In sports, we call it a slump. Economics professors call it a recession. Whatever you call it, Texas has had more than its share of tough times in the past few years, due largely to the slow recovery of the U.S. oil industry.

This lingering cloud of despair has taken the growth out of many municipal parks and public golf courses in the state—but not in Plano, a booming bedroom community 15 miles north of Dallas. Once a sleepy farm town, it is constantly attracting new businesses and residents. Recently J.C. Penney moved its headquarters from New York City to Plano, creating thousands of new jobs for its 125,000 residents.

One thing that attracts businesses and homeowners to Plano is its home town atmosphere, largely the result of the city’s park system. While other Texas communities have been cutting back, Plano has doubled the size of its park system since 1980 and has added a municipal golf course.

Today the city has 1,300 acres of park land in use, with another 1,300 acres held for future development.

"Plano is a prosperous young city which has made quality parks and open space two priorities," explains Kevin Murray, superintendent of park operations. "Very few communities in Texas have set aside so many acres of land per resident for parks and recreation."

Murray manages the golf course and supervises all the park division’s administrative work. A counterpart oversees all park-related field activities, including 43 park sites, athletic fields, medians, and public buildings. Murray started with the park division 12 years ago, working summers maintaining the parks and playing fields. He joined the department full-time in 1982 after receiving a degree in park administration from Texas Tech in Lubbock.

Operating from a flexible master plan established during the early 1970s, Murray has found great support from the voters, who have approved $6.6 million during the past two years for land acquisition and park development. Similar funding helped the city take over an 18-hole, daily fee golf course in 1985 from a private developer and to undertake a major upgrading program.

Plano Municipal Golf Course is now one of the department’s most popular recreational features.

The course was one of two built 15 years ago by a partnership including professional golfer Don January on land leased from the city of Plano. The other course, the private Los Rios Country Club, is adjacent to Plano Municipal Golf Course.

When Plano took over the course by buying all improvements made to the land, they also hired Golf Course Superintendent Butch Hartline. The Hartline family has been involved in the Texas golf industry for two generations. Hartline’s father, a golf professional, used to play golf frequently with January. Butch trained as a superintendent under his uncle, Richard Hartline, at Eastern Hills Country Club and The Shores Country Club in Garland. When the job came open at Plano in 1984, January gave young Hartline the superintendent’s job.

"I started out in the business when I was 14 years old, raking traps and mowing roughs for my uncle," Hartline recalls. "For four years, I was the night waterman at Eastern Hills. During that time I got real familiar with irrigation systems and how they should work on different grasses, soils and conditions. When you’re the controller, you have to remember conditions at every head to help the maintenance crew out on things like diseases, weeds and drainage."

When Hartline joined the course, it was struggling to get by on a single-row quick-coupler system and faced serious drainage problems. "Rowlett Creek runs through the middle of the course," Hartline explains.

"Every spring it would overflow its banks, flooding greens and fairways, leaving behind an inch or two of silt. The silt would seal up the clay soil underneath. The old irrigation system and the silt combined to cause algae and other problems through much of the year.

The goal was to have the course pay its own operating expenses out of greens fees. By making conservative improvements over a number of years, the number of rounds would increase to generate additional operating funds. That is exactly what has happened.

"We don’t use a dime of taxpayer’s money for operations," Hartline stresses. "All our revenue comes from greens fees. We don’t have to compete with others for a share of the greens fees. It really motivates everyone to improve the course without wasting money." Basically, Hartline reports to Murray in the parks department, while the head pro works for the recreation department.

In 1988, the course was totally self-supporting, with more than 63,000 rounds played. "We averaged more than 300 rounds per day the last two years," Hartline boasts. "Now we can seriously look toward buying more equipment, and adding traps and more trees to the course. The changes we’ve made are paving the way for the future."
Crew member uses squeegee to push silt into new storm drains following a recent flood.

Plano Municipal Golf Course
continued from page 23

Murray added, "We were able to improve the course's appearance in a couple of months through regular watering, fertilizing and mowing." However, there were bigger problems which took more time and money to correct." To solve these problems on the course, $1.2 million was budgeted in 1987 and an architect was hired to modify the course layout.

The first change was to correct the severe drainage and flooding problem. The creek made a double-S turn in the middle of the course. The banks of the creek sloped gradually up to the fairways and shoulders of the greens. "A few years ago one green was completely under water and four others were partially flooded, on top of big sections of fairways," Hartline recalled. "It took us nearly a week to wash the silt off and to open up the surface again by aerifying, spiking or verticutting. Some low spots took us weeks to get back into play." Hartline also blamed the bad drainage for contributing to an algae problem on the course.

A channel was constructed to divert excess water around the S curves. This preserved the winding appearance of the creek. A network of reinforced concrete pipe was installed, with 27 large catch basins. The banks of the creek around the holes were raised and low spots were brought up to grade.

Rowlett Creek still overflowed its banks this spring after an entire week of rain, but Hartline and his crew had the holes back in play after a few hours of cleanup. As soon as the creek receded, the crew used a York rake to remove the debris deposited by the water. The crew then used squeegees to push the silt into the storm drains while the irrigation ran. "As soon as we hosed off the cart paths we were back in business," Hartline said.

The cleanup process would not have been as effective without the course's improved irrigation system. It was the second improvement made to the course after the city took over.

The former single-row system consisted of manual quick couplers and old pipe. They were connected to a conventional pump station with a 100-hp main pump and a 25-hp jockey pump. "Whenever the... continued on page 26
pumps were turned on, we held our breath and crossed out fingers," Murray joked. "We averaged two main line blowouts every week, and they were usually in front of a green. I don't know how many times we had to repair a blowout at the end of a work day so the course could be irrigated at night."

The decision was made to review the irrigation system from its source. The course receives its water from a treatment plant located 1/4 mile away. Treated water from the plant is released into a creek, which leads to a reservoir for the city of Dallas. The golf course used to pump from the creek into its own reservoir, but it had no agreement with the Dallas water department.

Dallas wanted to charge Plano $25,000 a year for the water used by the golf course. But an agreement was finally reached to provide the course all the water it needed at no cost if Plano paid for a pump located at the treatment plant. This pump and a pipeline to the lake on the golf course cost $40,000. "It was a deal we couldn't pass up," says Murray.

The next stage of the irrigation system to be evaluated was the pump station. The two pumps always ran at full output. Recording devices placed on both sides of a pressure-reducing valve showed tremendous pressure spikes whenever the system was activated. Murray thought his only option was to install another conventional pump system—until an engineer from Best Equipment in Addison, TX, explained how variable frequency drive (VFD) pumping systems work.

The purpose of a VFD system is to regulate pump motor speed to provide only the amount of output pressure required by the irrigation system at any moment. Pressure sensors, a computer, and software work together to automatically change the speed of the pump motors to match the demand created by each cycle of the irrigation schedule. By using just the required horsepower, the pumps work only as hard as needed, saving power and reducing pump surge.

Brockway recommended replacing the old two-pump system with a VFD three-pump system consisting of two 60-hp pumps and one 15-hp jockey pump. Since both Murray and Hartline were trying to keep operational expenses down, they elected to go with a VFD pump station.

After examining the condition of the mains and laterals of the old irrigation system, Murray and Hartline decided to completely abandon them and search for an economical automatic system. "We liked some of the features of quick couplers," said Hartline, "like being able to activate any head on the course without going to a controller to turn it on, or to attach a hose to any head throughout the course. But we had to get away from manual control."

John Heidman, owner of Irritech Corp. in Dallas, had heard similar remarks before from municipal golf course superintendents. The irrigation contractor and designer put together a double-row system design with nearly 600 heads for Plano Municipal that increased fairway coverage by 75 percent.

He provided individual head control by specifying Rain Bird 91DR valve-in-head rotors. These heads can be turned on individually with a key in the field. In the same way, one or more heads can be omitted from an automatic program.

"The thing I like about the heads is the coverage they get in windy conditions," says Hartline. "It's windy here all the time, so we try to get the water down fast to reduce evaporation. These heads have been used for a long time in Florida, but we were one of the first courses in Texas to use them."

To control twice as many heads as Hartline had before, Heidman suggested a central controller with 33 satellite controllers. Since economy was a major consideration, a Rain Bird MC-3S central controller and satellites were selected. The central instructs the satellites to start their programs.

Three separate clocks in the central controller allow the satellites to be grouped according to special needs. In the case of Plano Municipal, Hartline keeps greens and tees on one clock and fairways on a second. Each clock can control up to 25 satellites.

Station timing is controlled at the satellites, but the central can instruct the satellite...
lites to run a syringe cycle from one to ten minutes long—or to shut down in case of rain. On/off switches permit satellites to operate independently from the central if desired. They can be set for up to 23 start times per day on a 14-day schedule.

"The new system has given us the flexibility to change programs easily for weather, overseeding, spring transition, and things like verticutting and aerifying," says Hartline. "We don't have to work around an irrigation schedule anymore. We make it work around us."

Last year, Hartline was able to complete his wish list for the irrigation system. During the Golf Course Superintendents Association of America convention in Houston, he saw a hose adaptor for the sprinkler heads. Now, by unsnapping the internal sprinkler assembly, he can install a hose adapter to any of his heads. A 3/4-inch or one-inch hose can then be attached to the adapter. By using the key to turn the head on, he can hose down or hand water nearly any portion of the course.

With the basics covered, Hartline has been concentrating on equipment and further improvements to the course. The soil greens were getting so hard that it was difficult to change the cup. In addition to annual bluegrass encroachment in the winter, some of the Tifdwarf greens were having a problem with algae.

"When we took core samples from the greens at the end of spring, we'd find algae and sometimes a dark layer," he recalls. "We need sulfur to keep our pH below 8 here, so I decided we should try to open up the soil deeper than our aerifier was going. We either had to rebuild our greens or try to loosen them up and amend them by deep aerification."

Since he only had the budget to rebuild one of the greens, Hartline located a contractor with a Verti-Drain aerifier that could pull cores almost a foot deep to aerify seven others. Before aerifying, the crew top-dressed the greens with sand. The cores brought to the surface were mixed into the sand and dragged into the holes.

"You could see the greens fluff up nearly an inch as they were aerified," Hartline remembers. The action of the machine provides an upward kicking or shattering action deep in the soil profile.

"As soon as we were done, I took a cup cutter and it went down all the way without a struggle," he adds. "We started getting deeper roots almost immediately, and the greens drained much better."

Hartline still plans to rebuild more greens as part of a plan to convert all greens to Tifdwarf (328). But he is wary of the higher maintenance requirement of sand-based greens. He points out that they require more fertilizer, more frequent spiking, and some hand watering. All greens are top-dressed three or four times a year.

Hartline maintains an aggressive verticutting program for the greens. Starting in late February, the crew begins light verticutting to encourage the Tifdwarf and to discourage the overseeded perennial ryegrass. The greens are verticut lightly twice more before April, when they are heavily verticut.

"We keep verticut reels on two Greenskings all year long," explains Hartline. "We either have to work around an irrigation schedule anymore. We make it work around us."

Hartline's first step to improve the fairways was to get a mower that would allow him to contour the Tifway bermuda and to switch fertilizers to produce moderate, uniform growth. In fact, the first piece of equipment the city bought when it took the course over was a Jacobsen F-10 seven-gang mowing tractor for the fairways. The cutting units are set for 1/2 inch in the spring, 1 inch in the summer, and 1 1/4 inch in the fall. During the winter, the overseeded ryegrass (Futura 2000) is cut at 7/32 inch.

He has been able to renovate all tees the past three years through a program of heavy sand topdressing. Today they are sand-based, with Tifway-2 cut at 1/2 inch. They are mowed at 1/2 inch year round with a Jacobsen TF-60 triplex mower. The same mower is used for verticutting by converting to verticut reels.

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continued on page 28
Plano Municipal Golf Course
continued from page 27

spring and fall and 11/16 inch during the
summer.

Once a month during the summer the
crew applies 18-0-12 that is 75 percent slow-
release. In the winter the fertilizer is
switched to 14-2-10. Based upon soil tests,
the program is supplemented with a 0-0-20
with magnesium.

During the summer, Hartline has the
crew aerify the fairways three to four times
with an Aerway unit that not only goes down
six inches or more and shatters the soil as
twisted tines come back out. A trailing
roller smooths the surface.

Having the new irrigation system takes
some of the worry out of deep aerification.
The soil needs to be on the dry side to allow
the tines to shatter it. Once aerified,
however, moisture levels must be restored
quickly to help the turf recover. Since water
penetrates more deeply into the aerified
root zone, the irrigation cycle needs to be
adjusted accordingly.

Hartline has chosen not to overseed the
fairways. "We have a year-round crew of
nine and a summer crew of 13," he says. "If
we overseed the fairways, we'd have to
spend our budget on rebuilding greens,
add staff and increase our maintenance
budget considerably. Right now we need to
spend our budget on rebuilding greens,
adding bunkers and landscaping the
course."

Hartline is hoping to step up his fairway
mowing equipment another notch. "I'd like
to switch over to hydraulic cutting units with
baskets and a mower that can be converted
for verticutting. The new lightweight five-
gang units make a lot of sense." Another
item on his wish list for fairways is a turf
vacuum.

Dormant spraying the fairways with
Roundup has helped the course solve
many of its annual weed problems. As-
needed applications of MSMA and Sencor
have reduced Dallisgrass, crabgrass and
johnsongrass problems. Surflan has been
effective for reducing annual bluegrass in
the fall and crabgrass in the spring, but only
on the fairways and shoulders of tees and
greens. The greens and tees are treated in
the winter with Rubigan and Pre-San to
control annual bluegrass and crabgrass.

During the spring, Hartline adds the
average temperature to the humidity as a gauge
for diseases. If the total is 150 or greater, he
looks for symptoms of Pythium blight. If any
is detected, he treats with Koban or Sub-
due. He is also on the alert for Helminthosporium in the
spring and fall. Daconil
2787, Chipco 26019 and Fore are alternated
for Helminthosporium. Rubigan provides
control of dollar spot in addition to discour-
aging annual bluegrass.

The response by Plano residents to Mur-
ray's and Hartline's improvements is very
positive based upon the increased amount
of play the course is receiving. Plans
include adding 12 sand traps to the course
this year, the first bunkers it has every had.
A number of trees will be added to accent
the fairways.

Keeping up with the city's growth is Mur-
ray's primary concern. A plan is in the
works to build either another nine holes to
the present course or a second 18-hole
course nearby. He plans to balance expa-
nsion with money-saving maintenance
measures.

Murray is closely following Texas A&M
Univereity research on a native
Buffalograss. According to Dr. Milt Engelke
at the university, Buffalograss resembles
the color of bermudagrass but has such a
low mature height that mowing can be
reduced significantly. This particular
Buffalograss also appears to release a
natural biological herbicide which nearly
eliminates competition from weeds. The
glass could allow the park department to
maintain more acreage without a propor-
tionate increase in maintenance costs.

The approach toward growth taken by
Plano Parks & Recreation Department is
preserving the home town atmosphere that
has made the city an attraction to home
buyers and businesses. The way things are
going, it won't be long before the 1,300
acres of parkland held in reserve will be
placed in use.