

THE WATER

SOURCE

A QUARTERLY PUBLICATION OF THE EDWARDS UNDERGROUND WATER DISTRICT

May 1992

Urban BMPs Can Preserve Water Quality

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Editors Note: May 3-9, 1992 has been designated as National Drinking Water Week. The American Water Works Association has organized a coalition of non-profit groups and government agencies to conduct a national water awareness campaign. Locally, the Edwards Underground Water District, City Water Board and League of Women Voters will join water-related organizations around the country and ask our community to get on the "Blue Thumb" bandwagon and "give drinking water a hand." Citizens around the region can show their "Blue Thumb" when they take action to protect their source of water, conserve and get involved in community decisions that affect water quality.

Often forgotten amid water supply arguments in the region is the fact that San Antonio is the world's largest city without a treatment plant for its drinking water. This circumstance can be viewed both as a blessing and a curse: as a blessing because, even untreated, water from the Edwards Aquifer surpasses all federal drinking water standards; as a curse if we take our natural estate for granted and foul the superior quality of water provided us by the Edwards. By using Best Management Practices (BMPs), however, each of us can be good stewards of this precious resource. BMPs can be

defined as one or a combination of practices which help reduce or prevent groundwater pollution at the source.

Some pollution can be captured and treated in structural controls such as retention and filtration ponds, but these facilities are costly, difficult to maintain, and their ability to filter some pollutants from runoff is questionable. A far more cost-effective solution is to keep storm-water runoff and recharging waters free from potential aquifer contaminants by using sound BMPs. Given that water from our sole source aquifer arrives at the tap with only a modicum of chlorine as treatment, it is crucial that the BMPs for the following potential pollutants be adhered to by all who live, work, play, or travel through the recharge and transition zones.

Fertilizers, Pesticides, and Herbicides

Everyone appreciates the aesthetic appeal of a lush green lawn, but many products applied as lawn treatments contain toxic chemicals which can easily attach to disturbed soil sediments and be carried to recharging waters with storm-water runoff, thereby contaminating the groundwater. Furthermore, homeowners tend to apply far more fertilizer than is warranted; it is estimated that 30% of nitrogen applied to lawns is washed away

or percolates beyond the root zone. Far more chemicals are applied to the land in the course of agricultural production, but one study suggests that homeowners use up to eight times more pesticides *per acre* than do farmers. Best Management Practices, therefore, include:

- Reducing application rates for fertilizers, pesticides, or herbicides. Never use more than directed on the label.
- Using organic substitutes whenever possible.
- Using slow-release fertilizers and pesticides if chemicals are used.
- *Never* disposing pesticides, fertilizers, herbicides, or their containers by merely dumping on the ground. Always dispose in a conscientious and safe manner (see product instructions).
- Converting your lawn to a xeriscape. Limiting turfgrasses to functional areas reduces the need for fertilization. Also, native and non-native xeriscape plants require less water, maintenance, fertilizers and pesticides, and produce a natural, beautiful landscape.
- Timing, as well as distribution of fertilizers, is important. Applications should correspond with grass requirements rather than homeowner convenience. Soil and grass type, shade conditions and other environmental factors should be considered in determining fertilizer requirements.

(continued)

Water Wisdom

Being good stewards of the Edwards Aquifer

Reverend John Moder, S.M., Ph.D.
President, St. Mary's University

Editors Note: This essay is adapted from a speech Fr. Moder delivered at the premier of the District's new technical film, "Inside the Edwards Aquifer." His message on stewardship is worth sharing with all those who rely upon the Edwards Aquifer.

Religious traditions around the world have seen water as so essential to human life that it becomes a symbol of the divine. The Rgveda, the most ancient text of Hinduism, contains a hymn to the goddess Waters. The twenty-five hundred year old Chinese I Ching contains a symbol for the Abysmal or Water. Water is linked with "repetition of danger" and the following advice is given:

...a man is in the same pass as the water in a ravine, and, like the water, he can escape if he behaves correctly... Water sets the example... It flows on and on, and merely fills up all the places through which it flows; it does not shrink from any dangerous spot nor from any plunge and nothing can make it lose its own essential nature... Thus likewise, if one is sincere when confronted with difficulties, the heart can penetrate the meaning of the situation. And once we have gained inner mastery of a problem, it will come about naturally that the action we take will succeed. (Book I, Hexagram 29, K'an)

The Judeo-Christian tradition is probably more familiar to us. The Hebrew scriptures begin the creation story with the spirit of God hovering over the waters (Gen. 1:2), and the Christian scriptures conclude the book of Revelation with an invitation to the thirsty to come to the waters (22:17). Water effects both destruction for God's enemies and salvation for God's friends in the story of the Flood and the exodus

through the Red Sea, and the same theme is carried forward in the New Testament accounts of baptism.

For religious people, water is life and death, power, cleansing and purification, refreshment and coolness.

Our situation is different from the ancients' in two important ways. For them, water seemed an inexhaustible resource, whereas, because of pressures from both our population and our technology, we are acutely aware of the limitations on our water resources. Second, while in the ancient world, water was a mysterious power beyond human control, our technical and social mastery gives humankind the crucial decision-making power over our water.

These two dramatic shifts impose the critical responsibility of intelligent stewardship on our generation. It is absolutely vital that we do make decisions about our water resources. Our water issues will not be resolved by themselves, but must be attended to consciously and deliberately.

Because these are complex technical and social questions, we need the best expert information available. We need to research and learn from the research, both about the hydrology of the aquifer and about the human needs that it serves. This information must not remain only in the hands of the experts, but everyone must be well-informed, even technically, in order to participate responsibly in the public decision-making process.

Perhaps most important is the need for fairness—a fairness to the past, to history and accepted practice, where these are relevant. There must be a fairness to the diverse needs of diverse groups of users: we must seek to be fair to all involved. And we must be fair to

the future, so that generations to come will have the life-giving waters we enjoy.

Clearly, this whole process will involve a lot of listening to the experts, to the users, to the public, to other decision-makers. The responsibilities of our time call us to be better listeners than we have been in the past. We will need to listen not only to the words and the positions, but to the real needs and values at stake.

Finally, decision-makers will need to make a continuing series of courageous decisions. The standard for these decisions ought to be the common good, a deeper value often neglected in our pursuit of sometimes genuine and sometimes spurious "rights."

Let me conclude with one more piece of water wisdom from the East—the eighth poem in the Tao Te Ching:

The highest good is like water.
Water gives life to the ten thousand things and does not strive.
It flows in places men reject and so is like the Way.
In dwelling, be close to the land.
In meditation, go deep in the heart.
In dealing with others, be gentle and kind.
In speech, be true.
In ruling, be just.
In business, be competent.
In action, watch the timing.
No fight: No blame. ■

Editors Note:

As this edition of The Water Source goes to print, major issues are affecting the status of the Edwards Aquifer. As the water situation becomes clearer, the Edwards Underground Water District will discuss the changes and their effects in future editions of our newsletter.

Water Quality *(continued)*

- Consider IPM, Integrated Pest Management, in maintaining your lawn. IPM emphasizes the importance of planting adaptive turf types, following prescribed cultural practices, monitoring weed and pest populations, targeting pesticide applications, and using biological controls such as beneficial insects to manage lawn and garden areas. For more details on IPM, contact your local horticultural extension agent.

Household Hazardous Wastes

There are a variety of everyday products which can negatively impact groundwater if improperly disposed or stored. Although beneficial in their applications, these products can be classified as household hazardous wastes due to the toxic or volatile chemicals they contain. Examples of household hazardous wastes include: solvents, pool acids, paint products, and automotive products.

BMPs call for the proper handling, use, storage, and disposal of suspected household hazardous wastes. Other BMPs include:

- Using products only as directed on labels.
- Keeping products in their original containers with labels kept legible for proper subsequent use and storage.
- Storing products in a cool, dry place away from the elements, and inspecting them regularly to ensure containers are not leaking.

- Properly maintaining motor vehicles helps keep motor oils, grease, shavings from brake linings, etc., from being deposited on roadways and available for subsequent runoff.

- Never disposing waste products -- particularly used motor oils, antifreeze, brake and transmission fluids, and car batteries -- by dumping or pouring on the ground, or into a storm sewer. One quart of motor oil can contaminate 250,000 gallons of water. Extreme caution should be taken in the disposal of such materials.

- For a list of recycling centers which accept various types of used or old household products, consult the phone book for reclamation centers, or contact the solid waste department of your local government.

Septic Systems

While it is recommended that residential development atop the recharge and transition zones be tied into centralized sewer facilities, on-site disposal (septic) systems are still permitted if prescribed soil permeability and depth standards are met. Individual homeowners, however, should properly maintain septic systems in the rural and urban fringe areas of the recharge zone to avoid groundwater pollution from disposing sewage in an unsanitary manner. BMPs call for:

- Water conservation: the most common reason for septic system failure is the use of more water than the soil can absorb. Changing to low water using appliances (toilets, showerheads, etc.) and altering water use habits can help

address the problem.

- Similarly, make sure drainage from roofs, roads, and driveways is not being diverted to the system's soil absorption field.

- Driving, paving, or building atop the soil absorption field can cause drain pipes to shift or crack and can compact the soil.

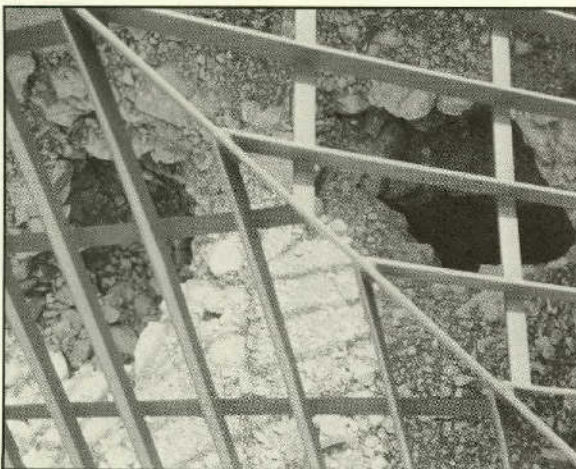
- Don't plant trees or shrubs over or around the soil absorption field because their roots can cause clogging.

- Proper maintenance is crucial. The septic tank should be pumped at least every three years; more frequently if a garbage disposal is used. Failure to do so causes the system to fail to treat wastes as it should, creating a nuisance and a health hazard.

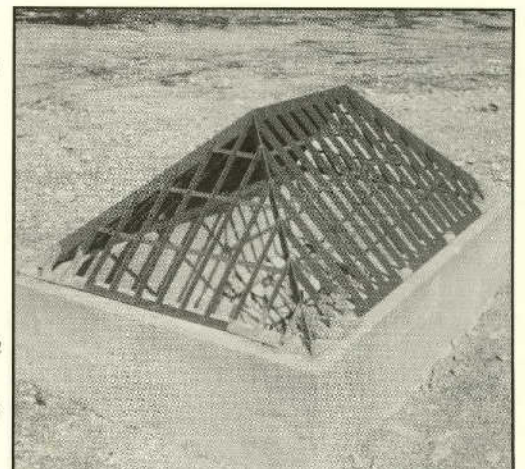
- Adding additional lines to the soil absorption fields increases the system's capacity to accept wastewater. Consult with a local sanitarian before construction.

In the absence of water treatment facilities, contamination of our sole source aquifer can spell calamity for public health and the vitality of local economies. Stewardship of the Edwards Aquifer requires the active involvement of aquifer users individually and collectively. Government regulations and controls can go a long way to assure the proper location, type and extent of land use activities on the recharge zone. But the cumulative effect of individual actions can lead to the continuation of superlative water quality or spoilage which will be handed to future generations. Concerns about water supply matter little when the water in question is fouled. ■

Sinkhole Gets Caged...



The EUWD has placed a grate over a sinkhole located in the flood pool of the San Antonio River Authority's dam site #10. The grate was installed to protect curious explorers and to keep the recharge feature intact. The sinkhole was acquired last summer as part of the Edwards Aquifer Preservation Program, and is located within a 51 acre conservation easement.



News Briefs...

□ The Edwards Underground Water District has a new documentary available for free rental. "Inside the Edwards Aquifer" is a technical film which addresses the technical dynamics of the aquifer's hydrology and geology. In great detail, it describes the origin of the aquifer and uses computer animation sequences to explain groundwater flow paths and to take a new look at the "bad water" line. The film also uses expanded charts to explain how the water level in the aquifer varies throughout the region and discusses several aspects of recharge, including augmentation. Aerial and underwater photography helps capture the uniqueness of the aquifer.

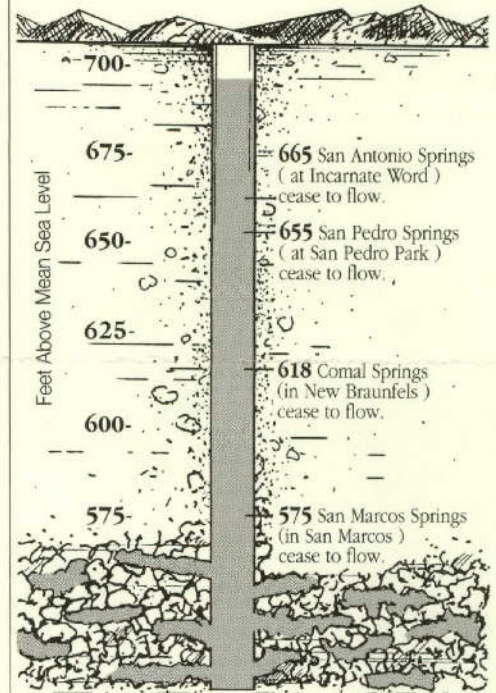
"Inside the Edwards Aquifer" is the second in a trilogy of films about the Edwards Aquifer. The first film, "The Edwards Aquifer: A Texas Treasure," was produced in 1989 and was designed to be an entertaining and informative means to educate the

general public about the value of the Edwards Aquifer. "Inside the Edwards Aquifer" goes one step further in describing the complex dynamics of an aquifer which is the sole source of water for 1.4 million people. Both films are part of the District's overall education effort because the EUWD believes that an informed public will be better prepared to meet the challenges which face the region in protecting this amazing resource.

□ Three students won awards for their projects about the Edwards Aquifer at the Alamo Regional Science Fair in March. Jennifer Jamison, from Dahlstrom Middle School, won first place for her project, "Fecal Coliform Bacteria in the Edwards Aquifer and San Marcos River." Second place went to Jeremy Hansen of Goodnight Junior High for "Phosphates and the Edwards Aquifer: What effects do detergents have on our source of water?" Kelley Wisley, from Kirby Jr. High School, received third place for her project entitled, "Oops! An oil spill!" ■

The Water Level

This reading reflects the daily high artesian water elevation at the Bexar County Edwards Aquifer Index Well.



Current Status: On April 22, 1992 the water elevation was recorded at 696.3 Average for April is 666.3

THE WATER SOURCE

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