City of Ann Arbor

Sanitary Sewer Improvements
Preliminary Engineering (SSIPE) Project

Neighborhood Public Meeting
June 16, 2016
Welcome & Introduction

Brian Slizewski
Team Overview

- City of Ann Arbor:
  - Brian Slizewski – Project Manager
  - Troy Baughman – Modeling and Data Support

- Technical and Public Engagement Consultants:
  - Robert Czachorski, Consultant Project Manager
  - Jeannette Patterson, Engineering Analysis
  - Teresa Newman, Lori Byron, Public Engagement
Meeting Outcomes

• Background on sanitary sewer system and previous projects

• Overview of the SSIPE project

• What to expect in your neighborhood
Project Background

Troy Baughman
Definitions – Stormwater System

- **Storm sewer** conveys most of the stormwater runoff from buildings and streets.

- **Catchbasin** is a part of a storm drain that is designed to trap debris so that it cannot enter the drainage pipes.

- **Roof drains** convey storm water from the roof to the storm sewer or retaining area.
Definitions – Sanitary Sewer System

- **Sanitary sewer** conveys domestic and commercial sewage, as well as some groundwater and stormwater that finds its way into the system.

- **Footing drain** drain pipes beneath a structure to drain ground water away.

- **Basement backup** the backup of flow from the sanitary pipe into a basement.
Property owner is responsible for the **footing drains**, **cleanout** and **sanitary sewer lateral connection**, all the way until it taps into the **sanitary main**.
Ann Arbor’s Sanitary Sewer System

360+ Miles of sewer pipes

Decade of construction

Length (miles)

Pittsfield Valley/ Darlington area
## Wet Weather Projects

| • Sanitary Sewer Wet Weather Evaluation Project | • Upper Malletts Drainage Study |
| • Footing Drain Disconnection Program | • Sanitary and Stormwater Systems Asset Management Plan |
| • Stormwater Model Calibration and Analysis | |

**PLUS:** continuous annual sewer maintenance and improvements (sewer televising, sewer cleaning, manhole repair, sewer lining, etc.)

• Green Streets Program
Wet Weather Projects

Sanitary Sewer Wet Weather Evaluation Project – 2013-2014

Sanitary Sewer Improvements Preliminary Engineering Project – 2016-2017

Capital Improvements Program funded construction projects (if needed) - 2018
Wet Weather Projects


Sanitary Sewer Improvements Preliminary Engineering Project – 2016-2017

Capital Improvements Program funded construction projects (if needed) - 2018
Sanitary Sewer Wet Weather Evaluation (SSWWE)

SSWWE project objectives:

• Evaluate the overall capacity of the sanitary sewer collection system
• Evaluate the past Footing Drain Disconnection (FDD) program and assess the future risk of sewer backups in the City
• Recommended methods to further reduce wet weather impacts to the sanitary sewer system
SSWWE Project Findings

SSWWE project looked at the sanitary sewer across the entire city and found five areas with potential capacity issues *during wet weather*, including the Pittsfield Valley area.

These five areas are being analyzed in depth, as the **Sanitary Sewer Improvements Preliminary Engineering (SSIPE)** project.
Sanitary Sewer Improvements
Preliminary Engineering Project

Robert Czachorski
Wet Weather Projects

Sanitary Sewer Wet Weather Evaluation Project – 2013-2014

--> Sanitary Sewer Improvements Preliminary Engineering Project – 2016-2017

Capital Improvements Program funded construction projects (if needed) - 2018
SANITARY SEWER IMPROVEMENTS PRELIMINARY ENGINEERING PROJECT

The goal of the Sanitary Sewer Improvements Preliminary Engineering (SSIPE) Project is to identify the cause of five observed hydraulic issues in Ann Arbor and to determine the best solution for each area, based on community values, cost, and effectiveness. The project also includes an operational improvement, Area F, the Diversion Structure, to divert flow from one area of the system to another.

Project Areas

- A Huron West Park Trunkline
- B High Level Trunkline (near 1st Street)
- C High Level Trunkline (near State/Hoover)
- D Pittsfield Valley
- E Winsted Lateral (Glen Leven Area)
- F Diversion Structure

Contact: Brian Slizewski, Project Manager (734) 994-2493  bslizewski@a2gov.org

Public Engagement

- Flow metering
- CCTV Review
- Manhole Inspections
- Smoke Testing
- Basement Elevation Surveys
- Wet Weather Observation
- Analyze Field Data
- Model Update
- Preliminary Engineering
- Public Input & Solution(s) Determination
- Capital Improvement Programming for Construction

Project Schedule & Field Work

- 2016
  - Mar
  - Apr
  - May
  - Jun
  - Jul
  - Aug
  - Sep
  - Oct
  - Nov
  - Dec

- 2017
  - Jan
  - Feb
  - Mar
  - Apr
  - May
  - Jun
Sanitary Sewer Improvements
Preliminary Engineering Project

Project goals:

1. Use field engineering techniques to determine if capacity issues exist.
2. Analyze field data and determine the cause of the capacity issues.
3. Determine the best solution for the area, based on public input and solution effectiveness.
Pittsfield Valley

SSWWE project’s computer modeling showed that sanitary sewer pipes are overloaded during wet weather.
Pittsfield Valley

Questions and field investigation tools:
Q1: Is the computer model reflecting what’s happening in real world? (Flow metering)
Q2: Are residents seeing impacts of overloaded pipes? In what areas? (Resident survey)
Q3: Where are the flows coming from? (CCTV, manhole inspection, smoke testing)
Project Schedule
Pittsfield Valley Field Investigation

- Flow Metering
- Resident Survey
- Sanitary Sewer Evaluation
  - CCTV
  - Manhole inspection
  - Smoke testing
Pittsfield Valley Field Investigation

Flow Metering: A flow meter is a device used to measure the flow rate of liquid moving through the sanitary sewer pipe. Field technicians installed 4 flow meters at various locations in the area.
Resident Survey

- 396 surveys mailed April 25, 2016
- 10 questions
- 155 responses
- 39% response rate
Resident Survey Findings

- 72% have a full basement
- 27% experienced sanitary sewage basement backups in the last 10 years
- 32% experienced basement flooding (groundwater or stormwater) in the last 10 years
- 42% have their private service leads cleaned or rodded every 1-5 years
Resident Survey Findings

8% mentioned tree roots in the system

10% experienced backups until private service leads were replaced
Pittsfield Valley Field Investigation

- Sanitary Sewer Evaluation
  - CCTV
  - Manhole inspection
  - Smoke testing
Sanitary Sewer Evaluation - CCTV

Closed Circuit Television (CCTV) is a technology used to inspect pipes in the sewer system. A small robotic device with a television camera is run through the sewer main to locate and identify sources of water entering the system, such as leaks, cracks, and broken pipe.
Sanitary Sewer Evaluation - CCTV

CCTV image shows groundwater entering sanitary sewer pipe
Pittsfield Valley Field Investigation

• Sanitary Sewer Evaluation
  – CCTV
  – Manhole inspection
  – Smoke testing
Sanitary Sewer Evaluation – Manhole Inspection

Field crews locate and collect information on manholes, their depth and condition.
Sanitary Sewer Evaluation – Manhole Inspection
Pittsfield Valley Field Investigation

• Sanitary Sewer Evaluation
  – CCTV
  – Manhole inspection
  – Smoke testing
Sanitary Sewer Evaluation – Smoke Testing

Smoke testing is a method to find ways that groundwater and stormwater are entering the sanitary sewer system.

A non-toxic mist travels throughout the system, identifying problems such as leaks, connected downspouts or roof drains.
Sanitary Sewer Evaluation – Smoke Testing

Smoke testing shows yard drain connected to the sanitary sewer system
Sanitary Sewer Evaluation – Smoke Testing

• Field crews will notify residents of upcoming smoke testing 48 hours in advance, via door hangers.
• Police & fire departments will also be notified.
• Residents do NOT need to be home during smoke testing.
Summary & Next Steps

Brian Slizewski
What’s Next

• Community will be involved in evaluating and selecting solutions to potential capacity issues.
• Look for further communication in the Fall of 2016.
Project updates: A2gov.org/SSIPE