





Memorandum

TO: Kevin J. Jackson, Village Manager 
FROM: Rob Sproule, Public Works Director 
FOR: Village President and Board of Trustees
DATE: August 21, 2023
SUBJECT: Oak Park Combined Sewer System and Sewer Back-ups

This memo is in response to the Village Board's request for additional information related to the response to the July 2nd rain storm. The memo provides information on the Village's combined sewer system for context, information and impacts from the July 2nd rain storm event, next steps the Village is taking to address sewer backups from the storm, and the recent FEMA disaster declaration related to the July 2nd event.

Background

I. A Short History of Oak Parks Sewer System and Related Initiatives.

The Village of Oak Park has a sewer system consisting of over 110 miles of sewer pipes ranging from 9-inches diameter to over 9-feet in diameter. The sewer system is a combined sewer system which means that it conveys both sanitary sewage and storm water. All of the Village's sewage flows into the Metropolitan Water Reclamation District's (MWRD) sewer system which ultimately flows to their Stickney Water Reclamation Plant located on Pershing Road in Cicero for treatment. Generally, MWRD's sewer system has the capacity to convey about a 5 to 10-year storm event. Since the Village discharges all of our sewage to MWRD, the Village's systems' capacity is generally constrained by MWRD's capacity.

Construction of the Village's sewer system began in about 1886 and continued as the Village grew until about 1930 when the system and Village was generally built out. Once built, the local sewer system quickly became strained beyond its capacity. Flooding and sewer back-ups were a regular occurrence in most of the Village. After the Great Depression, major public works initiatives made their way to Oak Park resulting in the construction of a major relief sewer project throughout the Village in 1937 which included a large trunk sewer down East Avenue. This sewer, which still serves roughly 50% of the Village, tied directly into the newly constructed MWRD interceptor sewer which runs on Roosevelt Road and south down East Avenue.

Despite this large effort in 1937, sewer backups continued in many parts of the Village. In 1948 the Village conducted a sewer study which determined that significant improvements were still needed to provide a five-year storm level of protection against basement back-ups. This level of protection is typical for urbanized areas comparable to Oak Park. The study noted that a lack of capacity was the most critical problem. To improve the capacity of the sewer system the Village would need to build additional large relief sewers and MWRD would also need to build additional sewers to help accept the additional sewage. In 1967 the Village constructed a large relief sewer project throughout the Village to discharge to MWRD's newly constructed interceptor sewer which generally flows on Lake Street from the City and south down Lombard Ave. The MWRD interceptor sewer serves portions of the City of Chicago, Oak Park, Berwyn, and Cicero. This large project in 1967 addressed many of the sewer capacity issues in the Village, however the north portions of the Village was still prone to sewer backups during modest rain event as well as some more localized areas with capacity constraints.

In 1993 the Village undertook another sewer study following a significant rainfall that resulted in many homes having sewer back-ups. The study determined that many similar issues surrounding overall capacity still existed and found that significant investments in large diameter sewers in the Village would provide little in the way of relief from basement back-ups in major storm events. A number of recommendations came from the study and resulted in major initiatives being taken by the Village. These included making investments in local sewer improvements, cleaning and inspecting sewers regularly, and suggesting downspout disconnections and overhead sewers in impacted areas. Since this time the Village has been investing in local sewer replacement projects to address localized capacity issues. On average the Village invests around \$1.5 million annually for local sewer system improvements to address deteriorated conditions and improve local capacity.

In 2010 and 2011, the Village again experienced large rain events which resulted in many sewer back-ups. In 2012, the Village started work on a complex hydraulic model of the Village's entire sewer system in the Village to identify bottlenecks and potential projects and programs to reduce the frequency and severity of sewer backups. This sewer study was completed in 2014 and can be found on the Village's website here: https://www.oak-park.us/sites/default/files/public-works/2014-combined_sewer_system_master_plan_report.pdf
The study determined that large scale sewer improvements could not feasibly be constructed to provide a 10-year level of protection for the entire Village and that the best use of funds would be a more comprehensive approach of relief sewer projects: localized sewer improvements to eliminate bottlenecks in the system, implementing green infrastructure and inlet restrictors in areas to reduce the amount of stormwater in the system, and creating a grant program to encourage homeowners to retrofit their private sewers with backflow preventers or overhead sewers. The Village has been implementing the recommendations

included in this study since this time.

The Village has constructed many of the local sewer improvements and smaller relief sewer projects recommended by the study, including projects on Lemoyne, Berkshire, and Fillmore. The Lemoyne relief sewer project was partially funded using MWRD grant funds. A future large relief sewer project is included in the upcoming 5-year Capital Improvement Plan to help improve the capacity of the northeast section of the Village which has the most chronic basement backups.

Green infrastructure projects including a rain garden at the Public Works Center and fourteen permeable alleys have been installed using MWRD and IEPA grant funds and the Village just received additional MWRD funds to construct an additional four permeable alleys in 2024. Inlet restrictors have been installed at various locations with additional locations planned for installation. The Village also adopted a Rain Ready grant program to help fund green infrastructure projects on private property to reduce the volume of stormwater being discharged to the sewer system. The Rain Ready program was suspended during COVID and is currently not active until a consultant can be brought on board to oversee the program.

In 2012 the Village adopted a Sewer Backup Protection Grant Program to help fund the installation of overhead sewer systems or sewer backflow devices. The grant funds 50% of the construction costs with a maximum amount of \$3,500. Helping to fund the installation of these systems is the most cost-effective use of funds for protecting properties from sewer backups from the Village's sewer system. To date about 450 properties have participated in the program.

Almost all of the homes in Oak Park built prior to 1975 were built with sewer systems whereby the house's sewer runs directly to the main sewer in the street by gravity with no sewer backflow protection. Many homes have all their drain lines, including the downspouts, connected to their sewer system. Basement sewer backups occur when the Village's sewer system fills up beyond its capacity and overflows into basements, or when individual homeowner's sewer lines have blockages that prevent their own sewage and rainwater from making it to the Village's sewer system.

The two most common types of protection methods are the installation of a backflow protection valve on the homeowners' sewer line and the installation of overhead sewers. The overhead sewer installation provides the best level of protection since the system raises the home's sewer above the surrounding ground elevation which prevents the Village's sewer from backing up into the basement (the sewer would flood the street for several feet before overflowing in the basement) as compared to the backflow prevention systems which rely on mechanical devices which must be maintained to prevent sewer backups. Detailed examples of these installations can be found in the Sewer Backup Protection Grant Program

materials found on the Village's website here: <https://www.oak-park.us/village-services/housing-programs/sewer-backup-protection-grant> Costs for these installations can vary considerably depending on individual circumstances for interior plumbing, finished or unfinished basement spaces, etc. The grant program funds both options at the same rate. Staff is currently evaluating this program to determine if the Village should consider increasing the maximum dollar reimbursement amount to account for increased construction costs. This information will be included as part of the upcoming Fiscal Year 2024 Budget process.

Despite all the efforts made in sewer improvements in Oak Park, roughly 15% of the Village remains susceptible to basement back-ups during heavy rainfall events.

II. Summary of July 2nd event

In the early hours of Saturday, July 2nd, the Chicagoland area was hit with severe thunderstorms and rain. Rainfall was heaviest in the South part of town. The South Pumping Station's rain gauge measured a total of 7.5". The majority of the rain was measured between 8AM - 12PM: 5" and 1:45PM - 4PM: 2.2".

The Central Pumping Station's rain gauge measured a total of 6.4". The majority of the rain was measured from 8AM - 12PM: 4" and 1:45PM - 4PM: 2".

The North Pumping Station measured the least of the three stations: 5.8". The majority of the rain was measured from 8AM - 12PM: 3.3" and 1PM - 4PM: 2.2".

The intensity of this rain storm equated to approximately a 100-year rain event. These types of storms have significant impacts to the larger MWRD system, the Village's local sewer system as well as individual home sewer systems. Oak Park is fortunate in that it is not impacted by flooding from creeks or rivers. The nearest floodplain is the Des Plaines River floodplain located in the Village of River Forest at Keystone Avenue and Chicago Avenue.

While there were widespread sewer backups in the Village, the northeast and north central areas seemed to be hardest hit.

III. Steps Taken Since the Storm Event

The following is a summary of action items completed and next steps:

1. Staff has engaged in communication with Cook County Emergency Management and Regional Security about possible FEMA assistance for individual properties. As of 7-29-23 Cook County EMRS ended their Joint Damage Assessments in surrounding

communities and the next steps are as follows:

- August 15, 2023 President Joseph Biden signed a Disaster Declaration, allowing the Federal Emergency Management Agency's (FEMA) to offer Individual Assistance for residents in the Village of Oak Park and Cook County, Illinois who were impacted by severe weather in July. FEMA's Individual Assistance could include grants for temporary housing and home repairs, low-cost loans to cover uninsured property losses, and other programs to help individuals and business owners recover from the effects of the storms.
 - Village Staff has reached out directly to residents known to have sustained damage from the storm and this information has also been shared on Village of Oak Park Communication channels and social media.
 - Disaster Survivors and businesses who sustained damages in Cook County can begin applying for Disaster Assistance now:
 1. Call 800-621-FEMA (3362)
 2. Apply online at disasterassistance.gov
 3. Use the FEMA mobile app
 4. Disaster Recovery Centers will be open in Cook County within the next several weeks for more opportunities for disaster survivors to engage with FEMA representatives on the disaster application process. These centers will accept in-person submissions of Disaster Assistance Applications.
 5. Anyone who lives anywhere in Cook County and sustained damages from the storms or flooding between June 29, 2023, and July 2, 2023, is eligible to apply.
 6. You don't need to have a preliminary damage report on file to apply.
2. Staff directed LRS, the Village's refuse contractor, to provide additional equipment and manpower to pick up materials left out by residents impacted by sewer back-up free of charge.
 3. The Department of Public Works Water & Sewer Division has cleaned and jetted approximately 50 inlets & catch basins.
 4. The Department of Public Works Water & Sewer Division has gathered information and collected names and addresses of properties impacted in an effort to address people's concerns and help with possible solutions. We have also referred them to our website which addresses sewer backup prevention.
 5. Work already planned and budgeted for in 2023 is televising & cleaning of main line sewers. As a start, Engineering staff has enlisted the assistance of National Power

Rodding for emergency purposed to inspect main line sewers of blocks that our staff received multiple calls on.

6. Engineering staff has designed a sewer on Augusta Avenue from Hayes Avenue to N. Taylor Avenue to serve as an overflow to help reduce the likelihood and severity of sewer backups on the 700 and 800 blocks of Hayes Avenue which were heavily impacted by the storm. This work is proposed to be added to the current water and sewer project on Augusta Ave. since this area is already under construction. A change order will be presented to the Village Board to approve the additional \$195,000 needed for this work at the September 5th Board meeting. There are available funds in the Fiscal Year 2023 Water & Sewer Fund from savings due to deferred projects to fund this work.

IV. Summary

The range of alternatives to mitigate future flooding and sewer backups vary from installing large relief sewers, the installation of permeable pavements and other “green” infrastructure to reduce the volume of storm water, assistance programs to help individual property owners install flood protection systems, and education materials for disconnecting downspouts which can be found on the Village’s website here: <https://www.oak-park.us/village-services/public-works/basement-flooding-prevention>. Installation of large relief sewers may help to provide some level of protection; however, there will continue to be storm events that will exceed system capacity and potentially impact individual properties that don’t have back-up protection systems in place. Staff recommend continuing the Village’s current multi-fold approach of educating residents about downspout disconnections; the installation of infrastructure to increase capacity where possible and minimizing choke points within the system, expanding on-street holding capacity where appropriate with the installation of street inlet restriction; and financial support of grant programs for the installation of overhead sewers and/or sewer line check valves.

If you have any questions, please feel free to reach out to Rob Sproule, Public Works Director at rsproule@oak-park.us or by phone at 708-358-5700.

cc: Lisa Shelley, Deputy Village Manager
Ahmad Zayyad, Deputy Village Manager
Bill McKenna, Assistant Public Works Director / Village Engineer
All Department Heads
Christina M. Waters, Village Clerk