completed Construction Projects Water Plant

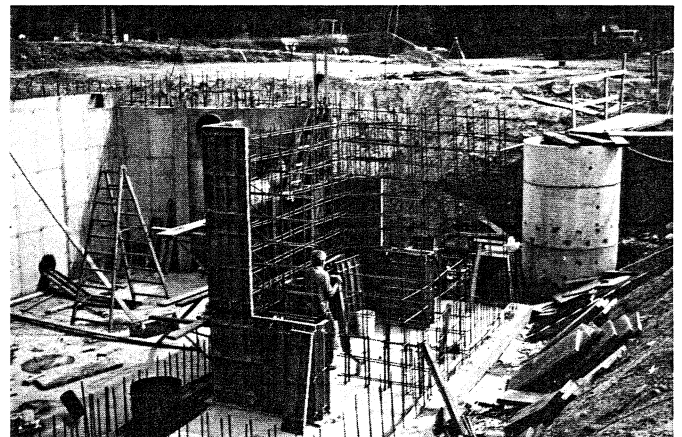
1. The construction of a sludge thickening and dewatering system has been completed. This system removes approximately 200,000 gallons per day of water sludge from the waste stream before it enters the sewage plant. This results in significant cost savings to the Authority and thus to our customers.
2. A new high service pump has been added to the water treatment plant. This provides both a back-up system as well as additional water to our customers when needed.

Waste Water Treatment Plant

1. New sludge belt presses have been installed at the plant. These are used in the final step to process solids removed from the waste water.
2. Rehabilitation and expansion of the air flotation building has been completed. This process thickens solids which are a bi-product of the primary & secondary treatment system.
3. All settling tanks have been completely rehabilitated. It is in these tanks that suspended and biological solids settle and are collected for processing.
4. The air supply & distribution system for the aeration tanks have been completely rehabilitated. This is the processing stage where biological treatment occurs. In addition the system has been redesigned for greater efficiency.
5. Rehabilitation of anaerobic sludge digesters is now complete. This is where solids generated by the treatment plant are processed to stabilize and to further reduce the solids in the sludge.
6. Both the main pumping station and the Twin Oaks pumping station have been completely rehabilitated including the replacement of all mechanical equipment and pumps.

Present Construction Projects

1. Flow Equalization System—This system will take the total flow entering the sewage plant and equalize the variations in flow to provide better control of waste water treatment. The project began in February 1988 and is expected to be completed by year's end.
2. Manhole Rehabilitation—We are currently waterproofing all manholes to guard against I/I (See article in this issue).



Construction of Flow Equalization System.

Future Construction Plans (expected to begin within the year pending State approval)

1. Chemical Handling System for Water Treatment Plant—This will allow the use of bulk quantities of chemicals in the treatment process resulting in both cost and labor savings.
2. Grit and Screening Chamber for Waste Water Treatment Plant—This chamber will remove rags and grit from the waste water prior to its entering the treatment system.
3. Secondary Settling Tank—The addition of this secondary tank will provide additional settling time resulting in more efficient treatment of waste water.
4. Sludge Recycling System—This system will give us better monitoring and control over the biological treatment system used in our waste water process.

This is a capsule view of the many projects undertaken or planned by your municipal authority. We will be explaining specific projects in greater detail in future issues of this newsletter.

(I/I continued from page 2)

Using the services of an outside contractor, video TV cameras are fed into the pipes. This allows crews to visually inspect the internal pipe structure for leaks, cracks and faulty connections. The cameras are followed by a piece of equipment which puts out a gel-like substance which can seal and repair many of the points of leakage on the spot.

Of course, some cracks and joints cannot be repaired in this way. These require excavation to expose the pipe and manually repair the source of I/I. Leaks through manhole covers, which is the major source of inflow must also be repaired manually. Your Authority is constantly inspecting and repairing all sources of I/I to help prevent overload on our system.

We are taking every measure possible to control, decrease and

eliminate infiltration and inflow. Recently we've established an eight person crew which is responsible for all maintenance in the field including repairs to the pipelines and manholes. We have recently purchased our own sewer line television inspection equipment to cut down on the dollars spent for contracted services. However, there is only so much we can do alone.

We need your help! Please be aware of the impact of I/I on the integrity of our entire system. Remember: the connection of roof drains and sump pumps to the system is not only a major cause of I/I and greatly increases the chances of overload, but is also illegal. If you have made such a connection, please disconnect it at once. If you know someone who has such an illegal hook-up please speak to him/her or contact your Authority.

DID YOU KNOW...WATER TRIVIA FACTS

1. What is the total amount of water used to manufacture a new car including tires?

Answer: 39,090 gallons per car.

2. How many miles of pipeline and aqueducts are in the U.S. and Canada?

Answer: Approximately one million miles or enough to circle the earth 40 times.

3. How much water is used in taking an average shower?

Answer: 25-50 gallons.

4. How much water does the average residence use during one year?

Answer: 107,000 gallons average.

5. What does a person pay for drinking water on a daily basis?

Answer: The national average is 27 cents.

This newsletter is produced as a public service to the customers of the Lower Bucks County Joint Municipal Authority. Our goal is to keep you informed and up-to-date on all your Authority is doing to preserve and protect your water supply. We welcome your comments and questions. If there are topics you'd like to see covered in future issues, please responds in writing to: Mr Joseph Pantano, Managing Engineer, Lower Bucks County Joint Municipal Authority, 7811 New Falls Road, Levittown, PA 19055.

ATTENTION ILLEGAL DISCHARGERS!

The L.B.C.J.M.A. wastewater treatment system is designed and operated to treat domestic wastewater. Dumping of chemicals and any other waste such as oil is strictly prohibited and could cause serious problems with the treatment system.

Remember, the treatment system at the wastewater treatment plant is a *living system*—what is dumped in the sewer can kill the organisms used in the treatment process!

In addition to illegal discharges, illegal dumping is occurring

throughout the collection system. We are making a special request to our customers to notify this office if you are aware of or see any illegal dumping such as septic waste haulers emptying tankers anywhere in the collection system. Our number is **945-7400 ; after 5:00: 946-0731.**

Septic waste causes specific problems at the treatment plant which result in extra treatment costs and the possibility of non-compliance with state and federal regulations.

Lower Bucks County Joint Municipal Authority
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