

## **7- Shorewood Public Infrastructure Inflow and Infiltration Prevention Strategy**

The Village of Shorewood has understood and acknowledged the relationship between rainfall, inflow, infiltration, and basement backups. Accordingly, the Village has an on-going sewer inspection program that consists of closed captioned TV inspection of sewers on a five to seven year cycle. The CCTV review is then used to implement an annual sewer lining program that addresses inflow and infiltration issues along public mains.

We note that the CCTV inspections in the combined sewer area are also conducted. The repairs prescribed in this area are based on observed structural defects and do not target inflow or infiltration issues.

In the context of the present Facility Plan, the I-I control specifically targets basement backup risks (i.e., excessive wet weather flows) in Basins 1 and 6. As previously discussed, both basins are designated and “non-performing” or “broken” by the MMSD, with the root cause of the problem directly related to the presence of I-I sources in both areas. This section of the Facility Plan discussed sources and proposes control strategies that support the hydraulic improvements proposed in this document so far.

### ***7.1 – Basin 1 Public Infrastructure I-I Control Strategies***

Inflow and infiltration issues in Basin 1 have been identified in the mid-2000s, when dyed water flooding in the eastern part of the basin showed clear water transference from storm sewers to sanitary sewers. As a result, a number of streets had sanitary and storm sewers lined.

Despite these previous efforts, the sanitary system in Basin 1 shows a high potential of inflow and continued efforts are needed to curb wet weather flows. A new I-I study was commissioned and completed in 2011. Flow metering and data collection in the Basin has been compiled in a report, included as ATTACHMENT 6. The proposed schedule of implementation is being condensed so that I-I reduction benefits can be realized as soon as feasible.

In summary, Basin 1 Public I-I prevention strategy involves investigative and rehabilitation work to be undertaken in the next 12 to 16 months:

1. 2,800 feet of smoke testing of storm sewers
2. 11,000 feet of smoke testing of sanitary sewers
3. 4,700 feet of dyed water flooding of storm sewers
4. 1,130 feet of sanitary sewer televising
5. 6,650 feet of sanitary sewer lining
6. Rehabilitation of 40 sanitary sewer manholes

### ***7.2 – Basin 6 Public Infrastructure I-I Control Strategies***

Inflow and infiltration problems in Basin 6 have been established though flow metering in 2009 and confirmed with subsequent field investigation that occurred in 2011. Reports on the investigation and rehabilitation strategies were outlined in a report entitled Basin SH6 I-I Study,

prepared in 2010. This report is included as ATTACHMENT 7, though it should be noted that the implementation timeline originally proposed has been condensed into a single year due to the catastrophic rainfall events in July.

In summary, the Basin 6 Public I-I prevention strategy involves investigative and rehabilitation work to be undertaken in the next 12 to 16 months:

1. Sewer lining to prevent I-I directly into the sanitary mains. So far performed 2,500 feet of lining in 2010.
2. Dyed water flooding of storm sewers to identify transference of runoff into sewer mains. So far performed flooding of 7,300 feet of storm sewers in Basin 6. Defects have been identified and corrective action is in the works for public bidding.
3. Smoke testing of sanitary sewers to identify clear water sources. So far performed smoke testing on 7,300 of sanitary sewer in Basin 6, and identified 4 locations with catch basin connections to the sanitary sewers.
4. Dyed water testing of an additional 4,700 feet of storm sewers is underway and will be used to identify rehabilitation needs. With this effort, the entire Basin 6 would have been investigated, with rehabilitation efforts starting in winter of 2011-12.

### ***7.3 –Public Infrastructure I-I Control Summary***

#### **Anticipated Costs**

- Sewer Lining program - \$175,000 per year
- Secondary drainage collection system - \$1,000 per home

#### **Implementation Schedule**

- 2011-2020 – storm and sanitary sewer pipe lining program
- 2011 and forward – provide secondary drainage collection system whenever road is reconstructed

#### **Funding Source**

- Lining program – 1/3 Storm Utility Fund, 2/3 Sanitary Utility Fund
- Drainage collection system – General Tax Levy