



Municipal Utility Districts

Wastewater pipes (thicker lines are larger pipes)

Wastewater treatment plants

GIS DATA FROM CITY OF HOUSTON (WASTEWATER LINES, CITY LIMITS), TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TREATMENT PLANTS), BUREAU OF TRANSPORTATION STATISTICS NATIONAL TRANSPORTATION ATLAS DATABASE (WATER BODIES), AND TEXAS WATER DEVELOPMENT BOARD (WATER BODIES)

→ Down the Drain by CHRISTOF SPIELER

Much of the water that goes into a house goes back out the drain. The water supply system is duplicated in reverse to bring wastewater back to treatment plants. Houston has 40 plants, treating 277 million gallons a day and discharging the water into the bayous.

Sewage treatment plants are a well-established technology; by the time the

water has made it through primary, secondary, and tertiary treatment, it's often cleaner than the rest of the bayou water. The real challenge in Houston is getting sewage to the plants. Most cities rely entirely on gravity to move sewage; Houston is too flat for that. Instead, neighborhood pipes sloping at 14 feet a mile carry sewage to 420 lift stations, where pumps

feed the sewage into pressurized pipes called force mains. Many of the force mains, which can be 50 feet underground, were tunneled in a \$1.2 billion program in the 1990s designed to eliminate places where sewage overflowed directly into bayous (see "The Houston Underground," *Cite 49*).

On the edges of the city, sewage (and

water supply) is handled by numerous small municipal utility districts. Most have their own small sewage treatment plants. This infrastructure, built by developers when the neighborhoods were new, is now wearing out. Replacing it will be one of the biggest infrastructure challenges of the near future.