

## Case Study

### HyperFlex Fixes Seriously Leaking Swimming Pool

#### Background:

SealGuard was approached by the general manager of a 3,500 acre game preserve in the center of Texas to provide technical assistance and material to fix a large partially natural swimming pool. It was suffering from both heavy outflow when full and heavy inflow of dirty groundwater during torrential rain events. (There is an old saying in Texas: “We get 24” of rain per year and you should be here the day we get it”)



**Fig 1: The Subject Pool, as the gap between the wall and floor is cleaned with a high pressure water stream and loose debris removed.**

#### The Project:

The pool was constructed by first, damming an inlet on a man-made lake (or tank as it is called in Texas) then excavating down to bedrock at around 16 feet. Approximately 12” of gunnite was then applied to the walls of this man-made swimming hole, which is 90 feet long and approximately 40 feet wide. Over time 2 basic factors conspired to cause ever worsening leaks, to the point where the pool was unusable. The first factor was the gunnite walls. Gunnite, like all cementitious products, is somewhat hydrophilic, meaning that it will shrink over time as it cures and dry out. In this case, the walls pulled up and away from the floor, leaving a sizable gap for water egress and ingress.



**Fig 2: This photo shows how the gunnite has shrunken from the bedrock floor.**

This led to the loss of thousands of gallons per day when full and allowed large amounts of fine, silty clay to enter the pool in high rain events. It also caused significant voids behind the wall which we discovered when drilling our injection holes

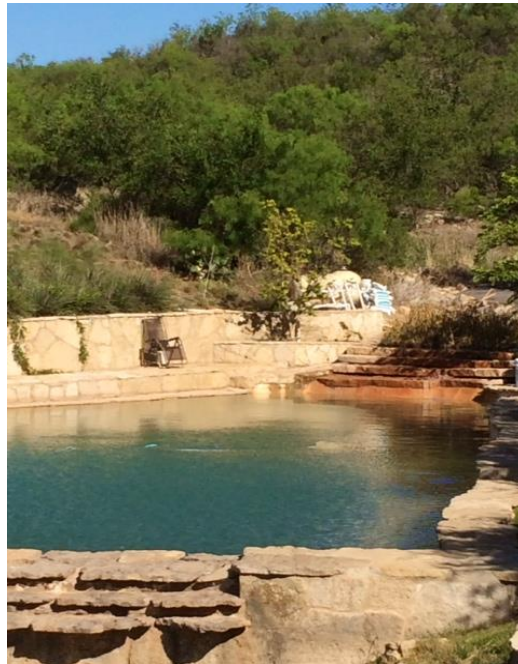
### Project Methodology

1. We started by breaking out the loose, cracked hydraulic cement from a previous repair attempt as well as washing out loose dirt and debris with a hose as best we could.
2. Using SealGuard II, we injected face of the largest openings, (those over ½” or so) to serve as a chemical “chinking”. We then followed with dry oakum rope and, using a putty knife, forced it into the smaller cracks where we could.



**Fig 3: Drilling 5/8” holes for injection packers, Notice the oakum and SealGuard II used to chink the floor/wall gap.**

3. Due to the voids, we elected to drill at an angle to hit the very back corner of the gunnite wall rather than straight back. This way we would be able to fill the gap between the wall using far less material than if it was pumped higher up the wall, into the void and allowed to run into the joint. We started our pattern on 4-6 foot centers and adjusted as we went based on how well the HyperFlex was migrating.
4. Once the holes were drilled at the proper angle, a garden hose was used to flush the drill dust and also to wet down the substrate. 5/8" packers were then installed.
5. An initial injection was performed. We pumped each packer until we had a good show of HyperFlex at the face of the opening.
6. After allowing the initial injection to cure, effectively sealing the interface between the gunnite wall, we then re-injected each packer with ½ - 1 gallon of additional material to fill in the void behind the wall and provide additional strength to the original seal created with the first injection pass.
7. After waiting for the excess material to cure fully, it was scraped off the floor of the pool and disposed of in a regular refuse container. The packers were loosened and pounded all the way into the injection hole, then covered with hydraulic cement or other patching medium.
8. Pool has not lost a drop – it looks great!



**Fig 4: Complete Pool.**

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