AGENDA
COMMITTEE OF THE WHOLE
November 8, 2022
2200 Harnish Drive
Village Board Room
7:30 P.M.

Trustee Smith - Chairperson
Trustee Brehmer
Trustee Auger
Trustee Spella
Trustee Glogowski
Trustee Dianis
President Sosine

- AGENDA -

1. **Roll Call – Establish Quorum**
2. **Public Comment – Audience Participation**
   (*Persons wishing to address the Committee must register with the Chair prior to roll call.*)
3. **Presentation – Water Audit and Water Loss Assessment Program**
4. **Community Development**
5. **General Administration**
   A. Consider a Resolutions Accepting Popular Annual Financial Report for Fiscal Year End April 30, 2022
   B. Consider a Resolution Accepting the Algonquin Police Pension Municipal Compliance Report for Fiscal Year End April 30, 2022
   C. Consider a Resolution Accepting the Actuarial Funding Report for the Algonquin Police Pension Fund for the Contribution Year May 1, 2022 to April 30, 2023
   D. Consider a Resolution for the 2022 Property Tax Levy
   E. Consider an Agreement with Hitchcock Design Group for the Towne Park Design and Engineering Services
6. **Public Works & Safety**
   A. Consider an Agreement with Christopher Burke Engineering for the Eastgate Roadway and Pedestrian Improvements
7. **Executive Session** (If needed)
8. **Other Business**
9. **Adjournment**

VILLAGE OF ALGONQUIN

PUBLIC WORKS DEPARTMENT

– M E M O R A N D U M –

DATE: *11/2/2022*

TO: Robert Mitchard: Public Works Director

FROM: *Jason Meyer: Chief Water Operator*

SUBJECT: Water Audit and Water Loss Assessment Program

Mr. Mitchard,

This memo is to advise you of our findings for the completed internal water loss audit FY 20-21. The Utilities Division contracted M.E. Simpson Co, Inc. to complete the internal audit of the Villages water treatment facilities, and distribution system. During the audit process, village staff compiled all the necessary data for M.E. Simpson to complete the audit. The final outcome was to find the deficiencies in the water system which have been located and corrected. Aaron Horbovetz with the M.E Simpson company will explain the remainder of the water audit, and provide further recommendations to the Village.

EXECUTIVE SUMMARY: WATER LOSS AUDIT ASSESSMENT 2019-20

An in-depth examination of the Village of Algonquin's Water System was conducted by M.E. Simpson Company, Inc. at the request of the water utility. Known as a "Water Loss Audit", the purpose of this study was to assess the current state of water losses within Algonquin's water system. The desired end result was to uncover potential areas of water loss that can be mitigated in the short term but also provide some long-range planning goals to best guide the utility and its resources.

THE WATER LOSS AUDIT

The American Water Works Association, via thousands of volunteer water professionals from around the world, have created a standardized format for conducting these water audits. The detailed methodology can be found in a 400+ page published guidance document known as the M36.

THE PROCESS

For the time-period from May 1st, 2019 to April 30th, 2020, the following information was gathered and assessed in great detail, following the M36 format:

- The total amount of Water supplied into the distribution system
- All sources of Authorized Water Consumption
- Billing and metering inaccuracies (residential, commercial, industrial)
- Potential sources of Unauthorized Consumption or theft
- Pressure Management
- System Data including:
    - Length of Mains
    - Number of Active and Inactive Service Connections
    - Average Length of Customer Service Line
    - Average Operating Pressure

M36 Water Loss Audits are required by law in some states and certain regions, but the Village of Algonquin is under no such obligation, and the audit was done voluntarily at the utilities request, to better help them understand their water system.

END RESULT

The Village of Algonquin's Water Utility staff spent a considerable amount of time working with M.E. Simpsons Water Audit Team to compile and assess all the water system data, and a comprehensive report was generated, detailing all of the findings, along with recommendations for improvements to better understand and mitigate water loss within Algonquins water distribution system.

December 22, 2021

Jason Schutz
Utilities Superintendent
Village of Algonquin
110 Meyer Dr
Algonquin, IL 60102

RE: REPORT FOR WATER AUDIT AND WATER LOSS ASSESSMENT PROGRAM

Dear Mr. Schutz,

M.E. Simpson Co., Inc. is pleased to present our report on the Water Audit and Water Loss Assessment Program for the Village of Algonquin.

M.E. Simpson Co., Inc. is a Professional Services Firm dedicated to developing and providing programs and services designed to maximize peak performance for our clients' water distribution systems. Many of these programs are universally recognized as a part of "Best Management Practices" (BMPs) for utilities. We pride ourselves on delivering solid solutions using the highest quality technical and professional services by way of state-of-the-art technology and a skilled and well-trained staff of professionals.

Our services were developed and refined to provide utilities with programs that can be customized to meet their needs. From complete "Turn-Key" services to assisting with the development of "in-house" programs for utilities, M.E. Simpson Co., Inc. serves our clients with this ultimate goal: to deliver to the public the implicit faith that **"the water is always safe to drink"**.

M.E. Simpson Co., Inc. truly appreciates the time and consideration afforded to us regarding our Water Audit Services Program. We have submitted this report with our approach to identify and quantify sources of apparent and real water losses in the water system.

Please let us know if you have any questions regarding the enclosed report. We look forward to working with you again.

Sincerely,

Carlos Covarrubias
Regional Manager

AUDIT PREPARATION TEAM

Aaron M. Horbovetz, PE, PMP
Engineering Services Manager

Ashley L. Ditchcreek, MBA
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Introduction

A Water Loss Control Audit Program was utilized to help the Village of Algonquin Water Department locate, understand and control the water losses in the distribution system. This was accomplished using the standard AWWA Water Audit Spreadsheet (Version 6.0) and Water Balance through distinct tasks as outlined. The auditing process uncovered probable areas of water loss and allowed for a review of Water Department practices for water loss accounting. It is especially important to be able to locate areas of water loss within the system including potential leakage, inaccurate metering, as well as potential issues with the accounting and billing departments.

Water Loss Control Survey / Audit Approach

The Water Loss Control Survey / Audit program is a multi-phase plan encompassing a selected group of services designed to assist the Utility in improving water accountability and optimizing the distribution system's operational performance. The program was structured around the Utility's specific needs so that the results can help optimize a structured water loss reduction program.

The AWWA Water Audit Format was used to track the finished water volumes from purchased/produced water sources through the uses of water metered, unmetered and potential leakage within the distribution system. This component analysis allowed for the various segments of water use to be examined based on the available data supplied by the Utility. The desired end results were to uncover potential areas of water loss that can be mitigated in the short term but also provide some long-range planning goals to be set for sustainability. In simple terms, water loss occurs in two ways: It is either not measured correctly via the metering and billing process (hence the water is not really lost, it simply was not correctly accounted for) or it leaked out of the system somewhere between the source of entry into the distribution system to the customer's meter or service.

As shown in the IWA/AWWA Water Balance below, all water entering a water distribution system can be accounted for as it flows through the distribution system to customers. The most meaningful information developed from a water audit is quantity (gallons) of water loss components (apparent and real) shown in the Water Balance and the monetary value of these components. Consequently, water systems can assess the effectiveness of existing water loss management efforts, evaluate the potential for improved performance and prioritize activities specifically designed to address deficiencies.

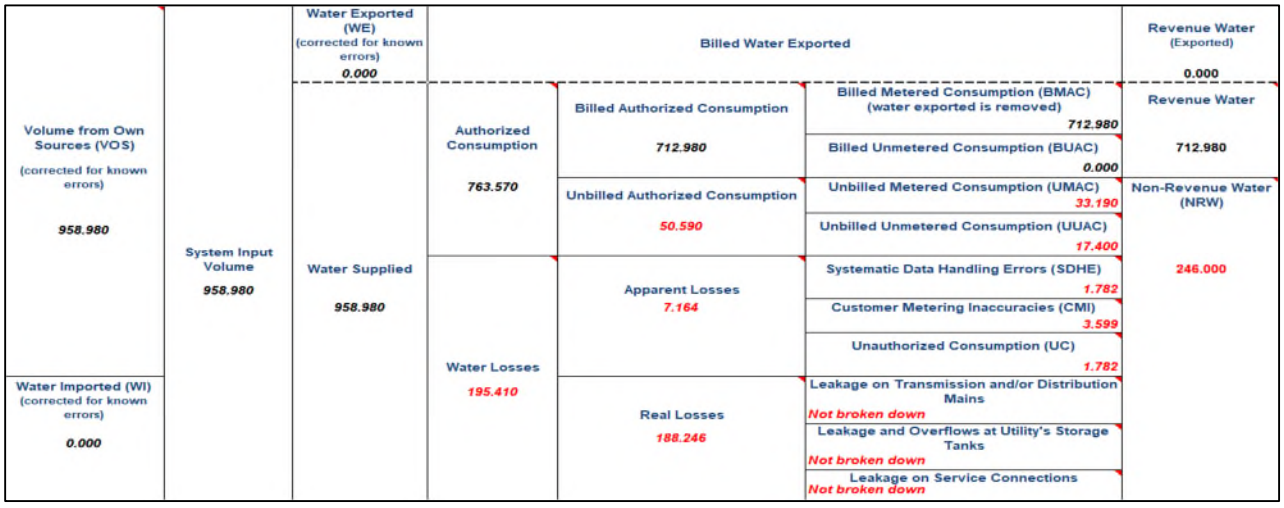


Figure 1: Water Balance

Water Supplied

The first phase on the Water Loss Control Audit was to evaluate water production through the master water meters to ensure the input into the system has been accurately measured and documented. All water audits must start with the verification of the distribution system inputs to ensure reliable water production volumes.

Volume From Own Sources (VOS)

The Village of Algonquin produced their own water via 8 wells located throughout the distribution system, during the audit period, May 1st, 2020 through April 30th, 2021. Each well is metered and recorded the volume of water being sent into 3 separate Water Treatment Plants. Effluent production meters at each plant record the actual volume of water entering the distribution system, and are read daily at 12:00 AM (midnight) so there is no lag-time adjustment required. Water used for treatment plant processes was accounted for and documented as Unbilled Metered usage. The totalized water volume, as measured by the WTP effluent meters, was **954.540 MG**. This is the volume measured by the meters, but does not represent the total volume of water supplied into the system. *Adjustments for meter accuracy and tank levels must also be accounted for.*

Master Meter Accuracy for Volume from Own Sources (VOS)

An important aspect of accounting for the volume of water introduced into the distribution system includes assessing whether or not the production meters are accurate. This is especially critical when attempting to calculate losses within the water system. Inaccuracies in the production metering affect the entire outcome of the audit. That inaccuracy can be "Telescoped" through the entire audit. In simple terms, *how you finish the audit is dependent on how you start*.

It is very rare that any production or wholesale meter is 100% accurate. In the Audit Spreadsheet, there is an adjustment for metering accuracy that is applied to the total finished water volume produced. There are "acceptable" limits to the accuracy level of water meters (such as 98.5% - 101.5%). AWWA has a table of suggested accuracy limits in the M6 manual for water meters for specific types and sizes of water meters. This accuracy limit is intended for customer meters (residential and commercial accounts); however, it does not always apply to production and wholesale flow meters. Production flow meters have no real defined rules for master meter accuracy limits. It is in the best interest of the Utility to make sure that the production flow meters are accurate for several reasons. The primary reason is that the entire water audit is based on the assumption that the water supplied amounts are accurate and can be relied on. Another reason includes proper chemical feed rates for water treatment.

As part of the audit, M.E. Simpson's audit staff reviewed pertinent flow meter testing results. These tests were conducted by M.E. Simpson personnel in April of 2021. A total of 8 well meters were tested, but the well meters and the accuracy results were not used in the audit, as they do not directly measure the volume of water being supplied into the distribution system.

At WTP 1 there are 2 Effluent Zone meters, and both WTP's 2 & 3 have 1 effluent meter each, which directly measure the volume of water supplied into the system. These plant effluent meters were tested, and the results were used as part of the calculation for total water supplied. The volume from each individual meter was adjusted based on its individual test accuracy and then summed to determine the total true volume. The total true volume compared to the measured metered volume showed an **under-registration** of **4.38 MG**. The meters were tested and the results were reviewed using M36 methodology by M.E. Simpson Co., Inc.

The Village of Algonquin has 4 storage tanks that are monitored and the levels recorded daily through their SCADA system. The difference in tank levels from the beginning to the end of the audit period was **0.060 MG.**

The sum of true volume from the production meters and tank level difference equals the total master meter error adjustment, **4.44 MG**. Figure 2 shows that the total volume of water produced is less than the actual amount of water that introduced into the distribution system.

Water Imported (WI)

The Village of Algonquin does not import water or have any emergency connections.

Water Exported (WE)

The Village of Algonquin did not export water during the audit period.

Water Supplied Summary

Below is a snapshot of the Water Supplied from the Audit showing the data inputs discussed and adjustments made for the meter inaccuracies.

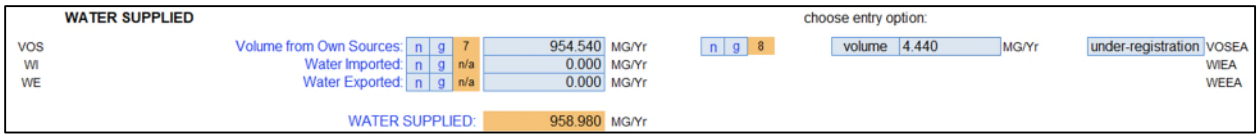


Figure 2: Water Supplied and Error Adjustments

The total adjusted value for Water Supplied into the Algonquin water distribution system was **958.980 MG**. In simple terms, it is typical for a Utility to look at water loss by a percentage of loss. *Water pumped versus water sold, equals water loss*.

Water Supplied Recommendations

The first step to quantify and recover water loss is to make sure the total system volumetric input is accurately measured. The production meters for Algonquin are very important for the Utility and water measured at these locations needs to be measured correctly. This area of water supplied has the *largest overall impact* on the results of the audit. The Utility should continuously review production water volumes on a monthly basis.

While Algonquin is not under any state mandate for production meter testing, the production meter testing and calibrations help ensure accurate accounting for the most important area of the audit, Water Supplied. Production water meters should be tested annually and potentially semi-annually to ensure the volume of water is accurately measured and the Utility is receiving the appropriate amount of revenue for the volumes being produced. We recommend that the production meters continue to be tested on an annual basis.

Another way to ensure the volume being registered through the meter is accurate is to implement a daily review of the meter registrations by Utility personnel. We recommend reviewing and updating any written policies regarding the meter testing and data management.

Authorized Consumption

There are four (4) categories of authorized use. The following is a breakdown of how water is consumed within a Utility using the AWWA Water Audit format:

- Billed Metered
- Billed Unmetered
- Unbilled Metered
- Unbilled Unmetered

Billed Metered (BMAC)

Billed Metered Authorized Consumption is defined as the water volumes measured during consumption and billed according to an approved rate structure.

The total volume for Billed Metered was **712.980 MG**. This is the totalized volume of water that was billed by Algonquin during the audit period. This data was extracted from the Village's billing and AMI software. The meters are read daily and the billing cycle runs from the first to the last of each month. The Village reviews this data on a monthly basis and flags accounts with anomalous consumption for further review. Water sold to contractors through hydrant meters is included in the Billed Metered, **1.24 MG**.

"Lag time" is the period between the time the production meters are read and when the customer billing meters are read. Lag time calculations were not necessary, as the metering data represent the entire audit period.

Billed Unmetered (BUAC)

The Village does not have any Billed Unmetered accounts.

Unbilled Metered (UMAC)

Unbilled Metered Authorized Consumption consists of water volumes that are metered but not billed for. Examples of some accounts that could be included in this category would be: parks, municipal pools, utility buildings, fire departments, etc. The total volume for Unbilled Metered was **33.19 MG**. The Village of Algonquin uses backwash water for plant use. The total amount of finished water used as backwash during the audit period was **5.769 MG**. The Village's municipal accounts are metered, but not billed. The Village account usage for May 2020 through April 2021 was reported as **54.842 MG**.

Unbilled Unmetered (UUAC)

Unbilled Unmetered Authorized Consumption consists of water volumes that are not registered through a meter and not billed for by the Utility. Some scenarios would be: water main flushing, hydrant flushing, firefighting, etc. Water utilities can use the "default" value of 1.25% of the Water Supplied that is allowed for this data input in the audit. The default value is useful because tracking unbilled unmetered water usage can be difficult to confirm unless there is a clear record of tracking by the Utility. The AWWA Water Audit

Committee that created the audit spreadsheet has set this particular default value based on input from data collected across the U.S. from several water utilities over several years.

Hydrant flushing and Fire flow testing is conducted annually, and the volume of water used for this purpose during the audit period was **17.4 MG**.

The default value of 1.25% was not used for the 2020-2021 Algonquin water audit.

Summary of Authorized Consumption

The total Authorized Consumption for the audit period is **763.570 MG**.

Below is the Authorized Consumption section of the audit spreadsheet showing the categories where water was consumed.

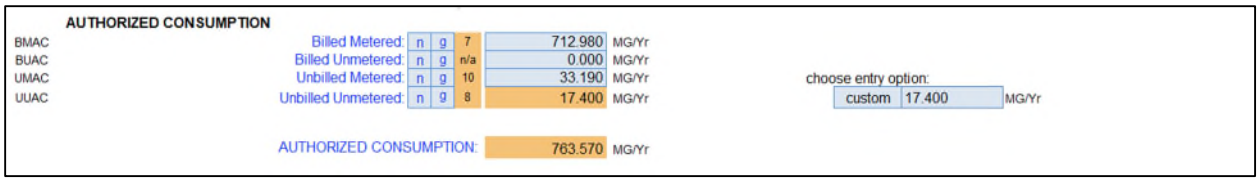


Figure 3: Authorized Consumption

Authorized Consumption Recommendations

We recommend auditing the billing records annually by Utility personnel as well as once every five (5) years by a third party. This will help to ensure that the appropriate usage is being properly billed for and to help identify meter registration issues. Reviewing and/or developing written policies regarding the usage of contractor fill stations and hydrant meters is also recommended.

The Village of Algonquin should continue to work with the Fire Department to document volumes used for fire-fighting and training. The hydrant flushing records should include an estimate of the time the hydrant was flushed and the appearance of the water being flushed as a way to more accurately account for Unbilled Unmetered water use. Hydrant diffusers with built-in flow gauges should be used and the flow recorded. When the Utility staff or Fire Department flushes, it is easy to give the field crews computer tablets to record the location of the flush, the amount of time for the flush, hydrant conditions and more. The calculations can be automatically made for flush amounts that can then be recorded. We recommend meters being installed at the fire academy to account for the volumes used.

Water Losses

By taking the Water Supplied and subtracting the Authorized Consumption, the total Water Loss can be determined. The Audit Spreadsheet entry for total Water Loss calculation is shown below.

Figure 4: Water Losses

These losses can now be further defined as "*Apparent Losses*" (accounting/billing errors, meter inaccuracy, etc.) and "*Real Losses*" (water lost to leakage on service lines or water mains).

Apparent Losses

Apparent Losses are comprised of three areas:

- Unauthorized Consumption
- Customer Metering Inaccuracies
- Systematic Data Handling Errors

Apparent Losses were determined by reviewing the data provided by the Village on authorized uses, examining possible metering inaccuracies, and identifying potential data handling errors.

Unauthorized Consumption

Unauthorized Consumption is difficult to properly quantify and requires some estimates to be made. However, reviewing customer service requests and reporting of open hydrants can usually help validate this information.

The International Utility Revenue Protection Agency estimates that most utilities lose 1-2% of their revenue due to theft of water (per Neptune Meter Co.). The default value of 0.25% was used for this audit. By using the default value, the Unauthorized Consumption during the audit period is estimated at **1.782 MG**. This default value in the spreadsheet is useful when an actual estimate cannot be determined. The default value was based on AWWA Water Loss Committee studies performed on theft and other unauthorized uses when the spreadsheet was initially being developed in 2001-2006. Typically, the theft of water from the water system is not a huge loss (in terms of both actual volumes or revenue) unless an illegal tap is located.

Customer Metering Inaccuracies

Customer Metering Inaccuracies are a source of Apparent Loss. The water "lost" due to Apparent Loss is not really lost, just the ability to measure consumption properly has been compromised by inaccurate metering. Meters are generally not 100% accurate throughout the water system. Given the acceptable ranges of meter accuracy for 5/8" Displacement meters are 95.0-101.0% for low flows (1/4 gpm), 98.5-101.5% for intermediate flows (2 gpm) and 98.5-101.5% for high flows (15 gpm), there is a strong likelihood of some water loss occurring as a result of meter inaccuracy. Other sizes will exhibit similar issues.

There were no tests conducted on small or large meters during the audit period. Currently, the Village conducts reactive testing when triggered by a customer complaint or the account is flagged by the billing system due to discrepancies.

The audit team reviewed the Water Research Foundation report "Accuracy of In-Service Water Meters at Low and High Rates" conduction by the Utah State University Water Research Laboratory that studied the decline of meter accuracy based on several factors. This research was completed on water meters 5/8" to 2" in size and included the brand and type of meters in the Utility's system. The audit team considered the findings in this Utah State report to estimate the potential water lost to inaccuracy based on the meter sizes and age. This metering inaccuracy was applied to the overall meter population.

For metering inaccuracy, the auditor has the option to input a percentage of overall meter under-registration for the entire meter population or input a calculated volume figure. The results of our review and analysis of the percentage accuracy in the tested, repaired and replaced meters based on the average accuracy were reviewed and compared to other audits conducted in other utilities by the audit team showed similar traits in overall meter degradation by age.

Apparent Loss due to Meter Under-Registration

Based on the previously described methodology, a **99.52% accuracy level (0.48% under-registration)** was used in this audit. Using the **under-registration** of **0.48%**, the estimated Customer Metering Inaccuracy for the audit period is **3.599 MG**.

Systematic Data Handling Errors

The Utility currently uses an AMI system with meters read by the Utility and compiled for the billing office. Meter reading and usage reports are run and analyzed by utility personnel to catch any anomalies that may be occurring and addressed when located.

For the Systematic Data Handling Errors section, the default value was assigned as most billing and accounting systems that employ AMR/AMI systems cannot always detect and track errors quickly and get them fixed before the errors are transferred into the customer's bills. Usually AMR/AMI systems are trouble free to a certain degree, but there has not been any major work done by the AWWA Water Loss Control Committee to define how the Systematic Data Handling Errors can be tracked. The default value is based on the experiences of the AWWA Water Loss Software Committee, where a **0.25% error** may occur in the reading/billing cycles. The Village of Algonquin may certainly be more/less than that but this is an area that would be difficult to document.

Apparent Losses Summary

The total for the Apparent Losses (shown below), **7.164 MG**, can be attributed to Unauthorized Consumption, Customer Metering Inaccuracies and Systematic Data Handling Errors using the default values and metering inaccuracy levels.

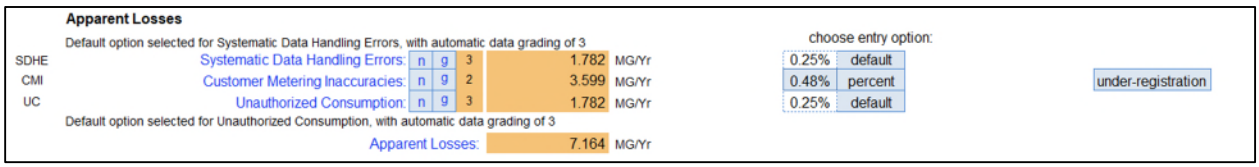


Figure 5: Apparent Losses

Apparent Losses Recommendations

A look at the meter population statistics from the data submitted for the last few years revealed that there are possible potential opportunities for water loss recovery as well as revenue recovery. The residential meters may exhibit *some* degradation based on age and throughput wear. While the fiscal pay off may not be clearly evident, the use of statistically significant random sample testing can provide valuable information regarding meter accuracy trending.

The 12-to-15-year mark is where the audit team typically sees meter inaccuracies increase in the residential sector for most water utilities depending on water quality and types of meters. The large commercial meters, if properly maintained, can usually last 20 years. Testing large commercial water meters on an annual basis will help to keep the meters functioning properly and maintain revenue.

We recommend implementing a meter testing program by testing a statistically significant sample of meters on an annual basis.

- A portion of meter revenue needs to be set aside for an annual meter testing budget, not just meter replacements
- Meters need to be tested based on levels of revenue being generated. Experience has shown that the following guidelines seem to work but the Utility may have other guidelines that are followed:
    - Meters that generate $14,000.00/year or more in revenue test every year
    - Meters that generate $7,000.00/year or more in revenue test every 2 years
    - Meters that generate $3,000.00/year or more in revenue test every 3 years
    - Meters that generate $1,000.00/year or more in revenue test every 4 years

  These figures will allow a meter testing program to pay for itself and be cost effective for the Utility.

- Meter testing needs to be conducted following a well-established methodology. This means following AWWA guidelines on flow rates for testing and conducting evaluations for each meter tested for sizing and type. The testing should consider the "on-site" conditions where the meters are located as it is usually not feasible to remove meters from settings to test meters on a test bench in a shop. Also, tenant changes in a facility occur from time to time. As a result, the water use pattern may change as well. The meters should be evaluated accordingly.

Apparent Losses Recommendations

- Displacement meter testing should be looked at with consideration given to the low-flow threshold. This was discussed earlier in the meter accuracy area of the audit with references to Utah State's study of displacement meters. Low flow accuracy limits start at 95% accuracy, so 5% of the meter's use at low flow can be compromised but still meet new meter accuracy limits for low flow. By claiming a higher level or meter accuracy for the overall meter population during an audit, the utility shifts some water loss to the Real Loss side of the equation. In some cases, the result is the Utility could be looking for more leakage that does not exist. The audit team did not see this in Algonquin, but also had to assume the current level of performance for the smaller meters in the Utility. The recommendation is to have random sampling tests conducted on the smaller meters as a regular meter maintenance practice.

Proper Meter Sizing

The proper sizing of the meters is an area where potential revenue recovery is possible over the long-term for commercial accounts. A meter may be too large or small when a change of building occupancy occurs, which can lead to missed registration at lower flow rates. When meters are tested in place for the larger settings, proper sizing should always be a part of the visual inspection program each time the meter is tested. Generally, the low flow element should see approximately 20-30% of the total flow through a compound meter. It must be cautioned that reducing the size of a meter to regain some lost low flow accuracy must be balanced with peak demand requirements.

Meter Data Transfer Errors and Data Analysis Errors

Meter data transfer errors and data analysis errors do not appear to be a major issue. We encourage the Village of Algonquin to maintain their process of continually review meter billing records.

System Data Improvements

As improvements are made to the distribution system, those physical changes should be added to the GIS data. This would include such items as a correct count of actual service connections to the water system and removed or abandoned service lines. These connections should be organized as residential, commercial and fire service connections. The number of connections (active and inactive) in the audit software is used in the calculation of the UARL (unavoidable annual real loss).

Real Losses

The determination of Real Losses (losses attributed to leakage) was calculated using the Water Supplied, Consumption Data and estimated Apparent Losses within the Water Audit spreadsheet. The Real Loss amounts are obtained by subtracting the Apparent Losses from the Total Losses.

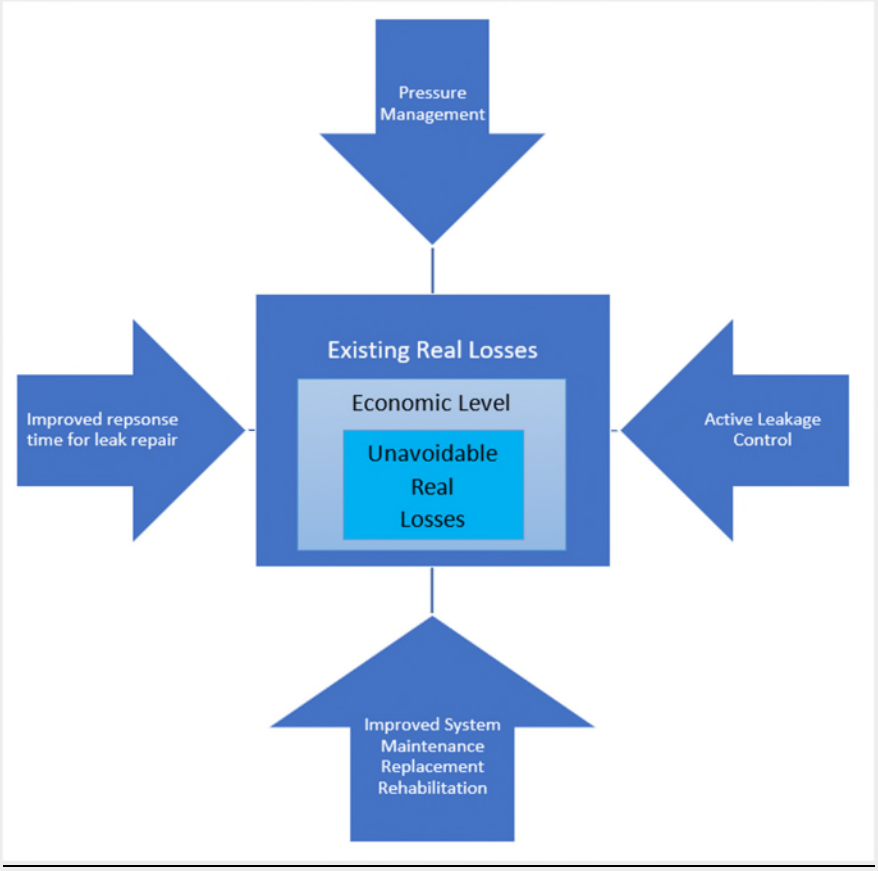
Real Losses			
	Real Losses:	188.246	MG/Yr
	WATER LOSSES:	195.410	MG/Yr

Figure 6: Real Losses

This Real Loss calculation of **188.246 MG** per year can be averaged to a daily loss of **515,742 gallons** per day or about **358 gallons** per minute over the entire distribution system.

Real Losses Recommendations

The Real Loss Controls can be applied using the AWWA "Four Pillar" approach as shown below.

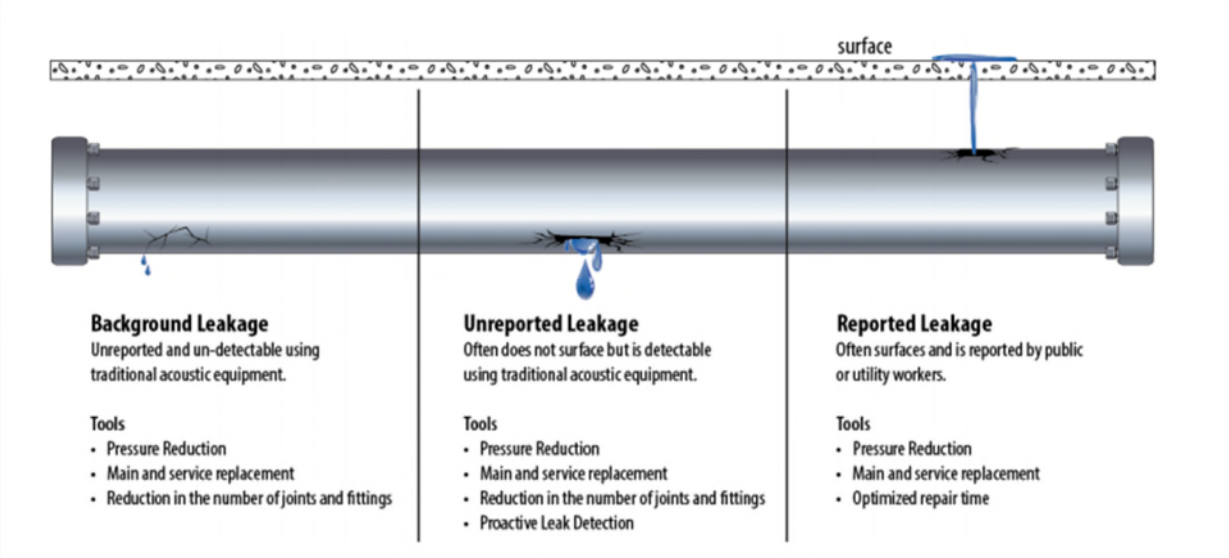


Real Losses Recommendations

Leak Detection

Active Leak Detection

It is suggested that the current leak detection efforts be continued for the entire system as a way to reduce leakage. The cost of the leakage as indicated by the Real Loss calculation in dollars lost, indicate this program would pay for itself each year until the ILI ratio is reduced. The Infrastructure Leakage Index (**ILI)** is **2.6,** meaning the current level of leakage is 2.6 times greater than the UARL (Unavoidable Losses) of **73.5 MG**. The UARL cannot be recovered, but remainder of the losses, totaling **114.7 MG** per year *could possibly be located* and recovered depending on the aggressiveness of the leak detection program and other measures.



Pressure Management

Proper pressure management can be used to control leakage. When pressure goes up, so does leakage (mostly UARL). The utility pressure is at an average of 62.7 PSI. Constant monitoring of pressure across the 5 pressure zones could help to uncover potential “hot spots” for leakage.

Non-Revenue Water

In a water system, the Utility generates revenue based on the volume of water it supplies to customers, but does not generate revenue on lost water (Apparent Losses and/or Real Losses). Additionally, the Unbilled Metered and Unbilled Unmetered water uses, although classified as an authorized use, do not generate revenue.

The total amount of Non-Revenue Water was calculated based on *Total Water Loss* added to the *Unbilled Metered* and *Unbilled Unmetered* water.

Figure 7: Non-Revenue Water

The graphs below demonstrate the spread of losses by volume and cost.

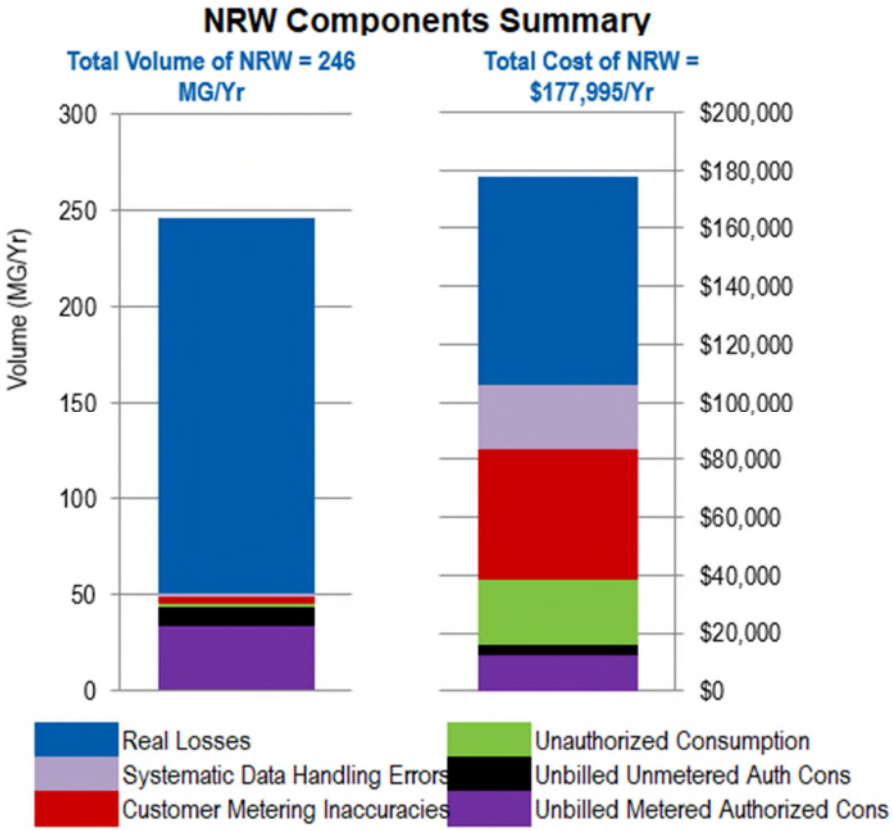


Figure 8: Non-Revenue Water - Volume vs Cost

System Data

In order to calculate the *Performance Indicators* for the water system, certain key information was obtained:

- Length of Mains
- Number of Active and Inactive Service Connections
- Average Length of Customer Service Line
- Average Operating Pressure

Length of Mains

The overall length of water main including hydrant laterals is approximately **137.7 miles**.

Number of Active and Inactive Service Connections

For the audit period, there were **11,171** active and inactive service connections in the Village of Algonquin. There are no separate fire connections in the Village's water system.

Average Length of Customer Service Line

This is the length from the curb shut off to the meter. The average service length of the customer service line is approximately **50 feet**. This was obtained from the Village's GIS data. The b-box locations were GPS'd and field verified.

Average Operating Pressure

The average operating pressure of the system is approximately **67.2 PSI**. The operating pressure was obtained using a combination of the SCADA system at the Pump Stations and pressure monitoring points around the Village.

SYSTEM DATA

Lm	Length of mains:	n g 10	137.7	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n g 8	11,171		(active *and* inactive)
	Service connection density:		81	conn./mile main	
	Are customer meters typically located at the curbstop/property line?		No		
Lp	Average length of (private) customer service line:	n g 7	50.0	ft	(average distance between property line and meter)
AOP	Average Operating Pressure:	n g 7	62.7	psi	

Figure 9: System Data

Cost Data

By computing the following costs, *Performance Indicators* can be derived showing the cost breakdown in specific areas of loss. The following are components of the Cost Data for the Village of Algonquin.

- Total Annual Cost of Operating Water System
- Customer Retail Unit Cost
- Variable Production Cost

Total Annual Cost of Operating Water System

The cost to operate the water system was obtained from the 2020-2021 data provided by the Village and confirmed with the Annual Report. The total cost to operate the Village's water system during the audit period was **$3,489,321**.

Customer Retail Unit Cost

The Customer Retail Unit Cost for the audit period was **$12.62 per 1,000 gallons**. This was calculated by using the total revenue from billed metered sales divided by the total billed metered volume.

NOTE: This value does not match the stated water rate, as it represents the total billed vs. the volume of water actually delivered. Some accounts are metered, but not billed.

Variable Production Cost

The Variable Production Cost for the audit period was **$366.73 per MG**. This cost includes electrical and chemical costs during the audit period.

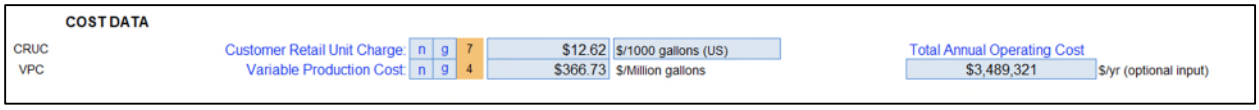


Figure 10: Cost Data

Performance Indicators

System Attributes

There are two (2) performance indicator categories where specific performance indicators are calculated representing the financial losses as well as a calculation of overall water loss and system performance.

The first category is comprised of the **Financial Indicators**. These consist of the revenue losses attributed to Apparent and Real Losses. This gives a breakdown of what metering issues may be costing the Utility as well as what the overall leakage is costing as well.

The figure below shows the Apparent Losses based on the *Customer Retail Unit Cost* and the Real Losses based on the *Variable Production Cost,* otherwise known as the cost to produce the next unit of water.

	Volume MG/Yr	Value $/Yr	Basis of Valuation
Apparent Losses	7.2	$88,446	CRUC
Real Losses	188.2	$69,036	VPC
Unbilled Authorized Cons	50.6	$18,553	VPC
Non-Revenue Water	246.0	$176,034	Blended

Figure 11: Financial Performance Indicators

This specific breakdown of costs will help with targeting specific remediation measures. A quick look indicates that Real Losses (leaks) are costing the Utility **$69,036 annually** and Apparent Losses (metering / accounting and billing issues) are costing the Utility **$88,446 annually**.

The second category is the **Operational Efficiency Indicators**. These indicators offer a perspective of looking at the losses in terms of metrics. This is a way of "normalizing" the losses so that these metrics are equal for each water system that conducts an audit. The Apparent Losses per service connection per day indicates what level of metering and billing recovery is possible over the spectrum of the water system. The same can be applied to Real Losses for leakage.

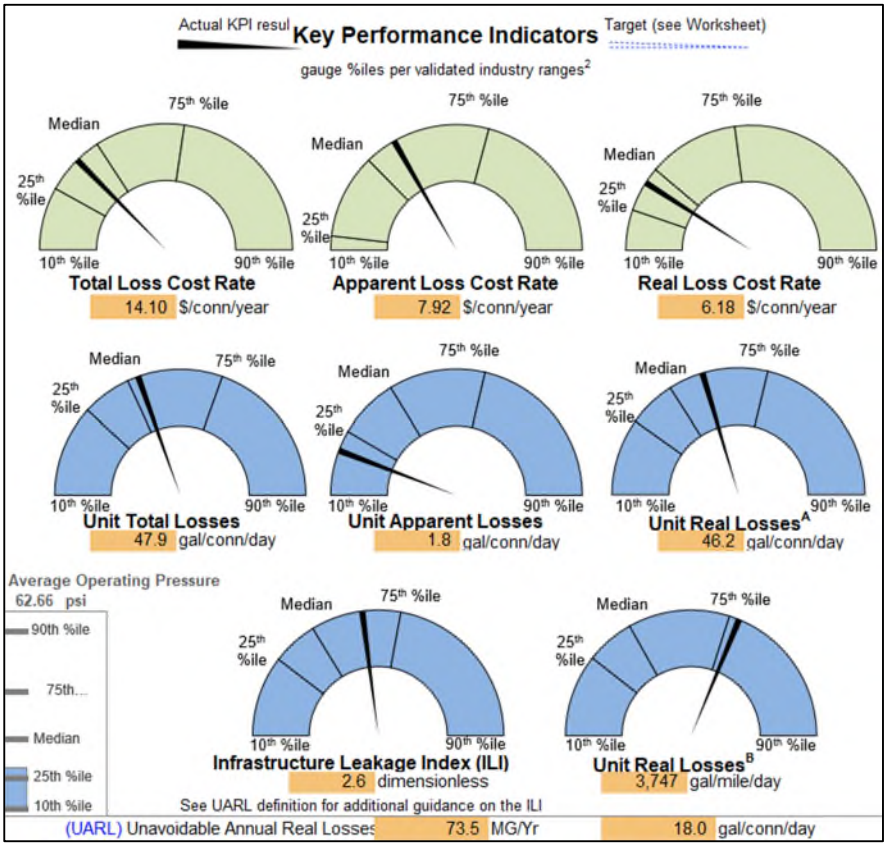


Figure 12. Key Performance Indicators

The Apparent and Real Loss units are based on the number of connections, not the number of meters.

A calculation is then made based on the physical parameters of the system for the **Unavoidable Leakage**. Unavoidable Leakage are the leaks that every water system will have despite all efforts to mitigate them. The **Unavoidable Annual Real Losses (UARL)** is a theoretical number defined as the technical low limit of leakage that could be achieved if all available leakage technology were to be applied to the distribution system to stop leakage, based on the baseline data of the system. The Village of Algonquin's Unavoidable Annual Real Losses during the audit period was **73.5 MG**.

Below is the calculation used to determine the UARL:

UARL (gallons/day) = [(5.41* Lm) + (0.15 * Nc) + (7.5 * Lc)] x P

Where:

Lm = Length of Mains (miles)

Nc = Number of Service Connections

Lc = Total Length of Customer Service Lines (miles or km) or

= Nc multiplied by the Average Distance of Customer Service Line, Lp (miles)

P = Average Operating Pressure (psi)

By taking the calculated Real Losses for the year, **Current Annual Real Losses (CARL)** and dividing that by the **Unavoidable Annual Real Losses (UARL)**, a ratio is calculated called the **Infrastructure Leakage Index (ILI)**. The **ILI** is a benchmarking indicator that represents the performance of the Utility for water loss, taking into account all the variables that need to be accounted for as stated above in the **UARL** calculation.

The **ILI** for the Village of Algonquin for the 2020-2021 audit period was **2.6**. The **ILI** can be used to help determine what Real Losses the Utility has that are truly recoverable if an aggressive leak detection and leak prevention program was applied to the system.

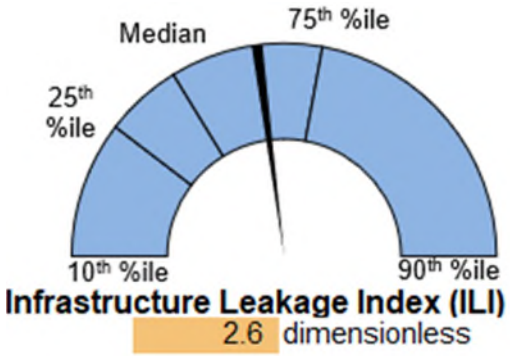


Figure 13: Infrastructure Leakage Index

General Guidelines for Setting a Target ILI (without doing a full economic analysis of leakage control options)			
Target ILI Range	**Financial Consideration**	**Operation Considerations**	**Water Resources Considerations**
1.0 – 3.0	Water resources are costly to develop or purchase; ability to increase revenues via water rates is greatly limited because of regulation or low-rate payer affordability.	Operating with system leakage above this level would require expansion of existing infrastructure and/or additional water resources to meet the demand.	Available resources are greatly limited and are very difficult and/or environmentally unsound to develop.
>3.0 – 5.0	Water resources can be developed or purchased at reasonable expense; periodic water rate increases can be feasibly imposed and are tolerated by the customer population.	Existing water supply infrastructure capability is sufficient to meet long-term demand as long as reasonable leakage management controls are in place.	Water resources are believed to be sufficient to meet long-term needs, but demand management interventions (leakage management, water conservation) are included in the long-term planning.
>5.0 – 8.0	Cost to purchase or obtain/treat water is low, as are rates charged to customers.	Superior reliability, capacity and integrity of the water supply infrastructure make it relatively immune to supply shortages.	Water resources are plentiful, reliable and easily extracted.
Greater than 8.0	Although operational and financial considerations may allow a long-term ILI greater than 8.0, such a level of leakage is not an effective utilization of water as a resource. Setting a target level greater than 8.0 – other than as an incremental goal to a smaller long-term target – is discouraged.		
Less than 1.0	If the calculated Infrastructure Leakage Index (ILI) value for your system is 1.0 or less, two possibilities exist. a) you are maintaining your leakage at low levels in a class with the top worldwide performers in leakage control. b) a portion of your data may be flawed, causing your losses to be greatly understated. This is likely if you calculate a low ILI value but do not employ extensive leakage control practices in your operations. In such cases it is beneficial to validate the data by performing field measurements to confirm the accuracy of production and customer meters, or to identify any other potential sources of error in the data.		

Table 1: General Guidelines for Setting a Target ILI

The Water Loss Control Planning Guideline looks at two (2) performance indicators: the Audit Validity Score (DVS) and the Target ILI Range that is economical for the Utility to realistically achieve. Based on the DVS score of **64**, Algonquin meets most if not all recommendations suggested. Based on an ILI of **2.6** and the Financial, Operational and Water Resources suggestion for this ILI, Algonquin meets all three suggestions.

Validation Score

This score is the total of the scores assigned to each component of the audit to describe the confidence and accuracy of the data input into the system. The assignment of validity scores was based on experiences with other water systems and knowledge of how the audit format works as well as using the guidelines set in the Grading Matrix in the software.

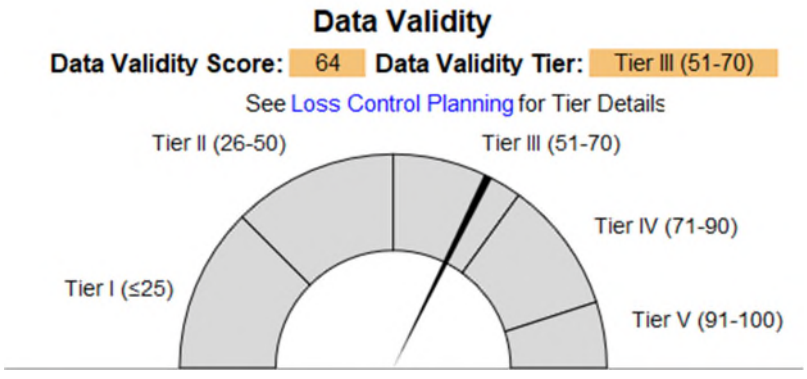


Figure 14: Data Validity Score

The Water Audit Data Validity Score is **64 out of 100**. From the AWWA Water Loss Control Committee individuals involved with the development of the Water Audit Software Spreadsheet, it is rare that a Validity Score of over 90 is ever achieved. In fact, one of the authors of the audit spreadsheet and of the M36 manual

on the Water Loss Control commented at an AWWA Water Loss Committee meeting that *if he were to see a validity score over 90, he would doubt the "validity" of it.*

The best way to obtain a better Validity Score is to incrementally improve the data set for each data entry into the audit spreadsheet. The Grading Matrix tab of the audit does just that. It is highlighted to show the current grading scale for the data input and *spells out what the Utility needs to do as a next step to get to the next highest grade level*.

The Water Audit Validity / Score range that Algonquin is in is reflected in some general recommendations made by the audit software.

Water Audit Report for:	Village of Algonquin
Audit Year:	2021 May 01 2020 - Apr 30 2021
Data Validity Tier:	Tier III (51-70)

Water Loss Control Planning Guide

	Water Audit Data Validity Tier (Score Range)				
Functional Focus Area	**Tier I (1-25)**	**Tier II (26-50)**	**Tier III (51-70)**	**Tier IV (71-90)**	**Tier V (91-100)**
Audit Data Collection	Launch auditing and loss control team; address supply metering deficiencies	Analyze business process for customer metering and billing functions and water supply operations; Identify data gaps; improve supply metering	Establish/revise policies and procedures for data collection	Refine data collection practices and establish as routine business process	Annual water audit is a reliable gauge of year-to-year water efficiency standing
Short-term loss control	Research information on leak detection programs; Begin flowcharting analysis of customer billing system	Conduct loss assessment investigations on a sample portion of the system: customer meter testing, leak survey, unauthorized consumption, etc	Establish ongoing mechanisms for customer meter accuracy testing, active leakage control and infrastructure monitoring	Refine, enhance or expand ongoing programs based upon economic justification	Stay abreast of improvements in metering, meter reading, billing, leakage management and infrastructure rehabilitation
Long-term loss control		Begin to assess long-term needs requiring large expenditure: customer meter replacement, water main replacement program, new customer billing system or AMR/AMI system	Begin to assemble economic business case for long-term needs based upon improved data becoming available through the water audit process	Conduct detailed planning, budgeting and launch of comprehensive improvements for metering, billing or infrastructure management	Continue incremental improvements in short-term and long-term loss control interventions
Target-setting			Establish long-term apparent and real loss reduction goals (+10 year horizon)	Establish mid-range (5 year horizon) apparent and real loss reduction goals	Evaluate and refine loss control goals on a yearly basis
Benchmarking			Preliminary Comparisons - can begin to rely upon with PIs for performance comparisons for real losses	Performance Benchmarking with PIs is meaningful in comparing real loss standing	Identify Best Practices/ Best in class; PIs are very reliable as real loss performance indicators for best in class service

For validity scores of 50 or below, the shaded blocks should not be focus areas until better data validity is achieved.

Figure 15: Water Loss Control Planning Guide

Conclusions

Based on the data provided, the results of the Water Loss Audit, and extensive discussions with utility personnel, it is clear that the Village of Algonquin does an excellent job in the vast majority of its record keeping and water loss control efforts. All pertinent audit data was considered in the preparation of the audit and this report. Since the audit is a "living document", as new information is obtained, the Utility stands to reap better results for future audit efforts.

	System				
			WTP 1	Zone 5	
	Zone 1	Zone 2	(Zone 1 + 2)	WTP 2	WTP 3
May 2020	25,864,000	11,965,000	37,829,000	20,999,000	22,781,000
June 2020	25,565,000	12,240,000	37,805,000	23,143,000	25,382,000
July 2020	25,461,000	12,405,000	37,866,000	25,469,000	28,602,000
August 2020	25,875,000	13,231,000	39,106,000	25,212,000	29,692,000
September 2020	22,846,000	11,653,000	34,499,000	21,300,000	23,198,000
October 2020	21,431,000	10,174,000	31,605,000	23,847,000	18,501,000
November 2020	21,471,000	9,941,000	31,412,000	17,805,000	18,934,000
Decemeber 2020	25,052,000	10,357,000	35,409,000	18,417,000	21,292,000
January 2021	29,419,000	10,257,000	39,676,000	22,772,000	13,511,000
February 2021	28,593,000	9,549,000	38,142,000	16,900,000	20,056,000
March 2021	25,766,000	9,865,000	35,631,000	17,592,000	22,249,000
April 2021	26,050,000	11,292,000	37,342,000	19,924,000	20,640,000
Totals (gal)	303,393,000	132,929,000	436,322,000	253,380,000	264,838,000
Backwash			2,340,000	3,429,000.0	

	Testing Results		Adj. Difference
Zone 1	99.2	305,839,717.74	-2,446,718
Zone 2	99.4	133731388.3	-802,388
WTP 2	100.4	252370517.9	1,009,482
WTP 3	99.2	266973790.3	-2,135,790

TOTAL VOS

	-4,375,414.32 Gal
Meter Accuracy Adjustment	-4.38 MG
Tank Level Adjustment	-0.06 MG
Total VOS Adjustment	**-4.44 MG**

		Water Treatment Plant 1			Wat
Total		**Well 5**	**Well 6**	**Well 7 / 11**	**Well 8**
81,609,000		5,588,000	7,993,000	22,868,000	8,745,000
86,330,000		4,904,000	8,054,000	23,452,000	11,078,000
91,937,000		5,925,000	7,792,000	22,805,000	12,727,000
94,010,000		5,410,000	8,157,000	24,175,000	10,191,000
78,997,000		5,001,000	7,221,000	21,084,000	10,603,000
73,953,000		4,837,000	6,699,000	18,520,000	12,039,000
68,151,000		5,295,000	6,531,000	18,057,000	9,014,000
75,118,000		5,891,000	7,264,000	20,553,000	9,169,000
75,959,000		2,486,000	2,583,000	9,401,000	12,411,000
75,098,000		6,374,000	7,104,000	23,827,000	9,611,000
75,472,000		6,139,000	7,587,000	22,282,000	17,641,000
77,906,000		21,586,000	7,462,000	23,094,000	19,984,000
954,540,000 Gal		79,436,000	84,447,000	250,118,000	143,213,000

new well meters put in at WTP 1

954.54 MG

Wells				
ter Treatment Plant 2		Water Treatment Plant 3		
Well 9	Well 10	Well 13	Well 15	
13,491,000	222	995,000	23,646,000	83,326,222
12,551,000	263	1,593,000	25,849,000	87,481,263
14,079,000	281	20,627,000	8,613,000	92,568,281
11,194,000	234	1,286,000	30,836,000	91,249,234
11,524,000	235	19,174,000	4,434,000	79,041,235
13,242,000	263	843,000	19,319,000	75,499,263
9,868,000	210	1,152,000	19,371,000	69,288,210
10,195,000	235	1,683,000	21,569,000	76,324,235
13,835,000	284	11,361,000	2,494,000	54,571,284
8,032,000	191	20,108,000	32,000	75,088,191
2	0	22,312,000	33,000	75,994,002
0	0	20,819,000	29,000	92,974,000
118,011,002	2,418	121,953,000	156,225,000	953,405,420

	Dimensions			
Circular Tanks	**Height**	**Diameter**	**Capacity**	**Reading Tank**
Countryside		32.4	390,000 gal	**10/1/2018** **9/1/2019**
Cary		29	230,000 gal	**10/1/2018** **9/1/2019**
Huntington		34.3	400,000 gal	**10/1/2018** **9/1/2019**
Hanson		51.6	400,000 gal	**10/1/2018** **9/1/2019**

Calculations					
Tank Level	**Radius**	**Radius^2**	**Volume (CF)**	**Volume (Gal)**	**Difference (Gal)**
49.6	16.2	262.44	40,873.455	305,753.883	
51.9	16.2	262.44	42,768.797	319,931.986	(14,178.103)
25	14.5	210.25	16,504.625	123,462.847	
26.9	14.5	210.25	17,758.977	132,846.024	(9,383.176)
52.9	17.15	294.1225	48,855.512	365,463.657	
53.2	17.15	294.1225	49,132.575	367,536.230	(2,072.573)
29.2	25.8	665.64	61,031.200	456,543.894	
31.4	25.8	665.64	65,629.441	490,941.037	(34,397.143)

Difference (MG)
(0.014)
(0.009)
(0.002)
(0.034)
(0.060)

				2020	
	M05209	**M06209**	**M07209**	**M08209**	**M09209**
	MAY	JUNE	JULY	AUGUST	SEPTEMBER
ASSOCIATION					
COUNT	68	68	68	66	66
CONSUMPTION	2,000	12,000	76,000	108,000	124,000
DOLLARS BILLED	$ 13.35	$ 80.10	$ 587.40	$ 881.10	$ 987.90
COMMERCIAL					
COUNT	1,322	1,324	1,322	1,324	1,316
CONSUMPTION	6,016,200	7,230,400	9,990,800	11,910,400	13,530,400
DOLLARS BILLED	$ 39,688.33	$ 48,070.68	$ 66,475.70	$ 79,302.27	$ 90,066.45
EDUCATIONAL					
COUNT	48	48	48	48	48
CONSUMPTION	268,000	484,000	2,120,000	3,282,000	5,984,000
DOLLARS BILLED	$ 1,788.90	$ 3,230.70	$ 14,151.00	$ 21,907.35	$ 39,943.20
FOOD SERVICE					
COUNT	200	200	200	200	200
CONSUMPTION	2,779,800	7,004,200	9,430,200	11,348,600	11,073,200
DOLLARS BILLED	$ 38,715.54	$ 46,902.66	$ 63,096.21	$ 75,915.78	$ 74,098.86
HOME BUSINESS					
COUNT	248	248	246	246	246
CONSUMPTION	1,224,000	1,384,000	1,502,000	1,522,000	1,666,000
DOLLARS BILLED	$ 8,140.04	$ 9,200.50	$ 10,342.79	$ 10,148.35	$ 11,639.47
INDUSTRIAL					
COUNT	50	48	50	50	50
CONSUMPTION	174,000	164,000	248,000	246,000	248,200
DOLLARS BILLED	$ 1,138.21	$ 1,059.84	$ 1,632.16	$ 1,613.00	$ 1,637.63
RESIDENTIAL					
COUNT	20,250	20,263	20,240	20,278	20,271
CONSUMPTION	93,882,000	102,540,400	106,992,000	114,156,000	122,103,800
DOLLARS BILLED	$ 633,121.76	$ 688,583.85	$ 726,107.54	$ 790,535.69	$ 847,382.92
VOA					
COUNT	110	104	106	106	106
CONSUMPTION	3,682,000	3,710,000	5,296,000	3,882,000	4,036,000
DOLLARS BILLED	$ -	$ -	$ -	$ -	$ -

BACKWASH 5,769,000 Gal 5.77 MG BILLED CONSUMP

HYDRANT FLUSHING 17.40 MG **TOTAL**

HYDRANT METERS	1.24 MG	

TOTAL UN

TOTAL UNBILL

				2021	
M10209	**M11209**	**M12209**	**M01219**	**M02219**	**M03219**
OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH
66	64	64	64	64	64
58,000	14,000	14,000	24,000	(4,000)	-
$ 467.25	$ 93.45	$ 93.45	$160.20	$ (26.70)	$ -
1,328	1,326	1,328	1,326	1,330	1,330
12,718,400	10,960,400	8,062,000	8,104,400	8,546,800	8,434,400
$ 84,752.04	$ 73,009.23	$ 53,666.87	$53,969.03	$ 56,910.54	$ 56,152.13
48	48	48	48	48	48
2,444,000	1,502,000	482,000	384,000	868,000	1,068,000
$ 16,313.70	$ 10,025.85	$ 3,217.35	$2,563.20	$ 5,793.90	$ 7,128.90
198	198	200	200	200	200
11,042,600	8,355,000	6,666,800	6,312,800	6,990,600	6,940,000
$ 73,873.23	$ 55,947.75	$ 44,671.89	$42,308.94	$ 46,826.13	$ 46,538.25
246	246	246	246	246	246
1,234,000	1,232,000	1,178,000	1,268,000	1,256,000	1,214,000
$ 8,199.25	$ 8,185.90	$ 7,840.53	$8,433.74	$ 8,361.18	$ 8,714.09
50	50	50	48	50	50
220,400	192,000	142,600	142,000	180,000	174,000
$ 1,467.82	$ 1,252.55	$ 964.26	$924.61	$ 1,178.26	$ 1,144.02
20,279	20,302	20,302	20,326	19,326	20,317
94,212,000	91,612,000	88,836,000	94,508,000	92,586,000	84,553,800
$ 640,155.48	$ 615,341.65	$ 597,318.36	$633,393.95	$ 622,092.00	$ 564,710.43
106	106	104	104	104	104
3,806,000	2,436,000	7,578,000	5,242,000	3,836,000	3,840,000
$ -	$ -	$ -	$ -	$ -	$ -

ᵖTION 1,423,492,000 Gal 1,423.49 MG

BILLED METERED	**1,424.73 MG**	(includes billed consumption & hydrant meters)

BILLED METERED	54,842,000 Gal	54.84 MG	
		60.61 MG	(includes Village account consumption & backwash)

LED UNMETERED	**17.40 MG**

M04219

APRIL	TOTALS
62	
-	428,000
$ -	$ 3,337.50
1,328	
9,382,400	114,887,000
$ 62,504.25	$ 764,567.52
48	
1,202,000	20,088,000
$ 8,023.35	$ 134,087.40
200	
8,604,000	96,547,800
$ 57,574.20	$ 666,469.44
246	
1,186,000	15,866,000
$ 7,893.93	$ 107,099.77
50	
190,000	2,321,200
$ 1,239.20	$ 15,251.56
20,303	
87,372,000	1,173,354,000
$ 585,461.20	$ 7,944,204.83
104	
7,498,000	54,842,000
$ -	$ -

	M05209	M06209	M07209	M08209	2020 M09209
	MAY	JUNE	JULY	AUGUST	SEPTEMBER
ASSOCIATION					
COUNT	68	68	68	66	66
CONSUMPTION	2,000	12,000	76,000	108,000	124,000
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DOLLARS BILLED	$ 38,715.54	$ 46,902.66	$ 63,096.21	$ 75,915.78	$ 74,098.86
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VOA					
COUNT	110	104	106	106	106
CONSUMPTION	3,682,000	3,710,000	5,296,000	3,882,000	4,036,000
DOLLARS BILLED	$ -	$ -	$ -	$ -	$ -

BACKWASH	5,769,000 Gal	5.77 MG	BILLED CONSUMP
HYDRANT FLUSHING	17.40 MG		**TO**

HYDRANT METERS	1.24 MG	

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					2021
M10209	**M11209**	**M12209**	**M01219**	**M02219**	**M03219**
OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH
66	64	64	64	64	64
58,000	14,000	14,000	24,000	(4,000)	-
$ 467.25	$ 93.45	$ 93.45	$160.20	$ (26.70)	$ -
1,328	1,326	1,328	1,326	1,330	1,330
12,718,400	10,960,400	8,062,000	8,104,400	8,546,800	8,434,400
$ 84,752.04	$ 73,009.23	$ 53,666.87	$53,969.03	$ 56,910.54	$ 56,152.13
48	48	48	48	48	48
2,444,000	1,502,000	482,000	384,000	868,000	1,068,000
$ 16,313.70	$ 10,025.85	$ 3,217.35	$2,563.20	$ 5,793.90	$ 7,128.90
198	198	200	200	200	200
11,042,600	8,355,000	6,666,800	6,312,800	6,990,600	6,940,000
$ 73,873.23	$ 55,947.75	$ 44,671.89	$42,308.94	$ 46,826.13	$ 46,538.25
246	246	246	246	246	246
1,234,000	1,232,000	1,178,000	1,268,000	1,256,000	1,214,000
$ 8,199.25	$ 8,185.90	$ 7,840.53	$8,433.74	$ 8,361.18	$ 8,714.09
50	50	50	48	50	50
220,400	192,000	142,600	142,000	180,000	174,000
$ 1,467.82	$ 1,252.55	$ 964.26	$924.61	$ 1,178.26	$ 1,144.02
20,279	20,302	20,302	20,326	19,326	20,317
94,212,000	91,612,000	88,836,000	94,508,000	92,586,000	84,553,800
$ 640,155.48	$ 615,341.65	$ 597,318.36	$633,393.95	$ 622,092.00	$ 564,710.43
106	106	104	104	104	104
3,806,000	2,436,000	7,578,000	5,242,000	3,836,000	3,840,000
$ -	$ -	$ -	$ -	$ -	$ -

?TION	1,423,492,000 Gal	1,423.49 MG	711.746

ɔTAL BILLED METERED	**712.98 MG**	(includes billed consumption & hydrant meters)

AL UNBILLED METERED	54,842,000 Gal	54.84 MG	27.421
		33.19 MG	(includes Village account consumption & backwash)

UNBILLED UNMETERED	**17.40 MG**
RIZED CONSUMPTION	**763.57 MG**
MER RETAIL UNIT COST	**$12.62 PER 1,000 GAL**

M04219

APRIL	TOTALS
62	
-	428,000
$ -	$ 3,337.50
1,328	
9,382,400	114,887,000
$ 62,504.25	$ 764,567.52
48	
1,202,000	20,088,000
$ 8,023.35	$ 134,087.40
200	
8,604,000	96,547,800
$ 57,574.20	$ 666,469.44
246	
1,186,000	15,866,000
$ 7,893.93	$ 107,099.77
50	
190,000	2,321,200
$ 1,239.20	$ 15,251.56
20,303	
87,372,000	1,173,354,000
$ 585,461.20	$ 7,944,204.83
104	
7,498,000	54,842,000
$ -	$ -

$ 9,635,018.02 Total Billed

FY 2020 - 2021 Hydrant Meter Rentals Water Usage		
Reading Out	Reading in	Total Gallons Used
01362200	01682700	320,500.00
00357900	00490500	132,600.00
00108200	00202000	93,800.00
02447200	02448500	1,300.00
00014900	00022600	7,700.00
00490500	00733700	243,200.00
00001100	00003300	2,200.00
00003300	00128800	125,500.00
0001000	00020800	19,800.00
00001100	00153100	152,000.00
0000007.48	0006447.75	6,440.27
00115900	00128200	12,300.00
02448500	02472300	23,800.00
00002800	00012600	9,800.00
00028900	00064400	35,500.00
02472300	02490000	17,700.00
00041600	00049600	8,000.00
00128800	00130100	1,300.00
0011576.78	0033690.53	22,113.75
0006450.21	0006674.79	224.58
00064500	00064900	400.00
		1,236,178.60 Gal
		1.24 MG

			FY 20/21 (Budget)
Personnel			
7700400	41103	IMRF	141,000.00
7700400	41104	FICA	93,000.00
7700400	41105	Unemployment Tax	2,000.00
7700400	41106	Health Insurance	184,000.00
7700400	41110	Salaries	1,144,000.00
7700400	41140	Overtime	50,000.00
		Subtotal	$ 1,614,000.00
Contractual Services			
7700400	42210	Telephone	22,700.00
7700400	42211	Natural Gas	20,350.00
7700400	42212	Electric	250,000.00
7700400	42215	Repeater Lines	8,300.00
7700400	42225	Bank Processing Fees	27,000.00
7700400	42226	ACH Rebate	25,000.00
7700400	42230	Legal Services	4,000.00
7700400	42231	Audit Services	6,200.00
7700400	42232	Engineering Services	30,000.00
7700400	42234	Professional Services	371,200.00
7700400	42236	Insurance	99,000.00
7700400	42242	Publications	1,200.00
7700400	42243	Printing & Advertising	3,750.00
7700400	42260	Physical Exams	1,600.00
7700400	42270	Equipment Rental	1,000.00
7700400	42272	Principal Lease Payments	21,800.00
		Subtotal	$ 893,100.00
Supplies & Materials			
7700400	43308	Office Supplies	500.00
7700400	43309	Materials	17,500.00
7700400	43317	Postage	28,400.00
7700400	43320	Tools, Equipment & Supplies	9,500.00
7700400	43332	Office Furniture & Equipmen	2,000.00
7700400	43333	IT Equipment	54,600.00
7700400	43340	Fuel (S)	17,000.00
7700400	43342	Chemicals	187,000.00
7700400	43345	Lab Supplies	10,400.00
7700400	43348	Meters & Meter Supplies	59,200.00
		Subtotal	$ 386,100.00
Maintenance			
7700400	44410	Booster Station	16,400.00
7700400	44411	Storage Facility	8,500.00

7700400	44412	Treatment Facility		85,200.00
7700400	44415	Distribution System		75,200.00
7700400	44418	Wells		174,700.00
7700400	44420	Vehicle Maintenance (S)		21,000.00
7700400	44421	Equipment Maintenance (S)		25,500.00
7700400	44423	Building Services (S)		103,000.00
7700400	44426	Office Equipment Maintenan		800.00
		Subtotal	$	510,300.00
Captial Expenitures				
7700400	43335	Vehicles & Equipment		0.00
7700400	45590	Capital Purchase		215,000.00
		Subtotal	$	215,000.00
Other Charges				
7700400	47740	Travel/Training/Dues		10,700.00
7700400	47760	Uniforms & Safety Items		10,700.00
7700400	47790	Interest Lease Expense		5,600.00
		Subtotal	$	27,000.00

Total	$	3,645,500.00

M.E. SIMPSON Co., Inc.

June 9th, 2021

Mr. Jason Schutz
Chief Water Operator
Village of Algonquin
110 Meyer Drive
Algonquin, Illinois 60102

Dear Mr. Schutz,

M.E. Simpson Company, Inc. is pleased to submit the following report of the Pitot testing performed for the Village of Algonquin on May 4th and 5th, 2021.

SUMMARY OF TEST RESULTS

WTP 1

- Zone 1 Effluent **99.2%**
- Zone 2 Effluent **99.4%**
- Well #5 **243.2%**
- Well #6
  - Pre-Calibration 95.7%
  - Post-Calibration **99.9%**
- Wells #7-11 **99.4%**

WTP 2

- Plant Effluent **100.4%**
- Filter Effluent
  - Pre-Calibration 96.3%
  - Post-Calibration **99.6%**
- Well #8 **98.3%**
- Well #10 **98.6%**

WTP 3

- WTP 3 Effluent **99.2%**
- Well #13 **98.2%**

At WTP 1, Wells 5 was malfunctioning and the testing performed was not reliable. We recommend that this meter be repaired or replaced.

We thank you for allowing us the opportunity to Pitot test your production meters, and look forward to working with you again in the future. If there are any questions please feel free to contact us.

Aaron M. Horbovetz, PE, PMP
Engineering Services Manager
aaronh@mesimpson.com

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

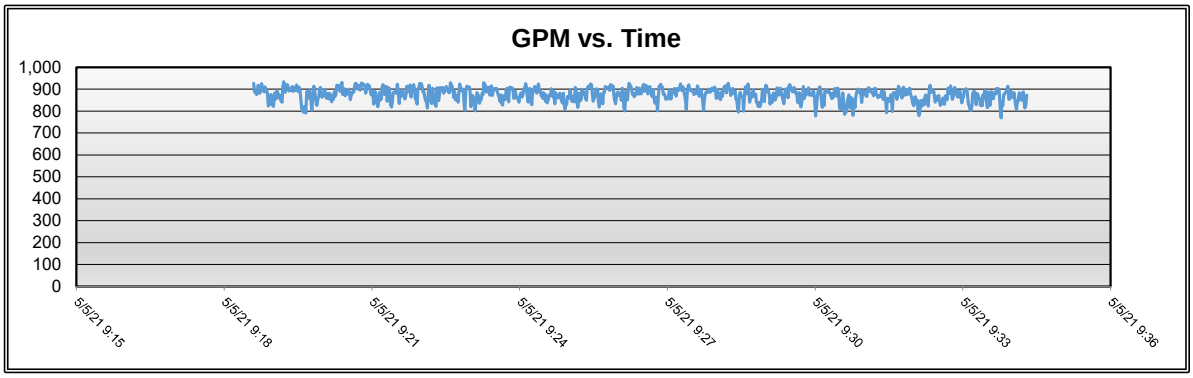
Client:	Algonquin, IL	**Emerg. Phone #:**	911
Contact Person:	Jason Meyer	**Title:** Chief Operator	**Phone:** (847) 875-5529
Test Supervisor:	Nick Mayo	**Title:** Project Leader	**Phone:** (219) 462-1144
Account Name:	WTP 1 - Zone 1 Effluent		

Building Name:	Water Treatment Plant 1	**Address:**	1010 Souwanas Trall
Meter Location:	South end of the building		
Confined Space:	No	**O2 Level:**	**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**	**Ventilation Required?:**
Test Date:	5/5/2021	**Time:** 9:19:18 AM	**Technicians:** Perris Perry	**Supervisor:** Nick Mayo

Meter Brand:	Badger	**Type:** MAG	**S/N:** 0803-086/35379786	**Model:** Primo
Size:	12 in	**Meter Coeff:**	**Venturi Coeff:**	**Meter Range:**

Sensor 1 Brand:	**Sensor Scaling:**	**S/N:**	**Model:**
Sensor 2 Brand:	**Sensor Scaling:**	**S/N:**	**Model:**
Location:			
Confined Space:	**O^2 Level:**	**Gas Present:**	**OK to Enter:**

Tap Location:	Down stream meter		**Address:**	1010 Souwanas Trall
Confined Space:	No	**O^2 Level:**	**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**		**Ventilation Required?:**
Corp Size:	1.00 in	**Pipe Material:** Ductile Iron	**Nom. Diameter:** 12 in	**Measured Diameter:** 11 15/16 in
Corp Adaptors:	Mueller	**Dir. of Flow:** East		**Area Tested:** .759 sq.ft
Rod Length:	3.0 ft	**Recorder #:** 20155104	**File Name:**	WTP 1 Zone 1 5.5.2021.xlsx

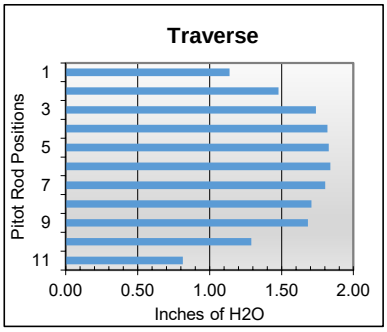


Pipe Factor: **0.920**

Test Start Time:	5/5/21 9:19
Test End Time:	5/5/21 9:34

METER READINGS

13,079,752	**gal**



Metered Volume:	**13,092**	Gallons
Flow Rate:	**868**	GPM
	1.25	MGD

Pitot Volume:	**13,198**	Gallons
Flow Rate:	**875**	GPM
	1.26	MGD
	2.51	ft/s

Test Accuracy: **99.2%**

Comments:

The meter(s) in this setting tested within AWWA accuracy limits derived from AWWA M6.

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

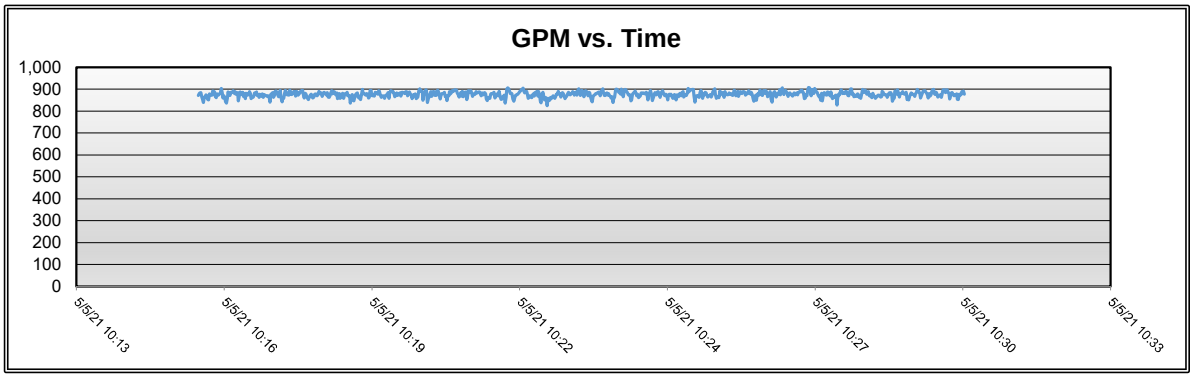
Client:	Algonquin, IL			**Emerg. Phone #:**	911
Contact Person:	Jason Meyer	**Title:**	Chief Operator	**Phone:**	(847) 875-5529
Test Supervisor:	Nick Mayo	**Title:**	Project Leader	**Phone:**	(219) 462-1144
Account Name:	WTP 1 - Effluent Zone 2				

Building Name:	Water Treatment Plant 1			**Address:**	1010 Souwanas Trall
Meter Location:	North end of building				
Confined Space:	No	**O2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**			**Ventilation Required?:**
Test Date:	5/5/2021	**Time:**	10:15:49 AM	**Technicians:**	Perris Perry **Supervisor:** Nick Mayo

Meter Brand:	Krohne	**Type:**	MAG	**S/N:**	A0246393 **Model:**
Size:	12 in	**Meter Coeff:**		**Venturi Coeff:**	**Meter Range:**

Sensor 1 Brand:		**Sensor Scaling:**		**S/N:**	**Model:**
Sensor 2 Brand:		**Sensor Scaling:**		**S/N:**	**Model:**
Location:					
Confined Space:		**O^2 Level:**		**Gas Present:**	**OK to Enter:**

Tap Location:	6' down stream of meter			**Address:**	1010 Souwanas Trall
Confined Space:	No	**O^2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**			**Ventilation Required?:**
Corp Size:	1.00 in	**Pipe Material:**	Ductile Iron	**Nom. Diameter:**	12 in **Measured Diameter:** 11 15/16 in
Corp Adaptors:	None	**Dir. of Flow:**	East		**Area Tested:** .759 sq.ft
Rod Length:	3.0 ft	**Recorder #:**	20155104	**File Name:**	WTP 1 Zone 2 5.5.2021.xlsx

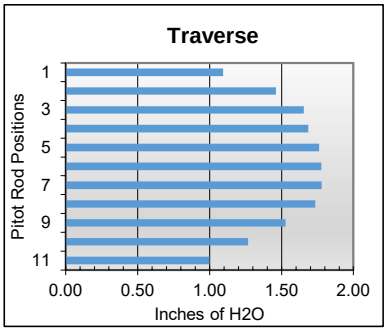


Pipe Factor: **0.926**

Test Start Time: 5/5/21 10:15
Test End Time: 5/5/21 10:30

METER READINGS

3,169,152	**gal**



Metered Volume:	**13,018**	Gallons
Flow Rate:	**871**	GPM
	1.25	MGD

Pitot Volume:	**13,094**	Gallons
Flow Rate:	**876**	GPM
	1.26	MGD
	2.51	ft/s

Test Accuracy: **99.4%**

Comments:

The meter(s) in this setting tested within AWWA accuracy limits derived from AWWA M6.

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

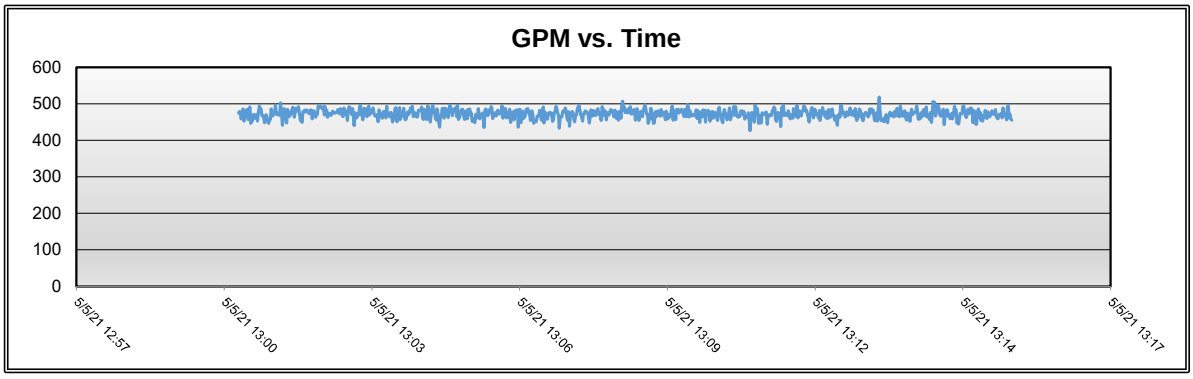
Client:	Algonquin, IL			**Emerg. Phone #:**	911
Contact Person:	Jason Meyer	**Title:**	Chief Operator	**Phone:**	(847) 875-5529
Test Supervisor:	Nick Mayo	**Title:**	Project Leader	**Phone:**	(219) 462-1144
Account Name:	WTP 1 - Well 5				

Building Name:	Water Treatment Plant 1			**Address:**	1010 Souwanas Trail
Meter Location:	North of the High Pressure tanks against wall				
Confined Space:	No	**O2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**		**Ventilation Required?:**	
Test Date:	5/5/2021	**Time:**	1:00:46 PM	**Technicians:** Perria Perry	**Supervisor:** Nick Mayo

Meter Brand:	McCrometer	**Type:**	MAG	**S/N:** UP20-0145	**Model:** Ultramag
Size:	8 in	**Meter Coeff:**		**Venturi Coeff:**	**Meter Range:**

Sensor 1 Brand:		**Sensor Scaling:**		**S/N:**	**Model:**
Sensor 2 Brand:		**Sensor Scaling:**		**S/N:**	**Model:**
Location:					
Confined Space:		**O^2 Level:**		**Gas Present:**	**OK to Enter:**

Tap Location:	Same tap site as Well 6's meter			**Address:**	1010 Souwanas Trail
Confined Space:	No	**O^2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**		**Ventilation Required?:**	
Corp Size:	1.00 in	**Pipe Material:**	Steel	**Nom. Diameter:** 8 in	**Measured Diameter:** 8 in
Corp Adaptors:	None	**Dir. of Flow:**	North		**Area Tested:** .337 sq.ft
Rod Length:	3.0 ft	**Recorder #:**	20155108	**File Name:**	Well 5 5.5.2021.xlsx

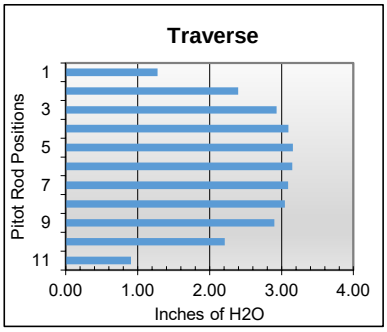


Pipe Factor: **0.900**

Test Start Time:	5/5/21 13:00
Test End Time:	5/5/21 13:15

METER READINGS

43,557,900	**gal**



Metered Volume:	**17,319**	Gallons
Flow Rate:	**1,148**	GPM
	1.65	MGD

Pitot Volume:	**7,121**	Gallons
Flow Rate:	**472**	GPM
	0.68	MGD
	3.01	ft/s

Test Accuracy: **243.2%**

Comments:

The meter(s) in this setting failed to test within AWWA accuracy limits derived from AWWA M6.
This meter was malfunctioning, and this test is not reliable.

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

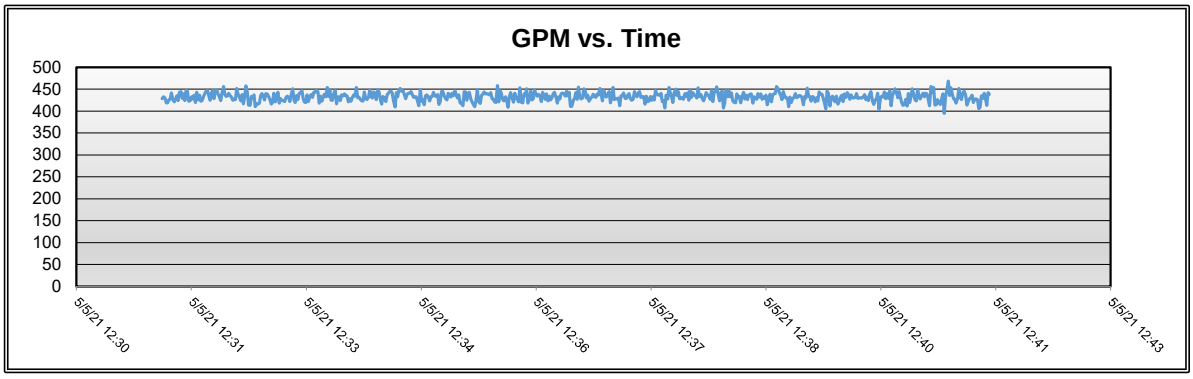
Client:	Algonquin, IL			**Emerg. Phone #:**	911
Contact Person:	Jason Meyer	**Title:**	Chief Operator	**Phone:**	(847) 875-5529
Test Supervisor:	Nick Mayo	**Title:**	Project Leader	**Phone:**	(219) 462-1144
Account Name:	WTP 1 - Well 6				

Building Name:	Water Treatment Plant 1			**Address:**	1010 Souwanas Trail
Meter Location:	North of the High Pressure tanks against wall				
Confined Space:	No	**O2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**			**Ventilation Required?:**
Test Date:	5/5/2021	**Time:**	12:31:19 PM	**Technicians:**	Perria Perry **Supervisor:** Nick Mayo

Meter Brand:	McCrometer	**Type:**	MAG	**S/N:**	UP21-0323 **Model:** Ultramag
Size:	8 in	**Meter Coeff:**		**Venturi Coeff:**	**Meter Range:**

Sensor 1 Brand:		**Sensor Scaling:**		**S/N:**	**Model:**
Sensor 2 Brand:		**Sensor Scaling:**		**S/N:**	**Model:**
Location:					
Confined Space:		**O^2 Level:**		**Gas Present:**	**OK to Enter:**

Tap Location:	Downstream of meter, past 90 deg elbow			**Address:**	1010 Souwanas Trail
Confined Space:	No	**O^2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**			**Ventilation Required?:**
Corp Size:	1.00 in	**Pipe Material:**	Steel	**Nom. Diameter:**	8 in **Measured Diameter:** 8 in
Corp Adaptors:	None	**Dir. of Flow:**	North		**Area Tested:** .337 sq.ft
Rod Length:	3.0 ft	**Recorder #:**	20155108	**File Name:**	WTP 1 Well 6 postcal 5.5.2021.xlsx

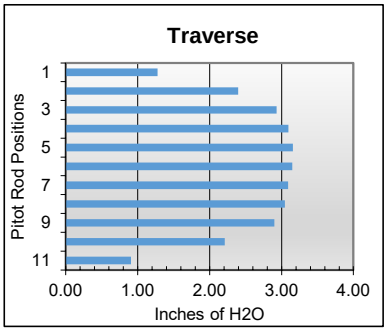


Pipe Factor: **0.900**

Test Start Time: 5/5/21 12:31
Test End Time: 5/5/21 12:41

METER READINGS

11,775,700	**gal**



Metered Volume:	**4,485**	Gallons
Flow Rate:	**432**	GPM
	0.62	MGD

Pitot Volume:	**4,489**	Gallons
Flow Rate:	**432**	GPM
	0.62	MGD
	2.76	ft/s

Test Accuracy: 99.9%

Pre-Calibration Accuracy: 95.7%

Comments:

The meter(s) in this setting tested within AWWA accuracy limits derived from AWWA M6.
The initial test accuracy was 95.7%. The KC Factor was changed from 1.00000 to 1.04493.

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

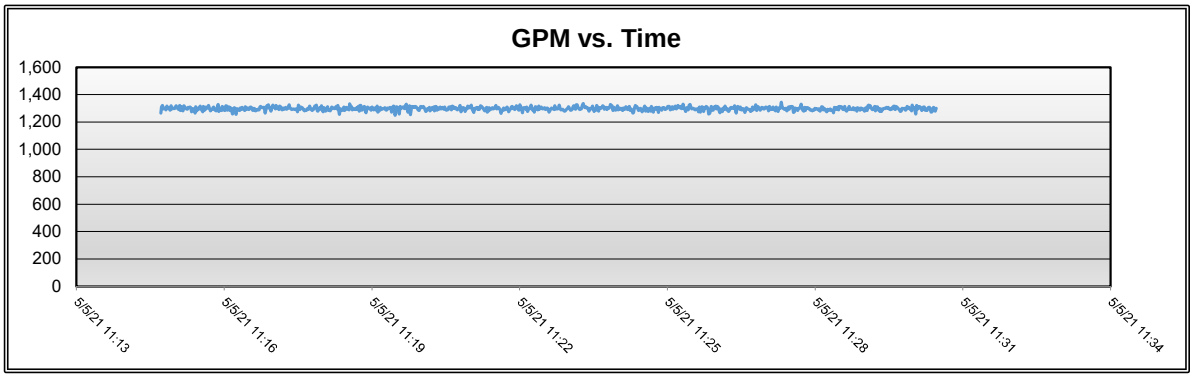
Client:	Algonquin, IL			**Emerg. Phone #:**	911
Contact Person:	Jason Meyer	**Title:**	Chief Operator	**Phone:**	(847) 875-5529
Test Supervisor:	Nick Mayo	**Title:**	Project Leader	**Phone:**	(219) 462-1144
Account Name:	WTP 1 - Well 7-11				

Building Name:	Water Treatment Plant 1			**Address:**	1010 Souwanas Trail
Meter Location:	North of pressure tanks along wall				
Confined Space:	no	**O2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**			**Ventilation Required?:**
Test Date:	5/5/2021	**Time:**	11:15:34 AM	**Technicians:** Perris Perry	**Supervisor:** Nick Mayo

Meter Brand:	McCrometer	**Type:**	MAG	**S/N:**	UP20-0144 **Model:** Ultramag
Size:	10 in	**Meter Coeff:**		**Venturi Coeff:**	**Meter Range:**

Sensor 1 Brand:	**Sensor Scaling:**	**S/N:**	**Model:**	
Sensor 2 Brand:	**Sensor Scaling:**	**S/N:**	**Model:**	
Location:				
Confined Space:	**O^2 Level:**	**Gas Present:**	**OK to Enter:**	

Tap Location:	upstream meter on vertical pipe			**Address:**	1010 souwanas Trail
Confined Space:	No	**O^2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**			**Ventilation Required?:**
Corp Size:	1.00 in	**Pipe Material:**	Ductile Iron	**Nom. Diameter:** 10 in	**Measured Diameter:** 10 2/16 in
Corp Adaptors:	None	**Dir. of Flow:**	North		**Area Tested:** .543 sq.ft
Rod Length:	3.0 ft	**Recorder #:**	20155108	**File Name:**	Well 7-11 5.5.2021.xlsx

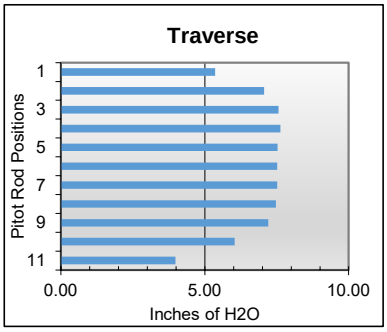


Pipe Factor: **0.954**

Test Start Time: 5/5/21 11:15
Test End Time: 5/5/21 11:30

METER READINGS

88,139,500	**gal**



Metered Volume:	**19,521**	Gallons
Flow Rate:	**1,290**	GPM
	1.86	MGD

Pitot Volume:	**19,638**	Gallons
Flow Rate:	**1,298**	GPM
	1.87	MGD
	5.17	ft/s

Test Accuracy: **99.4%**

Comments:

The meter(s) in this setting tested within AWWA accuracy limits derived from AWWA M6.

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

Client:	Algonquin, IL	**Emerg. Phone #:**	911
Contact Person:	Jason Meyer	**Title:** Chief Operator	**Phone:** (847) 875-5529
Test Supervisor:	Nick Mayo	**Title:** Project Leader	**Phone:** (219) 462-1144
Account Name:	WTP 2 - Plant Effluent		

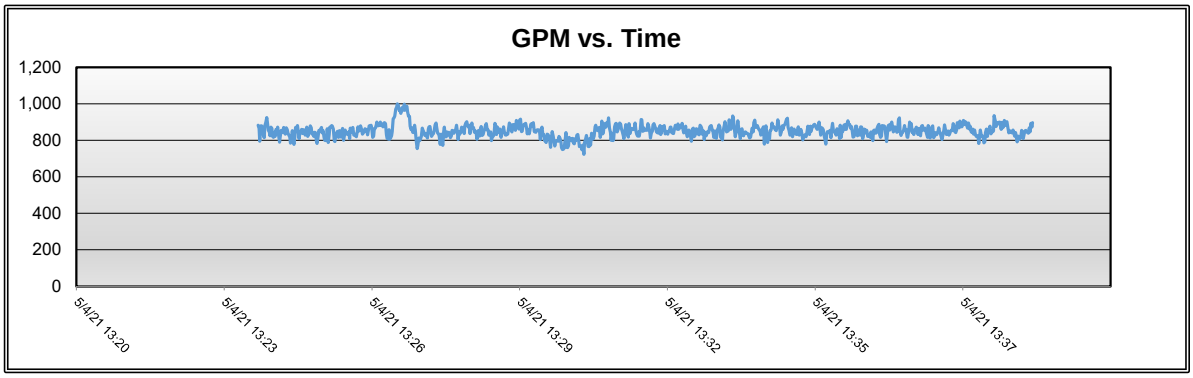
Building Name:	Water Treatment Plant 2	**Address:**	1461 Wynfield Dr
Meter Location:	Inside treatment plant		
Confined Space:	**O2 Level:**	**Gas Present:**	**OK to Enter:**
Fall Protection?:	**Pumped Vault?:**		**Ventilation Required?:**
Test Date:	5/4/2021	**Time:** 1:24:11 PM	**Technicians:** Perris Perry	**Supervisor:** Nick Mayo

Meter Brand:	Badger	**Type:** MAG	**S/N:** 1205-143	**Model:** M2000
Size:	14 in	**Meter Coeff:**	**Venturi Coeff:**	**Meter Range:**

Sensor 1 Brand:	**Sensor Scaling:**	**S/N:**	**Model:**
Sensor 2 Brand:	**Sensor Scaling:**	**S/N:**	**Model:**
Location:			
Confined Space:	**O^2 Level:**	**Gas Present:**	**OK to Enter:**

Tap Location:	In breezeway between buildings. 8' in the air	**Address:**	1461 Wynfield Dr
Confined Space:	No	**O^2 Level:**	**Gas Present:**	**OK to Enter:**
Fall Protection?:	**Pumped Vault?:**		**Ventilation Required?:**

Corp Size:	1.00 in	**Pipe Material:**	Ductile Iron	**Nom. Diameter:** 14 in	**Measured Diameter:** 14 1/16 in
Corp Adaptors:	None	**Dir. of Flow:**	NE		**Area Tested:** 1.057 sq.ft
Rod Length:	3.0 ft	**Recorder #:**	20155104	**File Name:**	WTP 2 Plant Effluent 5.4.2021.xlsx

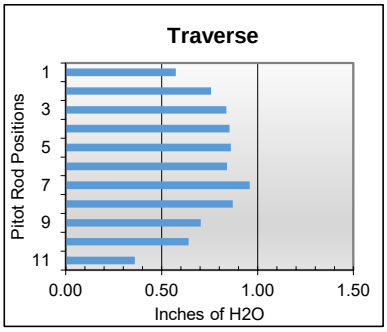


Pipe Factor: **0.946**

Test Start Time: 5/4/21 13:24
Test End Time: 5/4/21 13:39

METER READINGS

1,561,559,983	**gal**



Metered Volume:	**12,915**	Gallons
Flow Rate:	**854**	GPM
	1.23	MGD

Pitot Volume:	**12,860**	Gallons
Flow Rate:	**851**	GPM
	1.22	MGD
	1.76	ft/s

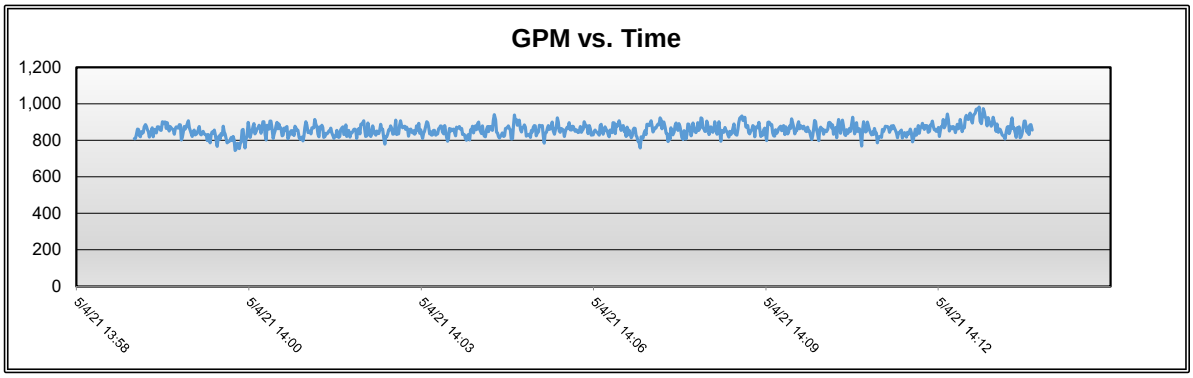
Test Accuracy: **100.4%**

Comments:

The meter(s) in this setting tested within AWWA accuracy limits derived from AWWA M6.

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

Client:	Algonquin, IL				**Emerg. Phone #:**	911	
Contact Person:	Jason Meyer	**Title:**	Chief Operator		**Phone:**	(847) 875-5529	
Test Supervisor:	Nick Mayo	**Title:**	Project Leader		**Phone:**	(219) 462-1144	
Account Name:	WTP 2 - Filter Effluent						
Building Name:	Water Treatment Plant 2			**Address:**	1461 Wynfield Dr		
Meter Location:	Inside treatment plant						
Confined Space:	No	**O2 Level:**		**Gas Present:**		**OK to Enter:**	
Fall Protection?:		**Pumped Vault?:**				**Ventilation Required?:**	
Test Date:	5/4/2021	**Time:**	1:59:03 PM	**Technicians:**	Perris Perry	**Supervisor:**	Nick Mayo
Meter Brand:	McCrometer	**Type:**	MAG	**S/N:**	UP21-0153	**Model:**	Ultramag
Size:	14 in	**Meter Coeff:**		**Venturi Coeff:**		**Meter Range:**	
Sensor 1 Brand:		**Sensor Scaling:**		**S/N:**		**Model:**	
Sensor 2 Brand:		**Sensor Scaling:**		**S/N:**		**Model:**	
Location:							
Confined Space:		**O^2 Level:**		**Gas Present:**		**OK to Enter:**	
Tap Location:	In breezeway between buildings. 8' in the air			**Address:**	1461 Wynfield Dr		
Confined Space:	No	**O^2 Level:**		**Gas Present:**		**OK to Enter:**	
Fall Protection?:		**Pumped Vault?:**				**Ventilation Required?:**	
Corp Size:	1.00 in	**Pipe Material:**	Ductile Iron	**Nom. Diameter:**	14 in	**Measured Diameter:**	14 1/16 in
Corp Adaptors:	None	**Dir. of Flow:**	NE			**Area Tested:**	1.057 sq.ft
Rod Length:	3.0 ft	**Recorder #:**	20155104	**File Name:**	WTP 2 Filter Effluent Post cal5.4.2021.xlsx		

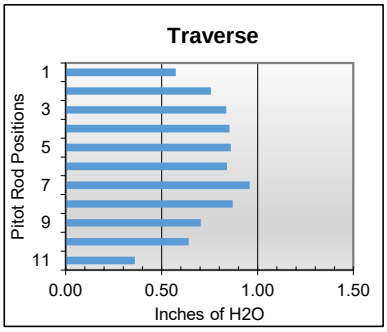


Pipe Factor: **0.946**

Test Start Time:	5/4/21 13:59
Test End Time:	5/4/21 14:14

METER READINGS

32,551,900	**gal**



Metered Volume:	**12,814**	Gallons
Flow Rate:	**853**	GPM
	1.23	MGD

Pitot Volume:	**12,864**	Gallons
Flow Rate:	**857**	GPM
	1.23	MGD
	1.77	ft/s

Test Accuracy: **99.6%**

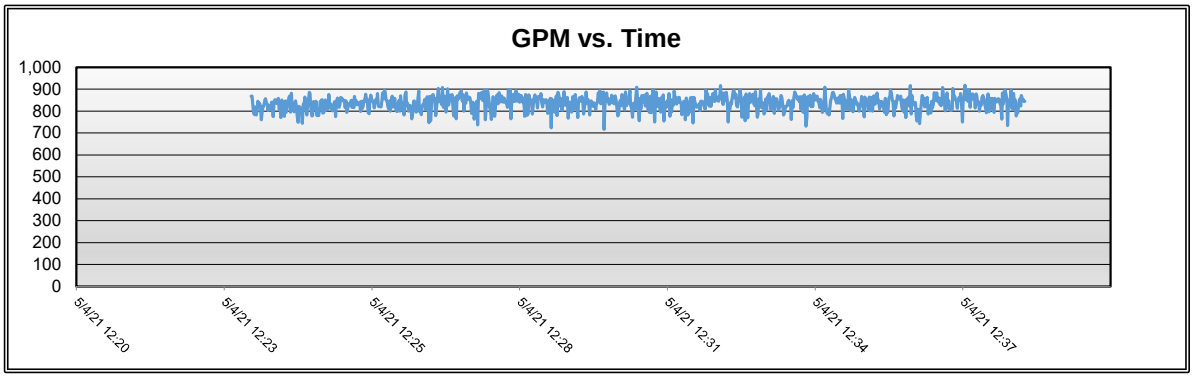
Pre-Calibration Accuracy: 96.3%

Comments:

The meter(s) in this setting tested within AWWA accuracy limits derived from AWWA M6.
The initial test accuracy was 96.3%. The KS factor was adjusted and the meter retested within limits.

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

Client:	Algonquin, IL				**Emerg. Phone #:**	911	
Contact Person:	Jason Meyer	**Title:**	Chief Operator		**Phone:**	(847) 875-5529	
Test Supervisor:	Nick Mayo	**Title:**	Project Leader		**Phone:**	(219) 462-1144	
Account Name:	WTP 2 - Well 8						
Building Name:	Water Treatment Plant				**Address:**	1461 Wynnfield Dr.	
Meter Location:	Along North wall by Filter						
Confined Space:	No	**O2 Level:**		**Gas Present:**		**OK to Enter:**	
Fall Protection?:		**Pumped Vault?:**				**Ventilation Required?:**	
Test Date:	5/4/2021	**Time:**	12:23:34 PM	**Technicians:**	Perris Perry	**Supervisor:**	Nick Mayo
Meter Brand:	McCrometer	**Type:**	MAG	**S/N:**	UM20170790	**Model:**	Ultra Mag
Size:	8 in	**Meter Coeff:**		**Venturi Coeff:**		**Meter Range:**	
Sensor 1 Brand:		**Sensor Scaling:**		**S/N:**		**Model:**	
Sensor 2 Brand:		**Sensor Scaling:**		**S/N:**		**Model:**	
Location:							
Confined Space:		**O^2 Level:**		**Gas Present:**		**OK to Enter:**	
Tap Location:	10' downstream meter				**Address:**	1461 Wynnfield Dr.	
Confined Space:	No	**O^2 Level:**		**Gas Present:**		**OK to Enter:**	
Fall Protection?:		**Pumped Vault?:**				**Ventilation Required?:**	
Corp Size:	1.00 in	**Pipe Material:**	Ductile Iron	**Nom. Diameter:**	10 in	**Measured Diameter:**	10 in
Corp Adaptors:	None	**Dir. of Flow:**	NE			**Area Tested:**	.53 sq.ft
Rod Length:	3.0 ft	**Recorder #:**	20155104	**File Name:**	WTP 2 Well 8 5.4.2021.xlsx		

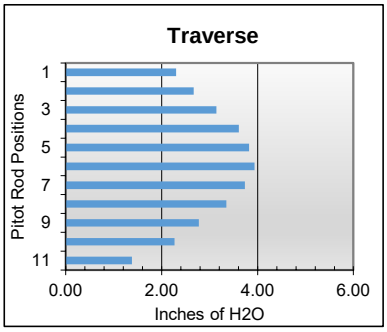


Pipe Factor: **0.868**

Test Start Time:	5/4/21 12:23
Test End Time:	5/4/21 12:38

METER READINGS

371,042,000	**gal**



Metered Volume:	**12,414**	Gallons
Flow Rate:	**822**	GPM
	1.18	MGD

Pitot Volume:	**12,627**	Gallons
Flow Rate:	**836**	GPM
	1.20	MGD
	3.41	ft/s

Test Accuracy: **98.3%**

Comments:

The meter(s) in this setting tested within AWWA accuracy limits derived from AWWA M6.

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

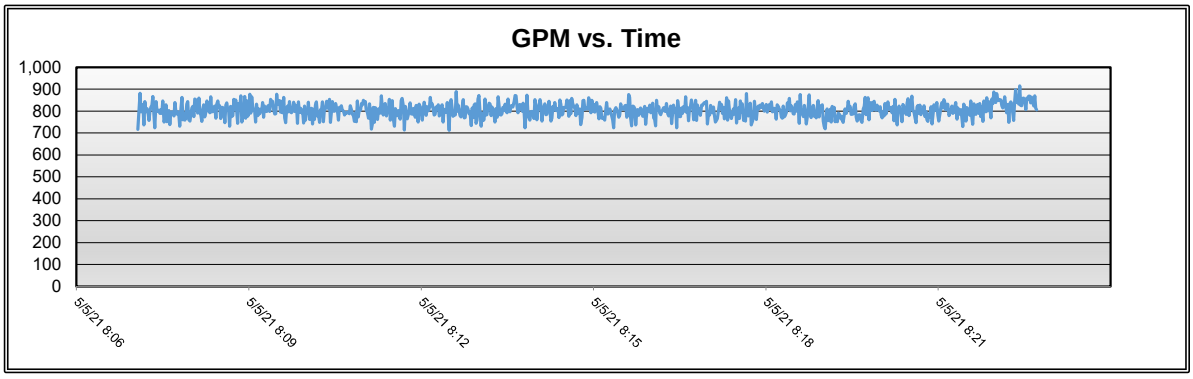
Client:	Algonquin, IL			**Emerg. Phone #:**	911
Contact Person:	Jason Meyer	**Title:**	Chief Operator	**Phone:**	(847) 875-5529
Test Supervisor:	Nick Mayo	**Title:**	Project Leader	**Phone:**	(219) 462-1144
Account Name:	WTP 2 - Well 10				

Building Name:	Water Treatment Plant 2			**Address:**	1461 Wynnfield Dr.		
Meter Location:	By stairwell on NE wall. Bottom meter in stack of 3						
Confined Space:		**O2 Level:**		**Gas Present:**		**OK to Enter:**	
Fall Protection?:		**Pumped Vault?:**				**Ventilation Required?:**	
Test Date:	5/5/2021	**Time:**	8:07:45 AM	**Technicians:**	Perris Perry	**Supervisor:**	Nick Mayo

Meter Brand:	McCrometer	**Type:**	Propeller	**S/N:**	E-98-00436	**Model:**	
Size:	8 in	**Meter Coeff:**		**Venturi Coeff:**		**Meter Range:**	

Sensor 1 Brand:		**Sensor Scaling:**		**S/N:**		**Model:**	
Sensor 2 Brand:		**Sensor Scaling:**		**S/N:**		**Model:**	
Location:							
Confined Space:		**O^2 Level:**		**Gas Present:**		**OK to Enter:**	

Tap Location:	Inlet line to filters			**Address:**	1461 Wynnfield Dr.		
Confined Space:	No	**O^2 Level:**		**Gas Present:**		**OK to Enter:**	
Fall Protection?:		**Pumped Vault?:**				**Ventilation Required?:**	
Corp Size:	1.00 in	**Pipe Material:**	Ductile Iron	**Nom. Diameter:**	8 in	**Measured Diameter:**	8 in
Corp Adaptors:	None	**Dir. of Flow:**	SW			**Area Tested:**	.337 sq.ft
Rod Length:	3.0 ft	**Recorder #:**	20155104	**File Name:**	Well 10 5.5.2021.xlsx		

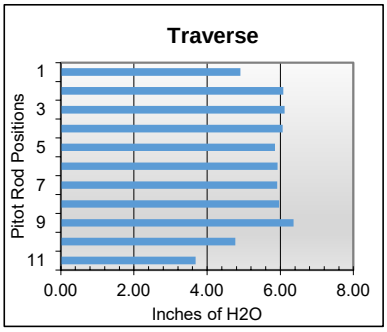


Pipe Factor: **0.975**

Test Start Time:	5/5/21 8:07
Test End Time:	5/5/21 8:22

METER READINGS

10,247,200	**gal**



Metered Volume:	**11,913**	Gallons
Flow Rate:	**792**	GPM
	1.14	MGD

Pitot Volume:	**12,087**	Gallons
Flow Rate:	**804**	GPM
	1.16	MGD
	5.13	ft/s

Test Accuracy: **98.6%**

Comments:

The meter(s) in this setting tested within AWWA accuracy limits derived from AWWA M6.

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

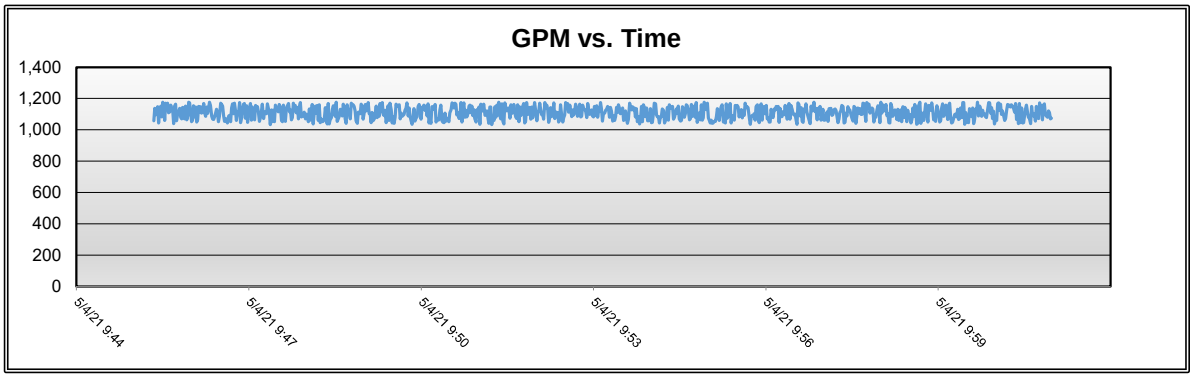
Client:	Algonquin, IL			**Emerg. Phone #:**	911
Contact Person:	Jason Meyer	**Title:**	Chief Operator	**Phone:**	(847) 875-5529
Test Supervisor:	Nick Mayo	**Title:**	Project Leader	**Phone:**	(219) 462-1144
Account Name:	WTP 3 - Effluent				

Building Name:	Water Treatment Plant 3			**Address:**	1000 Square barn Rd.
Meter Location:	Membrane Room- above entrance on west wall				
Confined Space:	No	**O2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**		**Ventilation Required?:**	
Test Date:	5/4/2021	**Time:**	9:45:56 AM	**Technicians:** Perris Perry	**Supervisor:** Nick Mayo

Meter Brand:	E&H	**Type:**	MAG	**S/N:** 7501A16000	**Model:** AquafluxF/6
Size:	10 in	**Meter Coeff:**		**Venturi Coeff:**	**Meter Range:**

Sensor 1 Brand:	**Sensor Scaling:**	**S/N:**	**Model:**	
Sensor 2 Brand:	**Sensor Scaling:**	**S/N:**	**Model:**	
Location:				
Confined Space:	**O^2 Level:**	**Gas Present:**	**OK to Enter:**	

Tap Location:	Downstream meter 9'			**Address:**	1000 Square barn Rd.
Confined Space:	No	**O^2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**		**Ventilation Required?:**	
Corp Size:	1.00 in	**Pipe Material:**	Ductile Iron	**Nom. Diameter:** 16 in	**Measured Diameter:** 16 2/16 in
Corp Adaptors:	None	**Dir. of Flow:**	North		**Area Tested:** 1.393 sq.ft
Rod Length:	3.0 ft	**Recorder #:**	20119345	**File Name:**	WTP 3 Effluent 5.4.2021.xlsx

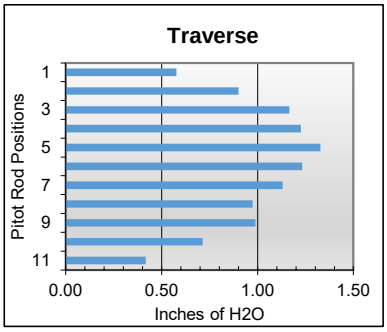


Pipe Factor: **0.882**

Test Start Time:	5/4/21 9:45
Test End Time:	5/4/21 10:00

METER READINGS

2,240,292	**gal**



Metered Volume:	**16,515**	Gallons
Flow Rate:	**1,100**	GPM
	1.58	MGD

Pitot Volume:	**16,651**	Gallons
Flow Rate:	**1,109**	GPM
	1.60	MGD
	1.74	ft/s

Test Accuracy: **99.2%**

Comments:

The meter(s) in this setting tested within AWWA accuracy limits derived from AWWA M6.

M.E. Simpson Company, Inc. - Polcon® Pitot Testing

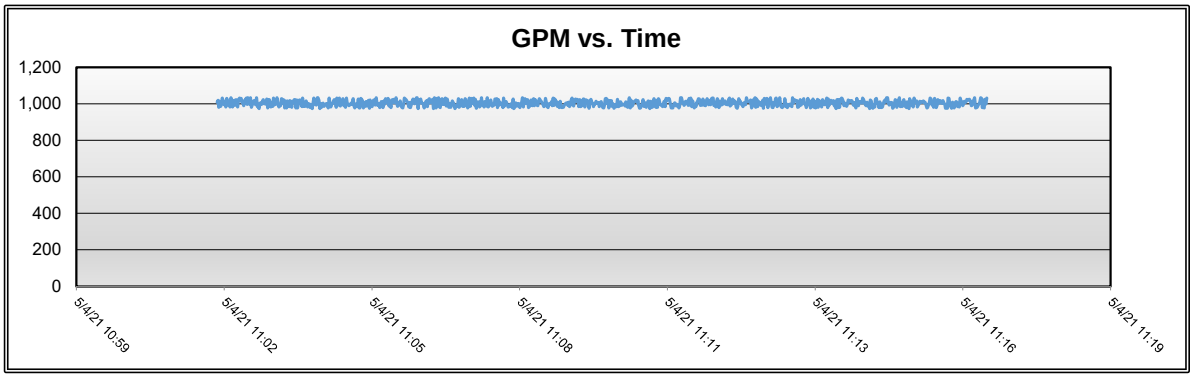
Client:	Algonquin, IL			**Emerg. Phone #:**	911
Contact Person:	Jason Meyer	**Title:**	Chief Operator	**Phone:**	(847) 875-5529
Test Supervisor:	Nick Mayo	**Title:**	Project Leader	**Phone:**	(219) 462-1144
Account Name:	WTP 3 - Well 13				

Building Name:	Water Treatment Plant 3			**Address:**	1000 Square Barn Rd.
Meter Location:	Membrane rom by hot water tank				
Confined Space:	No	**O2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**			**Ventilation Required?:**
Test Date:	5/4/2021	**Time:**	11:02:16 AM	**Technicians:**	Perris Perry **Supervisor:** Nick Mayo

Meter Brand:	**Type:**	**S/N:**	**Model:**
Size:	**Meter Coeff:**	**Venturi Coeff:**	**Meter Range:**

Sensor 1 Brand:	**Sensor Scaling:**	**S/N:**	**Model:**
Sensor 2 Brand:	**Sensor Scaling:**	**S/N:**	**Model:**
Location:			
Confined Space:	**O^2 Level:**	**Gas Present:**	**OK to Enter:**

Tap Location:	Downstream of meter			**Address:**	1000 Square Barn Rd.
Confined Space:	No	**O^2 Level:**		**Gas Present:**	**OK to Enter:**
Fall Protection?:		**Pumped Vault?:**			**Ventilation Required?:**
Corp Size:	1.00 in	**Pipe Material:**	Ductile Iron	**Nom. Diameter:**	8 in **Measured Diameter:** 8 in
Corp Adaptors:	None	**Dir. of Flow:**	South		**Area Tested:** .337 sq.ft
Rod Length:	3.0 ft	**Recorder #:**	20155108	**File Name:**	WTP 3 Well 13 5.4.2021.xlsx

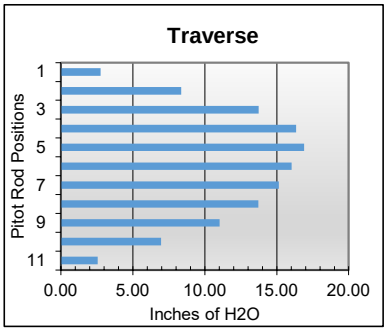


Pipe Factor: **0.821**

Test Start Time: 5/4/21 11:02
Test End Time: 5/4/21 11:17

METER READINGS

8,381,441	**gal**



Metered Volume:	**15,025**	Gallons
Flow Rate:	**985**	GPM
	1.42	MGD

Pitot Volume:	**15,294**	Gallons
Flow Rate:	**1,003**	GPM
	1.44	MGD
	6.40	ft/s

Test Accuracy: **98.2%**

Comments:

The meter(s) in this setting tested within AWWA accuracy limits derived from AWWA M6.

VILLAGE OF ALGONQUIN

GENERAL SERVICES ADMINISTRATION

– M E M O R A N D U M –

DATE: November 2, 2022

TO: Tim Schloneger, Village Manager

FROM: Matthew Bajor, Assistant to the Village Manager

SUBJECT: *Popular Annual Financial Report | 2021 – 2022*

The finance team has completed its fifth Popular Annual Financial Report (PAFR) for fiscal year ended April 30, 2022. Aligning with the Village's commitment to fiscal management and transparency, the PAFR summarizes findings from the Village's Annual Comprehensive Financial Report (audit) into a brief document that is easy for residents and other interested parties to understand.

The report has been submitted to the Government Finance Officers Association (GFOA) for feedback and recognition through the Popular Annual Financial Reporting Award Program. The Village has received recognition from the program for its last four submissions.

Additional information about the Village's finances, including budgets, audits, and other financial reports, can be accessed at https://www.algonquin.org/transparency.

Special thanks to Management Intern Ethan Hoffman, Accounting Manager Amanda Lichtenberger, Comptroller Susan Skillman, and Assistant Village Manager Michael Kumbera for their assistance with preparing the document.

C: Michael Kumbera, Assistant Village Manager
Susan Skillman, Comptroller
Amanda Lichtenberger, Accounting Manager

CONTENTS

VILLAGE OF ALGONQUIN, ILLINOIS

POPULAR ANNUAL FINANCIAL REPORT

Fiscal Year Ended April 30, 2022

MISSION STATEMENT

The mission of the people of Algonquin is to foster a harmonious, distinctive community with a strong sense of place, preserving its ecological and historical richness, providing a safe and comfortable environment, through a responsible use of community resources, and developing ownership and pride in the community through significant citizen involvement in all civic, social, and cultural affairs.

To this end, we will provide for the needs of today, prepare for the demands of tomorrow, and Remain mindful and respectful of the past.

VALUES

Respect

We are committed to fairness, inclusion, justice, compassion, and equal outcomes for all. We are open-minded and treat all individuals with respect and dignity.

Integrity

We are committed to the highest ideals of honor and integrity in all public and professional relationships.

Innovation

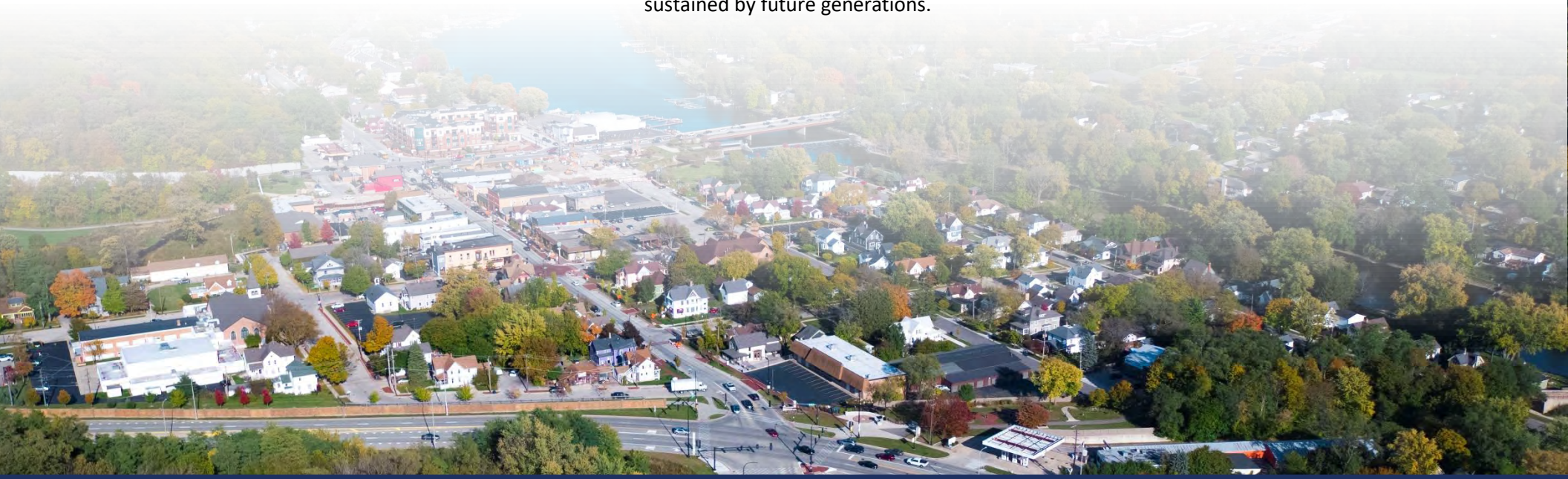
We are committed to a forward-thinking environment that embraces change and supports learning, creativity, calculated risks, and continuous improvement.

Collaboration

We are committed and accountable to organizational success and celebrate our shared dedication to public service.

Stewardship

We are committed to our natural, fiscal, and social resources and will care for such with transparency and openness, further considering how our work will be sustained by future generations.



MESSAGE FROM VILLAGE PRESIDENT

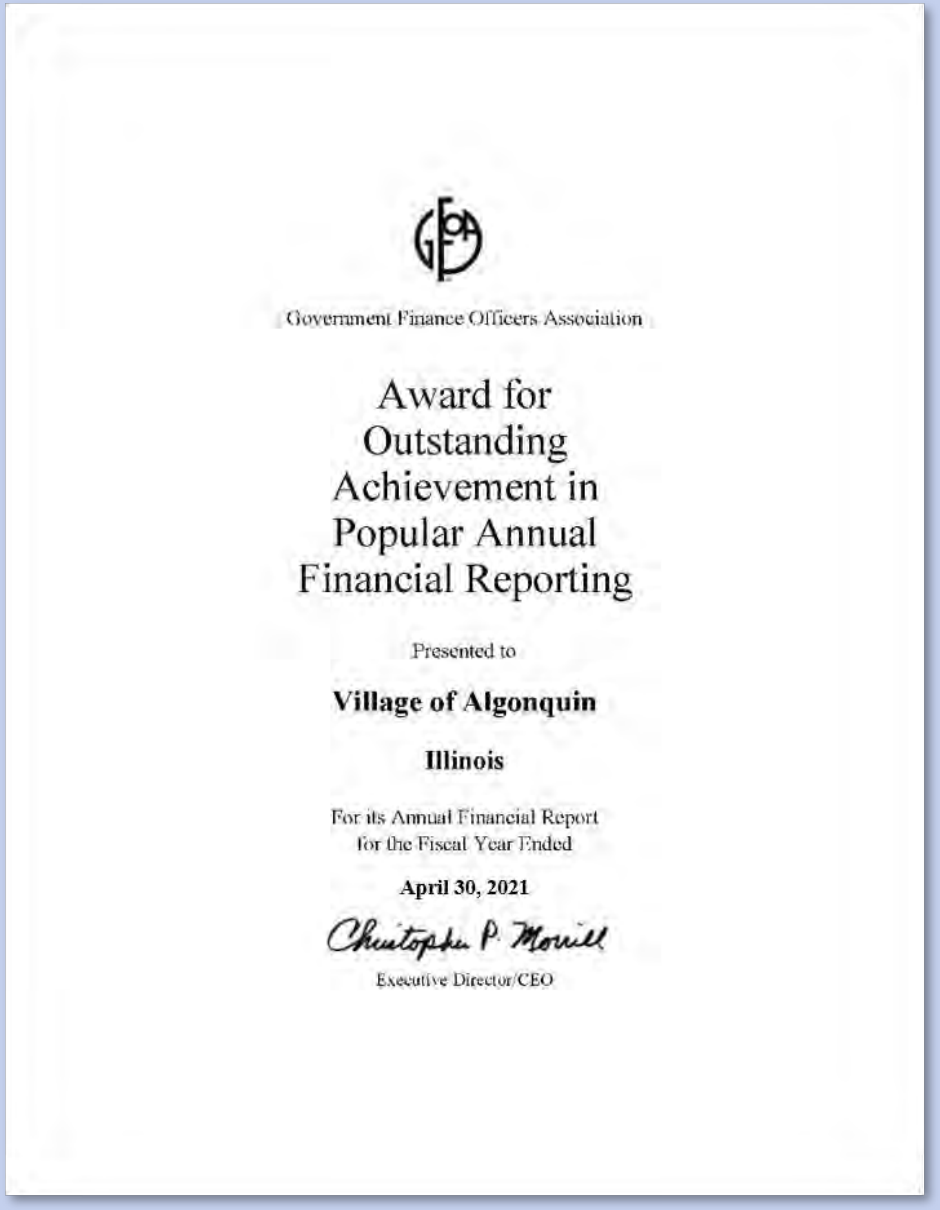
The Village of Algonquin is pleased to present our Popular Annual Financial Report (PAFR) to give you a snapshot of the Village's financial condition and our strategic priorities. A PAFR summarizes information from the Village's Annual Comprehensive Financial Report (annual report or audit) into a short document that is readily accessible and easily understandable to our residents and other interested parties without necessarily needing a background in public finance to read it.

The fiduciary responsibilities that we have as a Village Board are taken very seriously. We work tirelessly to set policy that is fiscally-disciplined and that provides our community with great value to meet the service needs of today, while making sound investments in our operations and infrastructure for a successful tomorrow.

If you haven't already, I encourage you to visit our Transparency Portal online at *www.algonquin.org/transparency* to review the specific information about the Village's finances, including our budgets, audits, expense transactions, Treasurer's reports, and much more. If you have specific questions regarding these reports, please contact our Finance staff online at *www.algonquin.org/finance* or by phone at 847-658-2700.

Sincerely,

Debby Sosine
Village President



Government Finance Officers Association

Award for Outstanding Achievement in Popular Annual Financial Reporting

Presented to

Village of Algonquin

Illinois

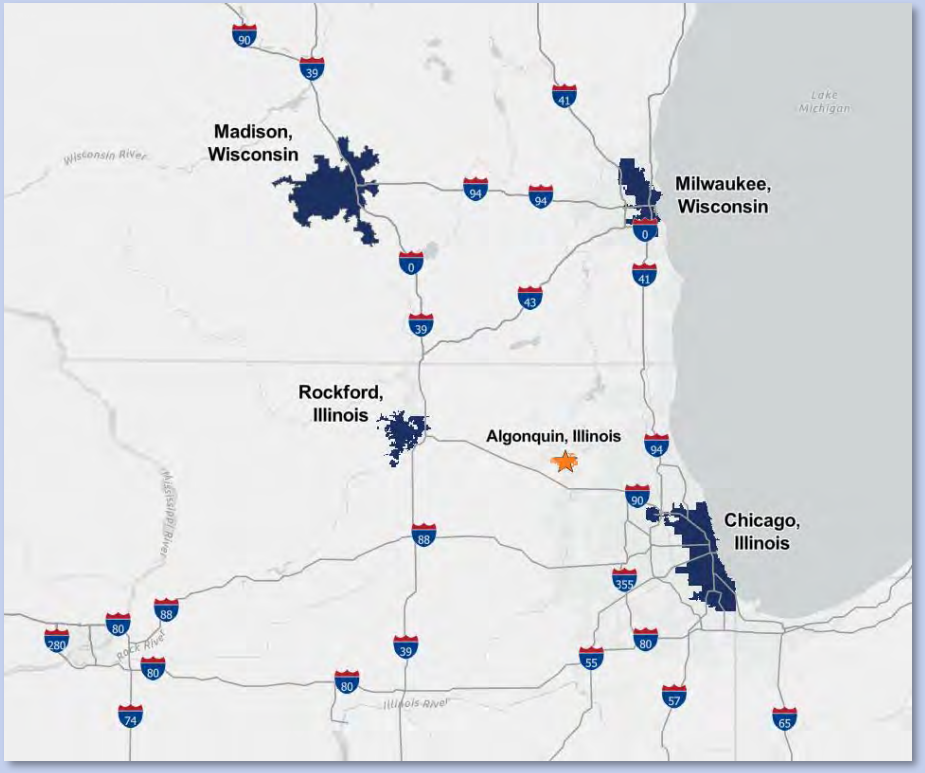
For its Annual Financial Report
for the Fiscal Year Ended

April 30, 2021

Christopher P. Morrill

Executive Director/CEO

ABOUT ALGONQUIN



Algonquin at a Glance…			
Incorporated	*February 25, 1890*	**Households**	*11,176*
Government	*Trustee-Village*	**Median Home Value**	*$268,100*
Full-time Employees	*129*	**Median Family Income**	*$109,819*
Area	*12.23 sq. mi.*	**Population with Bachelor's Degree**	*44.0%*
Population	*29,700*	**Unemployment Rate**	*5.9%*
Median Age	*40.9 years*	**Poverty Rate**	*4.2%*

Statistical information sourced through the United States Census Bureau and Illinois Department of Economic Security.

Algonquin Government

Algonquin is formally organized under the Trustee-Village form of government, and combines the strong political leadership of elected officials with the strong professional experience of an appointed local government administrator. The Board consists of a President, six Trustees, and a Village Clerk, elected at-large to serve overlapping four-year terms.

From left to right: Fred Martin, Village Clerk; Brian Dianis, Village Trustee; Maggie Auger, Village Trustee; Jerry Glogowski, Village Trustee; Debby Sosine, Village President; John Spella, Village Trustee; Laura Brehmer, Village Trustee; and Bob Smith, Village Trustee.

Major Accomplishments & Initiatives

Village staff, following specific goals of the Village Board and Village Manager, have been involved in a variety of projects throughout the year. These reflect the Village's commitment to ensuring that citizens are provided cost effective and quality services. Some notable items from the fiscal year include:

- acquired $4.2 million in federal funding through the American Rescue Plan Act (ARPA);
- approved the Northpoint Development, a $152 million development spanning 148 acres in the Algonquin Corporate Campus;
- implemented the Village's Comprehensive Parks and Recreation Master Plan, including plans to redevelop Presidential and Towne parks;
- received the Government Finance Officers Association's Triple Crown, recognizing the Village's significant achievements in financial reporting;
- made significant progress on the Old Town Algonquin Redevelopment Project, including the Around and About Main Street and the Riverwalk and Streetscape project extensions.

STATEMENT OF NET POSITION

This Statement of Net Position is presented in much more detail in the Village's Comprehensive Annual Financial Report. This is a very high-level summary that captures total assets and liabilities and compares them to prior years. **This may serve as a useful overall indicator of the Village's financial position and trends over the last two years**.

The Village's activities are presented in two following categories:

- **Governmental activities**: include most of the Village's core services, such as general government (administration, building, and zoning), public safety (police), and Public Works (street, parks, and forestry maintenance). Property taxes and state shared revenues (including sales tax) finance most of these activities.
- **Business-type activities**: include water and sewer utilities, which are primarily financed through user fees and charges.

The largest portion of the Village's net position reflects its investment in capital assets such as land, buildings and improvements, vehicles, machinery and equipment, and construction, less any outstanding debt used to acquire those assets. The Village uses these capital assets to provide services to its citizens; consequently, these assets are not available for future spending.

Following the Fiscal Year Ended April 30, 2022, the Village's net position increased $11.7 million, 4 percent, following increases in current and capital assets. The Village's Statement of Net Position is also impacted by several other transactions.

Continued completion of capital improvement projects accounted for a significant increase in capital assets, which totaled $5.9 million. For general government, construction progress in the Village resulted in a $3.0 million increase, resulting mostly from completion of the Terrace Hill Road Construction and the Randall Road Pedestrian Underpass projects during the fiscal year. The Village also purchased property at 7 S. Main Street, resulting in slight increases to land and right of way assets, as well as buildings. An additional increase of $2.9 million occurred through water and sewer improvements, which included improvement projects like the Downtown Streetscape, Ratt Creek Reach 5 Sewer Relocation, and Woods Creek Lift Station Improvements.

The increase in current and other assets can be attributed to an increase in other taxes and cash investments. Distributions from the American Rescue Plan Act increased this category by $2.4 million, while other taxes provided modest increases following the start of the Leveling the Playing Field for Illinois Retail Act.

Statement of Net Position for the Fiscal Year Ended April 30, 2022

	2022	2021
Assets		
Current and other assets	$ 62,618,974	$ 55,499,098
Capital assets, net	279,795,914	273,945,520
Total Assets	**$ 342,414,888**	**$ 329,444,618**
Deferred Outflows of Resources		
Deferred Outflows	$ 3,864,573	$ 3,086,887
Total Assets & Deferred Outflows	**$ 346,279,461**	**$ 332,531,505**
Liabilities		
Current and other liabilities	$ 6,759,996	$ 8,249,401
Long-term liabilities	43,101,411	38,759,910
Total Liabilities	**$ 49,861,407**	**$ 47,009,311**
Deferred Inflows of Resources		
Deferred Inflows	$ 16,027,561	$ 16,860,752
Total Liabilities & Deferred Inflows	**$ 65,888,968**	**$ 63,870,063**
Net Position	**$ 280,390,493**	**$ 268,661,442**

Total liabilities increased by approximately $2.9 million from 2021. The increase in total liabilities was largely due to an increase in non-current liabilities ($2.9 million) from low-interest loans secured for water and sewer improvements, as well as an increase in police pension liabilities ($0.3 million) for governmental activities. These liabilities were offset by decreases of $1.0 million in total liabilities for governmental activities and $0.5 million in total liabilities for business-type activities.

The Village's overall financial condition is strong and stable and current financial policies have provided opportunities for continued investment in programs and services that make Algonquin great.

STATEMENT OF ACTIVITIES

Statement of Activities, often referred to as the Village's income statement, reflects all of the financial activity for the Village during the fiscal year ended April 30, 2022. This statement presents information to show how the Village's net position changed during the year as a result of the financial activity (i.e., revenues and expenses). Over time, increases or decreases in net position may serve as a useful indicator of whether the Village's financial position is improving or deteriorating. Below is a summarized version of the detailed statement of activities found in the Village's Comprehensive Annual Financial Report.

Statement of Activities for the Fiscal Year Ended April 30, 2022

	2022	2021
Revenues		
Program Revenues	$18,812,968	$ 18,734,557
General Revenues	33,259,844	25,442,880
Total Revenues	**$52,072,812**	**$ 44,177,437**
Expenses		
Governmental Activities	$28,380,430	$ 23,340,788
Business-type Activities	11,963,331	10,006,844
Total Expenses	**$40,343,761**	**$ 33,347,632**
Changes in Net Position		
Net Position (beginning of year)	$268,661,442	$ 257,831,637
Changes in Net Position	11,729,051	10,829,805
Net Position (end of year)	**$280,390,493**	**$ 268,661,442**

The Statement of Activities shows that the Village's total net position has improved over the beginning net position during the course of the fiscal year.

Revenue trends reflect an increase of $7.9 million in total revenues. Distributions of $4.2 million from the American Rescue Plan Act contributed significantly to the overall increase. Following implementation of the Leveling the Playing Field for Illinois Retail Act, sales and use tax increased $1.4 million and home rule sales tax increased $1.0 million. Tap on fees from new construction, along with the annual water and sewer rate increase, resulted in a $2.0 million increase in charges for services.

Total expenses increased $6.9 million, or 21 percent, primarily due to government wide adjustments for capital assets and police pension expenses. Capital infrastructure projects also contributed to the Village's expenses during the year, including the following:

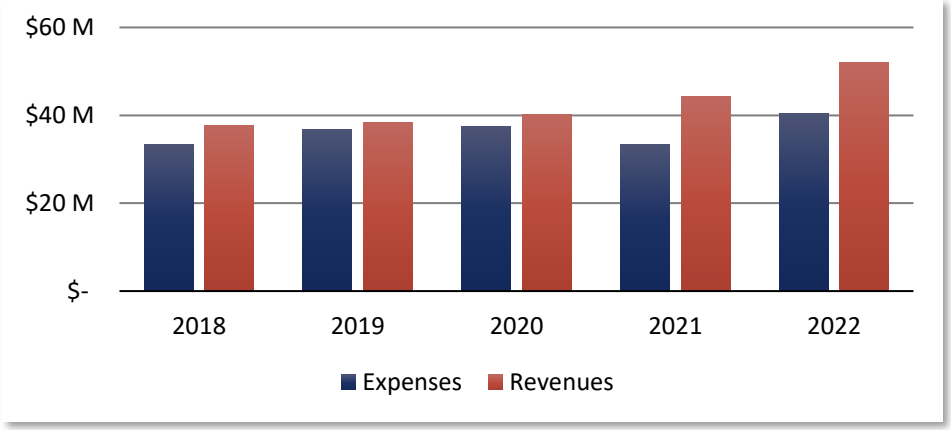
- Wastewater Treatment Facility Improvements Phase 6B: $4.2 million
- Ratt Creek Reach 5 Sewer Relocation: $1.5 million
- Scott Street Road Construction: $0.7 million

Moreover, significant investments continued in Old Town Algonquin:

- Downtown Streetscape Improvements: $2.2 million
- Main Street & Harrison Bike Trail & Roundabout: $1.7 million
- Main Street Watermain Extension: $0.4 million

A tax increment financing (TIF) district was established in the Old Town Algonquin to help facilitate and finance infrastructure improvements in the area, ultimately leading to private redevelopment and investment in this beautiful, pedestrian-friendly business district.

Revenue and Expense History

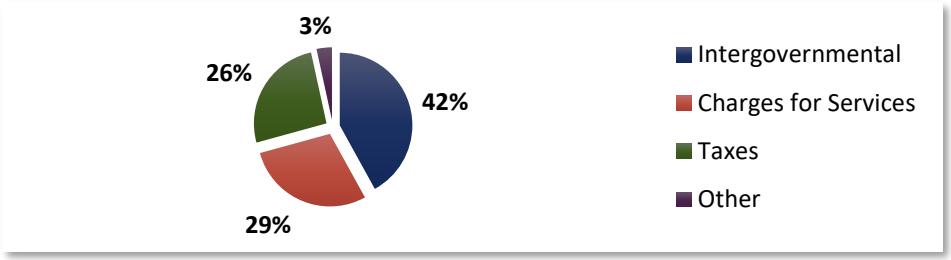


Revenues and expenses over the five-year period shown above are stable. In response to the pandemic, the Village adopted a Financial Resiliency Plan which has resulted in minor changes in expenses during recent fiscal years. Increases in revenues shown during the most recent year can be attributed to funding received through grants, such as the American Rescue Plan Act.

REVENUES

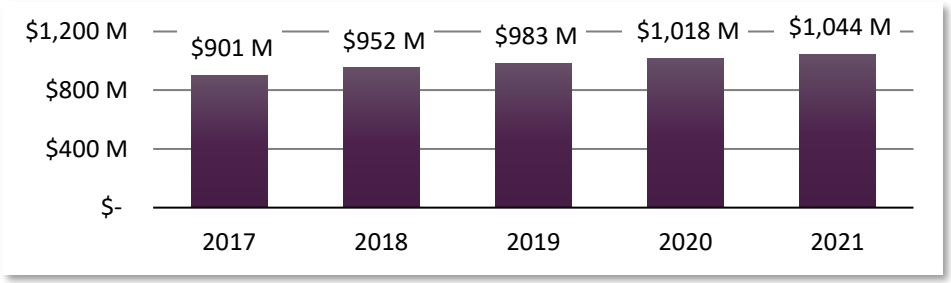
The Village Board and management are focused on maintaining long-term financial health through diversified revenue sources while strategically investing in community initiatives.

Total Primary Government Revenue by Source



Over 97 percent of Village revenues are comprised of the following categories: intergovernmental, taxes, and charges for services. Intergovernmental revenues are distributed by the State of Illinois and include sales and use tax and income tax. Locally assessed taxes include property tax and home rule sales tax. The charges for services category is made up of primarily water and sewer utility user fees.

A History of Algonquin's Assessed Valuation



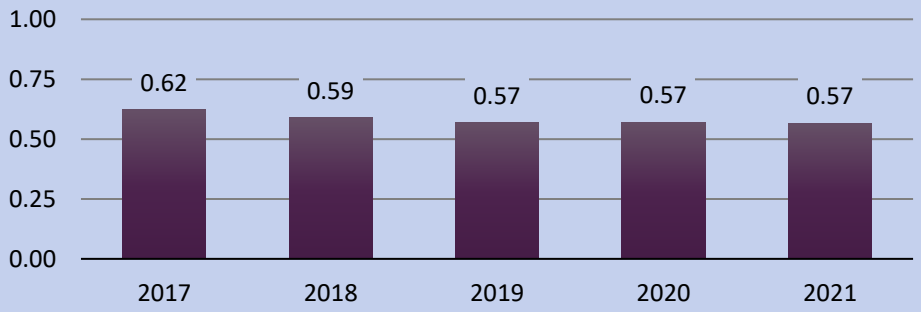
Due to recent upturns in housing market values, the Village's equalized assessed valuation increased 2.5% from the previous levy year. **This is the second consecutive year the assessed valuation has been exceeded $1.0 billion**.

Property Tax Breakdown

Education	Fire	County	Village	Other
60%	10%	9%	6%	15%

Several taxing bodies comprise local property tax bills in Algonquin. **The Village portion of the property tax is approximately 6 percent**. In other words, for every dollar that is paid by residents in property tax, the Village receives six cents. Schools, fire protection, county, and other taxing bodies (library, township, conservation, community college, etc.) comprise the remainder of the property tax bill.

Property Tax Rate History

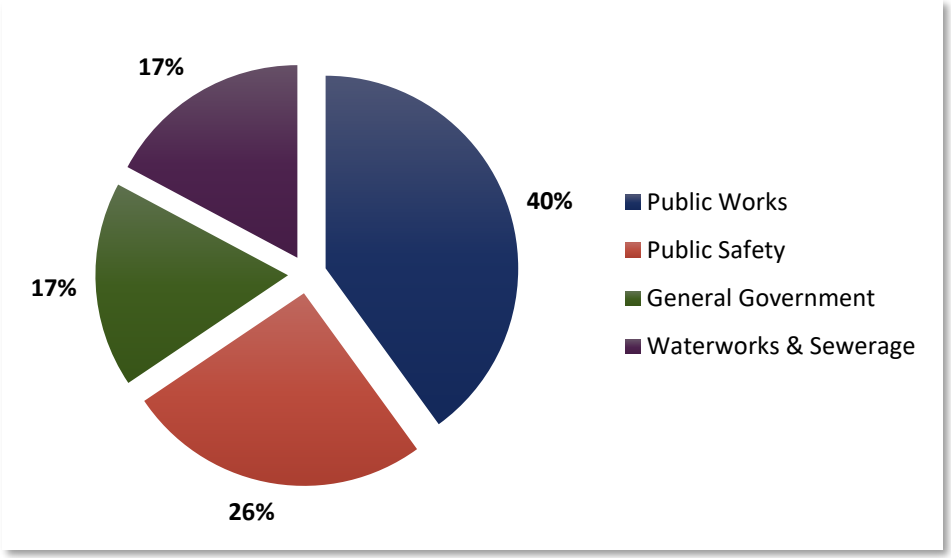


The Village's property tax rate remains flat following considerable reductions in recent years with little to no change in service delivery. Recent property tax levy freezes, combined with new construction growth and increases in equalized assessed valuation, have led to lower property tax rates over the past five years.

EXPENSES

The chart below illustrates the uses and percentages of the Village's expenses across all funds totaling $40.3 million for the fiscal year ending 2022. **The majority of expenses relate to public works (operations, maintenance, and construction) and Public Safety (police), with Waterworks and Sewerage and General Government (administration) making up the remainder**.

Total Primary Government Expense by Source



General Government expenses are incurred by the Village's administrative departments, including the Village Manager's Office, Finance, Human Resources, Innovation & Technology, Recreation, Community Development and other non-departmental costs.

Public Safety expenses are those incurred by the Village to provide police services to the public.

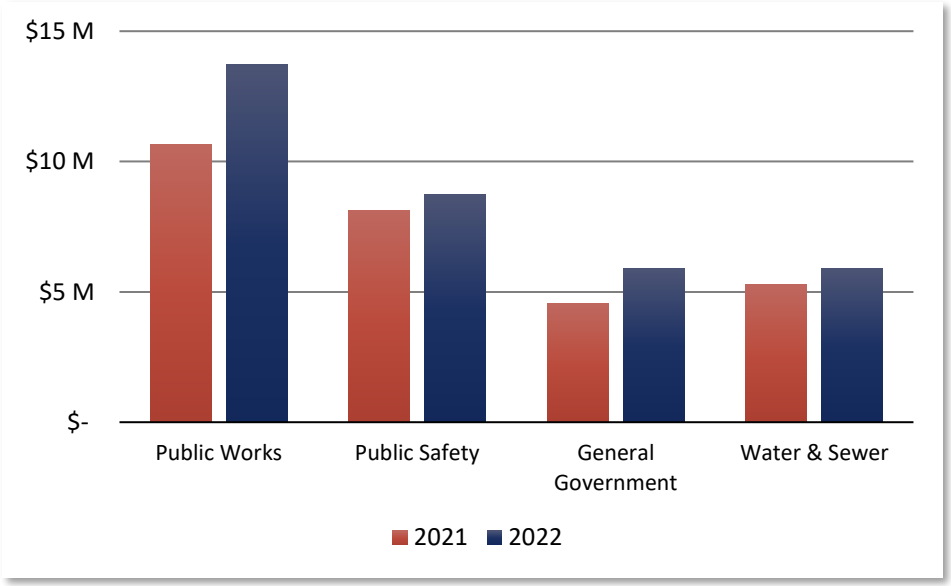
Public Works expenses are related to the design, construction, maintenance, and operation of all roadways, sidewalks, trails, parks, forestry, drainage, and related infrastructure within the Village.

Debt Service (Interest/Fees) reflects the interest costs for long-term debt, such as bonds and loans. This does not include any interest costs on water/sewer-related debt.

Water and Sewer expenses are those incurred by the Village to provide:

1. pumping, treatment, and distribution of potable water;
2. sanitary sewer conveyance and treatment of wastewater.

Annual Comparison of Total Primary Government Expenses



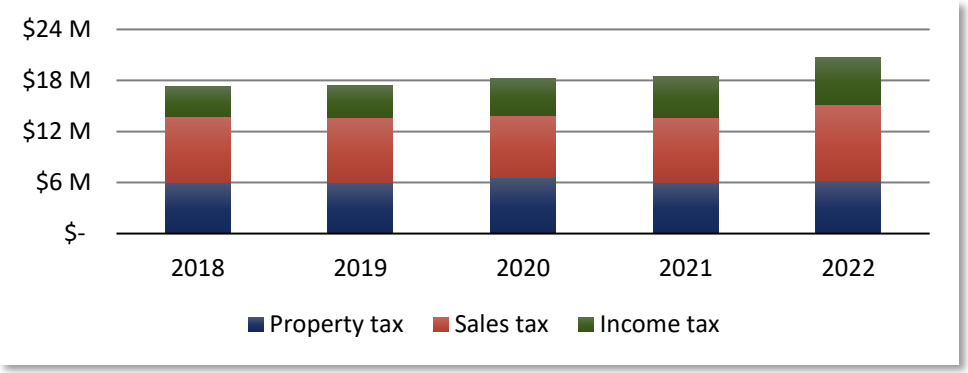
A year-to-year comparison of expenses shows increases in each category during the fiscal year. Increases in public works expenses are primarily attributed to government-wide adjustments in capital assets and personnel costs. Similarly, increases in public safety expenses can be attributed to personnel costs (salaries) and government-wide adjustments in police pension expenses. General government experienced increases in personnel costs, professional services, and government-wide adjustments in capital assets. Water and sewer experienced similar, but subtle increases in those categories as well.

REVENUE AND EXPENSE TRENDS

Revenue Trends

The General Fund, which serves as the Village's primary checking account to fund day-to-day operations, is composed of several sources of revenue (or income). Similar to a typical household, there are a couple of revenue streams that make up most of the Village's overall revenue. This includes sales tax, property tax, and income tax. These revenue sources account for nearly 72 percent of General Fund revenue.

Annual General Fund Revenue by Source

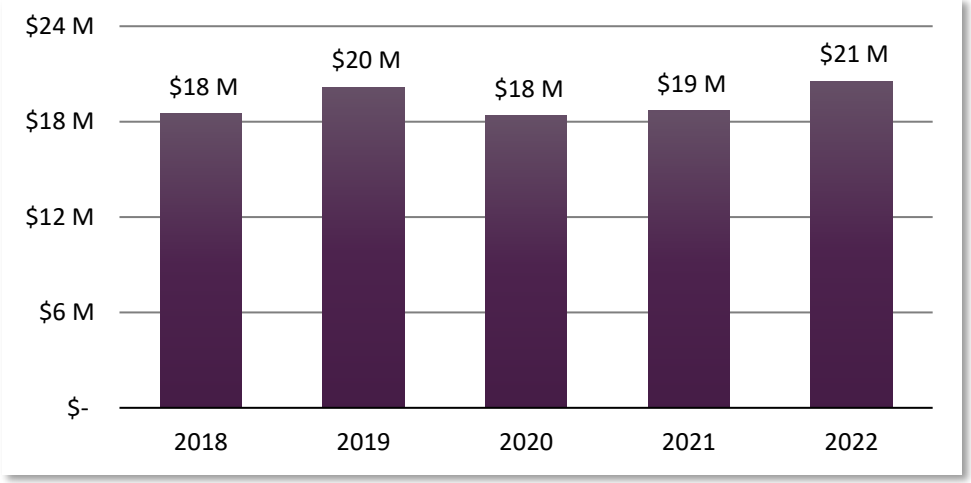


In the five-year period shown above, the three major revenue sources in aggregate are stable, with annual revenue contributions of approximately $20.7 million. Sales tax, the largest of the three revenue sources, increased 17.9 percent from the previous year. The increase in sales tax can be attributed to implementation of the Leveling the Playing Field for Illinois Retail Act, which captures sales tax from remote retail transactions. Property taxes have remained flat; however, the property tax rate was increased slightly to capture new growth in 2021, resulting in a 2.8 percent increase following an upturn in the housing market. Income tax also increased 14.2 percent when compared to 2021. The increases in these revenues offset decreases in other revenues like telecommunication tax, which decreased 9.9 percent, for the Village and offers some additional revenue to fund Village operation.

Expense Trends

During 2022, the Village expended $25.5 million from the General Fund, which includes transfers to other funds. **Of this total, approximately $10.3 million (40 percent) was allocated toward police and public safety operations**. Public Works was the next largest operating expense category in the General Fund, which expended approximately $4.3 million for day-to-day maintenance activities.

Annual Total General Fund Expenditures



Over the five-year period shown, annual General Fund expenses (excluding transfers) have increased 10.9 percent through 2022. Expenses increased for public works ($3.0 million) and general government ($1.4 million) due to government wide adjustments in capital assets when compared to the previous year. Public safety expenses increased $0.6 million from adjustments to police pension expenses.

Personnel expenses (salaries, health insurance, pension, social security/Medicare, etc.) are the largest expense category in the General Fund, making up nearly 60 percent of overall expenses. Personnel expenses in the General Fund increased $0.9 million, or 8 percent, from 2021. These increases resulted from the hiring of additional staff, along with planned salary increases.

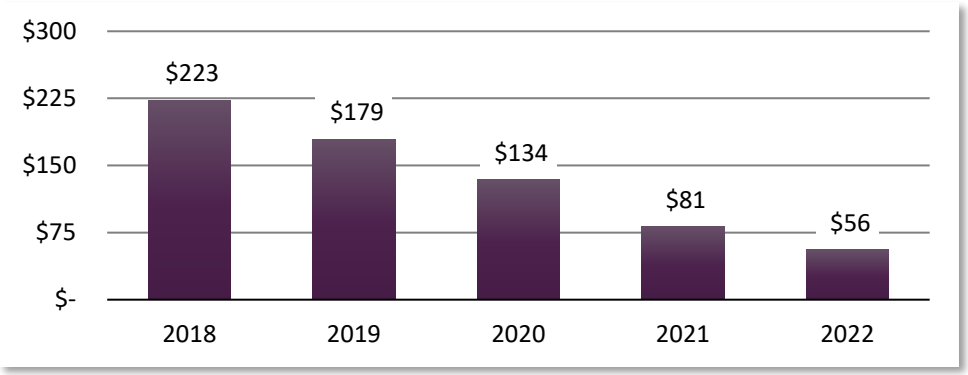
LONG-TERM DEBT

As of April 30, 2022, the Village had $27.7 million in long-term debt outstanding with $1.2 million due within one year. The outstanding debt relates to general obligation bonds and low-interest loans administered through the Illinois Department of Environmental Protection (IEPA).

General Obligation Bonds

General obligation bonds are direct obligations and pledge the full faith and credit of the Village and are payable from both governmental funds and business-type funds. These bonds are used to finance long-lived capital improvements, including the construction and improvement of Village facilities. Water and sewer utility revenues are pledged as repayment for the Wastewater Treatment Facility expansion debt (Bond Series 2013). Bond Series 2013 is scheduled to mature on April 1, 2025.

Bonded Debt per Capita



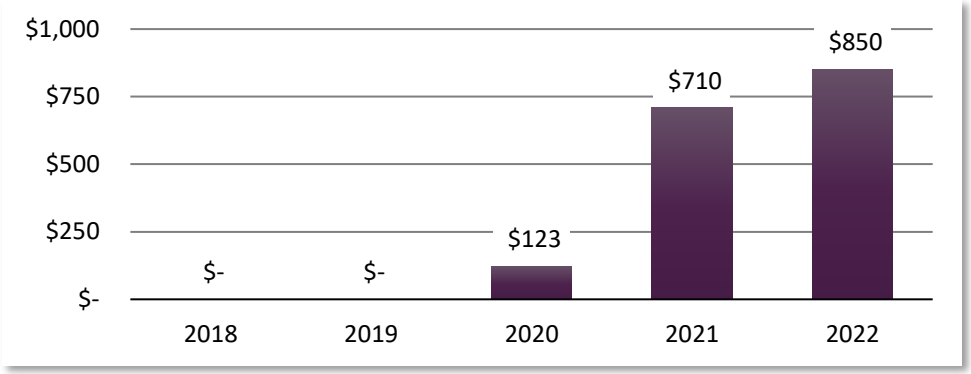
The graphic above displays the Village's bonded debt per capita for Bond Series 2013. The level of debt per capita is a good measure of a government's ability to pay its debt service costs through its current levels of tax revenue. The lower the level, the greater capacity the government has. **The Village's bonded debt per capita has decreased 75 percent in the five-year period shown** and will continue this trend as the Village continues to pay off its debt service.

The Village continues to maintain excellent investment grade ratings on its outstanding general obligation bonds, rated "AAA" by Standard & Poor's rating service. **The AAA rating is the highest possible rating the agency provides, and indicates a minimal risk to investors and achieves cost-savings to the Village via lower interest rates**. This is largely achieved by the Village Board's goal of strong financial management by continuing to diversify the Village's revenue base and maintaining strong fund balance reserves in the General Fund.

IEPA Loans

During fiscal year ended 2020, the Village acquired funding for capital improvements through the Illinois Environmental Protection Agency (IEPA) low-interest loan program. These capital projects include additional improvements to the Wastewater Treatment Facility and other water and sewer improvements.

IEPA Loaned Debt per Capita



As shown above, the Village's loaned debt per capita for the IEPA loans has increased with the acquisition of debt for the capital projects listed above. The increase when compared to 2020 is largely due in part to the issuance of two additional loans for water and sewer improvements. The payable balances on the debt service for all three loans totals $25.3 million. **The acquisition of the loans allows the Village to distribute the costs of the capital improvements over time**. Distributing the costs allows the Village to manage additional financial obligations and pursue additional capital projects as needed.

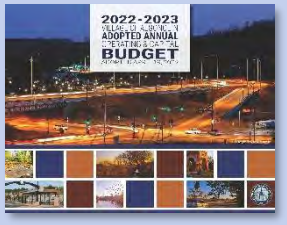
ABOUT PAFR

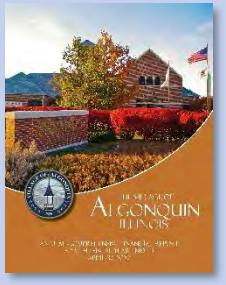
We are proud to present the Village of Algonquin Popular Annual Financial Report (PAFR) for the fiscal year ended April 30, 2022. The purpose of the PAFR is to provide a user-friendly summary of the financial position of the Village of Algonquin and other interesting information for citizens who want a better understanding of the Village's finances. The financial information in the PAFR is taken from the Village's Annual Comprehensive Financial Report (annual report or audit). The annual report outlines the Village's financial position and operating activities each fiscal year presented in conformity with generally accepted accounting principles (GAAP) and includes financial statements audited by Sikich, LLP, an independent firm of certified public accountants. The auditors' report concluded that the financial statements fairly reflect the financial condition of the Village in all material respects.

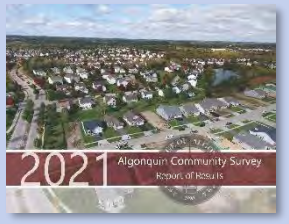
While the numbers in the PAFR come from an audited source, they are presented in a summarized, unaudited non-GAAP format that is more accessible to the public. Citizens who wish to review the audited, GAAP-based, full disclosure financial statements can refer to the Village's annual report available on the Village's website at *www.algonquin.org/transparency* or contact the Village at 2200 Harnish Drive, Algonquin, IL 60102. For more information, please contact Michael Kumbera, Assistant Village Manager, at *michaelkumbera@algonquin.org* or Susan Skillman, Comptroller, at *susanskillman@algonquin.org*.

During the past fiscal year, significant progress has been made on the Trails of Woods Creek, a 279-unit residential development featuring homes ranging from $294,000 to the upper $400,000s.

Interested in Learning More?







If you are interested in learning more about the Village, remember that you can view documents such as the Village's budgets, annual reports, and community survey results online at www.algonquin.org/transparency.

Connect with Us Online...

Village Website

At the Village website, *www.algonquin.org*, visitors may...

- Make payments towards building permits, municipal citations, and water and sewer utility bills;
- Read official documents such as budgets, audits, and community surveys;
- Submit permit application materials and Freedom of Information Records Request forms;
- View meeting agendas and minutes of the Village Board, Committee of the Whole, and Village commissions.

Algonquin e-News

Subscribe to the Algonquin e-News for monthly updates from the Village at www.algonquin.org/e-news.

Social Media

Nextdoor

VILLAGE OF ALGONQUIN

GENERAL SERVICES ADMINISTRATION

– M E M O R A N D U M –

DATE: October 31, 2022

TO: Tim Schloneger, Village Manager

FROM: Michael Kumbera, Assistant Village Manager

SUBJECT: Municipal Compliance Report

Pursuant to House Bill 5088, attached please find the Municipal Compliance Report for the Algonquin Police Pension Fund. The Police Pension Board is required to report annually to the Board of Trustees on the condition of the pension fund at the end of each fiscal year for tax levy purposes.

Recommendation:
Staff recommends the Committee of the Whole forward this item to the Village Board for acceptance by resolution at their meeting on November 15.

C: Amanda Lichtenberger, Accounting Manager

THE VILLAGE OF ALGONQUIN, ILLINOIS
POLICE PENSION FUND

PUBLIC ACT 95-0950
MUNICIPAL COMPLIANCE REPORT

FOR THE FISCAL YEAR ENDED
APRIL 30, 2022

Lauterbach & Amen, LLP
CERTIFIED PUBLIC ACCOUNTANTS
668 NORTH RIVER RD. • NAPERVILLE, ILLINOIS 60563
PHONE 630.393.1483 • FAX 630.393.2516
www.lauterbachamen.com

September 27, 2022

Members of the Pension Board of Trustees
Algonquin Police Pension Fund
Algonquin, Illinois

Enclosed please find a copy of your Municipal Compliance Report for the Algonquin Police Pension Fund for the fiscal year ended April 30, 2022. We have prepared the report with the most recent information available at our office. Should you have more current information, or notice any inaccuracies, we are prepared to make any necessary revisions and return them to you.

The President and Secretary of the Pension Fund are required to sign the report on page 3. If not already included with the enclosed report, please also include a copy of the Pension Fund's most recent investment policy.

The signed Public Act 95-0950 - Municipal Compliance Report must be provided to the Municipality before the tax levy is filed on the last Tuesday in December. We are sending the report via email to promote an environmentally-friendly work atmosphere.

If you have any questions regarding this report, please contact your Client Manager or PSA.

Respectfully submitted,

Lauterbach & Amen, LLP

LAUTERBACH & AMEN, LLP

THE VILLAGE OF ALGONQUIN, ILLINOIS
POLICE PENSION FUND

Public Act 95-950 - Municipal Compliance Report
For the Fiscal Year Ending April 30, 2022

The Pension Board certifies to the Board of Trustees of the Village of Algonquin, Illinois on the condition of the Pension Fund at the end of its most recently completed fiscal year the following information:

1) The total cash and investments, including accrued interest, of the fund at market value and the total net position of the Pension Fund:

	Current Fiscal Year	Preceding Fiscal Year
Total Cash and Investments (including accrued interest)	$42,533,806	$43,925,848
Total Net Position	$42,533,806	$43,922,881

2) The estimated receipts during the next succeeding fiscal year from deductions from the salaries of police officers and from other sources:

Estimated Receipts - Employee Contributions	$481,000
Estimated Receipts - All Other Sources	
Investment Earnings	$2,871,000
Municipal Contribution	$1,905,327

3) The estimated amount required during the next succeeding fiscal year to (a) pay all pensions and other obligations provided in Article 3 of the Illinois Pension Code, and (b) to meet the annual requirements of the fund as provided in Sections 3-125 and 3-127:

(a) Pay all Pensions and Other Obligations	$2,306,900
(b) Annual Requirement of the Fund as Determined by:	
Illinois Department of Insurance	N/A
Private Actuary - Lauterbach & Amen, LLP	
Recommended Municipal Contribution	$1,905,327
Alternative Municipal Contribution	$1,152,783

4) The total net income received from investment of assets along with the assumed investment return and actual investment return received by the fund during its most recently completed fiscal year compared to the total net income, assumed investment return, and actual investment return received during the preceding fiscal year:

	Current Fiscal Year	Preceding Fiscal Year
Net Income Received from Investment of Assets	($2,462,820)	$9,630,606
Assumed Investment Return		
Illinois Department of Insurance	N/A	6.50%
Private Actuary - Lauterbach & Amen, LLP	6.75%	6.75%
Actual Investment Return	(5.70)%	24.91%

5) The total number of active employees who are financially contributing to the fund:

Number of Active Members	48

6) The total amount that was disbursed in benefits during the fiscal year, including the number of and total amount disbursed to (i) annuitants in receipt of a regular retirement pension, (ii) recipients being paid a disability pension, and (iii) survivors and children in receipt of benefits:

	Number of	Total Amount Disbursed
(i) Regular Retirement Pension	17	$1,374,040
(ii) Disability Pension	4	$196,737
(iii) Survivors and Child Benefits	0	$0
Totals	21	$1,570,777

THE VILLAGE OF ALGONQUIN, ILLINOIS
POLICE PENSION FUND

Public Act 95-950 - Municipal Compliance Report
For the Fiscal Year Ending April 30, 2022

7) The funded ratio of the fund:

	Current Fiscal Year	Preceding Fiscal Year
Illinois Department of Insurance	N/A	72.51%
Private Actuary - Lauterbach & Amen, LLP	81.40%	74.44%

8) The unfunded liability carried by the fund, along with an actuarial explanation of the unfunded liability:
Unfunded Liability:

Illinois Department of Insurance	N/A
Private Actuary - Lauterbach & Amen, LLP	$9,982,004

The accrued liability is the actuarial present value of the portion of the projected benefits that has been accrued as of the valuation date based upon the actuarial valuation method and the actuarial assumptions employed in the valuation. The unfunded accrued liability is the excess of the accrued liability over the actuarial value of assets.

9) The investment policy of the Pension Board under the statutory investment restrictions imposed on the fund.

Investment Policy - See Attached.

Please see Notes Page attached.

CERTIFICATION OF MUNICIPAL POLICE
PENSION FUND COMPLIANCE REPORT

The Board of Trustees of the Pension Fund, based upon information and belief, and to the best of our knowledge, hereby certify pursuant to §3-143 of the Illinois Pension Code 40 ILCS 5/3-143, that the preceding report is true and accurate.

Adopted this 26th day of October, 2022

President Stan W. Hayes Date 10/26/2022

Secretary Amber Dole Date 10-26-22

INDEX OF ASSUMPTIONS

1) Total Cash and Investments - as Reported at Market Value in the Audited Financial Statements for the Years Ended April 30, 2022 and 2021.

   Total Net Position - as Reported in the Audited Financial Statementsfor the Years Ended April 30, 2022 and 2021.

2) Estimated Receipts - Employee Contributions as Reported in the Audited Financial Statements for the Year Ended April 30, 2022 plus 3% Increase (Actuarial Salary Increase Assumption) Rounded to the Nearest $100.

   Estimated Receipts - All Other Sources:

   Investment Earnings - Cash and Investments as Reported in the Audited Financial Statements for the Year Ended April 30, 2022, times 6.75% (Actuarial Investment Return Assumption) Rounded to the Nearest $100.

   Municipal Contributions - Recommended Tax Levy Requirement as Reported by Lauterbach & Amen, LLP, Actuarial Valuation for the Year Ended April 30, 2022.

3) (a) Pay all Pensions and Other Obligations - Total Non-Investment Deductions as Reported in the Audited Financial Statements for the Year Ended April 30, 2022, plus a 25% Increase, Rounded to the Nearest $100.

   (b) Annual Requirement of the Fund as Determined by:

   Illinois Department of Insurance - No April 30, 2022 Actuarial Valuation available at the time of this report.

   Private Actuary - Lauterbach & Amen, LLP:

   Recommended Amount of Tax Levy as Reported by Lauterbach & Amen, LLP in the April 30, 2022 Actuarial Valuation.

   Alternative Amount of Tax Levy as Reported by Lauterbach & Amen, LLP in the April 30, 2022 Actuarial Valuation.

INDEX OF ASSUMPTIONS

4) Net Income Received from Investment of Assets - Investment Income (Loss) net of Investment Expense, as Reported in the Audited Financial Statements for the Years Ended April 30, 2022 and 2021.

   Assumed Investment Return:

   Illinois Department of Insurance - Preceding Fiscal Year Interest Rate Assumption as Reported in the April 30, 2021 Actuarial Valuation. No April 30, 2022 Actuarial Valuation available at the time of this report.
   Private Actuary - Current and Preceding Fiscal Year Interest Rate Assumption as Reported in the Years Ended April 30, 2022 and 2021 Actuarial Valuations.

   Actual Investment Return -Net Income Received from Investments as Reported Above as a Percentage of the Average of the Beginning and Ending Balances of the Fiscal Year Cash Investments, Excluding Net Investment Income, Gains, and Losses for the Fiscal Year Return Being calculated, as Reported in the Audited Financial Statements for the Fiscal Years Ended April 30, 2022 and 2021.

5) Number of Active Members - Illinois Department of Insurance Annual Statement for April 30, 2022 - Schedule P.

6) (i) Regular Retirement Pension - Illinois Department of Insurance Annual Statement for April 30, 2022 - Schedule P for Number of Participants and Expense page 1 for Total Amount Disbursed.

   (ii) Disability Pension - Same as above.

   (iii) Survivors and Child Benefits - Same as above.

INDEX OF ASSUMPTIONS

7) The funded ratio of the fund:

Illinois Department of Insurance - Preceding Fiscal Year Net Present Assets as a percentage of Total Assets as Reported in the April 30, 2021 Actuarial Valuation. No April 30, 2022 Actuarial Valuation available at the time of this report.
Private Actuary - Current and Preceding Fiscal Year Net Present Assets as a percentage of Total Assets as Reported in the April 30, 2022 and 2021 Actuarial Valuations.

8) Unfunded Liability:

Illinois Department of Insurance - Deferred Asset (Unfunded Accrued Liability) - No April 30, 2022 Actuarial Valuation available at the time of this report.

Private Actuary - Deferred Asset (Unfunded Accrued Liability) as Reported by Lauterbach & Amen, LLP in the April 30, 2022 Actuarial Valuation.

CASH MANAGEMENT POLICY

of the

ALGONQUIN POLICE PENSION FUND

Adopted: January 26, 2022

This Cash Management Policy ("Policy") is adopted by the Board of Trustees ("Board") of the Algonquin Police Pension Fund ("APPF").

1. INTRODUCTION

The purpose of this Cash Management Policy is to require cash forecasts so as to ensure sufficient operating liquidity by estimating the available cash deposits, expected inflows, and required disbursements during a given period. This Policy aims to ensure an efficient working process that allows the APPF to meet monthly benefit obligations and operating expenses and transfer excess funds to the Illinois Police Officers' Pension Investment Fund (IPOPIF) for investment purposes.

2. SCOPE

This Policy will address the following procedures and processes for cash management.

- Objectives of the Cash Management Policy
- Authorized Representatives
- Cash Management Procedures
- Cash Flow Planning

3. OBJECTIVES

The cash forecast analysis is intended to measure and access the APPF's ability to meet its liquidity needs. Cash forecasting can reduce the need for liquidation of long-term investments before maturity in the event of a cash shortfall, and can identify idle funds and determine whether those funds could be transferred to the IPOPIF for investment purposes.

Outline the procedure for the APPF to transfer cash to the IPOPIF.

4. ACCOUNT REPRESENTATIVES

Account Representative for the purpose of transferring cash to the IPOPIF shall be the Treasurer. In order to initiate a transfer, it will also require the approval of either the President or the Secretary. The approval needs to be documented. Once approved, the Treasurer will make the transfer.

5. CASH MANAGEMENT PROCEDURES

The APPF shall keep, at a minimum, an estimated three (3) months of expenses in a local account. The amount of cash kept in the local account will fluctuate and will necessitate transfers to and from the IPOPIF. Requests to redeem cash from the IPOPIF can be made on a monthly basis and should occur via Automated Clearing House (ACH).

If the APPF has determined that it has a surplus of cash in the local account, it should transfer the funds to the IPOPIF for investment. The Treasurer (Account Representative) shall send transfers to the IPOPIF in the manner prescribed by the IPOPIF. The Treasurer shall indicate that the transfer is for the APPF, dollar amount to be transferred and the date the transfer will be made.

It is the responsibility of the APPF to ensure enough money is kept on hand to meet benefit obligations and other operating expenditures and to act in their fiduciary capacity as board members in the administration and payment of monthly retirement benefits and expenses.

6. CASH FLOW PLANNING

The APPF shall prepare an estimated cash flow projection annually on a calendar year basis. This cash flow projection should be presented and discussed at the Board's October meeting. The cash flow projection at a minimum should include the following:

- Estimated cash balance for 12 months
- Estimated employee contributions
- Estimated employer contributions
- Estimated pension benefits
- Estimated administrative expenses
- Estimated monthly net inflow and outflow
- Estimated monthly funding request/money transfer

The cash forecast should be based on conservative assumptions about both the cash receipts and disbursement portions of the analysis, and these assumptions should be reviewed and updated regularly.

The cash forecast should be updated periodically by the Board to ensure sufficient liquidity and actual cash flow results should be compared with the forecast projections.

VILLAGE OF ALGONQUIN

GENERAL SERVICES ADMINISTRATION

– M E M O R A N D U M –

DATE: November 1, 2022

TO: Tim Schloneger, Village Manager

FROM: Michael Kumbera, Assistant Village Manager

SUBJECT: Police Pension Fund Actuarial Report and Tax Levy Request

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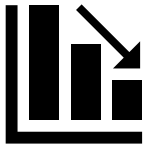
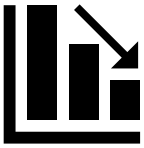
Attached is a copy of an independent actuarial report provided by Lauterbach and Amen for the Algonquin Police Pension Fund as of May 1, 2022. The fund is 81.4 percent funded (up 7.0 percent) from the prior year and the amortization target remains 100 percent by 2033 (13 years). Some additional highlights of this year's report include:



10.8%
Decrease in Required Contribution

$4.2M
Increase in Actuarial Value of Assets



-5.6%
Rate of Return (Market)

$3.6M
Reduction in Unfunded Liability

The Algonquin Police Pension Fund Board of Trustees is requesting that the Village Board levy an amount of $1,905,327 in accordance with the actuarial valuation results for the year beginning May 1, 2022. A copy of this request is attached to this memo.

Recommendation:
Staff recommends the Committee of the Whole forward this item to the Village Board for approval by resolution at their meeting on November 15.

C: Amanda Lichtenberger, Accounting Manager

Actuarial Funding Report

ALGONQUIN POLICE PENSION FUND

Actuarial Valuation
as of May 1, 2022

For the Contribution Year May 1, 2022 to April 30, 2023

LAUTERBACH & AMEN, LLP

Actuarial Valuation – Funding Recommendation

Lauterbach & Amen, LLP

CERTIFIED PUBLIC ACCOUNTANTS

ALGONQUIN POLICE PENSION FUND

Contribution Year Ending: April 30, 2023
Actuarial Valuation Date: May 1, 2022
Utilizing Data as of April 30, 2022

Submitted by:

Lauterbach & Amen, LLP
668 N. River Road
Naperville, IL 60563
Phone: 630.393.1483
www.lauterbachamen.com

Contact:

Todd A. Schroeder
Director
July 7, 2022

LAUTERBACH & AMEN, LLP

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ACTUARIAL CERTIFICATION

This report documents the results of the Actuarial Valuation for the Algonquin Police Pension Fund. The information was prepared for use by the Algonquin Police Pension Fund and the Village of Algonquin, Illinois for determining the Recommended Contribution, under the selected Funding Policy, and the Alternative Contribution for the Contribution Year May 1, 2022 to April 30, 2023. It is not intended or suitable for other purposes. Determinations for purposes other than the Employer's Actuarial Recommended Contribution may be significantly different from the results herein.

The results in this report are based on the census data and financial information submitted by the Village of Algonquin, Illinois, and may include results from the prior Actuary. We did not prepare the Actuarial Valuations for the years prior to May 1, 2016. Those valuations were prepared by the prior Actuary whose reports have been furnished to us, and our disclosures are based on those reports. An audit of the prior Actuary's results was not performed, but high-level reviews were completed for general reasonableness, as appropriate, based on the purpose of this valuation. The accuracy of the results is dependent on the precision and completeness of the underlying information.

In addition, the results of the Actuarial Valuation involve certain risks and uncertainty as they are based on future assumptions, market conditions, and events that may never materialize as assumed. For this reason, certain assumptions and future results may be materially different than those presented in this report. See the *Management Summary* section of this report for a more detailed discussion of the Defined Benefit Plan Risks, as well as the limitations of this Actuarial Valuation on assessing those risks. We are not aware of any known events subsequent to the Actuarial Valuation Date, which are not reflected in this report but should be valued, that may materially impact the results.

The valuation results summarized in this report involve actuarial calculations that require assumptions about future events. The Village of Algonquin, Illinois selected certain assumptions, while others were the result of guidance and/or judgment from the Plan's Actuary or Advisors. We believe that the assumptions used in this valuation are reasonable and appropriate for the purposes for which they have been used. The selected assumptions represent our best estimate of the anticipated long-term experience of the Plan, and meet the guidelines set forth in the Actuarial Standards of Practice.

In preparing the results, our Actuaries used commercially available software (ProVal) developed by Winklevoss Technologies, LLC. This software is widely used for the purpose of performing Actuarial Valuations. Our Actuaries coded the plan provisions, assumptions, methods, and participant data summarized in this report, and reviewed the liability and cost outputs for reasonableness. We are not aware of any material weaknesses or limitations in the software, and have determined it is appropriate for performing this valuation.

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To the best of our knowledge, all calculations are in accordance with the applicable funding requirements, and the procedures followed and presentation of results conform to generally accepted actuarial principles and practices as prescribed by the Actuarial Standards Board. The undersigned consultants of Lauterbach & Amen, LLP, with actuarial credentials, meet the Qualification Standards of the American Academy of Actuaries to render this Actuarial Certification. There is no relationship between the Village of Algonquin, Illinois and Lauterbach & Amen, LLP that impairs our objectivity.

Respectfully Submitted,

LAUTERBACH & AMEN, LLP

Todd A. Schroeder

Todd A. Schroeder, ASA, FCA, EA, MAAA

Robert L. Rietz, Jr., FCA, EA, MAAA

MANAGEMENT SUMMARY

Recommended Contribution
Funded Status
Management Summary – Comments and Analysis
Actuarial Recommended Contribution – Reconciliation

RECOMMENDED CONTRIBUTION

	Prior Valuation	Current Valuation
Recommended Contribution	$2,135,484	$1,905,327
Expected Payroll	$4,285,133	$4,945,867
Recommended Contribution as a Percent of Expected Payroll	49.83%	38.52%

The Recommended Contribution has Decreased by $230,157 from the Prior Valuation.

FUNDED STATUS

	Prior Valuation	Current Valuation
Normal Cost	$1,039,773	$1,104,217
Fair Value of Assets	$43,922,881	$42,533,806
Actuarial Value of Assets	$39,530,593	$43,676,676
Actuarial Accrued Liability	$53,104,654	$53,658,680
Unfunded Actuarial Accrued Liability/(Surplus)	$13,574,061	$9,982,004
Percent Funded		
Actuarial Value of Assets	74.44%	81.40%
Fair Value of Assets	82.71%	79.27%

The Percent Funded has Increased by 6.96% on an Actuarial Value of Assets Basis.

MANAGEMENT SUMMARY – COMMENTS AND ANALYSIS

Contribution Results

The Recommended Contribution is based on the selected Funding Policy and methods that are outlined in the *Actuarial Funding Policies* section of this report.

"Contribution Risk" is defined by the Actuarial Standards of Practice as the potential for actual future contributions to deviate from expected future contributions. For example, when actual contributions are not made in accordance to the Plan's Funding Policy, or when future experience deviates materially from assumed. While it is essential for the Actuary and Plan Sponsor to collaborate on implementing a sound and financially feasible Funding Policy, it is important to note that the Actuary is not required, and is not in the position to, evaluate the ability or willingness of the Plan Sponsor to make the Recommended Contribution under the selected Funding Policy.

As a result, while Contribution Risk may be a significant source of risk for the Plan, this Actuarial Valuation makes no attempt to assess the impact of future contributions falling short of those recommended under the selected Funding Policy. Notwithstanding the above, see the *Actuarial Recommended Contribution – Reconciliation* section of this report for the impact on the current Recommended Contribution of any contribution shortfalls or excesses from the prior year.

Defined Benefit Plan Risks

Asset Growth:

Pension funding involves preparing Fund assets to pay for benefits when Members retire. During their working careers, assets grow with contributions and investment earnings; and then, the Pension Fund distributes assets in retirement. Based on the Plan's current mix of Members and Funded Status, the Plan should experience positive asset growth, on average, if the Recommended Contributions are made and expected investment earnings come in. In the current year, the Fund asset growth was negative by approximately $1,389,000.

Asset growth is important in the long-term. Long-term cash flow out of the Pension Fund is primarily benefit payments, and expenses are a smaller portion. The Plan should monitor the impact of expected benefit payments on future asset growth. We assess and project all future benefit payments as part of the determination of liability. The assessment is made on all current Members of the Fund, both active and inactive. For active Members, the assessment includes the probability that Members terminate or retire and begin receiving benefits. In the next 5 years, benefit payments are anticipated to increase 50-55%, or approximately $861,000. In the next 10 years, the expected increase in benefit payments is 130-135%, or approximately $2,054,000. The estimated increase in benefit payments is being compared against the benefits paid to inactive Members during the fiscal year, excluding any refunds of Member Contributions.

Furthermore, plans with a large number of inactive Members have an increased "Longevity Risk". Longevity Risk is the possibility that inactive Members may live longer than projected by the Plan's mortality assumption. As shown in the previous paragraph, benefit payments are expected to increase over the next 5-year and 10-year horizons. The projected increases assume that current inactive Members pass away according to the Plan's mortality assumption. To the extent that current inactive Members live longer than expected, the future 5-year and 10-year benefit projections may be larger than the amounts disclosed in the previous paragraph. Higher levels of benefit payments, payable for a longer period of time, may cause a significant strain to the Plan's cash flow, future Recommended Contributions, and may lead to Plan insolvency.

Unfunded Liability:
Unfunded Liability represents the financial shortfall of the Actuarial Value of Assets compared to the Actuarial Accrued Liability. To the extent that Unfunded Liability exists, the Plan is losing potential investment earnings due to the financial shortfall. Contributions towards Unfunded Liability pay for the lost investment earnings, as well as the outstanding unfunded amount. If payments towards Unfunded Liability are not made, the Unfunded Liability will grow.

In the early 1990s, many Pension Funds in Illinois adopted an increasing payment towards Unfunded Liability due to a change in legislation. The initial payment decreased, and future payments are anticipated to increase annually after that. In many situations, payments early on were less than the interest on Unfunded Liability, which means that Unfunded Liability increased even though contributions were made at the recommended level.

The current Recommended Contribution includes a payment towards Unfunded Liability that is approximately $568,000 greater than the interest on Unfunded Liability. All else being equal, and contributions being made, Unfunded Liability is expected to decrease. The Employer and Fund should anticipate that improvement in the current Percent Funded will be mitigated in the short-term. The Employer and Fund should understand this impact as we progress forward to manage expectations.

Actuarial Value of Assets:
The Pension Fund smooths asset returns that vary from expectations over a 5-year period. The intention over time is that asset returns for purposes of funding recommendations are a combination of several years. The impact is intended to smooth out the volatility of Recommended Contributions over time, but not necessarily increase or decrease the level of contributions over the long-term.

When asset returns are smoothed, there are always gains or losses on the Fair Value of Assets that are going to be deferred for current funding purposes, and recognized in future years. Currently, the Pension Fund is deferring approximately $1,143,000 in losses on the Fair Value of Assets. These are asset losses that will be recognized in upcoming periods, independent of the future performance of the Fair Value of Assets.

Cash Flow Risk:
Assets, liabilities, and Funded Status are good metrics to monitor over time to assess the progress of the Funding Policy. However, these metrics may provide limited forward-looking insights. Specifically, the maturity of a Pension Fund can pose certain risks that often cannot be assessed with a point-in-time metric such as Percent Funded.

For example, two different Pension Funds could have the same Percent Funded, but have completely different risk profiles. One Fund might mostly cover active Members with little to no Members in pay status, whereas a second Fund might mostly cover inactive Members with a significant level of annual benefit payments. The latter Fund has a greater "Cash Flow Risk", i.e. a more significant chance that negative cash flows could lead to a deteriorating, rather than improving, Percent Funded over time.

It is important to note that, in general, positive net cash flows are good, but also need to be sufficient to cover the growth in the liabilities (i.e. the Normal Cost as well as interest on the Actuarial Accrued Liability). Typically, when cash flows are assumed to be insufficient to cover the growth in liabilities, the Percent Funded will decline, while future Recommended Contributions will increase.

Benefit Payment Risk:
Ideally, plans in a sound financial position will have the ratio of annual benefits payments to the Fair Value of Assets to be less than the Expected Rate of Return on Investments assumption (i.e. 6.75%). Theoretically, in this case it can be considered that investment returns will fully cover the annual benefit payments, and therefore, all Employer and Member Contributions made to the Fund will be used to pay for future benefit accruals and pay down the existing Unfunded Liability. To the extent that the ratio of the annual benefit payments to the Fair Value of Assets increases to above the Expected Rate of Return on Investments assumption, the Plan may experience some additional risks, such as the need to keep assets in more liquid investments, inability to pay down Unfunded Liability, and may lead to Plan insolvency.

As of the Valuation Date, the Algonquin Police Pension Fund has a ratio of benefit payments to the Fair Value of Assets of 3.69%. In this case, the Plan is currently in a sound financial position and has a reduced amount of Benefit Payment Risk and Cash Flow Risk. It would be expected that adherence to the current Funding Policy would lead to an increasing Percent Funded.

Fund Assets

The results in this report are based on the assets held in the Pension Fund. Assets consist of funds held for investment and for benefit payments as of the Actuarial Valuation Date. In addition, assets may be adjusted for other events representing dollars that are reasonably expected to be paid out from the Pension Fund or deposited into the Pension Fund after the Actuarial Valuation Date as well.

The current Fund assets are audited.

The Actuarial Value of Assets under the Funding Policy is equal to the Fair Value of Assets, with unexpected gains and losses smoothed over 5 years. More detail on the Actuarial Value of Assets can be found in the *Actuarial Funding Policies* section of this report.

The Fund Assets Used in this Report are Audited.

Demographic Data

Demographic factors can change from year to year within the Pension Fund. Changes in this category include hiring new Members, Members retiring or becoming disabled, inactive Members passing away, and other changes. Demographic changes can cause an actuarial gain (contribution that is less than expected compared to the prior year) or an actuarial loss (contribution that is greater than expected compared to the prior year).

Demographic gains and losses occur when the assumptions over the one-year period for Member changes do not meet our long-term expectation. For example, if no Members become disabled during the year, we would expect a liability gain. If more Members become disabled than anticipated during the year, we would expect a liability loss. Generally, we expect short-term fluctuations in demographic experience to create gains or losses of 1%-3% of the Actuarial Accrued Liability in any given year, but to balance out in the long-term.

"Demographic Risk" occurs when Plan demographic experience differs significantly from expected. Similar to Longevity Risk discussed previously, additional risk is created when demographic experience differs from the assumed rates of disability, retirement, or termination. Under the chosen assumptions, actuarial gains and/or losses will always occur, as the assumptions will never be exactly realized. However, the magnitude of the gain and/or loss and its influence on the Recommended Contribution largely depends on the size of the Plan.

Based on the number of active Members in the Plan, the Recommended Contribution has a moderate risk of having a significant increase due to demographic experience. For example, 1 new disabled Member would typically generate a substantial increase to the Actuarial Accrued Liability, which in turn, may increase the Recommended Contribution.

In the current report, the key demographic changes were as follows:

New Hires: There were 6 Members of the Fund who were hired during the year. When a Member is admitted to the Pension Fund, the Employer Contribution will increase to reflect the new Member. The increase in the Recommended Contribution in the current year due to the new Member experience is approximately $38,800.

Termination: There were 2 Members of the Fund who terminated employment during the year. The Fund may be obligated to pay a benefit or a refund of Employee Contributions to the Members in the future. The decrease in the Recommended Contribution in the current year due to the termination experience is approximately $15,600.

Mortality: There was 1 retiree who passed away during the year. When a retiree passes away, the Fund liability will decrease as the Pension Fund no longer will make future payments to the retiree. If there is an eligible surviving spouse, the Fund liability will increase to represent the value of the expected

payments that will be made to the spouse. When a surviving spouse passes away, the Fund liability will decrease as the Pension Fund no longer will make future payments to the surviving spouse.

As inactive Members age and continue to collect benefits, the Fund liability will also increase. In the current year, there were 21 inactive Members who maintained their benefit collection status throughout the year. The net decrease in the Recommended Contribution in the current year due to the mortality experience is approximately $117,000.

Salary Increases: Salary increases were greater than anticipated in the current year. This caused an increase in the Recommended Contribution in the current year of approximately $26,400.

Assumption Changes

In the current valuation, we have reviewed the individual pay increases assumption to reflect the wage schedule between the Village of Algonquin, Illinois and the Metropolitan Alliance of Police Algonquin Officers Chapter #78 for the period May 1, 2021 through April 30, 2025. The year over year step increases dictated by the wage schedule did change from the prior wage schedule; therefore, we have updated the individual pay increases assumption.

The above stated assumption changes were made to better reflect the future anticipated experience of the Fund. See the *Actuarial Recommended Contribution – Reconciliation* section of this report for the impact of these changes on the current valuation.

Funding Policy Changes

The Funding Policy was not changed from the prior valuation.

Other Considerations

The best due diligence continues to be the process of annually reviewing assumptions, provisions, and methodologies. Our commitment to reviewing new information regularly continues to be at the forefront of our reporting. In the current valuation, we have updated the underlying valuation software to value the most accurate estimate of Surviving Spouse benefits, including the expected Cost-of-Living Adjustments, described under the Illinois State Statutes. As a result, this caused a decrease in the Actuarial Accrued Liability of approximately $1,804,000, with a corresponding decrease in the Recommended Contribution of approximately $183,000.

ACTUARIAL RECOMMENDED CONTRIBUTION – RECONCILIATION

Actuarial Accrued Liability is expected to increase each year for both interest for the year and as active Members earn additional service years towards retirement. Similarly, Actuarial Accrued Liability is expected to decrease when the Fund pays benefits to inactive Members.

Contributions are expected to increase as expected pay increases under the Funding Policy for the Fund.

	Actuarial Liability	Recommended Contribution
Prior Valuation	$ 53,104,654	$ 2,135,484
Expected Changes	2,948,409	64,064
Initial Expected Current Valuation	$ 56,053,063	$ 2,199,548

Other increases or decreases in Actuarial Accrued Liability (key changes noted below) will increase or decrease the amount of Unfunded Liability in the Plan. To the extent that Unfunded Liability increases or decreases unexpectedly, the contribution towards Unfunded Liability will also change unexpectedly.

	Actuarial Liability	Recommended Contribution
Salary Increases Greater than Expected	$ 166,232	$ 26,358
Actuarial Experience	(2,957,546)	(265,051)
Assumption Changes	396,931	1,577
Asset Return Greater than Expected*	-	(36,253)
Contributions Greater than Expected	-	(20,852)
Total Increase/(Decrease)	$ (2,394,383)	$ (294,221)
Current Valuation	$ 53,658,680	$ 1,905,327

*Impact on the Recommended Contribution due to asset return is on an Actuarial Value of Assets basis.

The Actuarial Experience can be attributable to several factors including Actuarial Valuation software changes, demographic changes, and benefit payment experience compared to expectation. Key demographic changes were discussed in the *Demographic Data* section of this report.

VALUATION OF FUND ASSETS

Fair Value of Assets
Fair Value of Assets (Gain)/Loss
Development of the Actuarial Value of Assets
Actuarial Value of Assets (Gain)/Loss
Historical Asset Performance

FAIR VALUE OF ASSETS

Statement of Assets

	Prior Valuation	Current Valuation
Cash and Cash Equivalents	$ 390,809	$ 414,179
Money Market	369,771	463,712
Illinois Funds	251,743	251,988
Fixed Income	12,175,538	12,100,724
Stock Equities	2,738,964	2,820,560
Mutual Funds	27,909,654	26,386,114
Receivables (Net of Payables)	86,402	96,529
Total Fair Value of Assets	$ 43,922,881	$ 42,533,806

The Total Fair Value of Assets has Decreased by Approximately $1,389,000 from the Prior Valuation.

Statement of Changes in Assets

Total Fair Value of Assets - Prior Valuation	$ 43,922,881
Plus - Employer Contributions	2,280,983
Plus - Member Contributions	503,735
Plus - Return on Investments	(2,462,707)
Less - Benefit Payments and Refunds	(1,679,536)
Less - Other Expenses	(31,550)
Total Fair Value of Assets - Current Valuation	$ 42,533,806

The Rate of Return on Investments on a Fair Value of Assets Basis for the Fund was Approximately (5.61%) Net of Administrative Expense.

The Rate of Return on Investments shown above has been determined as a percent of the average of the prior and current Fair Value of Assets on the Statement of Changes in Assets. The Return on Investments is net of Other Expenses, and has been excluded from the Total Fair Value of Assets at the end of the Fiscal Year for this calculation.

FAIR VALUE OF ASSETS (GAIN)/LOSS

Current Year (Gain)/Loss on Fair Value of Assets

Total Fair Value of Assets - Prior Valuation	$ 43,922,881
Employer and Member Contributions	2,784,718
Benefit Payments and Refunds	(1,679,536)
Expected Return on Investments	3,002,094
Expected Total Fair Value of Assets - Current Valuation	48,030,157
Actual Total Fair Value of Assets - Current Valuation	42,533,806
Current Fair Value of Assets (Gain)/Loss	$ 5,496,351
Expected Return on Investments	$ 3,002,094
Actual Return on Investments (Net of Expenses)	(2,494,257)
Current Fair Value of Assets (Gain)/Loss	$ 5,496,351

The Actual Return on Investments on a Fair Value of Assets Basis was Less than Expected for the Current Year.

The (Gain)/Loss on the current Fair Value of Assets has been determined based on the Expected Rate of Return on Investments as shown in the *Actuarial Assumptions* section of this report.

DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS

Total Fair Value of Assets - Current Valuation		$ 42,533,806
Adjustment for Prior (Gains)/Losses		
	Full Amount	Deferral
FYE 2022	$ 5,496,351	4,397,081
FYE 2021	(7,313,597)	(3,802,418)
FYE 2020	1,641,374	568,912
FYE 2019	(119,471)	(20,705)
Total Deferred (Gain)/Loss		1,142,870
Initial Actuarial Value of Assets - Current Valuation		$ 43,676,676
Less Contributions for the Current Year and Interest		-
Adjustment for the Corridor		-
Total Actuarial Value of Assets - Current Valuation		$ 43,676,676

The Actuarial Value of Assets is Equal to the Fair Value of Assets with Unanticipated (Gains)/Losses Recognized Over 5 Years. The Actuarial Value of Assets is 102.69% of the Fair Value of Assets.

ACTUARIAL VALUE OF ASSETS (GAIN)/LOSS

Total Actuarial Value of Assets - Prior Valuation	$ 39,530,593
Plus - Employer Contributions	2,280,983
Plus - Member Contributions	503,735
Plus - Return on Investments	3,072,451
Less - Benefit Payments and Refund	(1,679,536)
Less - Other Expenses	(31,550)
Total Actuarial Value of Assets - Current Valuation	$ 43,676,676

The Rate of Return on Investments on an Actuarial Value of Assets Basis for the Fund was Approximately 7.59% Net of Administrative Expense.

The Actuarial Value of Assets incorporates portions of gains and losses over multiple years.

HISTORICAL ASSET PERFORMANCE

The chart below shows the historical Rates of Return on Investments for both Fair Value of Assets and Actuarial Value of Assets.

	Fair Value of Assets	Actuarial Value of Assets
FYE 2022	(5.61%)	7.59%
FYE 2021	28.35%	11.50%
FYE 2020	1.67%	5.07%
FYE 2019	7.16%	5.75%
FYE 2018	6.36%	5.56%
FYE 2017	8.99%	5.44%
FYE 2016	(0.44%)	4.89%

The historical Rates of Return on Investments shown above were calculated based on the annual Return on Investments, as a percentage of the average value of the assets for the year.

For purposes of determining the average value of assets for the year, the ending Fair Value of Assets has been adjusted to net out to the portion related to the Return on Investments themselves. All other cash flows are included.

For purposes of determining the annual Return on Investments we have adjusted the figures shown on the preceding pages. The figures shown on the preceding pages are net of Investment Expenses. We have made an additional adjustment to net out Administrative Expenses. Netting out Administrative Expenses allows us to capture returns for the year that can be used to make benefit payments as part of the ongoing actuarial process.

The adjustments we made are for actuarial reporting purposes only. By netting out Administrative Expenses and capturing Return on Investments that are available to pay benefits, it provides us a comparison to the Expected Rate of Return on Investments, but does not provide a figure that would be consistent with the rates of return that are determined by other parties. Therefore, this calculated Return on Investments should not be used to analyze investment performance of the Fund or the performance of the investment professionals.

Expected Rate of Return on Investments Assumption

The Expected Rate of Return on Investments for this valuation is 6.75%. Lauterbach & Amen, LLP does not provide investment advice. We look at a variety of factors when reviewing the Expected Rate of Return on Investments assumption selected by the Board. These factors include: historical Rates of Return on Investments, capital market projections performed by the Fund's investment advisors, the Fund's investment policy, capital market forward-looking benchmark expected returns by independent investment companies, rates used by comparable pension systems, and other factors identified in the Actuarial Standards of Practice.

Generally speaking, the ideal assumption for Expected Rate of Return on Investments is one that has a 50% chance of being met over the long-term. If actual returns going forward come in less than expected, the pension system risks deferring contributions to the future that should be made today and creating additional contribution volatility. Reducing the Expected Rate of Return on Investments by 25 basis points produces a Recommended Contribution that is 13.39% higher than currently shown.

"Investment Risk" is the potential that actual Return on Investments will be different from what is expected. The selected Expected Rate of Return on Investments assumption is chosen to be a long-term assumption, producing a return that, on average, would produce a stable rate of return over a long-term horizon. Actual asset returns in the short-term may deviate from this long-term assumption due to current market conditions. Furthermore, establishing the Expected Rate of Return on Investments assumption may be dependent on the Illinois State Statutes pertaining to the limitations on types of investments Plan Sponsors may use. If the actual annual rates of return are less than the Expected Rate of Return on Investments, actuarial losses will be produced, thus increasing the Plan's Unfunded Liability and, subsequently, future Recommended Contributions.

"Asset/Liability Mismatch" risk is a similar concept as Investment Risk, as it relates to setting the Expected Rate of Return on Investments assumption compared to the actual Return on Investments achieved. The Interest Rate used to discount future Plan liabilities is set equal to the Expected Rate of Return on Investments. It is expected that the selected Interest Rate be a rate that is reasonably expected to be achieved over the long-term. To the extent that the selected Interest Rate to value Plan liabilities is unreasonable, or significantly different than the actual Return on Investments earned over an extended period of time, additional Interest Rate risk is created. For example, determining Plan liabilities at an Interest Rate higher than what is expected to be achieved through investment returns results in Unfunded Liability that is not a true representation of the Plan's condition and Percent Funded. As a result, the Actuarial Accrued Liability determined is an amount smaller than the liability that would be produced with an Interest Rate more indicative of future Expected Rate of Return on Investments. Therefore, the Recommended Contributions under the established Funding Policy may not be sufficient to appropriately meet the true pension obligations.

RECOMMENDED CONTRIBUTION DETAIL

Actuarial Accrued Liability
Funded Status
Development of the Employer Normal Cost
Normal Cost as a Percentage of Expected Payroll
Recommended Contribution Breakdown
Schedule of Amortization – Unfunded Actuarial Accrued Liability
Actuarial Methods – Recommended Contribution

ACTUARIAL ACCRUED LIABILITY

	Prior Valuation	Current Valuation
Active Members	$ 20,928,242	$ 23,120,487
Inactive Members		
Terminated Members	1,997,678	2,133,812
Retired Members	26,725,531	24,933,383
Disabled Members	3,453,203	3,470,998
Other Beneficiaries	-	-
Total Inactive Members	32,176,412	30,538,193
Total Actuarial Accrued Liability	$ 53,104,654	$ 53,658,680

The Total Actuarial Accrued Liability has Increased by Approximately $554,000 from the Prior Valuation.

FUNDED STATUS

	Prior Valuation	Current Valuation
Total Actuarial Accrued Liability	$ 53,104,654	$ 53,658,680
Total Actuarial Value of Assets	39,530,593	43,676,676
Unfunded Actuarial Accrued Liability	$ 13,574,061	$ 9,982,004
Total Fair Value of Assets	$ 43,922,881	$ 42,533,806
Percent Funded		
Actuarial Value of Assets	74.44%	81.40%
Fair Value of Assets	82.71%	79.27%

The Percent Funded as of the Actuarial Valuation Date is Subject to Volatility on Assets and Liability in the Short-Term.

DEVELOPMENT OF THE EMPLOYER NORMAL COST

	Prior Valuation	Current Valuation
Total Normal Cost	$ 1,039,773	$ 1,104,217
Estimated Member Contributions	(418,380)	(482,892)
Employer Normal Cost	$ 621,393	$ 621,325

At a 100% Funding Level, the Normal Cost Contribution is Still Required.

NORMAL COST AS A PERCENTAGE OF EXPECTED PAYROLL

	Prior Valuation	Current Valuation
Expected Payroll	$ 4,285,133	$ 4,945,867
Member Normal Cost Rate	9.910%	9.910%
Employer Normal Cost Rate	14.35%	12.42%
Total Normal Cost Rate	24.26%	22.33%

Ideally, the Employer Normal Cost Rate will Remain Stable.

RECOMMENDED CONTRIBUTION BREAKDOWN

	Prior Valuation	Current Valuation
Employer Normal Cost*	$ 663,337	$ 663,264
Amortization of Unfunded Accrued Liability/(Surplus)	1,472,147	1,242,063
Recommended Contribution	$ 2,135,484	$ 1,905,327

The Recommended Contribution has Decreased by 10.78% from the Prior Valuation.

*Employer Normal Cost Contribution includes interest through the end of the Fiscal Year.

SCHEDULE OF AMORTIZATION – UNFUNDED ACTUARIAL ACCRUED LIABILITY

Below is the schedule of remaining amortization balances for the Unfunded Liability.

Unfunded Liability Base	Initial Balance	Date Established	Current Balance	Years Remaining	Payment
Investment (Gain)/Loss	$ (401,352)	4/30/2022	$ (401,352)	15	$ (36,253)
Actuarial (Gain)/Loss	(3,029,811)	4/30/2022	(3,029,811)	15	(273,675)
Contribution Experience	(1,927)	4/30/2022	(1,927)	15	(174)
Assumption Changes	396,931	4/30/2022	396,931	15	35,854
Investment (Gain)/Loss	(1,713,256)	4/30/2021	(1,674,147)	14	(159,397)
Actuarial (Gain)/Loss	223,736	4/30/2021	218,628	14	20,816
Contribution Experience	(430)	4/30/2021	(420)	14	(40)
Investment (Gain)/Loss	492,433	4/30/2020	467,857	13	47,189
Actuarial (Gain)/Loss	194,952	4/30/2020	185,223	13	18,681
Contribution Experience	(463)	4/30/2020	(440)	13	(44)
Assumption Changes	(32,162)	4/30/2020	(30,557)	13	(3,082)
Plan Changes	212,233	4/30/2020	201,642	13	20,338
Investment (Gain)/Loss	242,080	4/30/2019	222,325	12	23,894
Actuarial (Gain)/Loss	63,697	4/30/2019	58,496	12	6,287
Contribution Experience	(9,282)	4/30/2019	(8,524)	12	(916)
Investment (Gain)/Loss	320,616	4/30/2018	282,685	11	32,596
Contribution Experience	(992)	4/30/2018	(874)	11	(101)
Actuarial (Gain)/Loss	(325,744)	4/30/2018	(287,207)	11	(33,117)
Initial Unfunded Liability	$ 15,466,613	4/30/2017	$ 13,383,476	11	$ 1,543,207
Total	**$ 12,097,872**		**$ 9,982,004**		**$ 1,242,063**

The Actuarial (Gain)/Loss can be attributable to several factors including Actuarial Valuation software changes, demographic changes, Employer Contribution timing, Member Contribution experience, benefit payment experience, and salary increase experience compared to expectation.

The equivalent single amortization period based on the layered amortization of Unfunded Liability is 10.03 years for the current valuation.

ACTUARIAL METHODS – RECOMMENDED CONTRIBUTION

Actuarial Valuation Date	May 1, 2022
Data Collection Date	April 30, 2022
Actuarial Cost Method	Entry Age Normal (Level % Pay)
Amortization Method	Level % Pay (Closed)
Amortization Target	Layered - See Previous Page
Asset Valuation Method	5-Year Smoothed Fair Value

The contributions and benefit values of the Pension Fund are calculated by applying actuarial assumptions to the benefit provisions and census data furnished, using the Actuarial Cost Method described. The Actuarial Cost and Amortization Methods allocate the projected obligations of the Plan over the working lifetimes of the Plan Members.

The Recommended Contribution amount shown in this report is based on the methods summarized above. The *Actuarial Funding Policies* section of this report includes a more detailed description of the Actuarial Funding Methods being used.

The Actuarial Funding Methods are meant to provide a systematic process for determining contributions on an annual basis. The methods do not impact the expectation of future benefit payments. The methods only impact the way contributions are made towards future benefit payments.

Different Actuarial Funding Methods may achieve funding goals with differing levels of success. Certain methods are more efficient and more stable on an annual basis.

ALTERNATIVE CONTRIBUTION

Alternative Contribution
Funded Status – Alternative Contribution
Actuarial Methods – Alternative Contribution

ALTERNATIVE CONTRIBUTION

	Current Valuation
Alternative Contribution	$1,152,783
Expected Payroll	$4,945,867
Alternative Contribution as a Percent of Expected Payroll	23.31%

FUNDED STATUS – ALTERNATIVE CONTRIBUTION

	Current Valuation
Normal Cost	$1,183,542
Fair Value of Assets	$42,533,806
Actuarial Value of Assets	$43,676,676
Actuarial Accrued Liability	$54,223,168
Unfunded Actuarial Accrued Liability/(Surplus)	$10,546,492
Percent Funded	
Actuarial Value of Assets	80.55%
Fair Value of Assets	78.44%

ALTERNATIVE CONTRIBUTION

The Alternative Contribution is based on Actuarial Funding Methods and funding parameters outlined in the Illinois State Statutes for pension funding. The resulting contribution is lower than the Recommended Contribution for the current year. The Alternative Contribution amount is not recommended because it represents only a deferral of contributions when compared to the Recommended Contribution method.

Actuarial Funding Methods for pensions are best applied to provide a balance between the long-term goals of a variety of stakeholders:

1. Members – the Members are interested in benefit security and having the funds available to pay benefits when retired

2. Employers – cost control and cost stability over the long-term

3. Taxpayers – paying for the services they are receiving from active Members

The Alternative Contribution methods are not intended to provide a better system in any of the above categories long-term. The parameters are not recommended for a long-term funding strategy.

The funding methods and parameters put into place in the Illinois State Statutes in 2011 were intended to provide short-term budget relief for Employer Contributions. An Employer using the parameters outlined in the Illinois State Statutes for current funding should view the contributions as short-term relief. Our recommendation in this situation is for a Pension Fund and an Employer to work towards a long-term funding strategy that better achieves the long-term funding goals, over a period that does not exceed 3-5 years.

The Securities and Exchange Commission in 2013 used the phrase “Statutory Underfunding” to describe situations where contributions appear to be more manageable in the short-term, but set up future Recommended Contributions that are less likely to be manageable.

ACTUARIAL METHODS – ALTERNATIVE CONTRIBUTION

Actuarial Valuation Date	May 1, 2022
Data Collection Date	April 30, 2022
Actuarial Cost Method	Projected Unit Credit
Amortization Method	Level % Pay (Closed)
Amortization Target	90% Funded Over 18 Years
Asset Valuation Method	5-Year Smoothed Fair Value

The contribution and benefit values of the Pension Fund are calculated by applying actuarial assumptions to the benefit provisions and census data furnished, using the Actuarial Cost Method described. The Actuarial Cost and Amortization methods allocate the projected obligations of the Plan over the working lifetimes of the Plan Members.

The Actuarial Funding Methods are meant to provide a systematic process for determining contributions on an annual basis. The methods do not impact the expectation of future benefit payments. The methods only impact the way contributions are made towards future benefit payments.

Different Actuarial Funding Methods may achieve funding goals with differing levels of success. Certain methods are more efficient and more stable on an annual basis.

The guidelines in the Illinois State Statutes for pension funding are silent on the use of a corridor on the Fair Value of Assets in determination of the Actuarial Value of Assets. In the current valuation, the Plan Sponsor has elected to use a 10% corridor in the determination of the Actuarial Value of Assets for both the Alternative Contribution and the Recommended Contribution. In the event that the Actuarial Value of Assets exceeds 110% of the Fair Value of Assets or falls below 90% of the Fair Value of Assets, the excess gains or losses will be recognized immediately.

ACTUARIAL VALUATION DATA

Active Members
Inactive Members
Summary of Monthly Benefit Payments
Age and Service Distribution

ACTIVE MEMBERS

	Prior Valuation	Current Valuation
Tier I	29	29
Tier II	15	19
Total Active Members	44	48
Total Payroll	$ 4,221,806	$ 4,872,775

INACTIVE MEMBERS

	Prior Valuation	Current Valuation
Terminated Members	6	6
Retired Members	18	17
Disabled Members	4	4
Other Beneficiaries	0	0
Total Inactive Members	28	27

SUMMARY OF MONTHLY BENEFIT PAYMENTS

	Prior Valuation	Current Valuation
Retired Members	$ 119,989	$ 114,249
Disabled Members	16,334	18,246
Other Beneficiaries	-	-
Total Inactive Members	$ 136,323	$ 132,495

AGE AND SERVICE DISTRIBUTION

5/1/2022 Age and Service Distribution - All Active Members												
	Service	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Age												
Under 25		3										3
25 to 29		1	2	2								5
30 to 34		1	4	2								7
35 to 39		1	1	1	4	3						10
40 to 44				1	1	2	3					7
45 to 49						2	11					13
50 to 54						2	1					3
55 to 59												
60 to 64												
65 to 69												
70 & up												
Total		6	7	6	5	9	15					48

ACTUARIAL FUNDING POLICIES

Actuarial Cost Method
Financing Unfunded Actuarial Accrued Liability
Actuarial Value of Assets

ACTUARIAL COST METHOD

The Actuarial Cost Method allocates the projected obligations of the Plan over the working lifetimes of the Plan Members.

In accordance with the Pension Fund's Funding Policy the Actuarial Cost Method for the Recommended Contribution basis is Entry Age Normal (Level Percent of Pay). The Entry Age Normal Cost Method is a method under which the Actuarial Present Value of the projected benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age. The portion of this Actuarial Present Value allocated to a valuation year is called Normal Cost. The portion of the Actuarial Present Value not provided at an Actuarial Valuation Date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability.

The Entry Age Normal method attempts to create a level cost pattern. In contrast to other Actuarial Cost Methods which inherently lead to uneven or less predictable cost patterns, the Entry Age Normal method is generally understood to be less risky in terms of contribution stability from year to year.

The Conference of Consulting Actuaries Public Plans Community produced a "white paper" detailing Funding Policy model practices for public sector pension plans. Under the Level Cost Actuarial Methodology ("LCAM"), one of the principal elements to a Funding Policy is the Actuarial Cost Method. When deciding which Actuarial Cost Method to use, several objectives may be considered, such as the following:

- Each Member's benefit should be funded under a reasonable allocation method by the expected retirement date
- Pay-related benefit costs should reflect anticipated pay at retirement
- The expected cost of each year of service (i.e. Normal Cost) for each active Member should be reasonably related to the expected cost of that Member's benefit
- The Member's Normal Cost should emerge as a level percent of Member compensation
- No gains or losses should occur if all assumptions are met.

Following these criteria, the use of the Entry Age Normal Cost Method (Level Percent of Pay) is a model practice.

FINANCING UNFUNDED ACTUARIAL ACCRUED LIABILITY

The Unfunded Actuarial Accrued Liability may be amortized over a period either in level dollar amounts or as a level percentage of payroll.

When amortizing the Unfunded Actuarial Accrued Liability as a level percentage of payroll, additional risk is incurred since the amortization payments in the early years of the payment period may not be large enough to cover the interest accrued on the existing Unfunded Liability. As a result, the Unfunded

Liability may increase initially, before the amortization payments grow large enough to cover all interest accruals. Generally speaking, the Plan Sponsor will be required to contribute a larger total contribution amount over the course of the funding period under a level percentage of payroll basis as compared to a level dollar payroll schedule.

The Government Finance Officers Association notes that best practices in public pension finance include utilizing amortization periods that do not exceed 20 years. Longer amortization periods elevate the risk of failing to reduce any Unfunded Liability. For example, when the amortization payment in full only covers interest on the Unfunded Liability, but does not reduce the existing Unfunded Liability, the required contribution will increase in future years.

A second principal element under the Level Cost Actuarial Methodology described above is to establish an Amortization Policy that determines the length of time and the structure of the increase or decrease in contributions required to systematically fund the Unfunded Actuarial Accrued Liability. When deciding on the Amortization Policy, several objectives may be considered, such as the following:

- Variations in the source of liability changes (i.e. gains or losses, Plan changes, assumption changes) should be funded over periods consistent with an appropriate balance between the policy objectives of demographic matching and volatility management
- The cost changes in Unfunded Actuarial Accrued Liability should emerge as a level percentage of Member compensation

The LCAM model practices for the Amortization Policy include the following:

- Layered fixed period amortization by source
- Level percent of pay amortization
- An amortization period ranging from 15-20 years for experience gains or losses
- An amortization period of 15-25 years for assumption changes

In accordance with the Pension Fund's Funding Policy for the Recommended Contribution, the Unfunded Actuarial Accrued Liability is amortized by level percent of payroll contributions to a 100% funding target over a layered amortization period of 15 years. See the *Actuarial Methods – Recommended Contribution* section of this report for more detail.

The equivalent single amortization period based on the layered amortization of Unfunded Liability is 10.03 years for the current valuation.

We believe that the amortization period is appropriate for the purposes of this valuation.

ACTUARIAL VALUE OF ASSETS

The Pension Fund is an ongoing plan. The Employer wishes to smooth the effect of volatility in the Fair Value of Assets on the annual contribution. Therefore, the Actuarial Value of Assets is equal to the Fair Value of Assets with unanticipated gains/losses recognized over a five-year period.

The Asset Valuation Method is intended to create an Actuarial Value of Assets that remains reasonable in relation to the Fair Value of Assets over time. The method produces results that can fall either above or below the Fair Value of Assets. The period of recognition is short.

It is intended that the period of recognition is short enough to keep the Actuarial Value of Assets within a decent range of the Fair Value of Assets. In the event that the Actuarial Value of Assets exceeds or falls below a 10% corridor of the Fair Value of Assets, the additional gain or loss will be recognized immediately.

ACTUARIAL ASSUMPTIONS

Nature of Actuarial Calculations
Actuarial Assumptions in the Valuation Process
Assessment of Risk Exposures
Limitations of Risk Analysis
Assessment and Use of Actuarial Models
Actuarial Assumptions Utilized

NATURE OF ACTUARIAL CALCULATIONS

The results documented in this report are estimates based on data that may be imperfect and on assumptions about future events. Certain Plan Provisions may be approximated or deemed immaterial, and, therefore, are not valued. Assumptions may be made about census data or other factors. Reasonable efforts were made in this valuation to ensure that significant items in the context of the Actuarial Accrued Liability or costs are treated appropriately, and not excluded or included inappropriately.

Actual future experience will differ from the assumptions used in the calculations. As these differences arise, the expense for accounting purposes will be adjusted in future valuations to reflect such actual experience.

A range of results different from those presented in this report could be considered reasonable. The numbers are not rounded, but this is for convenience only and should not imply precision which is not inherent in actuarial calculations.

ACTUARIAL ASSUMPTIONS IN THE VALUATION PROCESS

The contributions and benefit values of the Pension Fund are calculated by applying actuarial assumptions to the benefit provisions and census data furnished, using the Actuarial Cost Method described in the *Actuarial Funding Policies* section of this report.

The principal areas of financial risk which require assumptions about future experience are:

- Expected Rate of Return on Investments
- Patterns of Pay Increases for Members
- Rates of Mortality Among Active and Inactive Members
- Rates of Termination Among Active Members
- Rates of Disability Among Active Members
- Age Patterns of Actual Retirements

Actual experience of the Pension Fund will not coincide exactly with assumed experience. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments to the computed Recommended Contribution.

Details behind the selection of the actuarial assumptions can be found in the Actuarial Assumption Summary document provided to the client upon request. The client has reviewed and approved the assumptions as a reasonable expectation of the future anticipated experience under the Plan.

ASSESSMENT OF RISK EXPOSURES

From time to time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations). In addition, Actuarial Standards of Practice require that the Actuary minimally perform a qualitative assessment of key financial and demographic risks as part of the risk assessment process with each annual Actuarial Valuation. The risk assessments we perform include, but are not limited to, the following:

- Periodic demographic experience studies every 3 to 5 years to confirm the ongoing appropriateness of actuarial assumptions
- Highlight the impact of demographic experience over the past year, as well as other sources of change and volatility in the *Actuarial Recommended Contribution – Reconciliation* section of this report
- Detail year-over-year changes in contribution levels, assets, liabilities, and Funded Status in the *Recommended Contribution* and *Funded Status* sections in the *Management Summary* section of this report
- Review any material changes in the census as summarized in the *Actuarial Valuation Data* section of this report
- Provide and discuss the Actuarial Assumption Summary document highlighting the rationale for each key assumption chosen by the Board
- Identify potential Cash Flow Risk by highlighting expected benefit payments over the next 5-year and 10-year periods in the *Asset Growth* section in the *Management Summary* section of this report
- Describe the impact of any assumption, method, or policy change in the *Management Summary* section of this report
- Utilize supplemental information, such as the GASB Discount Rate sensitivity disclosures to understand, for example, what impact an alternative Expected Rate of Return on Investments assumption might have on the estimation of Actuarial Accrued Liability and Funded Status
- Utilize supplemental information, such as the GASB solvency test, to better understand the Cash Flow Risk and long-term sustainability of the Plan.

LIMITATIONS OF RISK ANALYSIS

Since future experience may never be precisely as assumed, the process of selecting funding methods and actuarial assumptions may inherently create risk and volatility of results. A more detailed evaluation of the above risk exposures is beyond the scope and nature of the annual Actuarial Valuation process. For example, scenario tests, sensitivity tests, stress tests, and/or stochastic modeling for multi-year projections to assess the impact of alternative assumptions and methods, or modeling future experience different from the assumptions in these results, are not included in this Actuarial Valuation.

The Algonquin Police Pension Fund and/or the Village of Algonquin, Illinois should contact the Actuary if they desire a more detailed assessment of any of these forward-looking risk exposures.

ASSESSMENT AND USE OF ACTUARIAL MODELS

Actuarial Valuations rely upon the use of actuarial modeling software to predict the occurrence of future events, which include specific demographic and financial potential outcomes. Actuarial assumptions are established to provide a guideline to use for such modeling.

- The model used in this Actuarial Valuation is intended to determine the Recommended Contribution, under the selected Funding Policy. The actuarial assumptions used were developed with this goal in mind.
- There are no known material limitations or inconsistencies among the actuarial assumptions or methods.
- The output from the model is reasonable based on the individual actuarial assumptions and based on the actuarial assumptions in the aggregate.
- The actuarial software used to calculate plan liabilities has been purchased from an outside vendor. We have performed thorough testing of the software, including review of sample participants, to ensure the intended purpose of the model, the operation of the model, sensitivities and dependencies, and strengths and limitations of the model are sufficient for this purpose.
- Census data and financial information have been provided by client professionals, financial advisors, and/or auditors, who are known to be experts in their respective fields. We rely on the fact that the information provided by these experts has been given for the intended purpose of this Actuarial Valuation.
- Where applicable, certain actuarial assumptions and Funding Policy may be required as prescribed by law. In such instances, we have followed legal guidance to ensure conformity.
- The Expected Rate of Return on Investments assumption has been chosen using input from several sources; including, but not limited to: client professionals, financial advisors, auditors, and other capital market outlooks. We have relied on the information provided, in the aggregate, to settle on the selected Expected Rate of Return on Investments assumption.

As stated in the *Limitations of Risk Analysis* section, future experience may never be precisely as assumed. As a result, the funding methods and actuarial assumptions used in the model may create volatility in the results when compared year after year. A more detailed evaluation of this volatility is beyond the scope and nature of the annual Actuarial Valuation process. In such cases, additional scenario tests, sensitivity tests, stress tests, and/or stochastic modeling for multi-year projections to assess the impact of alternative assumptions and methods, or modeling future experience different from the assumptions in these results, may be performed to determine a range of reasonable results.

ACTUARIAL ASSUMPTIONS UTILIZED

Expected Rate of Return on Investments	6.75% Net of Administrative Expense
CPI-U	2.25%
Total Payroll Increases	3.00%
Individual Pay Increases*	3.75% - 8.65%

Individual pay increases include a long-term average increase for inflation, average annual increases for promotions, and any additional increases for a step program. Sample rates are as follows:

Service	Rate	Service	Rate
0	6.80%	8	3.75%
1	8.65%	9	3.75%
2	8.27%	10	3.75%
3	7.93%	15	3.75%
4	7.62%	20	3.75%
5	7.35%	25	3.75%
6	7.10%	30	3.75%
7	7.33%	35	3.75%

*Individual pay increases for active Members hired at age 40 or older are assumed annual increases at the ultimate rate reduced by 50 basis points, without adjustments in early service years.

Retirement Rates

100% of the L&A Assumption Study for Police 2020 Cap Age 65. Sample rates are as follows:

Age	Rate	Age	Rate
50	11.00%	58	16.25%
51	11.55%	59	16.25%
52	12.13%	60	16.25%
53	12.73%	61	16.25%
54	13.37%	62	18.00%
55	14.04%	63	20.00%
56	14.74%	64	20.00%
57	15.48%	65	100.00%

Termination Rates

100% of the L&A Assumption Study for Police 2020. Sample rates are as follows:

Age	Rate	Age	Rate
25	8.00%	40	2.17%
30	3.40%	45	1.56%
35	2.79%	50	0.46%

Disability Rates

100% of the L&A Assumption Study for Police 2020. Sample rates are as follows:

Age	Rate	Age	Rate
25	0.00%	40	0.38%
30	0.06%	45	0.53%
35	0.18%	50	0.48%

65% of active Members who become disabled are assumed to be in the Line of Duty.

Mortality Rates

Active Mortality follows the Sex Distinct Raw Rates as developed in the PubS-2010(A) Study. Mortality improvement uses MP-2019 Improvement Rates applied on a fully generational basis.

50% of active Member deaths are assumed to be in the Line of Duty.

Retiree Mortality follows the L&A Assumption Study for Police 2020. These rates are experience weighted with the Sex Distinct Raw Rates as developed in the PubS-2010(A) Study improved to 2017 using MP-2019 Improvement Rates. These rates are then improved fully generationally using MP-2019 Improvement Rates.

Disabled Mortality follows the Sex Distinct Raw Rates as developed in the PubS-2010 Study for disabled participants. Mortality improvement uses MP-2019 Improvement Rates applied on a fully generational basis.

Spouse Mortality follows the Sex Distinct Raw Rates as developed in the PubS-2010(A) Study for contingent survivors. For all rates not provided there (ages 45 and younger) the PubG-2010 Study for general employees was used. Mortality improvement uses MP-2019 Improvement Rates applied on a fully generational basis.

Marital Assumptions

Active Members: 80% of active Members are assumed to be married. Female spouses are assumed to be 3 years younger than male spouses.

Retiree and Disabled Members: Actual spousal data was utilized for retiree and disabled Members.

SUMMARY OF PRINCIPAL PLAN PROVISIONS

Establishment of the Fund
Administration
Member Contributions
Regular Retirement Pension Benefit
Early Retirement Pension Benefit
Surviving Spouse Benefit
Termination Benefit – Vested
Disability Benefit

ESTABLISHMENT OF THE FUND

The Police Pension Fund is established and administered as prescribed by "Article 3 – Police Pension Fund – Municipalities 500,000 and Under" of the Illinois Pension Code.

ADMINISTRATION

The Police Pension Fund is administered by a Board of Trustees whose duties are to manage the Pension Fund, determine applications for pensions, authorize payment of pensions, establish rules, pay expenses, invest assets, and keep records.

MEMBER CONTRIBUTIONS

Members contribute 9.910% of pensionable salary.

REGULAR RETIREMENT PENSION BENEFIT

Tier I

Eligibility: Age 50 with at least 20 years of creditable service.

Benefit: 50% of final salary for the first 20 years of service, plus an additional 2.5% of final salary for each year of service beyond 20 years of service, and not to exceed 75% of final salary. "Final salary" is based on the police officer's pensionable salary attached to rank held on the last day of service, unless the pensionable salary was greater at some point within the year prior to the last day of service. If so, the pensionable salary is averaged over the last 12 months.

Annual Increase in Benefit: A police officer is entitled to receive an initial increase equal to 1/12 of 3% of the original monthly benefit for each full month that has passed since the pension began. The initial increase date will be the latter of the first day of the month after the pensioner turns age 55 or the first day of the month after the benefit date anniversary. Subsequent increases of 3% of the current monthly benefit will be granted every January 1st thereafter.

REGULAR RETIREMENT PENSION BENEFIT - CONTINUED

Tier II

Eligibility: Age 55 with at least 10 years of creditable service.

Benefit: 2.5% of final average salary for each year of service, and not to exceed 75% of final average salary. "Final average salary" is determined by dividing the total pensionable salary during 48 consecutive months of service within the last 60 months of service in which total pensionable salary was the highest, by the number of months of service in that period (or by dividing the total pensionable salary during 96 consecutive months of service within the last 120 months of service in which total pensionable salary was the highest, by the number of months of service in that period, if greater). Annual salary for this purpose will not exceed the salary cap, indexed by the lesser of 3% or the CPI-U for the 12 months ending with the September preceding each November 1st. The salary cap will not decrease.

Annual Increase in Benefit: The initial increase date will be the latter of the January 1st after the pensioner turns age 60 or the January 1st after the benefit date anniversary. Subsequent increases will be granted every January 1st thereafter. The initial increase and subsequent increases will be the lesser of 3% of the original benefit or ½ of the CPI-U for the 12 months ending with the September preceding each November 1st.

EARLY RETIREMENT PENSION BENEFIT

Tier I

None.

Tier II

Eligibility: Age 50 with at least 10 years of creditable service.

Benefit: The regular retirement pension benefit reduced by ½ of 1% for each month that the police officer's age is between 50 and 55.

Annual Increase in Benefit: The initial increase date will be the latter of the January 1st after the pensioner turns age 60 or the January 1st after the benefit date anniversary. Subsequent increases will be granted every January 1st thereafter. The initial increase and subsequent increases will be the lesser of 3% of the original benefit or ½ of the CPI-U for the 12 months ending with the September preceding each November 1st.

SURVIVING SPOUSE BENEFIT

Tier I

Eligibility: Married to an active police officer with at least 8 years of creditable service, a disabled pensioner at the time of death, or a retired pensioner on the last day of service.

Active Line of Duty Death Benefit: An eligible surviving spouse is entitled to receive 100% of the police officer's final pensionable salary attached to rank held on the last day of service.

Non-Duty Death Benefit:

Disabled or Retired Pensioner: An eligible surviving spouse is entitled to receive the pensioner's benefit at the time of death.

Active Member with 20+ Years of Service: An eligible surviving spouse is entitled to the police officer's eligible benefit at the time of death.

Active Member with 10-20 Years of Service: An eligible surviving spouse is entitled to receive 50% of the police officer's pensionable salary attached to rank held on the last day of service, unless the pensionable salary was greater at some point within the year prior to the last day of service. If so, the pensionable salary is averaged over the last 12 months.

Annual Increase in Benefit: None.

Tier II

Eligibility: Married to an active police officer with at least 8 years of creditable service, a disabled pensioner at the time of death, or a retired pensioner on the last day of service.

Active Line of Duty Death Benefit: An eligible surviving spouse is entitled to receive 100% of the police officer's final pensionable salary attached to rank held on the last day of service.

Non-Duty Death Benefit:

Disabled or Retired Pensioner, Active Member with 20+ Years of Service, and Active Member with 10-20 Years of service: An eligible surviving spouse is entitled to receive the greater of 66⅔% of the police officer's earned pension benefit at the time of death or 54% of the police officer's monthly salary at the time of death.

Annual Increase in Benefit: The initial increase date will be the January 1st after the surviving spouse turns age 60. Subsequent increases will be granted every January 1st thereafter. The initial increase and subsequent increases will be the lesser of 3% of the original benefit or ½ of the CPI-U for the 12 months ending with the September preceding each November 1st.

TERMINATION BENEFIT – VESTED

Tier I

Eligibility: Age 60 with at least 8 but less than 20 years of creditable service.

Benefit: 2.5% of final salary for each year of service. "Final salary" is based on the police officer's pensionable salary attached to rank held on the last day of service, unless the pensionable salary was greater at some point within the year prior to the last day of service. If so, the pensionable salary is averaged over the last 12 months.

Annual Increase in Benefit: A police officer is entitled to receive an initial increase equal to 1/12 of 3% of the original monthly benefit for each full month that has passed since the pension began. The initial increase date will be the first day of the month after the benefit date anniversary. Subsequent increases of 3% of the current monthly benefit will be granted every January 1st thereafter.

Tier II

None.

DISABILITY BENEFIT

Tier I

Eligibility: Duty or Non-Duty Disability or Occupational Disease Disability with at least 5 years of creditable service.

Benefit: For a duty disability or an occupational disease disability with at least 5 years of creditable service, a police officer is entitled to receive the greater of 65% of final salary or the regular retirement pension benefit at the time of disability. For a non-duty disability, a police officer is entitled to receive 50% of final salary. "Final salary" is based on the police officer's pensionable salary attached to rank held on the last day of service.

Annual Increase in Benefit: A police officer is entitled to receive an initial increase equal to 3% of the original monthly benefit for each full year that has passed since the pension began. The initial increase date will be the latter of the January 1st after following pensioner turns age 60 or the January 1st after the benefit date anniversary. Subsequent increases of 3% of the original monthly benefit will be granted every January 1st thereafter.

Tier II

Eligibility: Duty or Non-Duty Disability or Occupational Disease Disability with at least 5 years of creditable service.

Benefit: For a duty disability or an occupational disease disability with at least 5 years of creditable service, a police officer is entitled to receive the greater of 65% of final salary or the regular retirement pension benefit at the time of disability. For a non-duty disability, a police officer is entitled to receive 50% of final salary. "Final salary" is based on the police officer's pensionable salary attached to rank held on the last day of service.

Annual Increase in Benefit: A police officer is entitled to receive an initial increase equal to 3% of the original monthly benefit for each full year that has passed since the pension began. The initial increase date will be the latter of the January 1st after following pensioner turns age 60 or the January 1st after the benefit date anniversary. Subsequent increases of 3% of the original monthly benefit will be granted every January 1st thereafter.

GLOSSARY OF TERMS

Glossary of Terms

GLOSSARY OF TERMS

Actuarial Accrued Liability – The Actuarial Present Value of future benefits based on Members' service rendered to the Measurement Date using the selected Actuarial Cost Method. It is that portion of the Actuarial Present Value of Plan benefits and expenses allocated to prior years of employment. It is not provided for by future Normal Costs.

Actuarial Cost Method – The method used to allocate the projected obligations of the Plan over the working lifetimes of the Plan Members.

Actuarial Value of Assets – The value of the assets used in the determination of the Unfunded Actuarial Accrued Liability. The Actuarial Value of Assets is related to Fair Value of Assets, with adjustments made to spread unanticipated gains and losses for a given year over a period of several years. Actuarial Value of Assets is generally equally likely to fall above or below the Fair Value of Assets, and generally does not experience as much volatility over time as the Fair Value of Assets.

Asset Valuation Method – A valuation method designed to smooth random fluctuations in asset values. The objective underlying the use of an Asset Valuation Method is to provide for the long-term stability of Employer Contributions.

Funding Policy – A set of procedures for a Pension Fund that outlines the "best practices" for funding the pension benefits based on the goals of the Plan Sponsor. A Funding Policy discusses items such as assumptions, Actuarial Cost Method, assets, and other parameters that will best help the Plan Sponsor meet their goal of working in the best interest of the Plan Members.

Fair Value of Assets – The value of the cash, bonds, securities, and other assets held in the pension trust as of the Measurement Date.

Normal Cost – The present value of future benefits earned by Members during the current Fiscal Year. It is that portion of the Actuarial Present Value of benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

Unfunded Actuarial Accrued Liability – The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The Unfunded Actuarial Accrued Liability is amortized over a period either in level dollar amounts or as a level percentage of projected payroll.

Lauterbach & Amen, LLP

CERTIFIED PUBLIC ACCOUNTANTS

MEMORANDUM

TO: Village President and Board of Trustees

FROM: Stan W. Helgerson, President, Police Pension Fund

DATE: October 26, 2022

RE: 2022 Tax Levy Request

The Police Pension Fund Board is hereby requesting that the Village Board levy $1,905,327 for the Police Pension Fund. The amount was determined by an actuary that was jointly hired by the Village and the Pension Board.

Thank you for your consideration.

cc: Algonquin Police Pension Board

VILLAGE OF ALGONQUIN

GENERAL SERVICES ADMINISTRATION

– M E M O R A N D U M –

DATE: November 1, 2022

TO: Tim Schloneger, Village Manager

FROM: Michael Kumbera, Assistant Village Manager/Treasurer

SUBJECT: *2022 Property Tax Levy*

The attached resolution establishes the amount the Village is requesting for its 2022 property tax levy. State statutes require that the corporate authorities of the Village pass a resolution estimating the amount of tax to be levied not less than 20 days prior to the adoption of the final levy, which is scheduled to be presented at the December 6 Village Board meeting.

Background

For the 2021 tax levy year, the Village's portion of resident's tax bill was approximately 6.4 percent (with some minor variations depending on exact location of household). In FY 22/23, property taxes comprise 28 percent of the General Fund revenue, which includes the Road and Bridge tax levy, which is levied by the township level of government. The Village, a home-rule unit of government, is not subject to the Property Tax Extension Limitation Law (PTELL), however, the Village is required to comply with the "Truth in Taxation Law." The law places requirements on the Village in the adoption of the 2022 property tax levy if the proposed 2022 gross property tax levy is 105 percent greater than the 2021 net property tax extension. Property tax revenues are not used to support business-like activities that are accounted for in enterprise funds, such as the Village's Water and Sewer Utility.

Recommendation

The recommendation for the 2022 Tax Levy is $6,130,000. This is an increase of $230,000 from the 2021 tax levy. The details are shown in Exhibit A which is attached. As the proposed levy is 103.90 percent of last year's extensions, there is no requirement for a public hearing under the Truth in Taxation Statute. The recommendation does take into consideration several factors that will impact the FY 23/24 financial plan including:

- The actuarial contribution recommendation for the Algonquin Police Pension Fund which exceeds the statutory requirement with a 100 percent funding level by 2033.
- The proportion of state-shared revenues and their stability in the long-term.
- Operational and capital needs for the upcoming period.
- Growth in Equalized Assessed Valuation (EAV) from both property value appreciation and new construction.

Projected EAV

Based on preliminary data obtained from Kane and McHenry County, equalized assessed valuation in the Village is expected to increase for the eighth consecutive year. The estimate of EAV for 2022 is $1,110,000,000 which is 6.3% more than last year which illustrates appreciation of real estate values and new construction. The assessors in each county use a three year history of property values including sales experience in determining the reassessment or current valuation. Assessments generally lag behind current market pricing by 18 months. The estimated tax rate for 2022 would be 0.55 per $100 of EAV (refer to Exhibit A for details) which is slightly less than 2021. A draft resolution reflecting this data is also attached.

Requested Action

If the Committee of the Whole concurs, a resolution should be forwarded to the Village Board for approval at the November 15 Village Board meeting.

Attachments

RESOLUTION 2022-R-

DETERMINING THE AMOUNT OF FUNDS TO BE LEVIED FOR THE 2022 TAX YEAR THROUGH REAL ESTATE TAXES FOR THE VILLAGE OF ALGONQUIN, KANE AND McHENRY COUNTIES, ILLINOIS

BE IT RESOLVED BY THE PRESIDENT AND BOARD OF TRUSTEES OF THE VILLAGE OF ALGONQUIN, KANE AND McHENRY COUNTIES, ILLINOIS:

1. That it is determined that the amount of taxes to be levied by the Village of Algonquin, exclusive of election costs, is $6,130,000, which is less than 105 percent of the prior year's extension.
2. That the amount of taxes proposed to be levied is 103.90 percent of the prior year's extension.
3. That the intent of the Village to levy less than 105 percent does not require an advertisement in the newspaper or a public hearing in accordance with the Truth in Taxation Law (35 ILCS 200/18-55 et seq.).

_____
Debby Sosine, Village President

(SEAL)

Attest: _____
Fred Martin, Village Clerk

EXHIBIT A

VILLAGE OF ALGONQUIN
PROPOSED REAL ESTATE TAX LEVY
2022 TAX LEVY

EQUALIZED ASSESSED VALUATION *	$1,110,000,000	(6.3% INCREASE)
PURPOSE	ESTIMATED RATE	PROPOSED LEVY
CORPORATE	0.122	$1,350,000
POLICE PENSION	0.205	2,280,000
SOCIAL SECURITY	0.000	0
IMRF	0.000	0
SCHOOL CROSSING GUARDS	0.000	0
LIABILITY INSURANCE	0.000	0
POLICE PROTECTION	0.225	2,500,000
ESDA	0.000	0
PARKS	0.000	0
TOTAL	0.552	6,130,000

** Estimated*

VILLAGE OF ALGONQUIN
SCHEDULE OF PROPERTY TAX RATES & EAV

Tax Levy Year	Rate ($/$100)	Levy ($)	EAV ($)	% Change EAV
1988	0.600	$560,450	$110,909,000	-
1989	0.599	$693,900	$135,617,000	22.3%
1990	0.520	$870,250	$166,102,000	22.5%
1991	0.554	$1,099,915	$192,167,000	15.7%
1992	0.566	$1,154,155	$211,172,000	9.9%
1993	0.529	$1,344,234	$232,032,000	9.9%
1994	0.556	$1,439,688	$269,127,000	16.0%
1995	0.477	$1,677,581	$308,854,325	14.8%
1996	0.484	$1,841,828	$356,504,156	15.4%
1997	0.486	$1,873,385	$419,401,278	17.6%
1998	0.483	$2,098,213	$429,661,002	2.4%
1999	0.494	$2,280,130	$463,158,850	7.8%
2000	0.489	$2,350,739	$513,584,881	10.9%
2001	0.502	$2,870,821	$578,127,467	12.6%
2002	0.456	$3,031,293	$658,305,942	13.9%
2003	0.484	$3,613,946	$747,072,297	13.5%
2004	0.477	$3,975,083	$834,437,331	11.7%
2005	0.464	$4,392,662	$947,091,750	13.5%
2006	0.464	$4,829,500	$1,038,991,569	9.7%
2007	0.470	$5,242,000	$1,115,890,792	7.4%
2008	0.485	$5,601,000	$1,155,073,386	3.5%
2009	0.484	$5,601,000	$1,157,591,396	0.2%
2010	0.523	$5,601,000	$1,077,620,673	-6.9%
2011	0.564	$5,575,000	$981,280,749	-8.9%
2012	0.621	$5,481,000	$887,200,696	-9.6%
2013	0.678	$5,481,000	$805,011,458	-9.3%
2014	0.705	$5,481,000	$777,811,422	-3.4%
2015	0.716	$5,731,000	$800,571,395	2.9%
2016	0.657	$5,600,000	$852,365,740	6.5%
2017	0.622	$5,600,000	$900,634,801	5.7%
2018	0.588	$5,600,000	$951,587,593	5.7%
2019	0.570	$5,600,000	$982,740,828	3.3%
2020	0.571	$5,812,000	$1,018,422,053	3.6%
2021	0.565	$5,900,000	$1,044,040,074	2.5%
2022	0.552	$6,130,000	$1,110,000,000	6.3%

Village of Algonquin

The Gem of the Fox River Valley

M E M O R A N D U M

TO: Tim Schloneger, Village Manager

FROM: Katie Gock, Recreation Superintendent
Michael Kumbera, Assistant Village Manager

DATE: November 3, 2022

SUBJECT: Towne Park Design and Engineering Services Agreement

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Attached to this memo is a design and engineering proposal for the redevelopment of Towne Park from Hitchcock Design Group. This firm previously assisted the Village with the Parks and Recreation Master Plan, Towne Park Master Plan, and our $600,000 OSLAD grant application for this site, and therefore, is very familiar with our park system, recreation offerings, and community needs.

The proposed cost for design and engineering at Towne Park is projected at $363,500. The proposal does include an option for the Mineral Springs site at a cost of $15,000, based upon the scope of work included in the Historic Commission's grant application to the Landmarks Illinois Donnelley Preservation Fund program. If there is Village Board consensus to proceed with work at the Mineral Springs site, it would be prudent to incorporate this work as part of the Towne Park construction for a total project cost of $378,500.

The FY 22/23 budget currently has $180,000 allocated to Towne Park engineering, which only included Phase 1 preliminary engineering. Due to the prospective OSLAD grant award for this site as well as construction financing/debt planning for this and other proposed projects (i.e. Presidential Park), Village staff is recommending that we advance the design engineering phase into the current fiscal year, with a goal of having shovel-ready documents in 2023. There is existing capacity in the Park Improvement Fund to make up the difference between budget and the proposed expenditure.

Recommendation

Staff recommends approval of the proposal from Hitchcock Design Group for the design and engineering services at Towne Park. Staff will be available in advance of and at the Committee of the Whole meeting to answer any questions.

C: Robert Mitchard, Public Works Director
Michele Zimmerman, Assistant Public Works Director

November 1, 2022
Village of Algonquin
Towne Park

Scope of Services
Towne Park Final Design

Hitchcock Design Group will be the Prime Consultant and Landscape Architect with Dewberry Architects as the Architect for the restroom buildings and bandshell, Christopher Burke Engineering as the Civil Engineer for grading, utilities, storm water management, wetland delineation, and permitting. Nova Engineering will be the electrical engineer for site electrical services to the restroom buildings and bandshell. Any additional site surveying and soil borings will be provided by others directly under contract with the Village of Algonquin.

FINAL DESIGN SERVICES

The goal for this part of the agreement is to use the existing master plan continue to finalize the design, update opinion of probable cost, and complete documentation suitable for permit applications, bidding & negotiations, and construction pending grant award.

E. Program and Analysis Phase

Objective: The objective is to confirm the project's design program, budget, grant components and eligibility, permit requirements, equipment preferences, and schedule.

Process: Specifically, the Hitchcock Design Group team will:

1. **[Meeting #1: Staff]** Conduct a **Kick-off Meeting** with Village representatives and the other project team members confirming:
   a. Design program and priorities
   b. Project team structure and responsibilities
   c. Grant application requirements
   d. Anticipated permitting requirements and timelines
   e. Available data and data gathering needs
   f. Budgeted costs
   g. Schedule

2. **Identify Jurisdictional Interests** by discussing the project with representatives of appropriate constituent and regulatory groups including:
   a. Village of Algonquin (storm water and site development)
   b. Village of Algonquin (sanitary and water main improvements)
   c. IEPA (NPDES permit)
   d. McHenry County or IDNR
      i. Floodplain impacts
   e. U.S. Army Corps of Engineers
      i. Waters of the US impacts
      ii. Wetland impacts
      iii. This is anticipated to be a Nationwide Permit. If a Regional Permit is required, we will provide an additional cost at that time for Christopher Burke to provide that permit application.

3. **Collect Data** for the project area and the immediate surroundings including:
   a. Topographic survey – provided by client
   b. Existing utility locations – provided by client
   c. Soil borings and geotechnical analysis – provided by client
   d. Documentation illustrating storm water capacity availability in existing basin
   e. National wetland inventory map and waters of the United States
   f. Flood Insurance Rate Map information

4. Prepare an **On-Site Wetland Delineation and jurisdictional determination** using USACE Wetland Delineation Manual methodology and to prepare a natural systems report to be used with the permit application that includes:
   a. Observed vegetative, hydrologic and soil characteristics, dominant species and Swink, Floyd and Wilhelm quality values
   b. Aerial photography
   c. Representative site photography
   d. Regulatory constraints and permit requirements in accordance with State and Federal statutes
   e. Jurisdictional Determination application

5. Assist the Village to secure pricing and obtain a **Geotechnical Investigation Report** from qualified geotechnical firms at the locations of the proposed improvements to define:
   a. Strength, consolidation and bearing capacities of the existing sub-surface
   b. Presence of any unsuitable sub-grade materials

6. Use the **Boundary and Topographic Survey** prepared by the Village Engineer for the Master Plan phase.

7. **Photograph the Project Area** and immediate surroundings in order to identify readily apparent physical conditions and patterns of use.

8. Prepare **Base Maps** at Appropriate Scales using the inventoried data and the and topographic survey Provided by the Village.

9. Prepare a written **Project Program** that includes:
   a. Project design program
   b. Jurisdictional factors
   c. Budget information
   d. Project Schedule

10. **Review the Program and Analysis** by forwarding the written Project Program and discussing with client representatives and other project team members.

Deliverables: **Base Maps**, **Written Project Program**

B. Design Development Phase

Objective: The objective is to reach consensus with the client and jurisdictional authorities on the final design, probable cost and construction strategy for the proposed improvements.

Process: Following your confirmation of the design program and priorities, the Hitchcock Design Group team will:

1. **Finalize the Design** including size, horizontal and vertical geometry, structure, materials and finish, as appropriate, for the proposed improvements including:
   Basic Scope of Services
   a. Improved pedestrian circulation features, paths, and seating areas
   b. Prefabricated gazebo
   c. Restroom and shelter facility with storage
   d. Bandshell structure and stage
   e. Inclusive playground, surfacing, and drainage
      i. Evaluate and adjust layout to avoid water and sanitary line utility conflicts
   f. Landscape improvements
   g. Grading and drainage

h. Utility improvements including:
   i. Storm sewer
   ii. Sanitary and water connections to restroom facilities
   iii. Electrical service to restroom facilities, bandshell, and gazebo
   iv. Water Main project by others
i. Retaining walls (structural engineer by selected wall manufacturer)
j. Floodplain and stormwater mitigation improvements
k. Site furnishings

Optional Scope of Services

a. **OPTIONAL SERVICE #1**: Replacement of existing restroom facility including grinder pump.
b. **OPTIONAL SERVICE #2**: Renovation of Mineral Springs including concrete bench, steps, cap, underdrainage, interpretive signs, and landscaping. Interpretive sign graphic design to be coordinated with selected sign vendor.

2. **Coordinate with your Selected Playground Manufacturer** for development of the play equipment selection and layout.

3. **Architect to Prepare Preliminary** building plans and details including fixtures, materials, finishes.

4. **OPTIONAL SERVICE #1: Architect to Prepare Preliminary** building plans and details including fixtures, materials, finishes for the **Existing Restroom Facility Replacement**.

5. **Prepare the Design Development Documents** including:
   a. Existing conditions information
   b. Plan view drawings
   c. Descriptive supplemental drawings
   d. Outline specifications and Product data

6. Prepare a summary of estimated quantities and Update the **Construction Cost Opinion.**

7. **[Meetings #6 & #7: Staff]** Review the Design Development Documents with you at the 50% and 100% completion milestones. Prepare written summaries of discussions and update the Project Program following each meeting.

Deliverables: **Design Development Document**, **Construction Cost Opinion**, **Meeting Summaries**

C. Construction Documentation Phase

Objective: The objective is to produce the final drawings, specifications, quantity schedules, project manual and other bid documents that will be used to competitively bid and construct the improvements.

Process: Following approval of the Design Development Phase, the Hitchcock Design Group team will:

1. **Finalize the Graphic Documentation** that will be used to bid and construct the improvements including:
   a. Digital construction drawings
      i. Cover sheet, notes and legend
      ii. Existing conditions plans
      iii. Site preparation plans

iv. Grading and drainage plans
v. Storm, water, and sanitary utility plans
vi. Electrical service and site lighting plans
vii. Storm Water Pollution Prevention plans (SWPPP)
viii. Layout and materials plans
ix. Restroom and bandshell facility plans, details, and foundation drawings
    A. Restroom building to include sprinkler system
x. Landscape plans
xi. Site construction details
xii. **OPTIONAL SERVICE #1**: Existing restroom facility replacement plans, details, foundation drawings and sprinkler system.
xiii. **OPTIONAL SERVICE #2:** Mineral Springs renovation plans and details.

2. **Finalize the Written Documentation** that will be used to bid and construct the improvements including:
   a. CSI General and Supplementary Conditions, Contracting Requirements, and Bidding Requirements
   b. CSI Technical specifications

3. Prepare a summary of estimated quantities and Update the **Construction Cost Opinion**.

4. **[Meetings #8 and #9: Staff]** Review the Construction Documents with you at 75% and 90% completion. Prepare written summaries of discussions and update the Project Program following each meeting.

Deliverables: **Construction Drawings**, **Technical Specifications**, **Construction Cost Opinion**, **Meeting Summaries**

D. Permitting Phase

Objective: The objective is to obtain the required permits.

Process: Following approval of the Construction Documentation Phase, the Hitchcock Design Group team will:

1. Prepare and assemble **Permit Documents** including:
   a. Site Development Permit with Village of Algonquin
   b. Storm Water and Sanitary Permits with Village of Algonquin
   c. Restrooms and Bandshell Building Permit with Village of Algonquin
   d. IEPA (NPDES permit)
   e. County Wetland Permitting, if required
   f. US Army Corps of Engineers, if required

2. **Submit Permit Documents** as required to the respective regulatory agencies.

3. Communicate with you as necessary to **Discuss Review Letter(s)** received from regulatory agencies.

4. Make One (1) Set of Authorized **Revisions** to the appropriate Permit Documents and resubmit to the respective regulatory agencies

Deliverables: **Final Construction Documents, Revisions to Plans for Permit**

November 1, 2022
Village of Algonquin
Towne Park

CONSTRUCTION PHASE SERVICES (Hourly)

The goal for this part of the engagement is to help the client get the improvements constructed. Following award of the work to a Contractor, Hitchcock Design Group will provide these Construction Services until the specified Final Acceptance date of the work, or until 60 days after Substantial Completion of the work, whichever occurs first

A. Bidding and Negotiation Phase

Objective: The objective is to help the client select a qualified contractor to construct the improvements or to coordinate bidding phase work with the Village's selected Construction Manager (CM).

Process: Following your approval, the Hitchcock Design Group team will:

1. **Provide Bidding Documents** for the CM to Place **in Online Digital Plan Room** for bidding distribution and Management.

2. Help you advertise the bid letting by preparing **Legal Notice** for your use in publicizing the bid.

3. **[Bid Meeting #1: Staff / Prospective Bidders]** **Attend a Pre-Bid Meeting** for interested bidders.

4. **Answer Questions and Issue Written Addenda**, when appropriate, for the CM to issue to all bidders regarding changes to or clarifications of the Contract Documents.

5. **[Bid Meeting #2: Staff / Prospective Bidders]** **Attend the bid opening** and record the results. **Assist the CM to Prepare a Bid Tabulation** spreadsheet.

Deliverables: **Bidding Documents**, **Legal Notice**, **Addenda**, **Bid Tabulation**

B. Construction Administration

Objective: The objective is to help you finalize and administer your construction contract with the Contractor.

Process: Following your award of the work to a Contractor, the Hitchcock Design Group team will provide these Construction Services until Final Acceptance of the work, or until 60 days after Substantial Completion of the work, whichever occurs first:

1. Construction Manager will prepare AIA **Owner / Contractor Agreements**.

2. **[Construction Meeting #1: Staff / Contractor]** Attend a **Pre-Construction Meeting** with you and the Contractor to review:
   a. Contractor mobilization and staging
   b. Contractor schedules
   c. Contractor submittals
   d. Responsibilities
   e. Communications
   f. Payment procedures

3. **Issue Interpretations or Clarifications** of the Contract Documents when requested by: you or the Contractor.

4. Prepare recommendations for construction **Change Orders**, as requested by:
   a. You, because of a change that you wish to make to the scope of the Contractor's work

b. The Contractor because of the discovery of job site conditions that were concealed or unknown when the Owner / Contractor Agreement was executed, as approved by you

5. **Review Submittals and Shop Drawings**, product data and material samples which the Contractor is required to submit for the limited purpose of determining their general conformance with the design concept and information contained in the Contract Documents.

6. **Review Testing Procedures** and data provided by independent testing services.

7. Prepare written **Payment Recommendations** upon review of Contractor's monthly payout applications.

Deliverables: **Owner / Contractor Agreement**, **Clarifications**, **Change Orders**, **Submittal Review**, **Testing Review**, **Payment Recommendations**

C. Construction Observation

Objective: The objective is to become familiarized with the progress and quality of the Contractor's work and to determine if the work is proceeding in general conformance with the Contract Documents.

Process: During construction, we will:

1. **[Construction Meetings #2 - #17: Staff / Contractor]** Assuming a 6-8-month active construction period, **participate in Site Meetings** approximately every 2 to 3 week (fourteen (16) total progress meetings budgeted) with you and the contractor to become familiarized with the progress and quality of the Contractor's work and to determine if the work is proceeding in general conformance with the Contract Documents.

2. **Prepare Field Reports** of the progress meetings at the site with you and the Contractor.

Deliverables: **Field Reports**

D. Contract Close-out

Objective: The objective is to help the client close out its construction contract with the Contractor.

Process: After the Contractor notifies the client that the work is Substantially Complete, Hitchcock Design Group will:

1. **[Construction Meeting #18: Staff / Contractor]** Participate in one (1) site visit to conduct a walk through and **prepare a Punch List** upon substantial completion of the construction of the work documented by us.

2. **Review Contract Close-out Submittals** required as provided by the Contractor, such as but not limited to:
   a. Operating and maintenance manuals
   b. As-built record drawings
   c. Labor and material lien waivers
   d. Payment applications

3. **[Construction Meeting #19: Staff / Contractor]** Participate in one (1) site visit to conduct a walk through to verify completion of a punch list items and **Establish Final Acceptance**.

4. **Prepare Final Payment Recommendations** regarding the Contractor's request for acceptance of substantially and finally completed work.

Deliverables: **Punch List**, **Closeout Submittal Review**, **Final Payment Recommendation**

ADDITIONAL SERVICES

We may provide additional services, at your approval that are not included in the Basic Services, such as:

1. Revisions to previously completed and approved phases of the Basic Services
2. The services of additional consultants not specified in the proposal documents
3. Meetings with you or presentations to other parties not specified in the Basic Services
4. Detailed quantity estimates and construction cost opinions using data or formats other than our own
5. Detailed written summaries of our work or our recommendations
6. Services required due to the discovery of concealed conditions, actions of others, or other circumstances beyond our control
7. Services required to restart the project if you suspend our work at your convenience for more than 90 days during the performance of our services
8. Preparation of segregated or multiple contract bid sets or more than one Owner / Contractor agreement

AUTHORIZATION

Services or meetings not specified in this scope of services will be considered additional services. If circumstances arise during our performance of the outlined services that we believe require additional services, we will promptly notify you about the nature, extent and probable additional cost of the additional services, and perform only such additional services following your written authorization.

Village of Algonquin
Towne Park Final Design
November 1, 2022

Proposed Professional Fee Structure

The following Fee Structure follows the format outlined Scope of Services date November 1, 2022.

Professional Fee Structure Basic Scope of Services

Year 2022/23 Services:

Site Design and Engineering

Program and Analysis Phase:	$25,000
Design Development and Construction Document Phase:	$120,000
Permitting Phase:	$26,000
Subtotal (Fixed Fee):	$171,000

Architecture

Program and Analysis Phase:	$3,000
Design Development and Construction Document Phase:	$70,800
Permitting Phase:	$3,200
Subtotal (Fixed Fee):	$77,000

Year 2023 Services:

Site Design and Engineering

Bidding, Construction administration, observation, and close out phase:	(Hourly estimate) $46,000

Architecture

Bidding, Construction administration, observation, and close out phase:	(Hourly estimate) $22,000
Subtotal (Hourly Estimate):	$68,000

Reimbursable Expenses:

Printing, copying, courier services, mileage for travel:	$6,500
Subtotal Estimate:	$6,500
Basic Services Total Estimate:	**$322,500**

Professional Fee Structure Optional Service #1

Add replacement of Existing Restroom Facility to the project including demolition of existing structure, minor site layout adjustment for facility location, utility adjustments for new facility and location, architectural plans and details including fixtures, materials, finishes, MEP and sprinkler system.

Site Design and Engineering

Program and Analysis Phase, Design Development, Construction Document Phase, and Permitting Phase:	Add Fixed Fee: $9,500

Architecture

Program and Analysis Phase, Design Development, Construction Document Phase, and Permitting Phase:	Add Fixed Fee: $26,500

Site Design, Engineering, and Architecture

Bidding, Construction administration, observation, and close out phase:	Add Hourly Estimate: $5,000
Optional Service #1 Total Estimate:	**$41,000**

Professional Fee Structure Optional Service #2

Add restoration of Mineral Springs including concrete bench, steps and cap, interpretive signs (3), underdrainage, and minor landscape improvements. Graphic design for interpretive signs will be coordinated with the Village's selected sign vendor and design company.

Site Design and Engineering

Program and Analysis Phase,
Design Development,
Construction Document Phase, and
Permitting Phase: Add Fixed Fee: $11,500

Bidding, Construction administration, observation,
and close out phase: Add Hourly Estimate: $3,500

Optional Service #2 Total Estimate: $15,000

VILLAGE OF ALGONQUIN

PUBLIC WORKS DEPARTMENT

– M E M O R A N D U M –

DATE: October 31, 2022

TO: Tim Schloneger, Village Manager

FROM: Michele Zimmerman, Assistant Public Works Director

SUBJECT: *Eastgate Drive Roadway and Pedestrian Improvements*

In meetings recently with the Director of the Algonquin Library, the Village of Algonquin was requested to pursue roadway improvements in the area of the east side library that would expand the sorely needed parking availability in the area of that business. To meet this request, we determined that the entirety of Eastgate Drive, from Algonquin Road to the dead end at Algonquin Middle School, and contiguous to the library property was in need of roadway maintenance upgrades. The Public Works Department requested the assistance of Christopher B. Burke Engineering LTD to put together a scope of services, which you will find attached to this memo.

The project includes the addition of 22 to 24 angled parking spaces on the west side of Eastgate Drive, adjacent to property owned by the Archdioceses of Rockford. To make this project workable the Village will need either land acquisition or permanent easements from the St. Margaret Mary ballfield area, as the existing ROW is too narrow to accommodate the proposed parking. The project will also make all current carriage walk ADA compliant at the existing intersections with Algonquin Road, Ridge and Webster, and curb and carriage sidewalk will be removed and replaced, as needed, to make the area safe for residents in the area, pedestrians and school children who walk to St. Margaret Mary School and the library.

Any necessary underground utility work will also be addressed prior to redoing the new roadway.

This project was not budgeted but do to the timing of the Library project, we need to get the design underway so we can coordinate with their improvements. The Ratt Creek Reach 5 Stream Restoration project came in under budget. Therefore, we will use the coat saving from this to initiate this engineering.

Therefore, it is our recommendation that the Committee of the Whole take action to move this matter forward to the Village Board for approval of the Eastgate Roadway and Pedestrian Improvements to Christopher B. Burke Engineering in the amount of $70,191.00.

Consulting Engineering
Master Agreement Work Order Form

I. Incorporation of Master Agreement

All terms and conditions contained within the Village Engineer Master Agreement executed between the parties shall be applicable to the work to be performed under this Work Order and shall be deemed to be fully incorporated as if fully set forth herein.

II. Project Understanding

A. General Understanding/Assumptions

The project includes street rehabilitation (Grind & Overlay Resurfacing) to Eastgate Drive from IL-Route 62 (Algonquin Road) to the Algonquin Middle School Entrance south of Webster Street, along with the construction of new angled-parking spaces (+/- 23) on the west side of Eastgate between Ridge Street and the Church to meet Village standards. The improvements will extend for a length of approximately 1,650 lineal feet. It is our understanding that the roadway geometry will remain to match current conditions and will be resurfaced with a grind and overlay treatment.

The project will also include replacement all sidewalks/carriage walks, curb & gutter, and driveway apron replacements, as well as utility rehabilitation. We understand that the Village will televise the existing sewer and provide their analysis of its condition. The Village will also provide the break history of the water main within the project limits.

It is our understanding that the following will also be included in our scope for this project:

- Village will provide an asset condition report for storm and sanitary sewers and a list of locations where repairs are necessary.
- Village will provide information on the current pressure-reducing station and the proposed location of the new pressure-reducing valve (PRV).
- CBBEL will prepare Temporary Construction Easement (TCE) and Permanent Easement (PE) documentation for the property acquisition required to construct the new angled-parking stalls.
- Design of the new sidewalk and parkway (all carriage walks to be removed) and parkway grading for proper drainage.
- Fence removal and reinstallation approximately one foot behind the proposed sidewalk (which will require coordination with the Church/School).
- A site visit to determine tree removals based on species and condition; all proposed trees to be planted will be purchased and installed separately by the Village (Village to provide CBBEL locations for new trees to show in the plans).

It is our understanding the project will be designed in 2023 with construction (likely) occurring in 2026 (based on coordination with the Village and their discussions with the Archdiocese). Local funds will be used for construction costs, as well as all design and construction engineering fees.

B. Design Criteria
Village/IDOT

III. Scope of Services

A. Surveying and Geotechnical Services

Task A.1 – Project Topographic and ADA Survey

CBBEL will perform Topographic Survey of Eastgate Avenue R-O-W to R-O-W, (from southeasterly R-O-W Algonquin Road (IL-62) to Middle School entrance south of Webster Road; 2,100'LF±), with 50' side street overlap, including all ADA ramps. The following scope items will be included in this task:

1. Horizontal Control: Utilizing state plane coordinates, CBBEL will tie into NGS Monumentation control utilizing state of the art GPS equipment. Horizontal Datum will correlate with established/existing NGS control monuments (NAD '83, Illinois East Zone 1201).

2. Vertical Control: CBBEL will establish site benchmarks for construction purposes, tied to the NAVD '88 Vertical Datum. This will be based on GPS observed NGS Control Monumentation (NAVD'88 vertical control datum) State-of-the-art Hard Level equipment will be used to establish benchmarks and assign a vertical datum on the horizontal control points.

3. CBBEL will field locate all pavements, driveways, bike paths, curbs and gutters, pavement markings, signs, manholes, utility vaults, drainage structures, utilities, driveway culverts, cross road culverts, etc. within the project limits.

4. CBBEL will field locate all trees of 6-inch caliper or greater within the survey limits (Tree Line only for heavily forested areas), and record tree size, and location on survey.

5. Establish the approximate existing right-of-way of the roadways within the project limits based on monumentation found in the field, plats of highways, subdivision plats and any other available information.

6. CBBEL will survey cross sections along the project limits at 50' intervals, and at all other grade controlling features.

7. CBBEL will field-locate all above-ground utility infrastructure within the survey limits such as water, sanitary sewer, storm sewer, telephone, electric, cable and gas, etc. For each structure we will identify size, type, rim, and invert elevations.

8. Office contouring of field data and one-foot contour intervals.

9. Drafting the Existing Conditions Plan base sheets at a scale of 1"=20' for use during design.

***NOTE: Boundary/Land Acquisition Survey, Plats of Easement, and Right-of-Way/Plat of Highway Scope of Services are not included in this task.**

Task A.2 – J.U.L.I.E. Utility Coordination

CBBEL will coordinate with J.U.L.I.E. to retrieve atlas information for all applicable underground utilities including water main, gas, electric, cable, etc.. CBBEL will compile all Utility Atlas information into the base map. Locations of existing utilities /obstructions / systems shown on the base map are the compilation of available utility plans provided by utility owners and J.U.L.I.E. Utility Coordination. All utilities /obstructions / systems may not be shown. Contractor shall be responsible for locating and protecting all underground utilities /obstructions / systems whether or not shown on base map. J.U.L.I.E. Utility Coordination Atlas information is typically isolated to Public Right-of-Way (off-site) & limited areas adjacent to Public Right-of-Way. Identification & location of all private subsurface utilities within project area (on-site) is the responsibility of the client.

Task A.3 – Easement Exhibit and Legal Descriptions

1. Initial coordination with Client.
2. Research with the McHenry County Recorder's Office.
3. Field survey to establish the existing boundaries of the subject parcels.
4. Office calculations and plotting of field and record data.
5. CAD drafting of the easement exhibit for the proposed easement areas.
6. Write legal descriptions for the proposed easement areas.
7. Final review and submittal by an Illinois Professional Land Surveyor.

Task A.4 – Geotechnical Investigation

A Geotechnical Investigation will be performed by CBBEL's subconsultant, Rubino Engineering. The Geotechnical Investigation will include three (3) pavement cores to a depth of 5 feet and one (1) soil boring to a depth of 7.5 feet, to determine the existing structure of the pavement and condition of subgrade materials with a 6-inch core barrel to obtain a representative pavement section to be determined at a location with the least amount of observable gravel base. The sample will likely be a blend of aggregate base and subgrade soil. This assumes no flagmen are required to take the cores. The report will include an overview of subsurface conditions and recommendations regarding subgrade preparation and

stability, as well as construction considerations for temporary excavation and control of water.

The objectives of the boring study are to determine whether the associated laboratory analysis provide a basis for Rubino to sign IEPA Form LPC-663, Unincorporated Soil Certification by a Licensed Professional Engineer. A summary report will be prepared which describes the sampling procedures followed and presents results of the analytical laboratory testing. If all analytical results meet their respective MACs, Form LPC-663 will be filled out and signed by a Licensed Professional Engineer or Geologist. The report will be provided, and will be addressed to Christopher B. Burke Engineering, Ltd.

B. Phase 1 Engineering

Task B.1 – Field Reconnaissance

CBBEL Staff will perform a Field Reconnaissance of Eastgate Drive with Village staff. The purpose of the Field Reconnaissance will be to verify the method of rehabilitation/reconstruction and determine the limits and estimate the quantity of drainage structure, curb and gutter, and sidewalk removal and replacement. Additionally, CBBEL will determine the location of substandard radii and other geometric inadequacies to be improved as part of the project. The results of the Field Reconnaissance will be included in the Preliminary Plans. The results of the Field Reconnaissance will be reviewed with the Department of Public Works and compared to previous estimates to determine their impact on the estimated construction cost.

Task B.2 – Phase I Report

CBBEL will prepare a Phase I Report which will consist of the following:

- Preliminary Typical Sections
- Preliminary Plans
    - Showing roadway improvements
    - Parking area layout
    - Curb and gutter removal and replacement
    - Sidewalk removal and replacement
    - Storm structure replacements
    - Water main replacement (as necessary)
    - Sanitary sewer replacement and/or lining (as necessary)
- Sidewalk/Carriage Walk replacement per Village policy, including ADA assessment
- Storm Sewer Assessment
- Estimate of Construction Cost
- Construction Schedule
- Pavement Cores and Soil Analysis
- QA/QC Plan

C. Phase 2 Engineering

Task C.1 – Plans, Specifications and Estimates

CBBEL will prepare engineering plans, specifications and estimates utilizing local funds for the following sheets:

- Cover Sheet
- General Notes Sheets
- Summary of Quantities
- Existing and Proposed Typical Sections
- Alignment Ties and Benchmarks
- Tree Schedule
- Detour Route
- Maintenance of Traffic
- Existing Conditions and Removal Plans
- Proposed Roadway Plan and Profiles
- Proposed Sidewalk Plan and Profiles
- Proposed Parking Area Grading Plan
- Pavement Marking/Signage, Landscaping, and SESC Plans
- Soil Erosion and Sediment Control Notes and Details
- ADA Curb Ramp Plans and Elevations
- Construction Details
- Cross Sections

CBBEL will draft the Plan base sheets at a scale of 1"=20' for use during design.

CBBEL will assist the Village in bidding and recommendations of the bids.

Task C.2 – Stormwater Management Permitting

As the proposed parking area will disturb more than 5,000 square feet, CBBEL will prepare the stormwater calculations, modeling, narrative and exhibits and assemble into a tabbed stormwater permit submittal for the project to Kane County.

Task C.3 – IDOT Permitting

CBBEL will submit the necessary IDOT Permit documentation and Engineering Plans to IDOT for their review and approval to complete work within IDOT R.O.W. at IL-Route 62 (Algonquin Road). As all engineering and construction will be funded Locally, a PESA will not be required for any work within IDOT R.O.W.; permit approval will be processed through IDOT Local Roads.

D. Meetings/Coordination

-2 Meetings with Village
-1 Meeting with IDOT
-1 Meeting with School/Church/Library
-1 Public Information Meeting
CBBEL will provide letter(s); Village will perform mailing.

E. Deliverables

PDF of the Final Phase I Report
PDF of Final Engineering Plans, Specifications and Estimate

F. Services by Others

3 Pavement Cores, 1 Soil Boring by Rubino Engineering.

G. Information to be Provided by Client

Water main break history
Village analysis of the existing sanitary and storm sewer condition, tree survey, tree planting list.

IV. Staff-Hour & Fee Summary

A. <u>Surveying and Geotechnical Services</u>

Task A.1 Project Topographic and ADA Survey

Survey V	2 hrs x $179/hr	=	$ 358
Survey IV	6 hrs x $174/hr	=	$ 1,044
Survey III	6 hrs x $173/hr	=	$ 1,038
Survey II	36 hrs x $143/hr	=	$ 5,148
Survey I	36 hrs x $108/hr	=	$ 3,888
CAD Manager	18 hrs x $184/hr	=	$ 3,312
			$14,788

Task A.2 J.U.L.I.E. Utility Coordination

Survey III	16 hrs x $173/hr	=	$ 2,768

Task A.3 Easement Exhibit and Legal Descriptions

Survey V	1 hrs x $179/hr	=	$ 179
Survey IV	8 hrs x $174/hr	=	$ 1,392
Survey III	1 hrs x $173/hr	=	$ 173
Survey II	6 hrs x $143/hr	=	$ 858
Survey I	6 hrs x $108/hr	=	$ 648
CAD Manager	5 hrs x $184/hr	=	$ 920
			$ 4,170

Task A.4 Geotechnical Investigation

Rubino Engineering		=	$ 6,910

Subtotal Task A **$28,636**

B. <u>Phase 1 Engineering</u>

Task B.1 Field Reconnaissance

Engineer V	8 hrs x $185/hr	=	$ 1,480
Engineer III	8 hrs x $135/hr	=	$ 1,080
			$ 2,560

Task B.2 Phase I Report

Engineer V	4 hrs x $185/hr	=	$ 740
Engineer III	50 hrs x $135/hr	=	$ 6,750
CAD II	50 hrs x $135/hr	=	$ 6,750
			$14,240
	Subtotal Task B		**$16,800**

C. Phase 2 Engineering

Task C.1 Plans, Specifications and Estimates

Engineer V	4 hrs x $185/hr	=	$ 740
Engineer III	40 hrs x $135/hr	=	$ 5,400
CAD II	40 hrs x $135/hr	=	$ 5,400
			$11,540

Task C.2 Stormwater Management Permitting

Engineer IV	8 hrs x $155/hr	=	$ 1,240
Engineer III	16 hrs x $135/hr		$ 2,160
			$ 3,400

Task C.3 IDOT Permitting

Engineer V	2 hrs x $185/hr	=	$ 370
Engineer III	8 hrs x $135/hr		$ 1,080
CAD II	4 hrs x $135/hr	=	$ 540
			$ 1,990
	Subtotal Task C		**$16,930**

D. Meetings/Coordination

Engineer V	15 hrs x $185/hr	=	$ 2,775
Engineer III	30 hrs x $135/hr	=	$ 4,050
	Subtotal Task D		**$ 6,825**
	Subtotal		$ 69,191
	Direct Costs		$ 1,000
	Not-to Exceed Fee	**=**	**$ 70,191**

VILLAGE OF ALGONQUIN

Accepted by: _____

Title: _____

Date: _____

CHRISTOPHER B. BURKE ENGINEERING, LTD.

Accepted by: 

Title: President

Date: 10/26/2022

CHRISTOPHER B. BURKE ENGINEERING, LTD.
STANDARD CHARGES FOR PROFESSIONAL SERVICES
VILLAGE OF ALGONQUIN

Personnel	Charges ($/Hr)
Principal	210
Engineer VI	200
Engineer V	185
Engineer IV	155
Engineer III	135
Engineer I/II	110
Survey V	179
Survey IV	174
Survey III	173
Survey II.	143
Survey I	108
Engineering Technician V	173
Engineering Technician IV	138
Engineering Technician III	120
Engineering Technician I/II	100
CAD Manager	184
CAD II	135
GIS Specialist III	146
GIS Specialist I/II	94
Landscape Architect	166
Landscape Designer I/II	94
Environmental Resource Specialist V	169
Environmental Resource Specialist IV	146
Environmental Resource Specialist III	110
Environmental Resource Specialist II	90
Environmental Resource Technician	114
Administrative.	105
Engineering Intern	49

Updated March 29, 2022