

# Bio-Solid Fertility

The main source of fertility for Coyote Run's fairways and roughs is supplied by a product known as "bio-solids". Typically, the nutrients supplied to turf on golf courses or home lawns come from chemical fertilizers that are made from natural gas or oil. Bio-solids are composted sewage sludge, a beneficial byproduct of wastewater treatment. This material is separated from wastewater, composted and fully treated to create a safe, stabilized, useful product. It is especially beneficial for application to farms, golf course, athletic fields and landscapes due to the nature of the nutrient-rich organic material. To plants and earthworms, bio-solids are food. To soil, it is a valuable resource that can improve soil fertility and structure. Bio-solids are supplied free of charge to Coyote Run by the Metropolitan Water Reclamation District of Greater Chicago, (MWRDGC). Typically, bio-solids are applied when the course is closed in December on fairways one year and on roughs the next.

After the waste water processing and composting of the solids by the MWRDGC, bio-solids are ready to go to work. When applied to golf course turf and golf course soil, bio-solids improve soil by providing organic matter, which improves the "tilth" and other soil characteristics. Good soil tilth means that soils are easy to cultivate and possess a good environment for turfgrass roots. Bio-solids contain about 6% nitrogen. Nitrogen is the main component of lawn fertilizer. Besides the enhancement of soil fertility, the

organic matter in bio-solids improve soil microbial activity and soil moisture holding capacity. These improvements in soil characteristics provide tremendous benefits for turfgrass plants. Healthy soil means healthy grass. For instance, improved tilth makes it easier for plant roots to penetrate deeper into the soil. Improvements in tilth and soil-structure also provide a better balance of water and air in the soil for plant growth, which help the grass withstand the stresses of traffic, weather extremes and diseases. It also reduces water use because it improves the soil's ability to store water for use by plants.

Improvements in soil fertility and structure produced by bio-solids provide also improves the availability of other essential nutrients such as phosphorus, potassium, and sulfur, which plants require for vigorous growth. Bio-solids provide these nutrients in organic and inorganic forms. The

inorganic forms of the nutrients, like commercial fertilizers, are immediately available to plants, while organic forms are released slowly over several growing seasons, insuring long-term enhancement of plant growth.

The increased organic matter resulting from bio-solid application also provides food for soil organisms, such as earthworms and the millions of micro-organisms that keep the soil healthy and help to change nutrients from organic to inorganic forms. A healthy environment for soil organisms also helps to suppress root borne diseases of plants.

Another environmental benefit of bio-solid use on the golf course is the reduction in the consumption of oil and natural gas. Bio-solids reduce the need for chemical fertilizers and bio-solids that are not applied to local golf courses and farms need to be shipped to landfills that can be significant distances away from the sewage treatment plants, wasting fossil fuels.

