



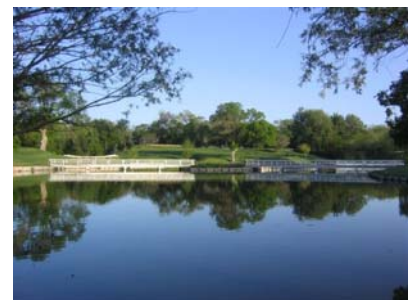
Groundwater Guardian Green Site Case Study

Salina Country Club

The Salina Country Club is located within the City of Salina, Kansas along the Smoky Hill River. The 140-acre site was established in 1911 and its facilities include an 18-hole golf course with driving range and practice areas, four outdoor tennis courts, an outdoor swimming pool and other amenities.

The Salina Country Club golf course includes water features, mature trees, continuous cart paths, gentle rolling terrain, and a challenging layout. The course recently underwent a renovation under the direction of Class A Certified Golf Course Superintendent Mike Hulteen. It began with the installation of a new, state-of-the-art computer-controlled irrigation system, and culminated with gassed and regrassed greens.

In April of 2008, the Salina Country Club was recognized for its groundwater stewardship through designation as a Groundwater Guardian Green Site by The Groundwater Foundation. The Groundwater Guardian Green Site program recognizes the groundwater and environmental stewardship of highly-managed green spaces, like golf courses, by encouraging sites to implement, measure, and document their groundwater-friendly practices. The program publicly recognizes sites for their efforts on behalf of water resources and encourages their sustainable implementation while providing an opportunity for superintendents and managers of highly-managed green spaces to educate themselves, site staff, and site visitors about the important resource of groundwater. Designation as a Groundwater Guardian Green Site is based on the completion of an application and earning at least 70% of total applicable points based on current practices related to pesticide and fertilizer use, water use, managing sources of pollution, protecting water quality, and environmental stewardship. Salina Country Club also participates in the Audubon Society's Cooperative Sanctuary Program for golf courses.



The Salina Country Club has focused many of its practices on water conservation, including:

- Conversion to more drought-tolerant varieties on grass on the fairways and tees, switching from a combination of blue grass and rye grass to Zoysia grass. Zoysia provides an excellent playing surface, but requires nearly 50% less water and 80-90% less pesticide.
- Replacement of blue grass and rye grass in the roughs and surrounds with proven varieties of turf-type fescues. Old



grass varieties on the greens have also been replaced with an extremely drought and disease resistant variety of bent grass.

- Replacement of the club's 34-year old irrigation system. The new state-of-the art computer system provides precise control of water from irrigation wells to course application, and includes moisture sensors to prevent unnecessary irrigation cycles during rain events.
- Application of fertilizers that build a more rigid turf plant that requires less water.
- Root-plowing along the fairways and around the greens to eliminate competition between the trees and turf for water.
- Increase in height of cut on the roughs and surrounds.
- Deep and infrequent irrigation cycles to promote a deeper, healthier root system.
- Extensive use of mulches in the ornamental areas.
- Regular aerification and topdressing to control thatch accumulation that blocks water penetration into the turf's root zone.
- Recycle water from clubhouse ice machines to supply a small waterfall and water ornamental plants and gardens.

The Club has also been in discussion with representatives from the City of Salina to discuss the possibility of using treated water from the City's wastewater treatment plant to irrigate portions of the golf course. Using recycled wastewater would allow the City to reduce the amount of treated wastewater discharged into surface water supplies and the Country Club to decrease demand on its irrigation wells.

The Salina Country club implements a number of other groundwater-friendly practices, such as:

- Annual soil testing to determine nutrient requirements and fertilizer application based on nutrient analysis.
- Use of integrated pest management practices to minimize pesticide applications.
- Adding or replacing plants based on the region's climate.
- Proper fertilizer and pesticide storage, mixing, and application practices.
- Maintaining no-application zones around surface water and wells.
- Annual testing of private drinking water well.
- Proper disposal of hazardous substances (i.e. batteries, old tires, used motor oil, etc.)
- Managing parking areas to minimize runoff and contaminant loading to nearby surface water supplies.
- Use of a recirculating waterfall on the course to naturally aerate the water to help control algae growth.
- Increased no mow/low irrigation native areas for wildlife habitat.

Learn more about the Salina Country Club by visiting www.salinacountryclub.com. More information about the Groundwater Guardian Green Site program is also available online at www.groundwater.org/gg/greensites.html.