

8.0 CATCHMENT AREA 6 FLOW METERING

The flow metering program was designed to provide a general understanding of the hydraulics of Sewer Catchment Area 6, which is tributary to the Thames Street Interceptor, to evaluate the dry weather and wet weather flow characteristics of the catchment area, and to determine infiltration and inflow sensitivity within the catchment area.

The metering manholes were selected to provide a snapshot of the flows entering and exiting Catchment Area 6, enabling a more precise analysis of flows generated within the catchment area. Once the metering manholes were identified, ADS Environmental Services installed four flow meters at Thames Street near Touro Street, Americas Cup Avenue at Thames Street, Memorial Boulevard near Bellevue Avenue, and Thames Street at Lee Avenue. The meters measured depth and velocity of the wastewater flows and recorded the data between April 18 and May 30, 2006. Rain and tide gauges also measured and recorded data during that time.

Catchment Area 6 Metering Results

- The metering equipment observed 8 wet weather events in excess of 0.25 inches of precipitation, consisting of 5 events under 1 inch, 2 events under 1.1 inches, and an 18 hour event totaling 4.08 inches of precipitation. For the analysis of inflow, the April 23, 2006 storm was selected because it was a large, short duration wet weather event in the metering period which did not trigger a surcharge in any of the metered manholes; occurred during a period of generally dry weather; had adequate time for flows to return to base wastewater flows (recover) and was completely confined to the collection system (this event did not cause a CSO at any City facility). The storm occurred at about 4:30 PM on Sunday, April 23, with a duration of about 7 hours, a peak hourly intensity of 0.38 inches per hour, and total rainfall of 1.09 inches.
- Based on the wet weather event selected, Catchment Area 6 is contributing a significant amount of direct (immediate) flow to the sanitary sewer system. The volume of inflow estimated to have entered the system during the analyzed storm is approximately 500,000 gallons. This amount is considered significant for a storm event of short duration (about 7 hours) with a relatively low peak hourly intensity of 0.38 inches per hour.
- Based on the correlation between upstream and downstream meters for the event selected, there does not appear to be significant volume of indirect flow from Catchment Area 6, however, the

extended recovery period does appear to indicate that a substantial volume of indirect flow is entering Catchment Area 6 via the Thames Street Interceptor from tributary catchment areas.

- There does not appear to be an obvious correlation between the dry weather period wastewater flows and the tide level in Newport Harbor, indicating that infiltration caused by fluctuating ground water levels may be minimal during the observed period. This conclusion was confirmed in other areas by the flow isolation and CCTV inspection work.
- Based on conditions observed in other areas of the City; lack of infiltration flow at the time, as observed in both the CCTV inspection of the Thames Street Interceptor and in the metering data; and the frequency of inflow sources encountered in other areas of the City (i.e. rain leaders, roof drains, catch basin, yard drains), Catchment Area 6 appears to generate significant volumes of inflow.

Rehabilitation Recommendations

Based on a preliminary analysis of flow information obtained during the metering period, the conditions encountered in the Thames Street Interceptor CCTV inspection, the building inspections, and the results of the smoke testing in other priority inflow areas in the City, the City should consider performing a full sewer system evaluation study (SSES) of Sewer Catchment Area 6.

Conclusions

Based on the results of the wastewater flow metering of Sewer Catchment Area 6, it is recommended that the City of Newport perform a SSES program to identify inflow sources to reduce total inflow entering the sanitary sewer system during storm events.

At the request of the City, Earth Tech received a contract amendment in December 2006 and this SSES field investigation of Catchment Area 6 is underway and scheduled to be completed by July 2007 as part of Phase 1 Part 3.

A detailed description of the Catchment Area 6 Flow Metering Investigation including procedures, results, estimation of inflow and infiltration, hydrographs of wet weather events, recommendations, and conclusions is presented in the following Technical Memorandum.