

game of golf makes to the State of Minnesota and the respective communities located within the state.

The MGCSA study found that an average of nearly 300,000 gallons of water per acre were used in 1988 on the courses whose superintendents responded to the questionnaire. One disturbing thing that became obvious was that some do not know how much water they use on their property.

As a result of the study and the MGCSA's ongoing concern for its industry and the environment, the MGCSA is committed to:

- * Encourage the installation of effective metering devices on all golf course irrigation systems in the state of Minnesota.
- * Permanently install a functioning committee for the increased conservation of water and other resources.
- * Intensify the educational opportunities available to our membership specifically addressing water conservation.
- * Continue contributions, and expand as resources permit research dedicated to water conservation in areas such as irrigation equipment, plant breeding and selection for better drought tolerance as well as lower water usage, and cultural practices that will reduce the use of water and runoff, improve water retention and facilitate the expanded use of effluent water.



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GOLF COURSE IMPACT ON WATER QUALITY

(Credit— THE MOUNTAIN STATE GREENLETTER—JULY 1989)

FINDING: Golf courses do not pose a significant pollution threat to the nation's water supplies. This conclusion is based on a review of the scientific evidence that is currently available. Neither groundwater nor surface water is threatened by golf course runoff. Further, studies show that stormwater runoff is near zero from golf courses.

GROUNDWATER: About half of all people in the United States depend on groundwater for their drinking water, and the figure is 90% in rural areas. Results from ongoing scientific studies show that the use of pesticides on golf courses does not threaten public drinking water. Because of the low mobility and quick biodegradation of most golf course pesticides, they simply do not reach groundwater in significant quantities.

One Environmental Protection Agency-funded study being undertaken on Cape Cod in Massachusetts provides for a "worst-case" estimate of groundwater contamination. To date, test results have been encouraging, demonstrating that golf courses and clean groundwater do co-exist.

Some experts argue that golf turf offers uniquely favorable control mechanisms to prevent groundwater contamination. Dr. Stuart Z. Cohen, a former Ground Water Team Leader for the EPA in Washington, notes that "the use of pesticides on golf courses poses less of a threat to the nation's groundwater than does the agricultural use of pesticides.

Additionally, turfgrass provides a "thatch layer" not found in row crop situations. Thatch binds up pesticide residues and increases degradation of some chemicals. Dr. Harry D. Niemczyk of Ohio State University has found that as much as 99% of recovered pesticides are found in turfgrass thatch.

In some areas, golf courses are also helping to mitigate the groundwater pollution effects of hazardous waste sites. Many of the nation's golf courses fertilize soil using sludge compost mixes prepared by urban waste recycling programs. These sludges might otherwise be disposed of in municipal landfills. Thus, potential groundwater leaching from dump sites is averted by careful community planning and recycling.

STORMWATER RUNOFF: Stormwater runoff from golf courses is not a significant environmental hazard. Research conducted by Dr. Thomas Watschke, a turfgrass specialist at the Pennsylvania State University,

indicates that thick, healthy turf reduces runoff "to next to nothing."

An average golf course of 150 acres effortlessly absorbs 12 million gallons of water during a three-inch rainfall. Dr. Watschke finds that thick, carefully managed turfgrass has 15 times less runoff than does a lower quality lawn. As a result, almost all of the pesticides applied to the grass remain in place after peak rainfall.

Dr. Richard J. Cooper of the University of Massachusetts argues that turfgrass cover "reduces soil erosion and prevents soil and chemical runoff into water sources."

By comparison, parking lots, streets and even residential areas load nearby waters with hazardous pollutants carried in runoff from road surfaces, gutters, and catch basins.

SURFACE WATER: Golf courses help decrease sedimentation pollution of rivers, streams and lakes by preventing topsoil erosion. The major polluter of U. S. surface water is sedimentation from soil erosion. However, turfgrass reduces erosion, as compared to alternative land uses.

For instance, studies show that grassland experiences 84 to 668 times less erosion than areas planted with wheat or corn. Construction has an even more devastating impact on topsoil, so golf courses can greatly reduce erosion effects as compared to other land users, like shopping malls or housing developments.

Sedimentation Pollution from Soil erosion costs society billions of dollars in increased transportation, shipping, and cleaning costs. Thus, by preventing soil erosion, golf courses serve a very beneficial societal purpose.

CONCLUSION: Golf courses do not threaten the nation's water supplies. Scientific studies show that pesticides used on golf courses do not seep into neighboring groundwater sources. Other studies demonstrate that stormwater runoff is greatly reduced by turfgrass. Finally, still more studies show that grassy areas reduce soil erosion, which is a major cause of sedimentation pollution in the nation's rivers, lakes and streams.

On the whole, a golf course makes an environmentally sound contribution to any community.



STRESS MANAGEMENT TOOLS



A truly stressful situation.

As a follow up to last month's stress article by Dr. John P. McNamara, we present this list of Stress Management Tools.

1. Examine yourself
2. Reduce Xanthine intake (coffee, tea, cola)
3. Avoid vitamin depletion
4. Monitor salt intake
5. Avoid hypoglycemia
6. Delegate work
7. Maximize information input
8. Release anger appropriately
9. Choose realistic options
10. Develop a plan with goals
11. Practice progressive muscle relaxation
12. Maintain a sense of humor
13. Be Polite
14. Know your standards and values
15. Employ biofeedback
16. Face reality
17. Normalize difficult situations
18. Meditate
19. Be assertive-not aggressive
20. Make decisions
21. Do it now, Don't procrastinate
22. Know your strengths and weaknesses
23. Organize
24. Seek opportunity from crisis
25. Create environments that reduce stress
26. Ventilate
27. Practice imaging
28. Join a support group
29. Exercise regularly
30. Improve interpersonal skills
31. Recognize early signs of stress illness - get treatment
32. Use psychoactive drugs appropriately
33. Practice self-hypnosis, yoga, zen
34. Take control of your life
35. Get adequate rest
36. Leave time for the unexpected
37. Get massaged
38. Create buffer zones around stress
39. Curry stress reducers
40. Treat people like human beings
41. Forget the past
42. Prepare
43. Seek spiritual nourishment
44. Dress up, not down
45. Build in relaxation time
46. Be flexible
47. Abdicate parts of your life
48. Learn to say NO - and when to say it
49. Don't gossip
50. Slow down - smell the roses
51. Reduce noise and people pollution
52. Establish routines
53. Communicate to those around you
54. Minimize surprise
55. Structure environment to work for you
56. Use modern technology
57. Choose friends carefully
58. Do your share to keep good friends

Taken from "Teaching Healthy Managers To Control Their Economy-prone [Type A] Behavior", SELF MODIFICATION OF EMOTIONAL BEHAVIOR, Edited by K. Blakenstine and J. Polivus. Plenum Press, New York City, New York. 1982