

ULI Land Use Policy Forum Report

Water and the Future of Land Development

**Prepared by
Deborah L. Myerson**

**The ULI/Larson Forum on Land Use Policy
Washington, D.C.**

November 22, 2002



**Urban Land
Institute**

About ULI

ULI—the Urban Land Institute is a nonprofit education and research institute that is supported by its members. Its mission is to provide responsible leadership in the use of land to enhance the total environment. ULI sponsors education programs and forums to encourage an open, international exchange of ideas and sharing of experiences; initiates research that anticipates emerging land use trends and issues and documents best practices; proposes creative solutions based on that research; provides advisory services; and publishes a wide variety of materials to disseminate information on land use and development. Established in 1936, ULI has more than 17,000 members in 60 countries representing the entire spectrum of the land use and development disciplines.

Richard M. Rosan
President

ULI Land Use Policy Forum Reports. ULI is in the forefront of national discussion and debate on the leading land use policy issues of the day. To encourage and enrich that dialogue, the Institute holds land use policy forums at which leading experts gather to discuss topics of interest to the land use and real estate community. The findings of these forums serve to guide and enhance ULI's program of work. The Institute produces summaries of these forums in its Land Use Policy Forum Reports series, which are available on the ULI Web site at www.policypapers.uli.org. By holding these forums and publishing summaries of the discussion, the Institute hopes to increase the body of knowledge that contributes to the quality of land use policy and real estate development practice throughout the country.

Acknowledgments

ULI gratefully acknowledges Robert C. Larson, chairman of the Urban Land Institute Foundation, member of its Board of Governors, and ULI trustee, for his endowment of the ULI/Larson Forum on Land Use Policy. The goal of this annual forum is to identify and explore emerging land use policy issues of national interest and importance, prioritize issues that merit programmatic attention at ULI, and recommend ways that ULI can address these issues.

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Contents

Policy Forum Summary 2

 Introduction 2

 Water and Urban Development 2

 The Land Use and Land Development Response 3

 Water Supply and Growth: A New Connection 4

 Roundtable Discussions 4

 Conclusions: Shaping ULI’s Agenda 5

Policy Forum Agenda 6

Policy Forum Participants 7

Policy Forum Summary

The 2002 ULI/Larson Forum on Land Use Policy, “Water and the Future of Land Development,” considered the issue of water availability and its potential impacts on land development throughout the United States. A group of 23 participants, consisting of ULI’s top leadership and eminent professionals involved in land use and water resource management, discussed the availability of sustainable levels of water and how to interpret the land use and real estate implications of water availability. Participants agreed that while a national water crisis does not appear to be imminent, without a broad-based reduction in public water consumption and a change in development patterns, regional and local problems with both water quantity and quality will continue.

Introduction

Earth is known as the “water planet,” but only 1 percent of the water that covers more than 70 percent of the planet’s surface is fresh. Earth’s ecosystem and its inhabitants cannot function without clean, fresh water. Questions about the sustainability of the existing U.S. water supply are surfacing in rapidly growing states such as Texas, Arizona, and California, while other regions of the country that normally have an abundant supply of water are experiencing severe drought conditions and adopting increasingly rigorous conservation measures.

Water and Urban Development

Charles Groat, director of the U.S. Geological Survey (USGS) in Reston, Virginia, opened the forum with a presentation on water and urban development. He described the nation’s water supply and demonstrated that how land is used—whether for agricultural purposes or for urban development—directly affects the availability of usable water. “It’s clear that over the past 50 years, the urban footprint has had an impact that rivals the forces of nature in changing the environmental landscape,” noted Groat.

Groat cited USGS data showing that between 1950 and 1980, U.S. water use mushroomed by more than 130 percent—from about 160 billion gallons per day to about 370 billion gallons per day—far outstripping the growth in the U.S. population, which expanded by 30 percent during that period, from 150 million to a little more than 200 million people. Total water use has declined since

1980, leveling off to about 330 billion gallons per day, which Groat credited primarily to conservation measures for irrigation and thermoelectric power production. Nonetheless, Groat added, domestic and public water uses have continued to rise as the population has grown to more than 288 million people in 2002.

As more U.S. land becomes urbanized and less is used for agriculture, water use is certain to increase, straining freshwater sources both above and below ground, said Groat. Moreover, inefficient water use leads to saltwater intrusion in rivers and aquifers, and to land subsidence, in which the withdrawal of water from the ground causes the surface of the land to sink several inches to several feet. “As urban areas spread outward, we will see increased challenges in maintaining water quality and quantity,” he noted, adding that even in areas where replenishment is not now a problem, the spread of developed urban areas will increase water use, increase the likelihood of contamination of available water supplies, diminish groundwater recharge by adding impermeable surfaces, and encroach on floodplains.

While the scarcity of water has long been acknowledged in the arid West, Groat commented, several urban areas in the East also are showing signs of a diminished supply, as more wells on the East Coast are abandoned as a result of high salt content. As a result, he noted, more desalination projects are being built in the East.

Groat also described how water laws in the western and eastern United States reflect historic differences in availability. Western water law is governed by “prior appropriation,” which essentially means that the first person to divert water from a river or stream and put it to beneficial use is entitled to continue that use without interference from other users who make subsequent claims. The law thus says, “first in time, first in right,” and is based on use rather than landownership. By comparison, Eastern riparian water law, originating from England’s system of water law, is based on the ownership of riparian land—the land bordering a river, stream, or lake. In addition to being based on landownership, riparian water rights also require upstream water users to be reasonable—to respect the rights of downstream water users and the public’s interest in safe, clean, plentiful water.

Groat observed, “When conflicts of allocation of scarce water occur, the laws in western states are better able to address the question of who gets the water than the laws in the eastern states.” He remarked that some eastern

states now are taking a look at improving their water laws to clarify how allocations are made in times of scarcity.

While he noted that it is difficult to make accurate predictions about the future of water resources in the United States, Groat maintained that we know enough about the problems related to water supplies and urban development to work toward a successful solution. He suggested that the following components can be used to help solve these problems: drought planning; water use plans that take into account habitat needs as well as agricultural and urban needs; technology that can facilitate safe reuse and aquifer storage and recovery; and the use of scientific data to predict weather, climate, recharge rates, stream/aquifer interactions, and habitat needs. In the end, said Groat, solving these problems will take resources, determination, compromise, good science, and careful decision making.

The Land Use and Land Development Response

Three speakers then made brief presentations, offering land development, public sector, and design perspectives on the appropriate responses to these water supply and demand issues.

William Devine, a partner with Manatt, Phelps & Phillips, LLP, in Costa Mesa, California, provided a perspective from the development community. He noted that the state of California recently sought to link land development to water supply with two new state water management laws, SB221 and SB610. The first law requires builders of subdivisions with more than 500 units to verify—in consultation with water retail suppliers—that sufficient water supplies exist for the next 20 years to support the inhabitants of the proposed development in addition to existing and planned future uses. The second requires water utility districts to assess available water supplies and provide local water retailers with that information, to be used when they gauge the water needs of new residential, commercial, and industrial projects.

Devine noted that since these laws are relatively new (having been in effect since January 2002), their implementation has yet to be tested thoroughly, and litigation is anticipated. He commented, “It’s similar to CEQA, [the California Environmental Quality Act] in that it stands to be a tool for people who want to stop growth.” He also observed that water utility districts opposed SB610, since it imposes strict requirements on them but does not pro-

vide any funding to implement these requirements. Without sufficient funding, Devine explained, the result likely will be inadequate water assessments and thus lawsuits.

Though he noted that the water assessment requirements do not take into account water conservation measures in a given development, Devine acknowledged that the measure nonetheless likely will propel developers to become more efficient in their water management plans. “The real challenge is,” he added, “is this going to work?”

Offering a public sector perspective, Stan Williams, chief executive officer for the Santa Clara Valley Water District in San Jose, California, explained that it currently costs \$8 million to supply water to 800 to 900 homes in some areas of California. “It’s not [the] water [that] is costly, it’s the infrastructure to treat it and convey it to users,” he said. Conveyance costs typically increase the base cost of water by more than three times. According to Williams, water costs—when added to other development and land acquisition costs—sometimes act as a development constraint in California, and make the development of affordable housing nearly impossible.

Williams also noted that 80 percent of water rights in California is designated for agricultural users who, in turn, pay lower rates than municipal and private users. He commented that a shift of as little as 15 percent of water resources from agricultural to urban allocations could meet growth demands. “There’s a whole business [being built] around finding people with water rights to trade to needy areas, particularly . . . farmers who will sell water,” he explained.

Susan Maxman, president of Philadelphia-based Susan Maxman & Partners, Architects, shared a designer’s response to demand for water conservation. She described alternative building and drainage strategies that mimic nature’s ways of returning water to the earth and limit the use of impervious surfaces, which prevent water from seeping back into the ground. These processes include using wetlands as natural water filtration systems, using only indigenous vegetation in landscaping, choosing more porous materials for pavement, and building more French drains, which channel runoff directly into the ground rather than into storm drains.

“We need to be doing more to work with the land, not against it. Returning water back to the land and not losing it down a storm sewer is a strategy we all have to think about,” commented Maxman. “If developers understood more about the natural process, [if they

recognized] that a natural fix is better than a manmade fix, they would see that natural solutions—such as the inclusion of a constructed wetland—can serve as a true amenity to a development,” she added.

Water Supply and Growth: A New Connection

Speaking over lunch, A. Dan Tarlock, distinguished professor of law and director of the program in environmental and energy law at the Illinois Institute of Technology’s Chicago-Kent College of Law, told participants about the expanding options that enable cities to integrate water supply considerations with land use planning. Tarlock described an emerging, new relationship among three areas that previously were considered largely separate from a legal perspective: water law, public utility law, and land use law. In most cases, the responsibility for planning and regulating water resources is shifting from the federal and state governments directly to local governments. Thus, he explained, local governments will have many more options—and responsibilities—to link water supply and land use policies than they have had in the past.

“As competition for limited resources is increasing,” Tarlock added, “cities can no longer afford to ignore the relationship between water supply and land consumption.” He suggested that in many parts of the United States, future urban growth will depend on reallocating existing water supplies, conserving water, and creating a smart growth planning and regulatory process that will enable cities to make the most of these limited resources.

“We will likely see more emphasis on smart growth techniques as they apply to water conservation,” Tarlock predicted, noting that as municipalities find themselves searching for new water sources to serve their growing populations, they will be likely to explore more collaborative approaches to providing water. “Cities need to realize they are part of a larger aquifer and watershed Then, new relationships with other jurisdictions can be formed so they can work together to conserve water,” he added.

Cities will be pressed to incorporate water supply projections into local land use plans, take into account short-term conditions affecting water resources—such as severe droughts—and consider the long-term possibility of reduced water supply due to global climate change. Finally, Tarlock noted, in cases where the projected level of growth surpasses realistically available water resources,

public policy measures may be needed to make development approvals contingent on the demonstrated availability of an adequate water supply.

Roundtable Discussions

Forum participants divided into four groups to discuss topics that ULI might address to respond to issues pertaining to water supply and the future of land development. Each group considered the following questions:

- Is the United States truly facing a long-term water shortage? Is this a national or regional issue? What kind of impact will water availability have on how, how much, and where development can occur?
- What needs to be done to assure truly sustainable and self-sufficient water resources for the future, given projected growth trends and emerging water availability issues?
- How can land use planning and urban design respond to reduced water availability?
- What infrastructure investments can help to mitigate water availability problems?
- What is the role of market forces in resolving these problems? How will development be different in the future in response to water availability?
- What public policies—at what levels—should be employed to address these issues?

Conclusions: Shaping ULI’s Agenda

After the group discussions, forum participants synthesized the ideas that emerged in the roundtables and considered topics that ULI should focus on in the coming year. Participants identified the following trends, priorities, and questions for ULI to consider:

The U.S. Water Supply

Participants agreed that the United States as a whole is not facing a water shortage, but that regional shortages do exist. For example, coastal zones with urban and/or tourist areas are facing water shortages, since less fresh water typically is available in their rivers or aquifers. Even at the regional level, participants felt, water supply issues often involve allocation or management problems rather than shortages.

Participants also identified a geographic distinction between water quality issues that are especially common

in the East—where many municipalities rely on reservoirs—and water supply or allocation concerns that are more common in the West—where groundwater is a prime water source. Finally, participants noted that security issues related to water safety must be considered and suggested that city vulnerability assessments should be conducted.

Sustainable Water Resources

While acknowledging room for interpretation with regard to the meaning of “sustainable” water resources, participants agreed that this was nonetheless a good opportunity to think about water issues on a whole-system basis. For example, participants indicated that cities can ensure truly sustainable and self-sufficient sources of water for the future only by recognizing that they are parts of larger watersheds, meaning that cities would have to give up some traditional authority in this area and collaborate with other municipalities and agencies to manage water resources. A city then could use the scope of its watershed to examine the boundaries and constraints of water management and to project supply and demand.

Urban Design for Water Management

Most choices for urban design, participants felt, remain at the consumer level. At the building level, many water conservation-oriented components exist and could be included, but the cost of implementing these components and the need for education about them are high, and therefore must be driven by consumer preference.

Infrastructure Investments and Water Management

Infrastructure investments offer opportunities to plan for water reuse and artificial recharge. Desalination must be recognized as part of the solution to water supply problems. Participants also noted problems with decaying infrastructure—compounded by state, local, and federal budget deficits—and wondered who would bear the cost of resolving these problems.

The Role of Market Forces and Their Impact on Development

The management of water resources does not currently operate in a true market system. Market forces do not determine the price of water, and thus neither water allocation nor conservation is based on supply and demand. Although this situation perpetuates certain inequities concerning access to water, letting the market prevail would raise other equity issues. Participants suggested that it might be more appropriate to modify the existing system of managing water resources to encourage a more

equitable and cost-efficient allocation, as well as more conservation.

Participants largely agreed that while water availability is an issue in some specific areas, such as Santa Fe, New Mexico; Prescott, Arizona; El Paso, Texas; and Savannah, Georgia, it will not have much of an impact on development in general in the foreseeable future.

The Role of Public Policy

Participants noted that although many rules and regulations exist at the national level, there is no overriding federal water policy. At a minimum, federal agencies must better coordinate their policies and activities. A federal water policy also could help deal with future water problems. At other levels of government, participants felt that water policy to direct water allocation should be shaped and implemented within the urban growthshed, noting that the watershed level is too large an area to be truly manageable.

A Role for ULI

The Urban Land Institute has an opportunity—and a responsibility—to educate developers about this topic, as well as to help identify opportunities for forward-looking developers to consider water management issues in their projects. Useful resources would include case study analyses of management and regulatory techniques in water resource management, as well as educational information on issues that affect water use, such as site-sensitive development projects, water-conserving landscaping materials, low water-use appliances, and so forth.

Through its education and research programs, ULI can emphasize the importance of water conservation and expand the growing body of knowledge and best practices among developers and designers. Finally, the Institute’s District Councils also offer a powerful potential to act as conveners to get the word out about good examples of water-efficient development projects and to identify environmentally sensitive areas.

Policy Forum Agenda

FRIDAY, NOVEMBER 22

- 8:30 a.m. **Welcome and Introductions**
Smedes York, President, York Properties, Forum Chair

- 9:00 a.m. **Water and Urban Development**
Speaker: Charles G. Groat, Director, U.S. Geological Survey, Reston, Virginia

- 9:45 a.m. **Break**

- 10:00 a.m. **The Land Use and Land Development Response**

The Development Response
Speaker: William R. Devine, Partner, Manatt, Phelps & Phillips, LLP, Costa Mesa, California

The Public Sector Response
Speaker: Stanley M. Williams, Chief Executive Officer, Santa Clara Valley Water District, San Jose, California

The Design Response
Speaker: Susan A. Maxman, President, Susan Maxman & Partners, Architects, Philadelphia, Pennsylvania

- 12:00 noon **Lunch: Water Supply and Growth: A New Connection**
Speaker: A. Dan Tarlock, Distinguished Professor of Law and Director of the Program in Environmental and Energy Law, Chicago-Kent College of Law, Illinois Institute of Technology, Chicago, Illinois

- 1:00 p.m. **Roundtable Discussions**

- 2:30 p.m. **Shaping ULI's Agenda**

- 3:30 p.m. **Adjourn**

Policy Forum Participants

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