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## Manhole Infiltration Repair Case Notes

*By Lloyd Richmond, CST Stabilization*



In Jackson, Wyoming, a local county service district suffered from high sewer treatment costs due to excess water infiltration into its collection system.

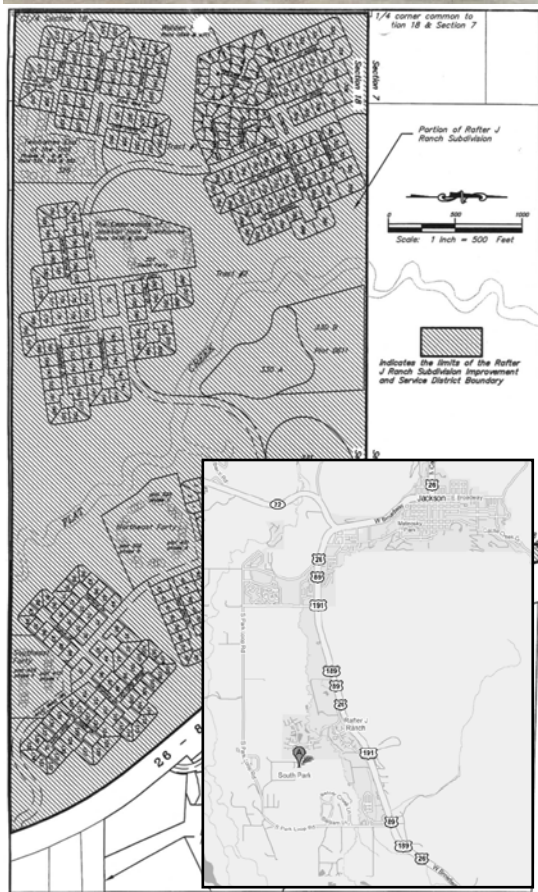
A plan to correct the problem was devised by Matthew F. Ostdiek, P.E. of Rendezvous Engineering, P.C.

Concrete Stabilization Technologies, Inc., was selected by the engineer to complete the work. CST has the capacity to provide both chemical grout solutions in combination with a Uretek<sup>®</sup> 2-part expansive polyurethane that is engineered to perform in a water environment. CST also is licensed to perform Uretek's patented Deep-Injection<sup>®</sup> process (UDI).

The Rafter-J Ranch Subdivision Improvement and Service District is located approximately 5 miles south of Jackson in Teton County.

In this area, 35 manholes / vaults and 4 transfer stations were repaired.

The savings in treatment costs paid for the repairs in less than one month.



### Anatomy of A Repair

1. A 5/8" hole is drilled through the wall of the manhole from the inside. A packer is inserted into the hole. The injection gun connects to the packer.
2. The high-density, hydro-insensitive poly-urethane is injected in liquid form (about the viscosity of light-duty oil) through the hole to the exterior (or positive) side.
3. The material immediately begins to expand, creating a mold pressure against the manhole and moves along the exterior surface until it finds fissures or cracks in the concrete.
4. The material flows through the cracks in the concrete thus quickly closing off the flow of water.



1. In this instance, when the initial hole is drilled through the concrete, exterior water begins to flow into the manhole.
2. But once the injected material reaches the exterior of the structure it quickly cuts off the flow of water and fills holes, fissures, and cracks.
3. two-part material is delivered from the truck to the injection gun via hoses. The material flows through to the exterior of the manhole and then flows back through a weakened area surrounding a metal stair step.
4. The material sets up quickly, and is completely cured (and inert) in 90 minutes. Excess material can be easily removed for a clean finish.



1. This vault suffered from high water infiltration. When holes are drilled to the exterior, water flows in high quantities.
2. Again, the injected material quickly cuts off the water intrusion and creates a curtain wall on the exterior of the vault. (Alternatively, injections can be made along the exterior.)
3. The expansive material also closes off leaks coming through the vault joints.
4. The entire circumference of the vault is covered in the same manner until all leakage is under control..

