



CASE STUDY

3-Alarm Disaster of a Detention Pond Gets Remediated

SUMMARY

Even your local fire station must address the amount of stormwater that falls on the station's property. As with most developments today, a large detention pond was built to retain the stormwater at Harris County ESD No. 48, Fire Station No. 5, located in Katy, Texas. Unfortunately, the pond's original design and development did not hold up well to the elements and stopped operating as expected, largely due to poor slope stabilization. Being keenly aware of the environmental risks of a poorly operational detention pond, as well as the stormwater regulatory compliance violations, the fire department looked to the Construction EcoServices and Jacobs Engineering team to renovate the pond and bring it back to proper operational status.

CHALLENGE

After a comprehensive assessment phase, the key issues with the pond were identified as being:

- Sediment and vegetation build-up in bottom of the pond, resulting in constant standing water and maintenance difficulties
- Poor stabilization causing erosion problems on slopes
- The path around the top of pond, often used for walking/running by the fire station's personnel, was eroded and no longer useable or safe.



Fixing Standing Water and Slope Erosion Issues

SOLUTION

As part of the assessment phase, and to ensure long-term, sustainable growth of grass in and around the pond, Construction EcoServices performed a soil analysis. This crucial test indicated levels of soil pH, total dissolved salts, sodium absorption ratio, organic matter, sodium, and soil composition. Key results of the test were:

- Soil lacked sufficient organic matter
- Soil was classified as Loamy Sand
- Soil pH was 6.3 (recommended range is 6.3-7.3)

Armed with test results, Construction EcoServices provided a “soil-specific recipe” of prescriptive agronomic soil amendments. These amendments were then blended in with the mulch, seed and fertilizer to ensure sustainable vegetation.

The Construction EcoServices and Jacobs Engineering team collaborated with the client, ensuring to address all of the client’s concerns and to recommend options that fit within the fire station’s budget. The final solution task list was as follows:

- Remove debris and existing decomposed granite path along pond bank
- Regrade the bottom of the pond and the slopes
- Install a 192’ drainage pilot channel
- Install Grass Cell reinforced path along pond bank
- Soil test and recommended amendments
- Hydraulically applied ProGanics (all) and Flexterra (slopes only)

RESULTS

A key aspect of the recommended solution was the resulting cost savings involved with the topsoil layer. The soil test indicated that the existing soil was fairly depleted and would need to be fortified with new, nutrient-rich topsoil. Construction EcoServices recommended using the engineered topsoil ProGanics, which by weight is much more expensive than typical topsoil. However, because of the engineering of ProGanics, far less is needed to achieve the same nutrient levels of typical topsoil. In addition, besides needing less product, selecting ProGanics also meant less freight involved, as well as less labor to apply the soil.

Today, as the images show below, the pond is compliant with a healthy stand of grass from top to bottom and is operating at expected levels.

ABOUT GREENRISE

Greenrise Technologies is focused exclusively in the stormwater marketplace. Our business units provide solutions involving turnkey compliance assurance services, engineering sub-consultancy and cutting-edge stormwater management systems to all segments of the development, design and construction markets where those pursuits intersect with the rapidly evolving stormwater regulations.

PRODUCTS USED

- **Jump Start** – Speeds germination and growth
- **Aqua-pHix** – decrease pH of soil and make it more chemically conducive to plant growth
- **Bioprime** – Slow release biostimulant for sustaining longer-term vegetation.
- **ProGanics Biotic Soil Media** – in lieu of top soil. Required for lack of organic matter.
- **Flexterra FGM** – combines both chemical and mechanical bonding techniques to lock engineered medium in place and promote accelerated germination with minimal soil loss.
- **Grass Cell** – cheaper alternative to decomposed granite path, used in walking/running path to prevent turf damage and easier to maintain.

THE ECONOMICS

TOPSOIL
22 Truck Loads



\$13,552

PROGANICS
2 Pallets
(80-50lb bags)



or \$7,105

COST SAVINGS \$6,447 (52.4%)

