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March-April 1990
Volume 45, Number 2

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Journal of Soil & Water Conservation
To advance the science and art of good land and water use worldwide

Cover: Groundwater quality issues are not just resource issues, but involve people and their choices for the future. Soil Conservation Service photo by Ron Nichols.

Journal of Soil and Water Conservation (ISSN 0022-4561) is published six times a year in January, March, May, July, September, and November by the Soil and Water Conservation Society, 7515 N.E. Ankeny Road, Ankeny, Iowa 50021-9764. Second class postage paid at Ankeny, Iowa, and additional mailing offices. POSTMASTER: Send address changes to *Journal of Soil and Water Conservation*, 7515 N.E. Ankeny Road, Ankeny, Iowa 50021-9764.

Address all editorial and business correspondence to SWCS, 7515 N.E. Ankeny Road, Ankeny, Iowa 50021-9764; telephone (515) 289-2331. Subscription is by membership in SWCS or by subscription. Membership dues are $44 a year ($50 outside the U.S. and Canada); subscriptions are $30 a year ($35 outside the U.S. and Canada).

PEN POINTS

Business as usual?

Having been to many gatherings where the topic of "sustainable agriculture" was addressed, I have an impression that the mainstream agriculture establishment still believes all is well and that we can fix agriculture's problems by simply trying out a few reduced chemical experiments, comparisons with conventional methods, and that is sustainable agriculture. It seems to me the question of sustainability has been reduced to the question of chemical use.

Reduction and elimination of petrochemicals is an important aspect of a healthy agriculture, and we do need to search for agronomic practices that enhance soil life. But, even if all farms were chemical free, we will be far from a sustainable agriculture unless we address the following basic concerns.

Renewable energy. Currently, we are converting barrels to bushels; modern agriculture is running entirely on rapidly depleting oil and gas, and our so-called safe food supply is extremely vulnerable. No agriculture can be sustained unless it runs on renewable energy. What are we doing to address and seek ways of kicking the petrofarming habits? What are we doing to promote fresh, locally grown food, to invest in the local community, as well as to avoid processing, packaging, and transportation?

Rural communities. More than 200,000 farms went bankrupt in the 1980s. By almost any measure, rural communities are declining. Are land-grant institutions building and revitalizing communities? Are we addressing the root causes of rural decline? Those of us who are seeking sustainability see agriculture and rural communities rooted in one another and inseparable. We must invest in and build on our rural heritage.

Soil and water conservation. Neither agriculture nor people can survive if we continue to waste soil and pollute our water. We have more soil erosion now than we did during the Dust Bowl era. How can we reserve this trend?

Health questions. The public is concerned about pesticide residue on food, chemicals in drinking water, antibotics and hormones in food, and risks to the farmer. The connection between health and agriculture is ignored entirely, and our "experts," with their usual self-assured tone, tell us all is safe. Because people's lives and the health of the biosphere are at stake, why shouldn't the burden of proof that our food is safe rest on those who claim so?

Agricultural policies. For agriculture to be economically viable, socially just, environmentally sound, we need local, national, and international policies that do not work against these goals. Universities should be a debating ground for these policies. How are agricultural policies affecting the people and agriculture?

True economics. All things that the "economy" depends on come from the Earth. Current economic thinking does not take the Earth and future generations into account. In a true economy, conservation is economical and degradation extremely costly. We need to transform fake economics so that it will truly reflect our borrowing and dealings with the Earth. Agriculture cannot and will not survive a fake economy.

Education, research and extension. A shift toward a sustainable agriculture necessarily requires a fundamental change in short-term, departmentalized research and teaching. It also requires direct farmer-researcher, farmer-farmer, and farmer-student exchanges. Colleges of agriculture must be mandated to run a farm—successfully and profitably; and if not successful, they would simply go bankrupt. That process can transform efforts in education, research, and extension in unforeseen ways.

Urban responsibility. The 98 percent of Americans living off the farm cannot lead wasteful, polluting lifestyles and expect farmers to run chemical-free farms and be stewards of the land. Urban-generated pollution will continue to impact agriculture negatively. What are we doing in the cities to conserve energy, recycle, and prevent air and water pollution?

A land ethic. Ethics prompt us to care for other individuals and the community. Ethics rule out doing things that harm the community. Aldo Leopold described a land ethic in *A Sand County Almanac,* "The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively the land. That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics." Generally, no concept of a land ethic seems to be prevail among agriculturalists, universities, and the educational system. Leopold believed "conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect." How can we integrate a land ethic into education, agriculture, and our lives?

These concerns and questions must be central to the search for sustainable agriculture. Most research and education efforts in this area, including most LISA-funded projects, are focused on agronomic aspects and soil ecology, which are essential and much needed. Also needed are research and educational programs that address all other aspects of a sustainable agriculture.

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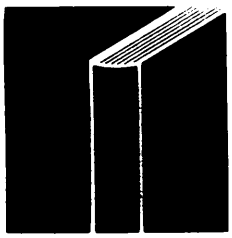
Correction

Column headings for table 6 in the article "Measurement of Residue with Dot Screens" [*JSWC*, September-October 1989, page 542-544] were printed incorrectly. Below is the correct version of table 6. The *JSWC* staff regrets this typographical error.

Table 6. Effect of dot size on residue cover estimation.

Photographic Simulation	Simulated Residue Cover With 200-dot Screens* 3-mm Dot Diameter	1.5-mm Dot Diameter	0.75-mm Dot Diameter
	(%)		
A	21.0	17.5	14.0
B	28.5	35.0	31.0
C	81.0	67.5	78.0
D	86.0	84.5	83.5
E	92.5	92.5	92.0
F	97.5	97.0	98.0

*The same random dot pattern was used on all three screens.



BOOKS, ETC.

Current Trends in Water-Supply Planning: Issues, Concepts and Risks. By David W. Prasifka, 266 pp., illus., refs., bibliog., index, 1987. Van Nostrand Reinhold, New York, New York 10003. $32.95.

The author purports to characterize the "trends" in how planning for water supply is currently being done in the United States. Although the title does not indicate, the book focuses solely on water supply for urban areas. Clearly, the emphasis in the book is on major urban areas, although some medium and even small cities and water districts could use some of the analytical methods mentioned if intellectual resources were available and the more sophisticated methods were justified. The author implies that the "trends" discussed characterize the water utility industry as a whole, but no data are presented with respect to the extent to which this is actually true.

After a very short introduction, chapter 1 contains: (a) a discussion of what the author terms water-demand "criteria," with respect to which he includes spatial and temporal variations in urban water demand, regionalizations, and water-supply planning philosophies and (b) a discussion of components of water demand.

Chapter 2 contains a discussion of water-demand forecasting, subdivided into data collection, forecast methods, forecast techniques, impacts of water conservation on water demand, impacts of water quality, and what the author terms "integrated approach to demand forecasting." The differentiation between forecast methods and forecast techniques is muddy. For example, multiple coefficient method, read regression analysis, is listed as a forecast method; econometric forecasting, which utilizes regression analysis, is listed as a forecast technique. Four water quality indexes are discussed, but there is no discussion of how they might be used in water-supply planning.

Chapter 3, according to the book's introduction, contains a discussion of "financing capital needs." The chapter actually includes discussion of pricing policies with respect to intake water, intake water rates and price structures, and price elasticity of intake water demand. There is no discussion of pricing policies at the "back end," that is, with respect to wastewater discharges. This is in spite of several decades of experience that show that sewer charges can have major impacts on intake water demand, especially with respect to industrial activities. There is no discussion of the problems in determining the fair share of costs to be borne by different classes of users, in relation to the costs imposed on the system and/or the benefits received, such as users at higher elevations requiring pumping, and users in outlying areas for which costs of services are substantially higher than for users closer to the centroid of the system. The helpful discussion of rate structures and marginal cost pricing would have been considerably more useful to the practitioner if a discussion of sewer charges, different ways of imposing charges when dischargers are not measures (as for residences), and illustrations of the interrelationship between intake water charges and wastewater charges had been included.

Chapter 4 addresses various natural and man-caused hazards, which can affect water supply systems, and therefore, should be considered in water-supply planning. Included are earthquakes, hurricanes, floods, riots, spills, and droughts. A section on hazards and public policy is included.

The last chapter, "Politics of Water," deals with public participation, which is termed a "risk-management technique" in the introduction.

Some comments:

► Who is the "water planner?" Is he or she an employee of the department of public works of a municipality, of a county water agency, of a bi-county water and sewer agency, a special district, a metropolitan area agency, a regional wholesaling agency such as the Metropolitan Water District of Southern California, or a state agency responsible for developing a "state water plan?" Does the context in which the planning is being done make a difference in the approach to, and methods used in, the planning?

► Operational definitions of the dimensions of water demand are never given. Operationally, what is involved are water intake, water recirculation, gross water applied, consumptive use of water, wastewater (quantity) discharged, and waste loads (quality) discharged. All of these are interrelated.

► The level of detail of much of the discussion is insufficient to be of help to the practitioner. For example, with respect to the discussion of industrial water demand, the author could have pointed out that the above six dimensions of water demand for an industrial activity are a function of types of raw materials; production processes; product mix; product specifications; cost of factor inputs, including energy, water, and other raw materials; and constraints and/or charges on discharges of water to water bodies or to collective wastewater handling systems.

► When reading this book, one would essentially be unaware that what comes in the "front end" of an urban water supply system must be taken care of at the "back end" by the sewage system, less consumptive use of water within the area. The back end is ignored in at least two basic respects. One is the neglect of the effects of sewer charges, pretreatment standards, various discharge limitations, such as on peak flow and on water intake by an activity. Much evidence is available, particularly for the industrial sector, of the substantial reductions in water intake that have resulted from incentives on discharges. This is of major importance in urban areas with a signficant industrial sector.

The other relates to the problems of integrating front end and back end when different agencies—often with different geographical jurisdictions—are separately responsible for water supply and wastewater handling and disposal. Compare the situations in the Los Angeles and Chicago metropolitan areas with those in Atlanta, Philadelphia, and the Washington Surburban Sanitation Commission in the Washington, D.C. area.

► Related to the immediately previous points is the question: How well is water supply planning (and wastewater handling and disposal) integrated with the urban planning activity? How does the comprehensive planning activity of the city's planning

department relate to the water supply planning of the department of public works, or the water commission, or whatever entity is responsible?

► The implication throughout the volume is that use of more sophisticated techniques/methods for urban water-supply planning would yield positive net benefits to society, particularly with explicit inclusion of demand management.

Much more could have been included about the importance of demand management in relation to precluding adverse alternatives. For example, in the Washington metropolitan area, demand management plus system integration mean that upstream, mainstem dams will not be necessary, thereby preventing the flooding out of scenic whitewater, historical areas, and good quality agricultural land. In the Denver area, demand management would preclude having to divert more water from the western slope, thus preventing substantial losses downstream on the tributaries and main stem of the Colorado River. These examples represent the necessity for the water supply planner to take a regional perspective.

The last chapter on public participation accurately describes the changed environment of water-supply planning and water resources management. As the author correctly states:

"Now, however, political and social attitudes play a dominant role in shaping water-planning philosophies. The onset of sensitivity to public opinion and response have signaled the end of the era of traditional water-supply planning" (p. 252).

Yet the author can state, on page 243, that "the final choice must rest with the planner," which is inconsistent with the foregoing statement. The final decision must rest with those in our society who are responsible for public decisions, such as county commissioners, city councils, and boards of operating agencies. The planner's professional responsibility is to determine the costs and consequences of alternative plans as objectively as possible, including explicit consideration of human behavior. It is the responsibility of the political decision-makers to decide if a two- or three-week shortage once every 5, 10, or 15 years is more acceptable than flooding out a national historical park or valued whitewater. In some areas, politicians and the public have come to realize that the use of much marginally useful water can be reduced or eliminated for short periods with minimal adverse consequences. The savings in investment costs and in environmental losses can far outweigh temporary changes in lifestyle.

In this new environment, which the author describes well, the statement that, "even a shortage occurring less than 5 percent of the time, however, is not acceptable to engineers" is passe. It is unfortunate that the statement was included in an otherwise accurate characterization of the present context of water-supplying planning and management.—*BLAIR T. BOWER, Alrington, Virginia.*

General

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