COMMON SANITARY SEWER SYSTEM PROBLEMS

- **Old and deteriorated main and lateral pipes** - sewers range in age from 30 to 100 years with an average age of 50 years.

- **Cracked sewer pipes** - Existing sewers are mostly clay pipes, which can crack as they deteriorate with age and also by earth movement.

- **Misaligned and open pipe joints** - Most of the mortar used to seal the joints between sections of clay pipe has deteriorated.

- **Undersized sewer pipe** - The existing sewer system is overloaded due to new sewer hook-ups, underground water infiltration, and illegal roof and/or yard drain connections.

- **Defective manholes** - Old manholes are made of bricks. Typical problems associated with brick manholes are loose bricks, missing bricks, and misaligned manholes.

- **Missing and/or unrecorded sewer pipes and manholes** - This problem is typical in the easement/backline sewer. Sewer pipe locations shown on the sewer record map are different from the actual sewer location.

- **Sewer main under houses and other improvements** - Complaints of sewer main alignment crossing the house and other improvements. A solution to this problem requires an agreement with the property owner for a new sewer easement at a relocated line.

- **Flat or level sewer main/lateral**
Typical Sanitary Sewer Problems

Typical House Connection to Sanitary Sewer System
CAUSES OF SEWER BACKUPS

Sanitary sewer backups are caused by several factors including the condition of the sanitary sewer system itself, natural phenomena such as earth movement and rain, and the incorrect usage of the system by the public.

Examples of backup causes are:

- Root infiltration - Tree roots are a major cause of backups.
- Water inflow/infiltration - Rainwater entering the sewer pipe causes overflows.
- Solids - Typical solids that buildup in the pipe and cause backups are grease, dirt, bones, tampons, paper towels, diapers, broken dishware, garbage, concrete, and debris.
- Structural defects in pipes and manholes - Sags in the line, cracks, holes, protruding laterals, misaligned pipe, and offset joints are all possible causes of backups.
Methods to Determine the Condition of the Sanitary Sewer System

- **Physical inspection** - This involves examining the physical condition of manholes and other sewer structures to determine their structural integrity and to identify possible sources of infiltration/inflow.

- **Flow monitoring/flow isolation** - Rainfall gauges are installed to monitor sub basins with overflow problems by collecting and analyzing flow data during normal and storm related weather events.

- **Smoke testing** - Smoke testing is used to locate specific defects (leaks) in sewer mains and laterals that contribute infiltration/inflow to the sewer system. Smoke testing involves injecting a non-toxic vapor (smoke) into the manholes and following its path of travel in the mains and laterals.

- **Dye water flooding** - Colored dye is added to the storm drain water. Dyed water appearing in the sanitary sewer system indicates an existing connection between the sewer and storm drain system.

- **Closed-circuit television inspection** - This is a useful tool in locating specific sources of infiltration as well as determining the structural condition of the sewer system. This information is necessary for the design of sewer replacement and rehabilitation projects.

- **Sewer maintenance records** - Records of frequent maintenance problems.