Memorandum

Date: December 5, 2017

To: Arbor Woods Neighborhood Residents
From: City of Ann Arbor; OHM Advisors

Re: Arbor Woods Neighborhood December 5, 2017 Public Meeting Recommendations

Introduction

On Tuesday, December 5th 2017, the City of Ann Arbor and its technical consultant, OHM Advisors, held a public meeting with the residents of the Arbor Woods neighborhood to present sanitary sewer system evaluation findings and to discuss possible options moving forward.

In 2013 and 2014, the City of Ann Arbor conducted a Sanitary Sewer Wet Weather Evaluation (SSWWE) project to evaluate the overall capacity of the sanitary sewer system. This citywide evaluation found five areas with potential capacity issues during wet weather events. These five areas are now being analyzed in depth as a part of the 2016-2017 Sanitary Sewer Improvements Preliminary Engineering (SSIPE) project. Further analysis of these five areas resulted in the determination to expand the SSIPE project study area to include the Arbor Woods area.

Field Investigation

Flow-monitoring during the SSIPE project revealed that some sanitary sewer pipes in the Arbor Woods area are receiving a high rate of flow during wet weather events as compared to the dry weather flow. Based on these flow-monitoring results, the project team initiated a field investigation to discover the source of the excess flows.

The field investigation crew performed flow-monitoring, closed circuit televising of the pipes, manhole inspections, and smoke testing to identify sources of inflow (direct connections) and infiltration (groundwater entering sanitary sewers through defective pipe joints and broken pipes) into the sanitary sewer pipes.

The results of the field investigation indicated that most of the excess flow is coming from footing drains that are connected to the sanitary sewer system. A footing drain, also known as a foundation drain, is a drain pipe system beneath a structure that drains ground water away from the structure. The field investigation crew also discovered a number of serious defects in the pipes that need to be fixed.

Modeling Results

The computer model was updated to reflect the findings from the fieldwork to determine the sanitary sewer pipe capacity, and the results of the model are shown in the figure on Page 3.

The red pipes in the Northwest area of the neighborhood (along Nottingham, Medford, and Towner from Needham to Easy) receive more flow than they can handle during a wet weather event. The model indicates that about 2500 feet of pipe is overloaded. These findings echo the results from the resident survey for this neighborhood.

Alternatives

There are two options to address this issue. The summary on page 4 outlines the two options, their costs, and their pros and cons:

Option A is to upsize the overloaded (red) pipes in this area using the pipe bursting installation technique. This technique would allow for the existing sanitary sewer pipes to be replaced with larger diameter pipes without using open trenches. These larger diameter pipes would increase the flow capacity.

Option B is to disconnect footing drains in about 30% of the homes in Arbor Woods. This critical mass of disconnections is needed upstream of the overloaded pipes to reduce the flow. The homeowner would arrange a time for a contractor to disconnect the footing drain from the sanitary sewer system and install a sump pump in the basement to redirect the flow to an approved storm water discharge location.

An alternate option was considered as well, but is not a practical solution:

> The alternate option involves the installation of storage tanks to temporarily hold excess flow during wet weather events until the flow in the sanitary sewer system decreases. Storing the excess flow would require finding nearby land to install these storage tanks and also installing new pipe to route the excess flows to the tanks.
>
> There are two reasons this option is not practical; first, finding enough open space to store these tanks would be difficult, and second the total length of new pipe that would have to be installed would likely be the same length or more than the length of pipe required in Option A.

Recommendations

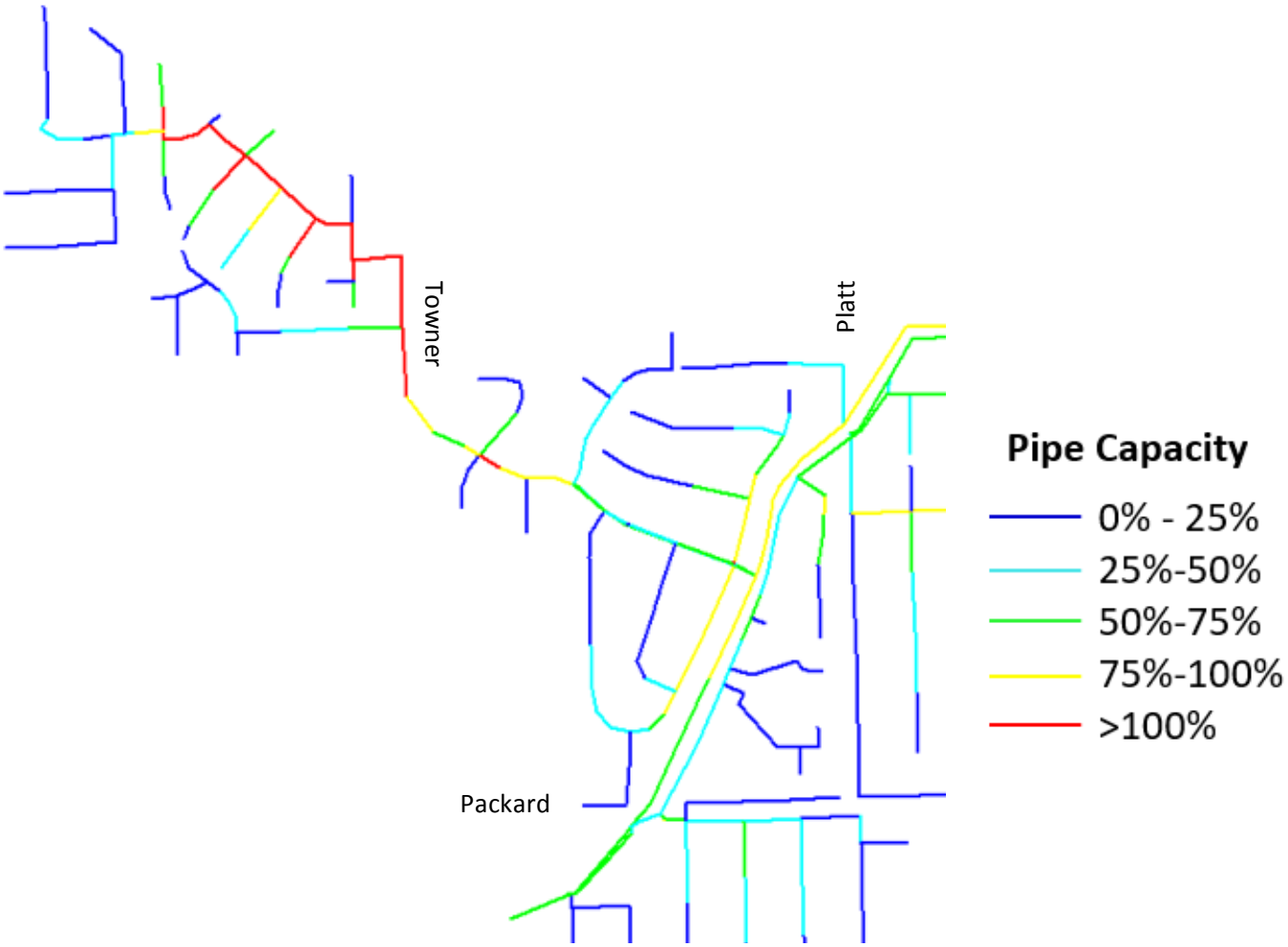
During the public meeting on December 5th, participants discussed the findings in detail and the residents were encouraged to ask questions and voice their opinions on the options, as well as provide additional pros and cons from their perspective.

Based on the pros, cons, and costs of the options, we recommend Option A to upsize the pipes in the area. Approximately 2000 feet of larger diameter pipe is needed to relieve the overloaded pipes. It is important to note that not all of the overloaded pipes in this area will be replaced. Strategically replacing a select set of pipes along this route will resolve the overload issue in the rest of the pipes. In addition to upsizing the pipes, the remaining serious pipe defects should be repaired.

Even if Option B, disconnecting footing drains, were selected, the serious pipe defects would still need to be repaired which could potentially warrant some construction.

Lastly, all residents are encouraged to voluntarily participate in the City's Developer Offset Mitigation (DOM) program to have their footing drains disconnected from the sanitary sewer system. Disconnecting footing drains reduces the amount of clean water transported through the sanitary sewer system and unnecessarily treated at the wastewater treatment plant, making this a best practice and a sustainable solution. The developer covers the costs for these disconnections.

Model Map



Summary of Options

Option A – Upsize Pipes with Pipe Bursting Technique

Replace existing pipes with larger diameter pipes to improve capacity

- Project Cost = **$1,000,000**
- Engineers' Pros:
  - Less expensive than Option B
  - Responsibility to complete the work falls on the City, not residents
  - Construction will take place in street right of way
- Residents' Pros:
  - Opportunity to repair/replace the road and storm sewer and water main pipes that are in poor condition – curb to curb project
- Engineers' Cons:
  - Construction noise
  - Construction may temporarily limit neighborhood street access

Option B - Disconnect Footing Drains

- Project Cost = **$1,000,000 - $1,500,000**
- Engineers' Pros:
  - Removes I/I flow at the source, permanently reducing the volume of water that has to be transported and treated
  - Construction takes place at the residents' convenience by contractors
- Engineers' Cons:
  - More expensive for the City than Option A
  - Construction will take place on residents' properties
- Residents' Cons:
  - Sanitary sewer pipes remain in poor condition in certain areas and serious defects would still have to be repaired

Additional Comments

- Project costs do not reflect lifecycle cost of transporting and treating the flow.