Wastewater a solution for some courses

In the West, where a century ago bitter range wars were fought over water rights, drought conditions have dramatized the scarcity of water and have fueled a search for remedies. Many now feel wastewater can provide a major solution to the problem of insufficient water supplies — even though, as one superintendent put it, "It's a pain in the neck."

And while supplying the water needs, wastewater can mean a financial windfall, especially for golf course operators in the Southwest, Southeast and on the West Coast who face water bills of $50,000 and more.

National Golf Foundation Field Services Director Sheridan D. Much said in a NGF report: "Burgeoning population and resultant expanding demands for water for domestic industrial and agricultural use make control of this resource a political as well as a practical issue.

"In addition to diminishing supply and rising costs, golf operators often face the resentment of a water-conscious public because they irrigate many acres of turfgrass.

Much said new water sources "must be found." One of those sources is wastewater.

Superintendent George Corthouts of Gainey Ranch Golf Club in Scottsdale, Ariz., has found success using wastewater in his computer-controlled irrigation system. Yet he warned, "It's a pain in the neck."

Markland Properties, Inc., developers of the Gainey Ranch course and its surrounding community, built a $4-million wastewater treatment plant and dedicated it to the community. It uses the effluent to water the 27-hole championship course and all other common greenbelts and landscaped areas in the community without worry of a water shortage in the water-poor Southwest.

'It's a pain in the neck ... but worth it.'
— George Courthouts
superintendent

State law stipulates that Corthouts can not irrigate with the effluent during the day.

Because effluent has a higher chemical content than fresh water, standing water leaves deposits of salts, chlorides and metals that are harmful to plant growth, Corthouts programs the irrigation system to slowly soak the ground, therefore leaching the chemicals down through the root zone.

"The effluent is obviously more corrosive than fresh water, but we get excellent, trouble-free performance from the valves and rotors in our ... system," he said.

"You're not going to get more benefits with effluent than, say, well water, but it's worth it," Courthouts said. "It's an excellent place to put effluent, certainly better than dumping it into a river or a hole."

Courthouts said each golf course will face different problems with effluent, depending on the source of effluent being used.

"In our case it's heavy in nitrates and phosphates. It's like pouring fertilizer

In some others it's higher in salts, which keeps the algae down in the water but is tougher on turf-growing."

Gainey Ranch's treatment plant is state-of-the-art, fully enclosed with no noise or odor, and "visitors are not even aware that it's there," Corthouts said.

James W. Adams, Toro Company irrigation group vice president, feels golf course developers should take notice of success stories like Gainey Ranch.

"New golf course construction in many parts of this country will not be possible unless recycled wastewater is available for irrigation," he said. "Some golf courses now operating could not exist if they were not irrigating with wastewater.

"This is true for many golf courses on military installations. The engineer at George Air Force Base in California, for example, said he would have to close down the base golf course if he were not able to irrigate with effluent from the base sewage treatment plant — which produces 1 million gallons per day. The golf course has been irrigated with wastewater since 1941."

A number of other Western courses are being irrigated with wastewater — or what Much terms "the only practical supply for their heavy needs."

"Golf courses are perfect on-land disposal sites in an era when governmental pollution controls are making this a problem for municipalities and industry," Much said in a NGF report.

In fact, at least in Florida, environmental regulators are supporting wastewater use.

Donald Wisdom, president of the engineering firm of Wisdom Associates Inc. of Stuart, Fla., said at a golf course development seminar in that state in August: "Construction of an irrigation system for a golf course using gray water or effluent from domestic sewage treatment plants is encouraged by the regulatory agencies. The main reason for this is the fact that potable water is a finite resource.

"Florida's population explosion is causing it to become an endangered resource."

Wisdom said getting an irrigation system that is built for effluent on line "will be expensive" and any breakdown would be costly, but it is beats having no water at all.

State laws regarding gray water vary, but in Florida the law requires a reliable irrigation system, high level of disinfection, less than 1 part per million detectability, and automatic diversion if limits exceed on-line chlorinator and turbidimeter.

Wisdom cited St. Lucie West and Martin Downs as Florida country clubs that have installed irrigation systems using effluent.

Dr. James R. Watson, Toro Company vice president, examined the nation's water problems and offered some confirming conclusions.

Many sections of the country, he said, have insufficient water to maintain normal activity in homes, farms and industry.

"Tucson, Ariz., San Antonio, Texas, and Miami, Fla., have been informed that they are taking water from their underground supply — upon which they are solely dependent — almost five times faster than it is being replenished by nature," Watson said.

In Long Beach, Calif., and Baytown, Texas, land subsidence created by overpumping wells has been so bad that it has cracked utility lines and undermined building foundations.

It wasn't merely the drought of 1987 and 1988 that brought the water issue to a critical point. "It is a century of waste aggravated by a government policy of cheap water and optimism that we could make deserts bloom at little cost," Watson said.

"And it is, finally, recognition that our finite supply of water must be managed to meet future demands imposed by the worldwide, explosive growth of population with an ever-increasing demand for food, clothing and shelter — all of which must come from existing water supplies...

"How long the present critical situation will continue is

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Manufacturers of irrigation and related equipment

Following is a list of companies dealing with irrigation and related equipment and who are not in the chart on pages 16-17:

Advanced Drainage Systems
3300 Riverside Drive
Columbus, OH 43221
614-457-3051
Circle No 209

A-I-Irrigation
3608 U.S. 92
Daytona Beach, FL 32114
904-252-2941
Circle No 210

Amiad, Inc.
16735 Saticoy St., Suite 109
Van Nuys, CA 91406
818-781-4055
Circle No 211

Athens Plastics, Inc.
15 Signal Ave.
Ormond Beach, FL 32074
904-677-7775
Circle No 212

Arizona Spray Equipment, Inc.
2615 W. Northern Ave.
Phoenix, AZ 85051
602-995-1111
Circle No 213

Atlantic Irrigation Specialties
1108 Ridgewood Ave.
Holly Hill, FL 32017
904-252-2900
Circle No 214

Buckner, Inc.
4381 N. Brawley
Fresno, CA 93722
209-275-0500
Circle No 215

Champion Turf Equipment
318 W. 79th St.
Kansas City, MO 64114
816-333-8000
Circle No 216

Tom Christy Enterprises
1207 W. Struck Ave. "E"
Orange, CA 92667
714-771-4142
Circle No 217

Claude Laval Corp.
1911 N. Helm
Fresno, CA 93727
800-344-7205
Circle No 218

Commercial Landscape Supply
1821 Reynolds Ave.
Irvine, CA 92714
714-474-9044
Circle No 219

Cornell Pump Co.
2323 SE Harvester Dr.
Portland, OR 97222
503-653-0330
Circle No 220

DonuTTrimmer Equipment Co.
2840 NW 2nd Ave. #308
Boca Raton, FL 33431
800-533-5167
Circle No 221

Famillan Pipe and Supply
13035 Saticoy St.
N. Hollywood, CA 91605
818-764-6400
Circle No 222

Federal Lawn Sprinkler Supply
6029 14 Mile Rd.
Sterling Heights, MI 48077
313-264-7460
Circle No 223

Filter Supply Co.
1210 N. Knollwood Cir.
Anaheim, CA 92801
714-527-8221
Circle No 224

Filtomat, Inc.
6363 Wilshire Blvd, Ste. 211
Los Angeles, CA 90048
213-651-0530
Circle No 225

Florida Irrigation Supply
2400 Paseo St., Box 453
Orlando, FL 32802
407-425-6669
Circle No 226

Griswold Controls
2803 Barranca Rd.
Irvine, CA 92714
714-559-6000
Circle No 227

Hobbs-Adams Engineering
1100 Holland Rd.
Suffolk, VA 23434]
804-539-0231
Circle No 228

Hunter Industries, Inc.
1940 Diamond St.
San Marcos, CA 92069
619-744-5240
Circle No 229

Hydro-Scape of Texas Inc.
6102 Centralcrest
Houston, TX 77092
713-956-4040
Circle No 230

Irrometer Co.
P.O. Box 2424
Riverside, CA 92516
714-689-1701
Circle No 231

Lasco, Inc.
3255 E. Miraloma
Anaheim, CA 92806
714-993-1220
Circle No 232

Matco Products, Inc.
405 Adams St.
Bedford Hills, N.Y. 10507
914-241-0662
Circle No 233

Keith McLain, Inc.
P.O. Box 720070
Houston, TX 77272
713-561-8832
Circle No 234

Microjet Irrigation Systems
4104 Airtrade St., Ste. 6
Orlando, FL 32827
407-857-0011
Circle No 235

Mist Co., Inc.
3701 Bee Caves Rd., Ste. 101
Austin, TX 78746
512-327-9122
Circle No 236

Munie Lawn Specialists
3800 Old Collinsville Rd.
Belleville, IL 62221
618-233-5296
Circle No 237

Motorola, Inc.
3039 Kilgore Rd. #190
Rancho Cordova, CA 95670
916-635-8884
Circle No 238

Naiad Co.
5627Stoneridge Dr. #316
Pleasanton, CA 94566
415-460-8530
Circle No 239

Pacific Equipment
& Irrigation
19515 E. Walnut Dr. N.
Industry, CA 91748
714-594-5811
Circle No 240

Parker Hannifin Corp.
17325 Euclid Ave.
Cleveland, OH 44112
216-531-3000
Circle No 241

Pipe 'N Heads
13510 Floyd Circle
Dallas, TX 75243
214-231-0535
Circle No 242

Rain Bird Sales, Inc.
145 N. Grand Ave.
Glendora, CA 91740
818-963-9311
Circle No 243

Rain Master Irrigation Systems
4645-2B Industrial St.
Simi Valley, CA 93063
805-527-4498
Circle No 244

Selectric, Inc.
1311 3rd St.
Umatilla, OR 97882
503-922-3256
Circle No 245

Smith Engines and Irrigation
4205 Golf Acres Dr., Box 668985
Charlotte, N.C. 28266
704-392-3100
Circle No 246

Smith Pipe & Supply, Inc.
772 Rancho Conejo
Newbury Park, CA 91320
800-498-6744
Circle No 247

Superior Controls Co.
24950 Avenue Kearny
Valencia, CA 91355
805-257-3533
Circle No 248

Systematic Irrigation Controls
3190 J Airport Loop Dr.
Costa Mesa, CA 92626
714-850-0996
Circle No 249

The Toro Co.
P.O. Box 489
Riverside, CA 92502
714-688-9221
Circle No 250

Thompson Manufacturing
5075 Edison Ave., Box 1500
Chino, CA 91710
714-591-4851
Circle No 251

Turfco Mfg. Co.
3456 Washington Ave.
Minneapolis, MN 55412
612-588-0741
Circle No 252

Turf Equipment & Supply Co.
6660 Santa Barbara Rd.
Elkridge, MD 21227
301-796-5575
Circle No 253

Turf Irrigation Repair/Products
5149 Azusa Canyon Rd.
Baldwin Park, CA 91706
818-338-9466
Circle No 254

Unique Systems
3500 Oak Lawn, Ste. 4000
Dallas, TX 75218
214-526-3225
Circle No 255

Virginia Turf & Irrigation
1904 N. Hamilton St.
Richmond, VA 23230
Telephone N/A
Circle No 256

Weather-Matic
P.O. Box 180205
Dallas, TX 75218
214-278-6131
Circle No 257

Wolf Creek Irrigation Co.
6051 Wolf Creek Pike
Trotwood, OH 45426
513-854-2694
Circle No 258

Field test started on subsurface drip

The Center for Irrigation Technology has initiated a three-year field trial to study subsurface drip irrigation of turfgrass to discover its long-term effectiveness and evaluate products of participating manufacturers.

Plots have been established from tall fescue sod. Participating manufacturers have recommended spacing for their products, and each plot will include lateral spacings 33 percent narrower and 33 percent wider than the recommended spacing.

Drip lines will be installed about 4 inches below the soil surface and the sod will be watered daily, with gross applications based on reference evapotranspiration, adjusted for a crop coefficient and individual system efficiency.

Irrigation times for each product and lateral spacing will be adjusted so all areas receive the same net amount of water.

The turfgrass in each plot will be visually rated on a scale of 1 to 9 for color, density, texture, uniformity and pest presence. Plant stress measurements will be taken using infrared thermometry.

At the end of the study, CIT will offer guidelines on the operation and maintenance of subsurface drip irrigation systems, and will be able to estimate the water-saving potential. CIT will issue reports annually.

Initial funding for the project has come from the Northern California Turfgrass Council, Metrolpolitan Water District of Southern California and participating companies.

Wastewater

Continued from page 18

problematical. Some climatologists say nothing can be done, that the situation will correct itself in 5, 10, 25 years."

Watson said artificial turf could become the "grass" of the future since it requires no water.

Wastewater, he said, is an important water resource which "we are not now using intelligently" and which "we can not afford to ignore."

"After treatment, wastewater is virtually pure water," he said. "It should be strenuously promoted. Active-growing grass will remove a major portion of the impurities in effluent; the soil with its microflora will remove the remainder."

At the same time, the nitrogen removed benefits the turfgrass, diminishing the need for fertilizers, Watson said.

"Not only does effluent provide the nutrients as well as much of the water required by turf, but, as a result of filtration, good quality water is percolated through the soil down to the level of ground-water aquifers and, in effect, replenishes them," he said.

He added that another consideration making wastewater irrigation attractive is that it provides for on-land disposal which the Environmental Protection Agency is encouraging as opposed to disposal into navigable waters.

"More than 2,000 facilities in the U.S. provide such a low-cost method of on-land disposal of municipal and industrial wastewater. About 75 of the nation's golf courses use treated wastewater for irrigation," Watson said.

"Sprinkler irrigation equipment can apply water wisely and without waste. The major advantage cited is that it places control in the hands of the best qualified individual on that turfgrass facility — the turfgrass manager."

"Automatic controllers coupled with valve-in-head, or valve-under-head sprinklers geared to apply water commensurate with the ability of the soil to accept it, conserves substantial quantities of water, and produces superior turfgrass," he said.

Watson said cloud seeding and desalination are, for the most part, prohibitively expensive and of limited benefit to water-needy areas.

Toro's Adams cautioned that it is "not feasible to use wastewater for golf course irrigation unless there is an automatic underground irrigation system."

Irrigation design courses planned

Ten-day design classes are being held through May at Weather-matic's College of Irrigation Knowledge in Dallas, Texas, according to Director of Training Richard B. Choate.

The college, which has been training distributors, contractors, specifiers and professionals in related fields since 1966, opened its 10-day classes in September. Abbreviated five-day courses for specifiers are normally offered in late May and early June.

Choate said enrollment is strictly limited to insure individualized instruction. The basic course includes lectures, domonstrations and practical excercises, both in the classroom and as homework assignments.

Subjects include soil-water-plant relationships, basic and advanced hydraulics, sprinkler application and layout, and piping system design, as well as such business-related topics as materials pricing and advertising sales promotion.

Courses will begin Oct. 16, Nov. 6, Dec. 4, Jan. 8, Jan. 22, Feb. 12, March 5, March 26, April 23, May 14 and June 4.

More information is available from Weather-matic distritors and regional sales managers, or from Choate at 214-278-6131.