Inside: Stephanie Rose on Lifting Expectations

WaterShapes

Design • Engineering • Construction

Volume 6
Number 10
October 2004
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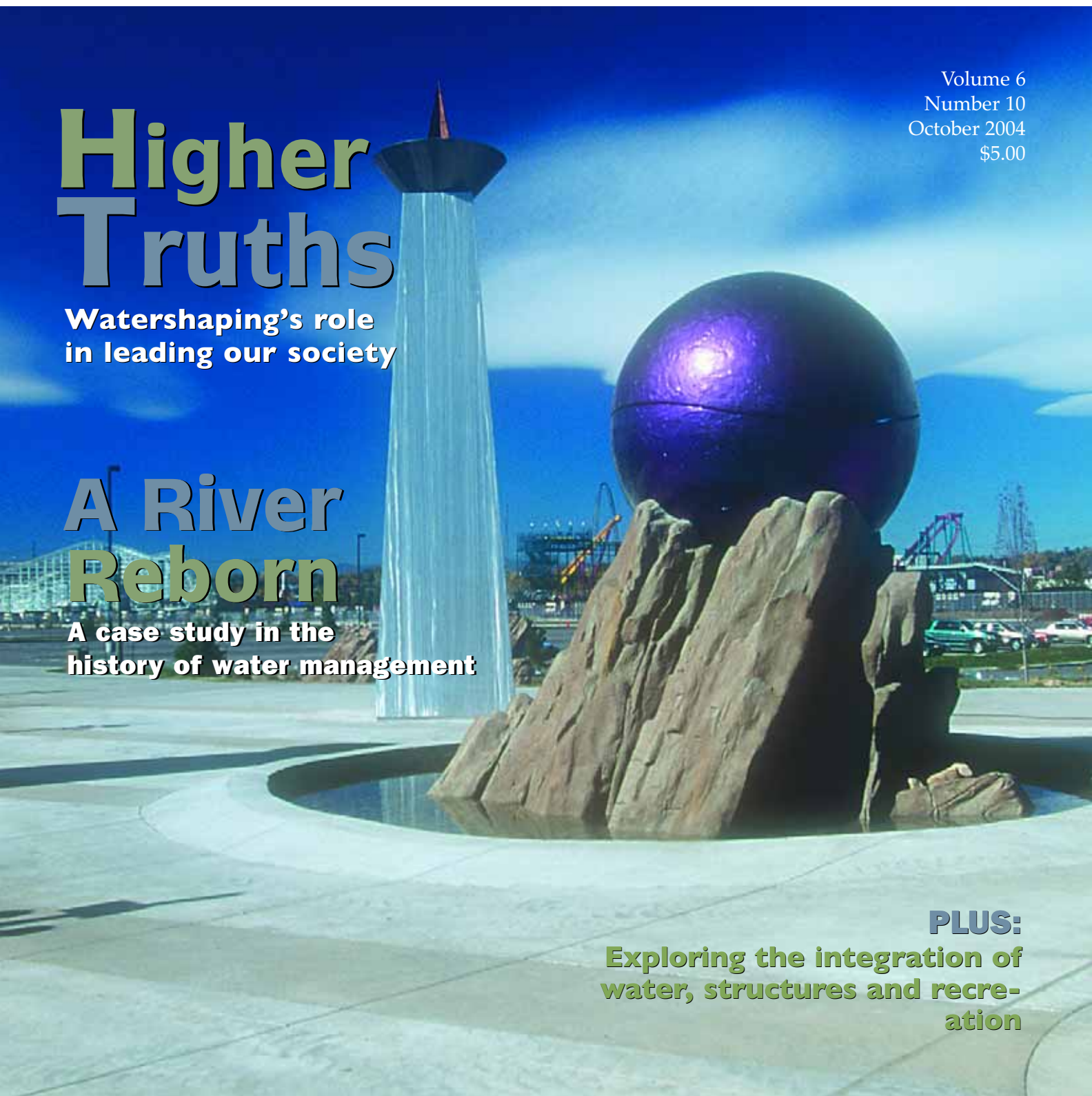

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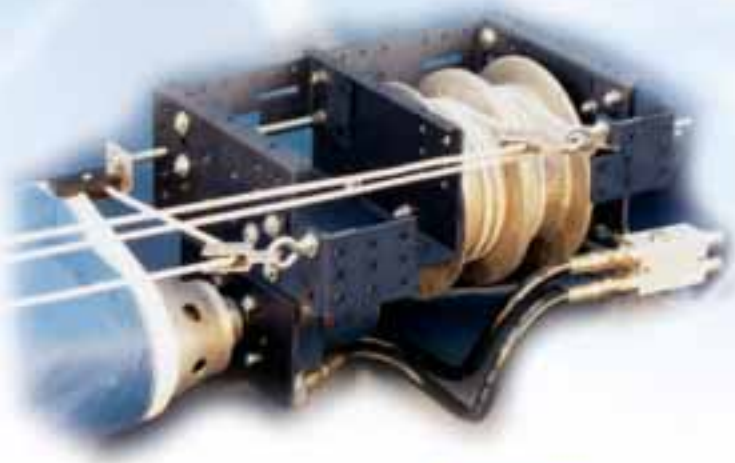

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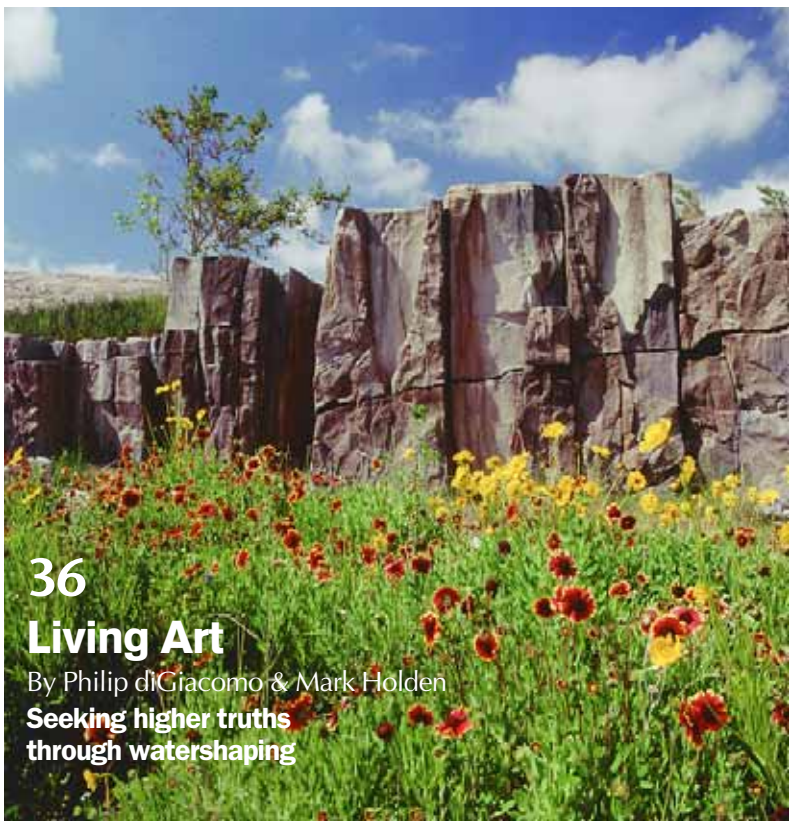
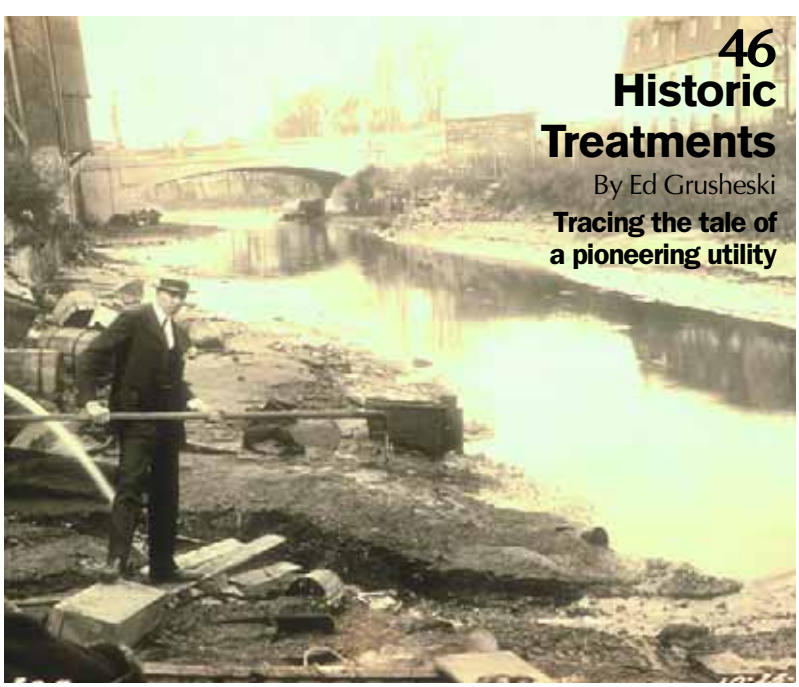
contents

October

features

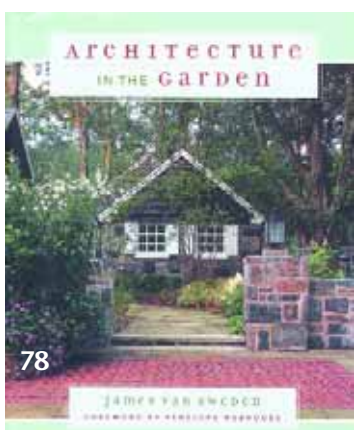




WATERSHAPES

Volume 6 • Number 10 • October 2004

columns



departments

On the cover:
Photo courtesy Philip di Giacomo, Inc., Azusa, Calif.

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By Eric Herman

Big Ideas

When you spend any time talking to designers of public artworks, the concept of "social responsibility" inevitably comes up in the conversation in one way or another. That makes sense, because artists who work in the public arena often do so with public funding and support from various citizens' groups, so on a practical level they are obliged to cast their work in light of public needs and interests.

It's a little harder to see the directness of the connection, but I think the same sense of social responsibility can be found in the projects of other designers who work in private commercial and residential settings: It's woven into the fabric of what they do partly because of the common vocabulary of design, partly by the need to comply with established codes and standards.

Once you rise above the level of practicality, however, this translation of social responsibility from public to private gets harder to define. In fact, once you get beyond the tangible challenges of doing a good job of digging holes, laying pipe, setting steel, pouring concrete and installing equipment, discussions of social responsibility can become complex, highly intellectualized and often quite difficult to sink your teeth into.

I've had plenty of discussions in which I find myself being nonplussed by sources long on catch phrases, sociological jargon and rhetoric but short on substance. The best and most reliable of these sources, however, transcend these limitations and have convinced me through the years that the finest works to be found in any sector of the watershaping trades are necessarily driven by, for lack of a better term, the "higher mind."

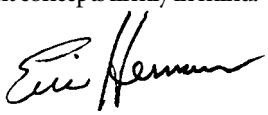
When they urge me to consider the raw impact that contained water in built environments has on people who spend time in those spaces – commercial or residential, public or private – it's easy to step back and agree that the work of watershapers indeed has significant sociological implications.

Consider the experience of inner-city kids frolicking in a local aquatics facility, the thoughts inspired by a dramatic plaza fountain, the safe harbor provided by backyard pools and spas or the biological splendors of a pond ecosystem. When you take time to consider what watershaping is all about, you'll find some grand implications that, like it or not, are part and parcel to the work you do.

In this issue, we're offering up two articles that look at some of the highest minded aspirations of the watershaping industry. On page 46 is "Historic Treatments," in which waterworks historian Ed Grusheski tells the story of Philadelphia's Fairmount Waterworks, a facility that was once *the* state-of-the-art water treatment utility in North America and is now an interactive museum devoted to the history of water usage, watershed preservation and aquatic environmentalism. He speaks directly to the social responsibility we all have to preserve the most valuable of our natural resources: fresh water.

In a very different vein, "Living Art" (page 36) offers a richly intellectual dialogue from designers Philip di Giacomo and Mark Holden that hones in on the tremendous responsibility watershapers have to provide their clients at all levels with environments that create meaningful and even society-altering experiences.

If part of what a good trade magazine can do is expand the consciousness of its readers, well, that's clearly our aim here with these two articles. In preparing them for print, I was struck by the notion that without practical knowledge, such sociological constructs are of little use. By the same token, putting our practical skills to the best, high-minded purpose requires that they be wielded with important concepts firmly in mind.



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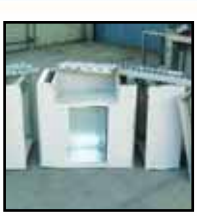



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a differing view on safety

The article "Reasonable Choices" by William N. Rowley (May 2004, page 28) takes an unequivocal position that flat grating is just as safe as a domed anti-vortex drain cover and, when intact, that it is "virtually impossible to suffer a body or limb entrapment."

This position flies in the face of the Nickens case, in which a 16-year-old was entrapped on a 12-inch square drain cover in perfect condition while she was warming herself in a hot tub after swimming in a new $13-million-dollar pool facility. Her buttocks sealed the drain, and the associated 10-horsepower pump instantly created a vacuum. Three certified pool officials, two fully dressed policemen and her boyfriend jumped into the hot tub and struggled unsuccessfully against the one-ton holding force.

The simplest experiments demonstrate that children can easily seal six-inch-diameter flat drain covers with their bodies and that this will cause immediate body entrapment. By contrast, any deeply domed drain cover precludes sealing of the drain by children and concomitant suction entrapment. Further proof of the dangerous nature of the flat grating may be discerned from Mr. Rowley's testing: The welts illustrated on his mid-section, which are typically found on victims of body entrapment, clearly indicate that a child could not escape the associated suction entrapment.

The false safety information promulgated by Mr. Rowley has sanctioned the continued use of flat grating and may stop pool owners from adopting superior technology that completely eliminates body entrapment of children and all but the largest adults. The patent literature and marketplace are filled with candidate drain covers that totally eliminate body entrapment.

The article also advocates a position on hair entrapment that is patently incorrect – namely, drain covers that satisfy the suction fitting standards (ASME/ANSI A112.19-1987) will not entrap hair. In fact, the Consumer Product Safety Commission (CPSC) recalled 206,000 anti-vortex drain covers in 1997 that had caused two drownings and one near-drowning as a result of hair entanglement. The recalled drain cover not only satisfied the referenced standard; it also displayed superior anti-body-entrapment features compared to all other so-called anti-vortex covers.

It is noteworthy that the standard does not even address the problem of hair entanglement; instead, it deals exclusively with limiting hydrodynamic drag to less than five pounds. Unfortunately, every hair entrapment death reported by CPSC involves entanglement and not hydrodynamic drag. Only one drain cover is presently

available in the marketplace that will eliminate hair entanglement – the Anti-Hair Snare Plus (made by our company). All others, whether they meet the standard or not, are capable of entrapping entangled hair. The peer reviewed literature and the patent literature provide other designs that will effectively eliminate hair entanglement.

A final comment: Mr. Rowley's article strongly advocates the multiple or split-drain concept and recommends its adoption "at every turn and in any way possible."

The many fine safety features associated with this plumbing concept do not come without a price. First, the dual drain may double the probability of hair entanglement, which is the second most prevalent pool-drain safety problem. Second, no research has established the hold-down force when a child seals one of the drains with his or her body. This force will certainly be less than the single-drain suction of 400 to 600 pounds, but it may be greater than the five pounds specified in the drain cover standard. (I intend to conduct research on this issue this summer.)

Third, the probability of mechanical finger entrapment doubles when two drain covers are present. Fourth, the concept of the split drain cannot be easily retrofitted without extensive reconstruction of the pool. And, finally, the very safety of the dual drain will further encourage children to simultaneously play on the drain covers with the attendant risk of dual blockage.

To address the total safety problem properly, dual drains must incorporate safety drain covers – just like single drains.

Ralph L. Barnett
Triodyne Safety Systems
Northbrook, Ill.

William N. Rowley responds: Mr. Barnett incorrectly states the facts regarding the Tanya Nickens case. I was personally involved in the investigation, which clearly showed that Nickens was trapped on a *broken* 12-inch square grate.

He is also incorrect in his statement that flat drain covers are a hazard for children. All testing indicates that a single flat drain cover that is properly designed and intact will not cause an entrapment problem for a child. The welts on my mid-section referred to by Mr. Barnett were caused by continuous testing of drain covers for more than an hour and included as many as 12 separate tests.

Furthermore, I take serious issue with his statement that the safety information I offer is false. The safety information that I sanction has been tested and proved during the past 30 years. I also flatly reject his statement that dual main drains increase the risk of hair entrapment: To my knowledge, there has never been a suction or hair-entrapment accident on a properly designed and operating dual main drain.

I understand Mr. Barnett's motivation in promoting the use of his company's hair-entrapment safety covers. Making false statements and distortions as a means to do so, however, only serves to twist and obstruct the ongoing discussion of entrapment prevention.

October's Writers

Philip di Giacomo has been creating environments using artificial rock for more than 40 years. His company, di Giacomo, Inc., is based in Azusa, Calif., and is home to his design and manufacturing operations. His passion and spirited participation in landscape architecture has led him to produce many art pieces, including an entire series for the 1990 convention of the American Society of Landscape Architects. **Mark Holden**, a landscape architect, watershape contractor, educator and frequent contributor to *WaterShapes*, has focused his passion for water in Holdenwater, a design/build firm based in Fullerton, Calif. He can be reached by e-mail: mark@waterarchitecture.com. Together, di Giacomo and Holden plan to provide new insight into the rock and watershaping industries through their combined approach to the generation of ideas, inspiration and education.

Ed Grusheski is general manager of the Public Affairs Division of the Philadelphia Water Department (PWD). He previously served as an educator at Boston Children's Museum, the New Jersey State Museum, Philadelphia's Civic Museum and the Port of History Museum and was Director of PWD's Water Works Interpretive Center before taking

his current position with the Department. Educated at Boston Latin School, Georgetown University and the University of Pennsylvania, Grusheski lives in Philadelphia and serves on many task forces and committees, including the Department of Environmental Protection's Coastal Zone Management Steering Committee, the Schuylkill River Heritage Corridor Urban Gateway Task Force, the PWD Water Quality Education Committee and the Fairmount Park Commission Fund for the Water Works. He is also president of the Oliver Evans Chapter of the Society for Industrial Archeology and a Trustee of the Abraham Lincoln Foundation of the Union League of Philadelphia and serves on the Strategic Planning Committee for the Partnership for the Delaware Estuary.

Richard Allen is project manager and director of waterfeature development for Split Rock, Inc., an urban design/development firm based in St. George, Utah. Allen joined the firm four years ago, after having spent 23 years in the steel and metallurgy industry. In pursuing his career change, he was brought in to manage Split Rock's landscape and watershape projects and has immersed himself ever since in the arts and craft of high-end naturalistic watershape design.

By Brian Van Bower

Inquiring Minds

What do you *really* want to know about the arts and crafts of landscaping and watershaping? That's an important question for each and every one of us in the trades to ask of ourselves, because without knowing what you want to know (or at least what you *think* you should know), all of the talk about the value and power of education is just so much rhetoric.

I bring this up because, for a long time now, leaders and regular folks from all walks of the watershaping trades have been beating the educational drum. You read about it in every trade magazine, hear it in the vast majority of seminars and see it in the promotional messages of those who stage trade shows and conferences. Indeed, the value of education has become one of our industry's most prominent talking points.

My Genesis 3 co-founders David Tisherman and Skip Phillips and I have certainly been among those who have made big, loud noises in favor of learning as a way to improve our businesses, the quality of our projects and the reputation of our industry. Yet, without specifics having to do with what it means to be "educated" as watershapers, all our words about the importance of education dwindle in significance.

The greatest value of education is not so much what is taken away from a particular presentation, but how that information leads people to see just how much is going on out there beyond the classroom.

to the point

I ask this question about what constitutes useful education from the perspective of one who craves information for my own benefit as well as one who, for many years, has participated in setting up educational programs for other people in the trades. When we were starting the Genesis programs six year ago, our only touchstone was *us*: We decided to provide information that we ourselves would want to know. In other words, and especially at first, establishing a trade curriculum involves large doses of educated guesswork.

Those programs have been a source of considerable pride for us, and I'd imagine that other organizations in the education business feel similar levels of satisfaction knowing that their work has done some good. I take particular pride when I receive comments from people who say that our programs have re-energized their interest in the work and prompted them to move forward aggressively in pursuing greater knowledge on their own.

Indeed, a key point I take away from the feedback we receive (both the positives and the rarer negatives) is that the greatest value in education is not always so much what is taken away from a particular presentation, but how that information leads people to see just how much is going on out there beyond the confines of the classroom and the presentations unfolding therein. As we've discovered, it's the process of opening eyes and minds that has the greatest value: Our job as educators is to lead people to the trailheads of knowledge; it's up to those folks to take up a different sort of journey by themselves.

Continued on page 14

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So, in organizing our schools, we've sought to provide a framework – and as it turns out, many people have found it useful. And that's proved true despite the fact that our only roadmap when we started had to do with filling gaps in our own knowledge. For me, for example, information about the history of art and exploring the art in watershaping, hydraulics and design has been tremendously enlightening, as have many of the other practical sessions. (In all fairness, there have also been some classes that I haven't found to be quite so helpful or intriguing.)

It's been fascinating to watch how others respond within that framework. There are big differences between the backgrounds landscape architects and pool builders bring to the schools. That simple fact makes staging a single-track program tricky because there are strengths and weaknesses on both sides that need to be balanced. This calls for making lots of small program adjustments on the fly – and, frankly works well at keeping us on our toes – but there are spots where it's difficult to find ways to bridge the gaps.

possible pursuits

Consider the topic of plantings. For a great many people on the swimming pool side of the watershaping trades, the idea that one might need to know one plant species from another is about as foreign as the Latin used in the taxonomy of the plant kingdom. On the flip side, many from the landscape world tend to know quite a lot about plant material. The question becomes: Is education on plant types that are suitable for use around bodies of treated water something that would garner interest and be of use? To whom and to what degree?

I'll be the first to stand up and concede that I really don't know. Personally, I've found value in learning about plants and planting plans and that this knowledge has helped my design work. (In fact, my firm is now moving into landscape design to such an extent that a number of our projects don't include water at all.)

Let's consider the broader common ground of landscape lighting. We've all known for years that pool people tend to know nothing about lights that aren't set in wet niches, but I've been surprised to learn that even landscape architects and designers tend to consider lighting a specialty and as something best left to others. I'm a bit mystified by the reluctance to dig in, and I've long been convinced that classes on the subject would be of interest to people from all walks of the watershaping world. But let me jump back to the question I asked to open this column: To what degree do people in the trade really *want* to learn about the subject?

Planning educational topic matter becomes even more challenging when you consider that with a topic such as landscape lighting, the knowledge people gain can lead them in one of two directions.

Continued on page 16

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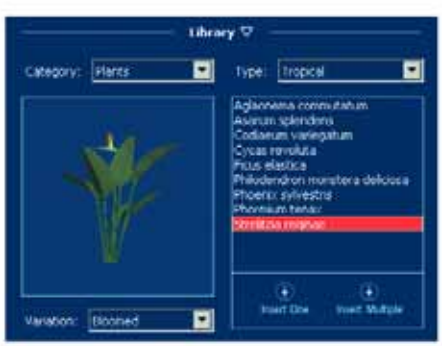

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Either they'll get excited, continue the learning process outside our classroom and make the new knowledge a solid part of their businesses – in which case we consider the effort worthwhile – or they'll decide that they'd rather be somewhere else and will continue to leave the work to others or to nobody at all.

In other words, those of us organizing seminar programs are left to decide whether or not offering detailed information about landscape lighting (or some other subject) has enough firepower to draw a roomful of students who will (if we've done our job) become inspired and pursue the topic on their own. That can be a tough call even though, on the surface, it would seem that a subject such as landscape lighting should be seen as a real opportunity to add value to our work.

Similar sets of questions arise when you consider topics such as water chemistry, industry-specific business education, soils and geology, computer-aided design, electronics, fine arts or site analysis. All of these are potentially wonderful topics, yet because trade education takes place in narrow time frames and therefore can't possibly be all things to all people, the exercise of picking and choosing is both inescapable and often very difficult.

you tell me

So let me pose the question directly to you: What do you want to know?

I want to hear from you directly. (E-mail using the address listed at the end of this column is probably the best option.) If

Trade education takes place in narrow time frames and therefore can't possibly be all things to all people, so the exercise of picking and choosing what to teach is inescapable and often very difficult.

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you're so inclined to respond, I'm interested in the topic matter that interests you most, and I need to know why. I'd also love to know a bit about the focus of your business, specifically whether you come at watershaping from the landscape side or from the pool/spa industry.

I'm asking this question for two specific reasons: First of all, the input may be useful in setting up future programs – and not just for Genesis 3, but also for others facing similar challenges as I fully intend to share the results in a future installment of this column. Second and more important, I hope to encourage you to take an active role shaping the watershaping industry's education programs because it's in everyone's interests if more of us get involved.

No matter how smart or well-intentioned educators are, it's impossible to build an effective program while working in a vacuum.

Fact is, no matter how smart or well-intentioned educators are, it's impossible to build an effective program while working in a vacuum. We can't serve up the best information unless you raise your hand and tell us (and any other education-sponsoring organizations) what you want to know. Do you crave information on lighting, chemistry or art history? Or are there other topics out there that those of us on the supply side of the education game have yet to consider?

Sure, all of us process the feedback of those who attend our programs, and that's a great tool. Yet we know those responses come from people who are already inclined to take advantage of the educational offerings as they currently exist. My suspicion is that many of you who have *not* attended classes may also have a great deal to say, so please do speak up!

We all know that balancing work, family, community involvement, recreation and vocational enrichment can be a challenge. Your time is valuable, and it's up to us in creating our educational programs to try to make the wisest possible uses of that time. We stand a much better chance of doing just that if you tell us directly what it is that you think you want to know. WS

Brian Van Bower runs Aquatic Consultants and is a partner in Van Bower & Wiren, a pool-construction firm in Miami. He is also a co-founder of Genesis 3, A Design Group; dedicated to top-of-the-line performance in aquatic design and construction, this organization conducts schools for like-minded pool designers and builders. He can be reached at bvanbower@aol.com.

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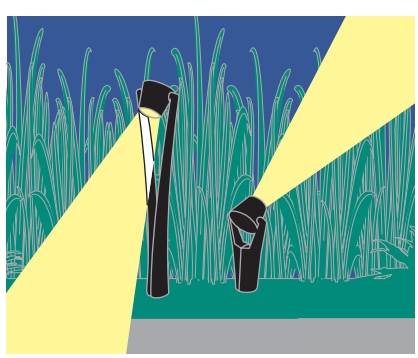

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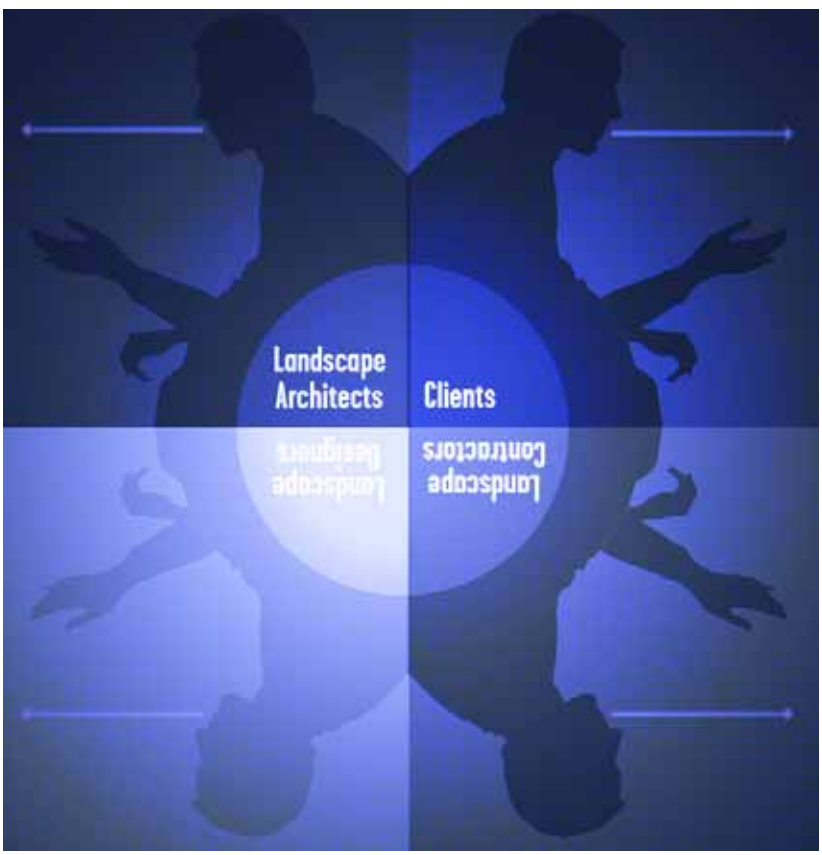
By Stephanie Rose

Communication Gaps



I recently wrote a Letter to the Editor of *Landscape Architecture*, the magazine of the American Society of Landscape Architects, in response to an editorial he wrote on the lack of interest among landscape architects in plant knowledge.

The gist of his commentary was that, for too many years now, landscape architects had been focusing on hardscape and overall design and were reserving little creativity, interest, or care for botanical adornments. My response was a supportive rant, as this has been a pet peeve of mine for years and I strongly believe that landscape architecture needs to get back to its roots (pun generously intended).

Way back in one of my first columns for *WaterShapes* – in April 1999 – I wrote about the distinctions among landscape architects, landscape designers and landscape contractors. I knew then as now that it was a broad generalization, but I observed that landscape architects tended to focus on hardscape, landscape designers on plants and landscape contractors on installing the stuff.

I'm not asserting that *all* landscape designers focus on planting while landscape architects direct their main attention to hardscape, but as a landscape designer, I know I've always directed most of my attention to the plant side of landscapes. I put my all into hardscape, too, but I've always believed that an interesting planting is the heart and soul of the final product – and my bias doubtless shows.

A lack of understanding among building owners, managers and the public has fostered a landscaping trend that favors common, low-maintenance greenery over interesting solutions that enhance our overall environment.

playing to type

I can't tell you how often I've driven around town and seen beautiful new buildings, parks and other public places with disappointing plant selections. I'm tired of seeing these fabulous spaces plastered with Agapanthus, Raphiolepis, Nandina, and Dietes – all perfectly good plants, but I suspect they're used in these settings because they virtually guarantee good, cheap grows.

I see it so often that I've become increasingly outraged by the utter lack of creativity.

I know it's not exclusively the landscape architect's or designer's or contractor's fault: I believe that a lack of understanding among building owners, managers and the public has fostered a landscaping trend that favors common, low-maintenance greenery over interesting solutions that enhance our overall environment.

It's not a good situation – sort of like settling for the starter set of eight crayons when a little knowledge of the available range of colors will let you exploit the big box with 128 colors. So why not use all 128 if you've got them at your disposal?

My point is this: The consumers of our services have a responsibility to communicate with and understand the capabilities of those they hire to take care of their landscape needs. They can't simply assume that a landscape architect

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knows all about plants, nor can they make that assumption about a landscape designer. It's also incorrect to assume that a landscape contractor is unaware of the growth habits of plants or that he or she wouldn't know what to do with a list of plants without a blueprint.

Our role in this, I think, is to make certain these consumers are armed with some of the right questions, that they know the value of determining the level of knowledge and expertise of the professionals they're dealing with, that they're emboldened to ask to see samples of past work and that they know enough to ask the professionals how much they know about plants and the way they focus their designs.

That's a substantial burden to pass to consumers, but I see educating and encouraging them in these areas as our responsibility – and as the only way to ensure that consumers hire us in full knowledge of our strengths.

And it'll work with consumers because most landscape professionals really do tend to specialize in one area or the other – plants or hardscape – and their work shows it even when they won't say it in words. In my experience, relatively few will say they're good at both; if they do, they should be asked to document the claim with photographs, client references and visits to sites they've installed.

communication breakdown

To give all of this a practical focus, let me mention a job I've worked on for more than two years now. A friend of mine had built a very large estate on a two-acre property and believed that the design professionals she had involved in landscaping it were all that she needed. (Our friendship began well after she had hired her contractors.)

The general contractor had assured her he "had a guy" who could handle all her landscaping needs and could take care of the hardscape, the planting and the drainage and irrigation. She had an architect, so the hardscape had all been designed up front – though little apparent thought had been given to the needs of existing trees or the appropriateness of the planting areas.

No one at any time ever mentioned that having a planting plan or involving a landscape designer or architect with plant expertise would be beneficial to the final product.

I kept my mouth shut and watched as new trees arrived and were installed along with acres of annuals. (I believe I've made my dislike for annuals known.) When the hardscape was finally finished and the contractors were gone, my friend asked me why her gardens looked so anemic, why it had all cost so much and – the killer question – "What's gone wrong back there?"

After some discussions with the general contractor and the landscape contractor, I determined that there had been no real communication about the plantings, that nobody had been asked to de-

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sign anything and that no thought had been given at all to integrating the planted areas with the rest of the property.

How could this have happened? Why? I mean, how difficult would it have been for the general contractor or landscape contractor to tell the homeowner at the beginning of the project that the services of a design professional would be needed? It's an environment in which we all need to stand up and recognize that our prospective clients are being disappointed and even alienated by what's happening – and that we need to speak up!

In this case, the homeowners had expressed a desire for a lush planting with lots of color and plants installed right up to new trees. The landscape contractor showed them pictures of trees and asked for preferences. They chose Oaks, but at no time did the landscape contractor explain to them that if they installed these trees, they would not be able to have the lush planting they wanted because you can't plant so close to Oaks without encouraging Oak Root Fungus.

By the time I came in to help, the trees had been planted and there was no money left. In this case, I blame the contractor for the ineffective communication and for not seeking design assistance. He even said he would pay me to redesign the space, as the homeowners were quite upset – and getting even angrier because poor decisions about the placement of decking was killing or had already killed a number of mature Pittosporums and Sycamores.

education is key

Of course, there's a measure of enlightened self-interest among professionals in keeping consumers away from full information about what we do. If a hardscape specialist or a planting specialist gets the whole job, the opportunity to make good money increases through the diversity of the job. (This point could be stronger-refer back to my original paragraph on this.)

I'd counter that tendency with a simple assertion that we all benefit when the work is done as well as it can be and that a problem case of the sort described above could have been avoided with some effective communication and a willingness on the part of the contractors to educate the clients about the complex nature of landscape work.

It's partly a matter of educating our client base – a point that's been made over and over again in *WaterShapes* since its first issue. Consumers need to know who they're hiring, what their expertise is, what their specialty is, and whether the efforts of other design professionals will be needed to produce top-quality results.

It's also a matter of educating ourselves and seeing that collaborations among professionals have a greater chance of success than do projects in which a specialist in one area or another overreaches his or her capabilities while failing to let clients in on the secret.

So how can a consumer know what kind of plant knowledge a landscape architect has? Or if a landscape designer has what it takes to handle the job? As far as I can tell, it's a bit like looking for a doctor: You get the one you want by asking the nurses and other health-care professionals who they'd prefer to see.

I tell my prospective clients and anyone else who's thinking about a landscape project the following: If you're looking for someone with great plant knowledge, seek out the advice of a good quality nursery or a good landscape contractor. The nursery will know whether the designer knows their plants, while the contractor will tell you if the designer knows what to do with those plants.

If that's not enough – if, say, they need someone who is good with a particular style of planting – I suggest asking the nursery staff who's buying those types of plants. This involves some research, but if consumers find the right professionals, their success will rise to the credit of everyone involved in the process. WS

Stephanie Rose runs Stephanie Rose Landscape Design in Encino, Calif. A specialist in residential garden design, her projects often include collaboration with custom pool builders. If you have a specific question about landscaping (or simply want to exchange ideas), e-mail her at sroseld@earthlink.net. She also can be seen on episodes of "The Surprise Gardener" on HGTV.

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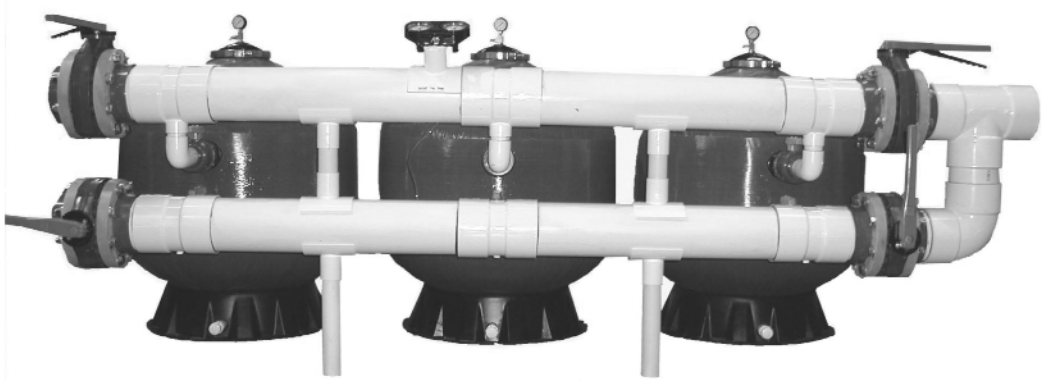

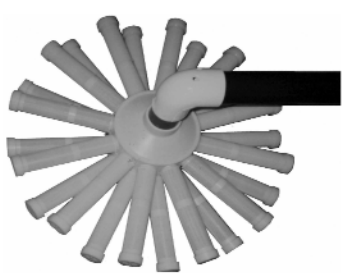

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By David Tisherman

Revisiting the Spillway

As much as I enjoy seeing my own projects come to fruition, there's something wonderful in seeing watershapers I know achieve great results in their work. I admire and encourage the effort, especially when the outstanding outcomes are the result of a professional's concentrated efforts to improve his or her own skills.

This is one of the reasons I teach: I take great satisfaction in sharing my techniques, sensibilities and the conviction that what I do is special, a true form of art.

Sometimes I speak with former students – watershapers in their own rights – who have, as a consequence of what they've learned, completely reconsidered the nature of their businesses and redirected their approaches. Other times, I see smaller-scale improvements that result from modest gains in capability, such as zeroing in on a product I've discussed with them or a material they've added to their bags of tricks.

Recently, however, I had something of an epiphany about one of my favorite details – a realization that has led me to participate in the creation of a brand-new product that stands to add a truly tasteful dimension to what might be an otherwise ordinary project. Although working on product development for various manufacturers is something I've enjoyed doing in the past (including work on Jandy's One Touch controller and RJE Technologies' Sonar Guard safety system), this particular new gadget has me unusually excited because it can take so many watershapers to a new level of performance.

Ego aside, isn't that what being a teacher is all about?

Our mission was to take a basic idea, strike a lively visual chord and create something that was worthy of the home.

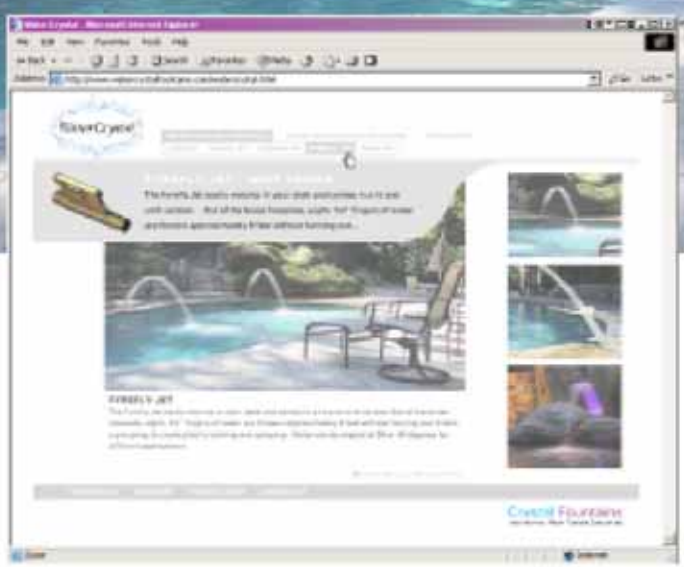
big ideas, small spaces

I was recently referred to a project on New Jersey's Long Beach Island, a lovely beachfront setting to which a fairly sophisticated set of affluent people repairs to escape the heat and humidity of New Jersey summers.

The prospective client was an architect in the process of building a home for his family. He contacted my Liquid Design partner, Kevin Fleming, and brought us to a site where the plans included a small, L-shaped pool to be surrounded by a series of tall, broad walls.

It's a traditional home with a nice variety of beautiful architectural touches, and the plans told me that the architect knew what he was doing. My confidence was reinforced when he admitted up front that he knew about building houses, but that swimming pools remained a mystery to him. He'd seen pools I'd designed and built, he said, and was willing to insist that Kevin and I were the watershapers he wanted for the job.

We had a lengthy design meeting with the family during which we focused mainly on what they wanted from the pool. It wasn't to be deep or the focus of vigorous waterplay, just a place to cool off and perhaps swim some easy laps. In rough terms, what they seemed to want was a concrete hole flanked by walls and filled with water. Our mission was to take that basic idea, strike a lively visual chord and create something that was



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worthy of the home.

The first thing we talked about was materials. The color palette in which the architect was already working – lots of greens with off-white trim – opened a wide range of possibilities running from stone veneers or exposed aggregate to stucco or tile. When the architect's mother said she wanted something "sparkly," she helped us narrow our focus to the reflectivity of ultra-smooth plaster or glass tile. The door was opened to the ultimate choice: blends of rich and subtle green glass of the sort offered by Oceanside Glasstile of Carlsbad, Calif.

These discussions were complex, but eventually we were on track in our quest for a design that suited the setting. I also knew there were challenges ahead. For starters, the pool was positioned in a small space with walls rising on two sides of the shallow end with a vanishing edge at the end of the walls. The edge was to be surmounted by two of the columns that held up the home's second story, and a third column was to be encapsulated within one of the walls. In other words, the job required an unusually critical degree of precision.

The more I considered the possibilities, however, the more I could see how this pool could be spectacular if we could light upon the right set of visual details.

eureka!

The walls had some dramatic potential, growing as they did above the sides of the pool, but the look had to be softened and integrated in some way. The standard approach would have been a wet wall, while a better approach might have been to mount a straight-edged weir in one of the walls – but both of those ideas lacked imagination. Instead, I decided to repurpose one of my favorite spa details and use the walls to lend movement, sound and visual impact to the composition while breaking down the starkly perpendicular relationship between the walls and the water.

Some time ago, my friend and fellow watershaper Paul Benedetti started calling this spillway detail "Tishways." I've focused on this approach many times in these pages going back to the very first project I ever published in *WaterShapes*: It's about shaping a visually simple set of channels in a spa's dam wall to create delicate flows of water that pour out into the pool rather than dribbling over a spillway and down the wall.

It's among my all-time favorite details, but appearances are deceiving and the effect is actually harder to achieve than one might think because of its advanced hydraulic design, difficult and expensive construction techniques and rigorous finish standards.

In this case, I thought, why not put a series of Tishways in one of the walls to spill into the pool? This seemed a good solution for a couple of key reasons. First of all, in a pool so small a more vigorous

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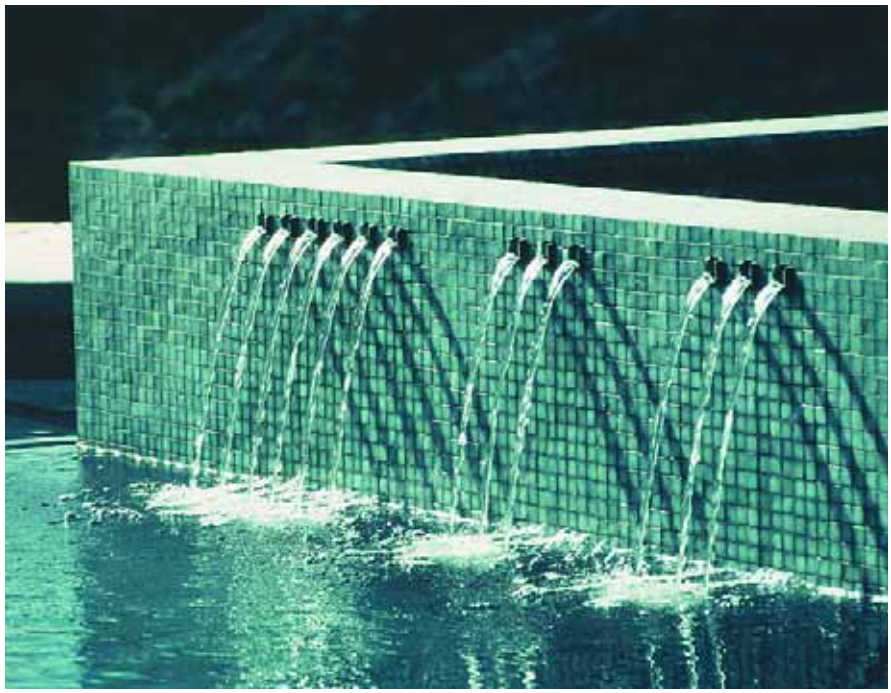
flow of water across a long weir would very likely visually overpower the whole composition. In addition, a larger effect would cause turbulence that would disrupt the vanishing-edge effect, and the sound would also reverberate way too much in the small, enclosed space.

The idea of having a series of small, carefully spaced and visually balanced spillways send small streams from the wall into the pool soon took shape as a means of adding the visual and aural delights of moving water to the project in an intriguing way that was properly scaled to the setting. My thought was to position the spouts no more than 12 inches above the waterline to create a soft, subtle effect.

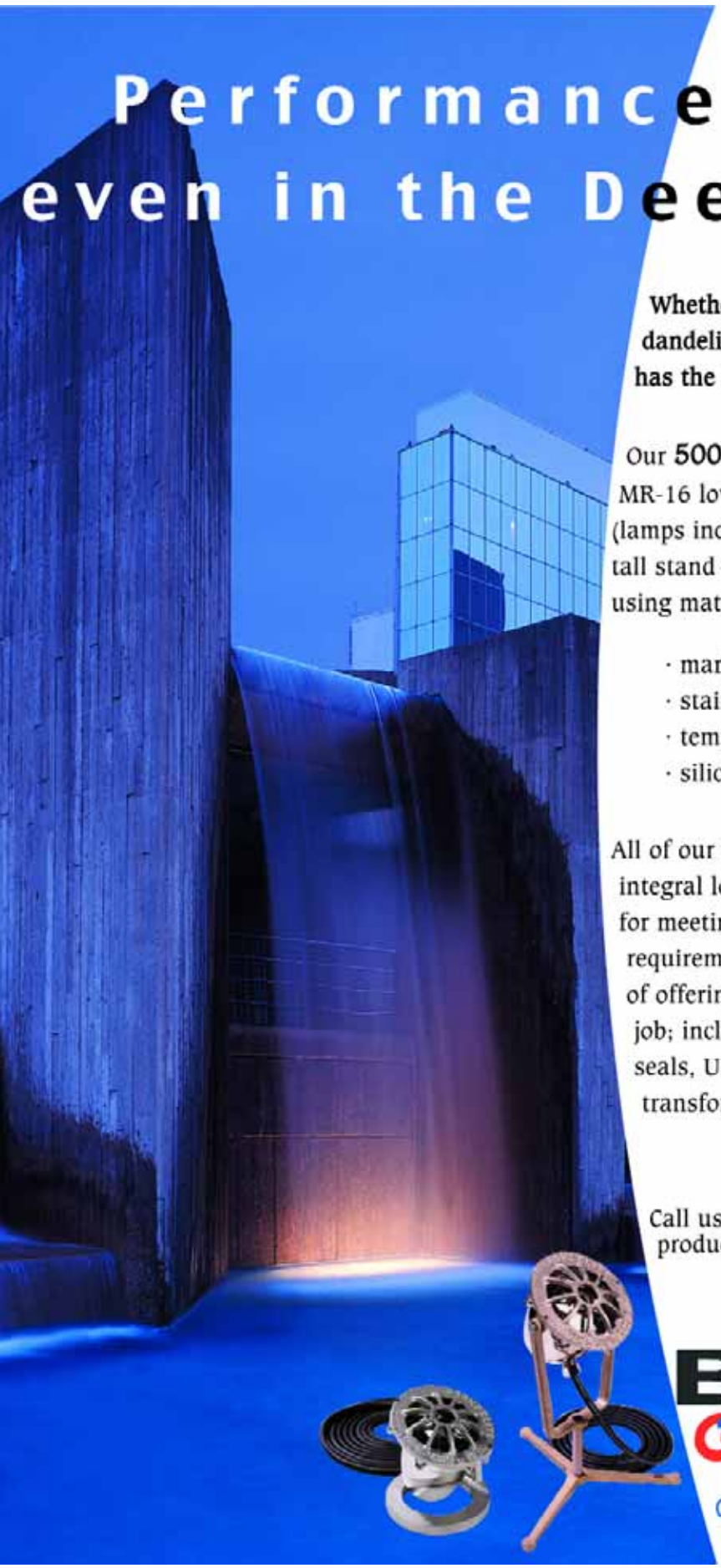
That was all great, but never before had I installed Tishways in a wall. It wasn't exactly a matter of reinventing the wheel, however, and I soon came to see it as an opportunity to improve on what I immodestly think is a darned good idea.

The more I thought about how to do it, I kept coming back to the idea that these



These channeled spillways offer an elegant alternative to the standard surface weir featured on so many raised spas, entirely changing the visual impression while serving the same basic function.

Performance Shows... even in the Deepest Places



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simple spillways really should be available as an off-the-shelf fixture that could be adapted to almost any two-level water effect, existing or new. After all, there are lots of waterfall and fountain fixtures available to create a range of effects, but nowhere to date has there been a fixture that gives you these small spillways in various widths and configurations.

in the pipeline

I weighed the idea for a while and soon called David White of OreQ (Temecula, Calif.), the company that manufactures and sells the Custom Cascades line of water effects. He had worked with me before, most notably on the beautiful scalloped weirs I used on the acclaimed (or notorious?) "Red Pool."

I told David that I wanted to talk to him about a product that might be good for the industry and shortly thereafter met with OreQ's Jess Hetzner and David about making Tishways available to watershapers everywhere.

A range of materials can be used to set off the spillway spouts. In this case, stone does the job; I've also used ceramic and glass tile to wonderful effect in framing this detail.

They quickly let me know that they already had a product that, with some refinement, could do the job. We soon began talking turkey about a fixture with enough flexibility to insert any number of runnels in dam walls at least five inches thick. The front side of the system breaks slightly past the plane of the vertical wall to send streams of water out into the pool; the back side has a tray that receives whatever finish material is being used on the inside face of the spa – pebbles, plaster or tile – so there's no visual disruption inside the spa itself.

The idea was to create something that would be very simple to install: All that would be required is setting and leveling the fixture and establishing proper hydraulics in the spa to avoid turbulence that would disturb smooth flows to the runnels. We discussed standard models as well as the potential for custom configurations. We also discussed a different sort of application: a custom and more complicated system for architectural walls, as in my current project, rigged with a multiple-port box that would accept water lines and fiberoptics.

As is the case with anyone who has participated in the development of a new product, I'd love to see Tishways take off and gain acceptance in the marketplace. But swing back with me to the sentiment with which I opened this column: It's more important to me as a teacher to make ideas accessible to those who are ready and willing to apply them.

More than anything else, I'd like to give designers and builders an alternative to the ordinary, flat-weir spillways found in countless backyards across the country and a simple way to bring beauty and visual balance to their designs and projects. That's a major point for me: Our clients spend a lot more time looking at our work from outside the water than they'll ever spend in it, so taking advantage of opportunities to enhance visual and aural

The spillway openings don't always need to be one-inch squares. In this case, they're all wider than that, and in others, I've used mixed sets of wide and narrow outlets to achieve visual balance.

Whether they're in or out of the water, both clients and kids (Casey at left and Madison on the right in this case) love this spillway detail for its aesthetics, its sounds and its sheer energy.

aesthetics is always the right thing to do.

Even in a purely practical sense, these fixtures prevent formation of the familiar patches of calcium that build up on dam walls within a short time of completion: These spillways effectively push the water away from the wall, so scale isn't an issue.

I'm a firm believer that, as designers, it's not our role to reinvent the wheel. What we're after are ways to refine what's already there, and even if I had no part at all in coming up with this concept or turning it into a product, I think of it as a neat arrow for any designer's quiver. WS

David Tisherman *is the principal in two design/construction firms: David Tisherman's Visuals of Manhattan Beach, Calif., and Liquid Design of Cherry Hill, N.J. He is also co-founder and principal instructor for Genesis 3, A Design Group, which offers education aimed at top-of-the-line performance in aquatic design and construction.*

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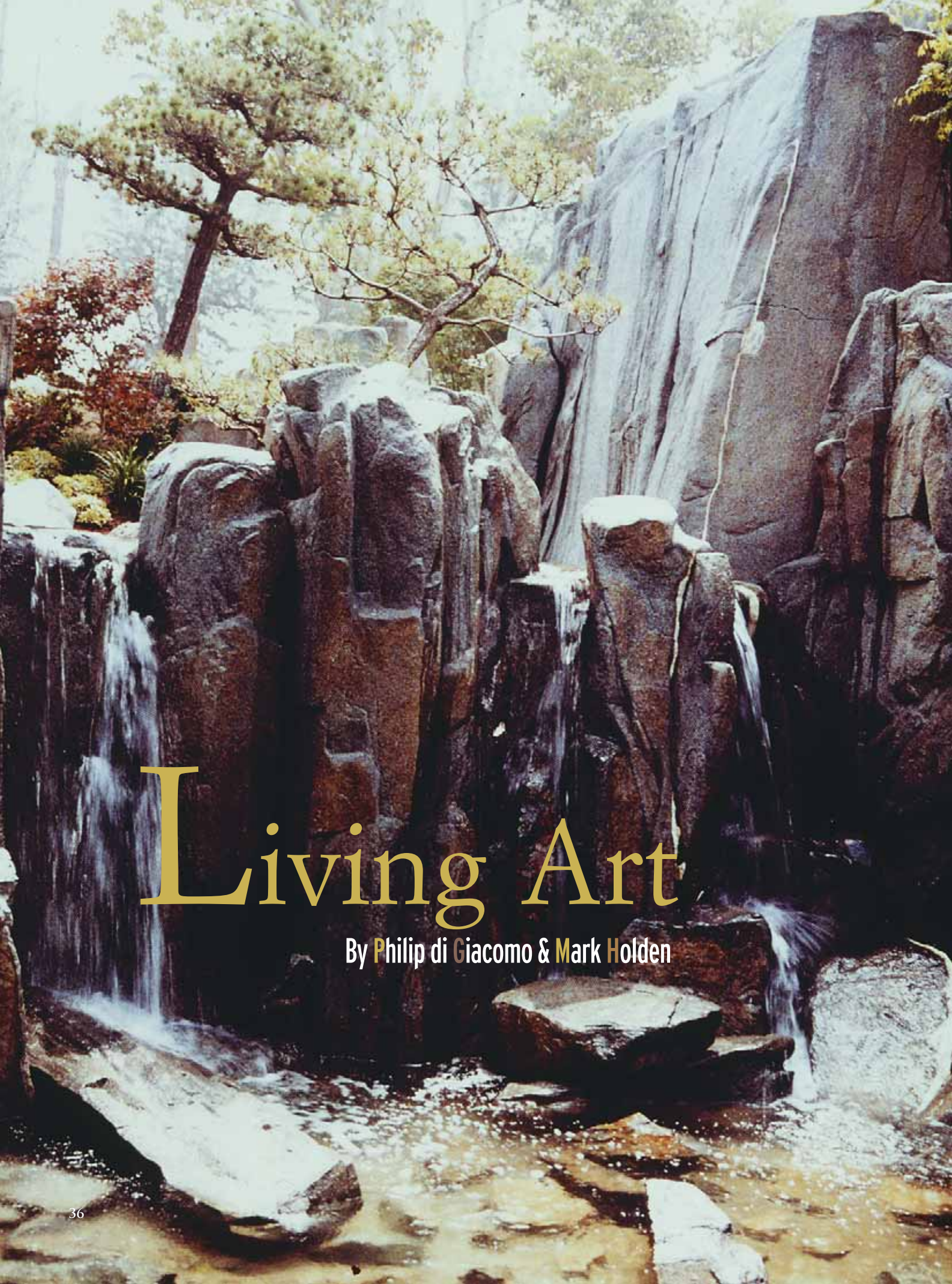

Living Art

By Philip di Giacomo & Mark Holden

The process of creating watershapes and landscapes is more than a simple exercise in orchestrating aesthetics, say rock designer Philip di Giacomo and watershaper Mark Holden. To these like-minded professionals, the purpose of their art is to conjure overt and subliminal perceptions in the hearts and minds of those who move through the spaces they establish - an ambition that lets their work influence not only individuals, but society at large.

To those who see art as frivolous and ultimately unnecessary and expendable, we offer as a counterweight the following from Austrian poet, Ernst Fisher: "Art is a driving force in bringing humankind to greater quality of life, and it is therefore an absolute cultural necessity."

For the artist, tremendous responsibility comes with that necessity. Indeed, those who expose others to art bear a burden in shaping entire cultures as people around them come to accept their artistic outputs as essential threads in the social fabric. Think of Brunelleschi in Renaissance Florence, for example, or Gaudi in modern Barcelona.

When we as watershape or landscape designers seek to expose others to our works of art, we accept a profound moral responsibility whether we work in the public or the private domain. At its core, our responsibility is to seek and communicate truth. As we see it, one and all who fall under the broad umbrella of the watershaping arts should be passionate in that quest for truth – and turn their backs on pretenders who are too lazy or greedy to take on the burden.

As artists, in other words, we should be doing all we can to influence society in a positive way. And you don't have to be a Picasso, Rubens, Einstein or Frederick Law Olmstead to make a difference: As artists, we *all* share the ability to shape culture and the realities of people's lives through our insightful use of water, stone, plants and light in all the various styles in which they can be applied.

Beautiful Minds

When you look up the word "art" in various dictionaries, you'll find the word "skilled" – that is, "possessed of the ability to do something well" – mentioned in almost every definition.

When you consider the broad sets of skills and forms of information required to perform at the highest level of watershape and landscape design, engineering and construction, it becomes clear that the process of creating art should be rational and not something that takes place in a state of intoxicated inspiration.

The information we bring to our work should go far beyond the suddenness or subjectivity of cultural clichés and fashion trends and should instead deal objectively with each object and space we create. When an observer sees that space, thinks about it and, most important, passes some form of judgment on the experience, this is what ultimately influences a culture.

Thus, when you break it down to the most basic (yet sophisticated) level, our projects should generate the sort of qualitative change mentioned at the outset of this article, both for individuals experiencing our work and for the overall shift in society that results as multiple observers judge and qualify their experiences.

It is our assertion that the watershaper should be motivated primarily by just this sort of sincere desire to improve the quality of life and public esteem for art and never be satisfied to appeal to the lowest common denominator. While financial gain is important, it won't typically drive a project to the best conclusion; furthermore, the need to do business does nothing to negate the artist's social responsibility.

Watershaping and landscape architecture are great, great art forms, but their histories past and present are littered with examples of work created without this necessary sense of social responsibility – work that consequently falls well short of its best potential. If the goal of the artist

'Those who expose others to art bear a burden in shaping entire cultures as people around them come to accept their artistic outputs as essential threads in the social fabric.'

is to change the quality of people's lives, striving for anything less means we are not working in complete acceptance of our creative responsibility.

When we meet that responsibility – when everything snaps into place with respect to water, rockwork, plantings, hardscape, lighting and various amenities – all of those elements subordinate to the fuller experience provided by the overall *composition* of those elements.

In listening to a symphony, we might observe the playing of an oboe or viola or timpani, but the experience is created by the collection of the sounds they make within the totality of the composition. By the same token, the best rockwork does not jump out and proclaim its presence to the viewer, but rather works as part of the composition in creating the overall experience to create a picture.

The Artistic Vocabulary

That overall composition is what most great art is all about, and we'd argue that watershapes and landscapes have just that sort of power and influence when composed by skilled practitioners in full awareness of their social responsibility.

Our art involves visual communication that often transcends verbal explanation. That's why there's a certain awkwardness to our presentation here, basically resulting from the fact that the notions we're discussing aren't easily captured in words on paper. But if you think about it for a

few minutes, the philosophical ramblings move inevitably to a simple observation: What we do as watershape and landscape designers is easily more important than most of us tend to recognize.

What we're saying might come across as arrogance – or maybe simple vanity. But when you think about the bigger social context in which we work, there's no reason why our work should not or cannot be considered in the same sentence as the artistry of Michelangelo or Frank Lloyd Wright, because our work is similarly influential and has a similar role in shaping the quality of life in communities around the world.

Yes, what we do may be hard to capture in words, but our work should always strive to edify and instruct and guide perceptions.

In composing a project, it's important to keep a key set of issues in play as you examine your progress from a variety of points of view, keeping foremost in your mind that the outcome will have great influence on the experience and judgment of the observer. The key to success is to not only understand these factors, but to put them into practice as the design process unfolds:

w **Dynamics.** This refers to the relationship between motion and the forces

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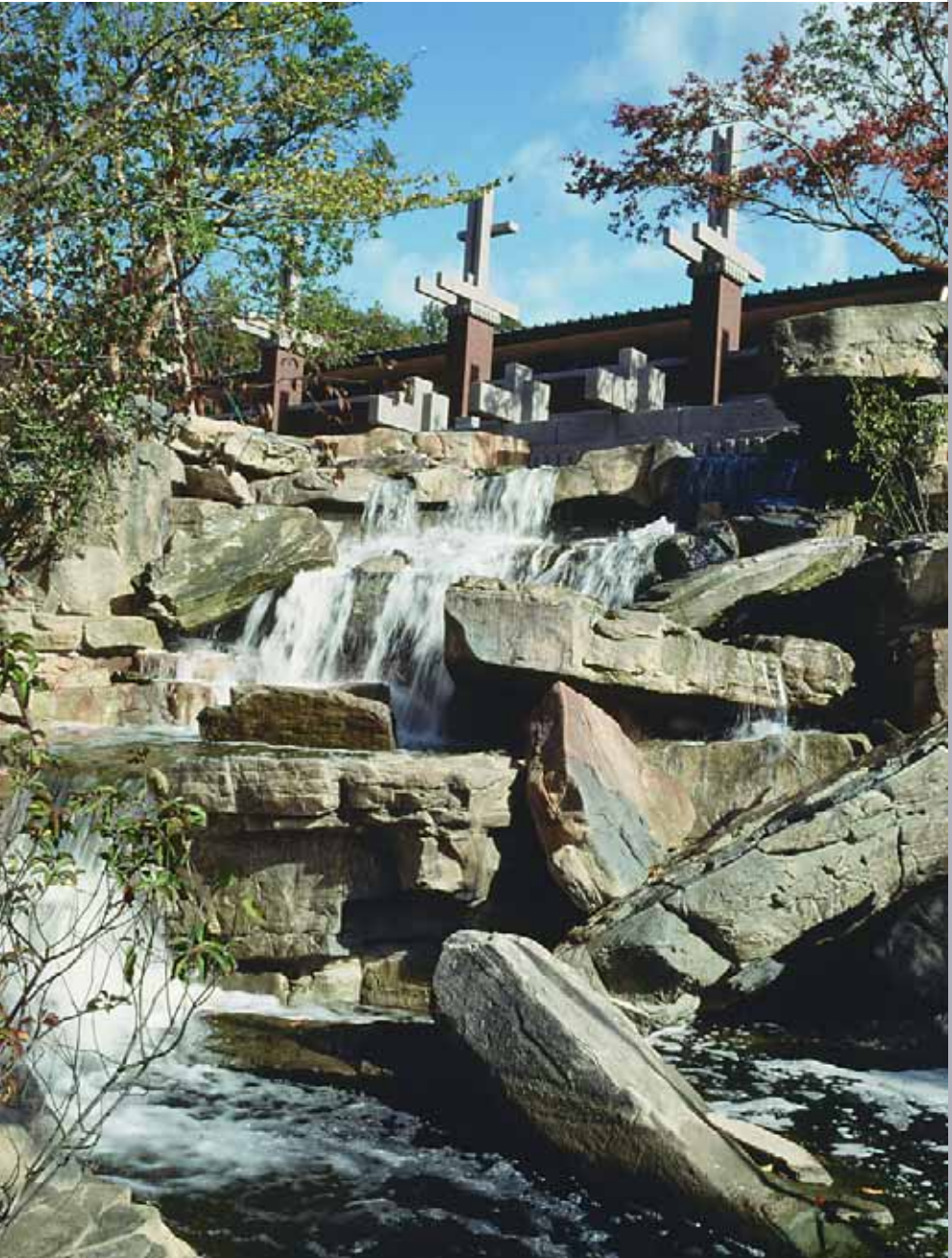


'When we meet that responsibility – when everything snaps into place with respect to water, rockwork, plantings, hardscape, lighting and various amenities – all of those elements subordinate to the fuller experience provided by the overall *composition* of those elements.'

that affect that motion. An example of dynamics in design can be seen in quality rockwork that goes beyond simply mimicking the forms of nature but seeks to capture and represent the processes that resulted in those forms. A rock formation is not a snapshot that captures a single moment, but is instead a moving picture that tells the story of all the forces of nature that have influenced that formation through vast, geologic time.

w **Subliminal registration.** It is extremely important to realize that a great deal of information is transferred subliminally, that is, below the threshold of conscious perception. The movement of shadow, the power of reflections on the surface of still water, the complex sounds of falling water, the subtle coloration of rockwork or hardscape: These are all examples of design elements that will communicate subliminal impressions – and it's important to consider that perception happens within a millisecond.

w **Kinetics.** This key element is defined as the study of all aspects of motion. In a landscape, kinetics are experienced both immediately, as in the way a weir will influence the form of falling water, and in less immediate ways, such as in the way rock forms are influenced by powerful forces of nature. There is movement or potential energy in everything we see, even when things appear to be stationary.

w **Geomorphology and Geology.** When creating naturalistic designs, it is critical to understand and embrace the study of topographical configurations and the evolution of landforms. One example is found in the concept of the *talus*, which is simply a piece of rock that has broken off from the main body of a formation. You can see by the shape of the talus that it was originally part of another nearby rock structure. Applying this concept lends a sense of the passage of huge, geological time frames into a compositon.

w **Phenomenology.** This is the study of human experiences in which subjective responses are temporarily left out of the equation. In other words, there are certain predictable responses to forms within a landscape: A narrow, winding path, for example, will cause a visitor to move more slowly through a space than will a wider, straighter path, and objects that are dis-

similar to those immediately surrounding them will draw the eye and create a focal point. These human responses to the designs we create are what drive the experience of the observer and must be considered fully as we proceed in our work.

w **Sincerity.** Working free of pretense or deceit in feelings, manner or actions is crucial to the success of any form of art. With watershapes and landscapes, the pretense we must avoid is the idea that the work is about the skill of the designer. Our aim should not be to impress with cleverness, but to use our knowledge and skills to create an experience.

It's not that we shouldn't all strive to create dynamic spaces and objects within them, but that we should always keep in mind that every element plays a role in the overall composition. In a very real sense, form follows function and the motivation dictates the form. At times that may mean creating extremely retiring and subtle forms; at others, the situation might require great boldness. In any event, sincerity of purpose in creating an experience for the observer will help guide you as you seek to tell the stories that stand behind the finished project.

Art and Science

If what we do is all about visual communication, just what is it we're trying to "say"? Almost without fail, our art exists to communicate information about nature and ourselves. In an extremely tangible sense, this means that art and science are inseparable in the design process.

When starting a project, in other words, it is critical to begin by defining real issues and objectives rather than by pursuing subjective impulses. Our work should communicate and speak directly to the viewer. If you have something to say by way of your design then do so, because what a project is saying is what gives it purpose.

It is in the melding of art and science that we see the great distinction between objectivity and subjectivity. Subjectivity can only reflect social conditions of the day or the condition of the individual viewing the art, while the combination of art and science have the much broader ability to change those conditions and are therefore necessary to advance society and influence the individual.

'There's no reason why our work should not or cannot be considered in the same sentence as the artistry of Michelangelo or Frank Lloyd Wright, because our work is similarly influential and has a similar role in shaping the quality of life in communities around the world.'

'With watershapes and landscapes, the pretense we must avoid is the idea that the work is about the talent of the designer. Our aim should not be to impress with cleverness, but to use our talent and skills to create an experience.'

Most zoo designs, for example, are little more than misinformation borne of the exigencies of the setting. Designing a natural habitat for lions is immediately influenced by the fact that the lions will see you seeing them in a so-called "natural environment."

Truth be told, if one of those lions could gain physical access to you, he would pounce on and perhaps kill you. That fact alone means that the design of the habitat will be far from "natural" and will represent nature only in certain respects. The safety and welfare of the animal and the public, the need for viewing spaces, constraints of size and space for the habitat, proximity to other habitats – all these issues influence the design.

Yet the zoo is there to enlighten visitors so they walk away with a greater appreciation of the animal in a "natural" setting, a setting that, however artificial, is often far removed from the visitor's immediate condition. The designer of the zoo exhibit must therefore balance the practical and physical circumstances of the setting with this higher, informative purpose in mind.

In many of the world's finer zoos, this communication proceeds flawlessly and we perceive a keen integration and balance of the practical with the need to represent the natural world. In other zoos, unfortunately, the greater purpose is completely lost in the design work, and the animals become little more than set pieces intended to entertain visitors and generate revenue.

A big part of the design challenge is to balance realistic conditions and constraints of the work with artistic responsibility. To edify and instruct in such a setting involves a magic recipe that blends art, science and a passion for people and their experiences.

Constructive Learning

We are fortunate these days to have a

'A big part of the design challenge is to balance realistic conditions and constraints of the work with artistic responsibility. To edify and instruct in such a setting involves a magic recipe that blends art, science and a passion for people and their experiences.'

great many resources from which to draw specific, objective information we can use to drive our designs. Not only do we have legions of artists and scientists alive and working today, but now we also have a tradition of past masters from which to draw.

That tradition is rich with wisdom that can be applied in every aspect of our work. Fredrick Law Olmstead once said, "Well-designed parks are works of art." Galileo wrote, "Images are the starting point for all of our thinking and feeling." And Picasso was known to express his view that museums were the worst possible place to put art, basically because people visiting

Building a Narrative

Whether the design seeks to awaken, cast shadows or bring light, whether it seeks to delight or to inspire quiet reflection, the work you do should never be seen as a mere "description" of an idea. Rather, and in a very real sense, we should seek to tell some kind of story.

In other words, when looking at our work or moving through a space we've shaped, the viewer should sense and see the evidence of a process that has unfolded over time.

This is certainly and easily true in the case of naturalistic designs that seek to capture the processes of nature in the essence of the work. It is also true in architectural settings, where the relationships between the elements tell a story about how light and water interact, or about how hardscape and plantings combine to create an impression of growth and permanence, or about how the hand of man conforms to the necessities of the site.

– P. di G. & M.H.

'Our work exists alongside homes or in public spaces where people are in the presence of our work not for the sake of viewing art, but as part of going about their daily lives. As a result, they will perceive the space in a variety of ways that will often have little or nothing to do with "art appreciation." '

museums tended to carry preconceptions about the nature of the art they were about to see. In each case, there's a kernel of insight we can use to inform our work and help us see what's truly at stake.

We are lucky in our trade because our artistic expressions have advantages over paintings hung on walls: Our work exists alongside homes or in public spaces where people are in the presence of our work not for the sake of viewing art, but as part of going about their daily lives. As a result, they will perceive the space in a variety of ways that will often have little or nothing to do with "art appreciation."

The ubiquitousness of watershapes, landscapes and architecture gives us an opportunity to change observers' qualitative experience. In that process, we bring into play aspects of our own learning and how we have been influenced by ideas that have had transforming influences on our lives.

That distinction is key: The notion is not to show someone a mirror image of nature, but to raise the observer's consciousness by offering an *insight* into nature. When we succeed in taking artistic expression to that level, we offer observers insights into the dynamics of the world around them – which naturally raises their interest and may even help them develop an understanding, appreciation and respect for nature and their own connections to it.

In this sense, we are products of our teachers and those who inspire us through tradition and direct contact. In turn, we also become teachers, and it is this transference of information, be it overt or subliminal, that binds us to our antecedents, to those who observe our work in the here and now and to those who are yet to come.

Seeing with the Mind

What we're talking about here is the management of perceptions and understanding how people see things – perhaps the most important factors of all in making good, accessible art.

The brain has a tendency to assume and organize things into meaningful spatial units. Using a fallen piece of talus as an ex-

ample, one's brain assumes that the piece fell from a larger rock formation. This happens because of the brain's natural tendency to organize what it sees and, in this case, to reassemble the pieces into a meaningful shape. As Picasso said, "Give the viewer all the pieces and they will make the picture."

His statement cuts directly to the difference between perception and seeing: *Seeing* is automatic, while *perception* must be provoked. Perception takes place not in the eye but in the cerebral cortex and is a product of thought.

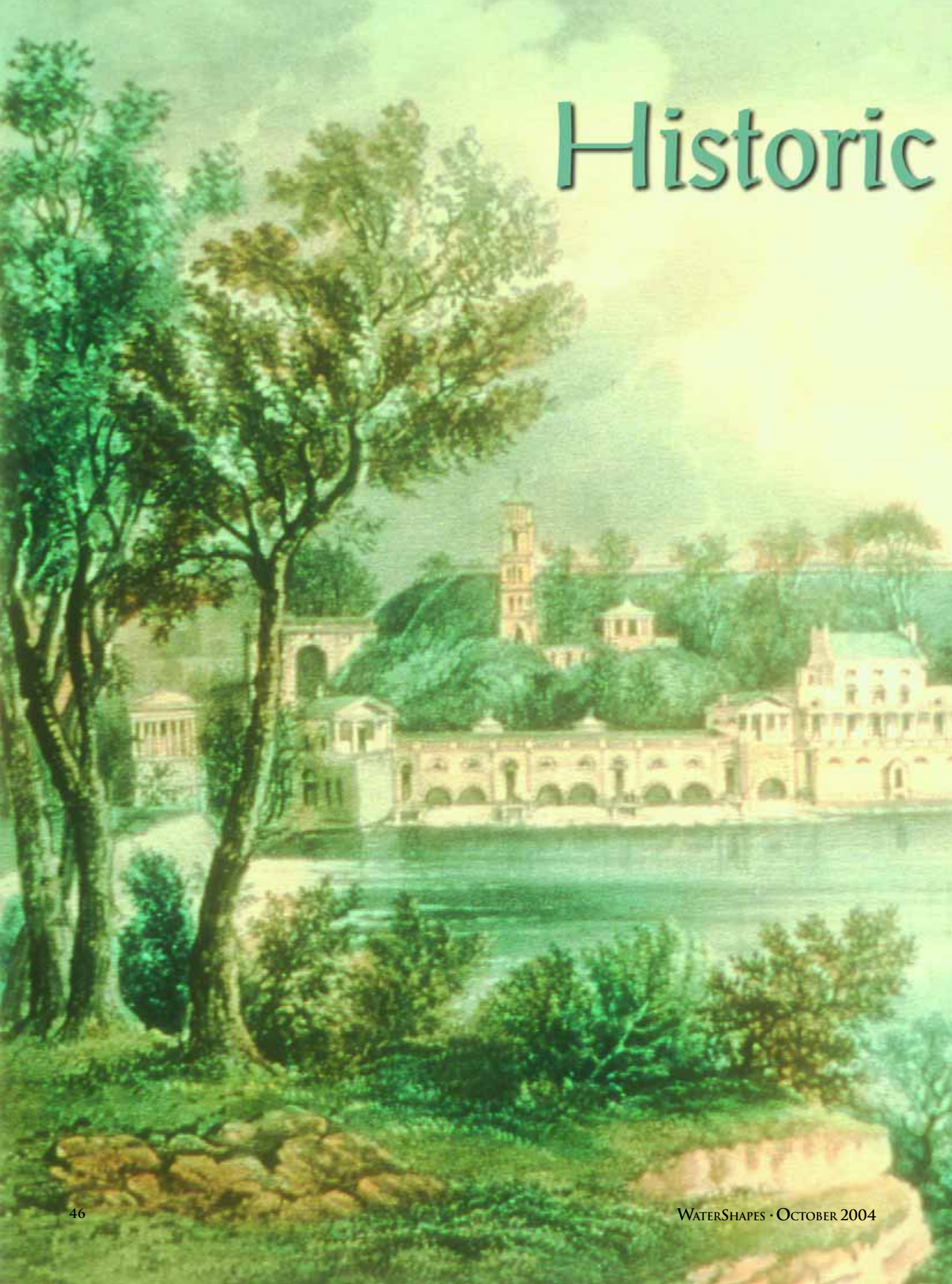
To generate perceptions in our viewers, we must first have an idea in our own minds of what we want them to perceive. Consider a painting of a tree: The point of many great paintings of trees is not simply to show the tree, but to tell the story of the effects of growth, age and weathering by wind, rain, heat, cold, lightning, insects and even fire. On the surface, the observer sees the tree, but upon closer consideration of all the complexities that combine to produce a perception, he or she gains insight, through the artist, into the metamorphoses that occur in the life of the tree.

When you're creating art, you cannot possibly engender such perceptions in the viewer unless you do so with forethought, information and the all-important sense of artistic responsibility. In the art of streamcraft, for example, the result isn't individual boulders, cobbles, shorelines or eddies, but the greater perception of the time-force and motion of the stream moving through the landscape.

We must always keep in mind that the perceptions we evoke are a result of the viewers' participation in the environment – a participation that works to increase their understanding of the stories that surround them. Physical participation, that is, relaxing in the shade of a tree, swimming in a pool or walking down a path, is one level. A second, deeper level of participation is psychological and is the realm in which all of the elements of our artistic responsibility come into play.

It doesn't matter if you're working in swimming pools, naturalistic watershapes or architectural fountains: In all cases, we work to create perceptions in the minds of observers and ultimately seek to create a judgment in their minds. Only then do we begin to live up to the true potential of what it means to be an artist.

'In the art of streamcraft, for example, the result isn't individual boulders, cobbles, shorelines or eddies, but the greater perception of the time-force and motion of the stream moving through the landscape.'

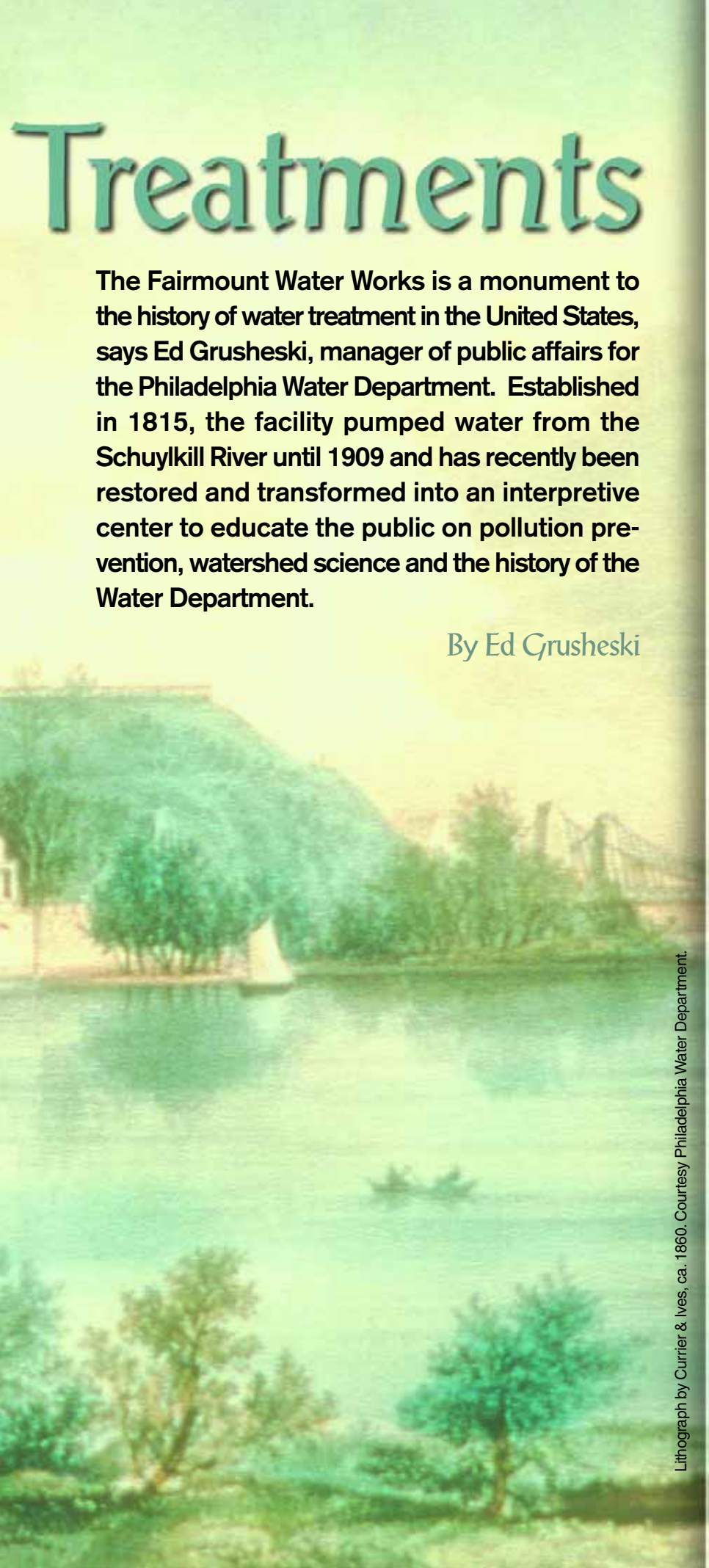


Historic

Treatments

The Fairmount Water Works is a monument to the history of water treatment in the United States, says Ed Grusheski, manager of public affairs for the Philadelphia Water Department. Established in 1815, the facility pumped water from the Schuylkill River until 1909 and has recently been restored and transformed into an interpretive center to educate the public on pollution prevention, watershed science and the history of the Water Department.

By Ed Grusheski



Lithograph by Currier & Ives, ca. 1860. Courtesy Philadelphia Water Department.

Local historians claim that the image of Philadelphia's Fairmount Water Works was the most reproduced of any industrial site in the United States through the first half of the 19th Century – and for good reason. At that time, the facility represented the absolute state of the art and served as a major point of pride for local residents as well as a source of fascination to visitors from near and far.

Throughout its long history, the facility was indeed at the leading edge of water-delivery technology and is now the ideal place to capture and tell the story of the development of environmentalism in the 19th, 20th and 21st centuries.

The story begins with formation of the Philadelphia Water Department. Organized in 1799, it is the oldest enterprise of its kind in the country and opened its first pumping station in 1801 to extract water from the Schuylkill River. This was the Centre Square Works, located on the site of what is now Philadelphia's City Hall.

That relatively short-lived first facility was a trailblazer on its own, using some of the very first steam engines ever deployed in North America. But it broke down frequently and was basically a failure, mainly because the primitive boilers had a nasty habit of exploding, often leaving residents without running water for extended periods of time.

A Fresh Approach

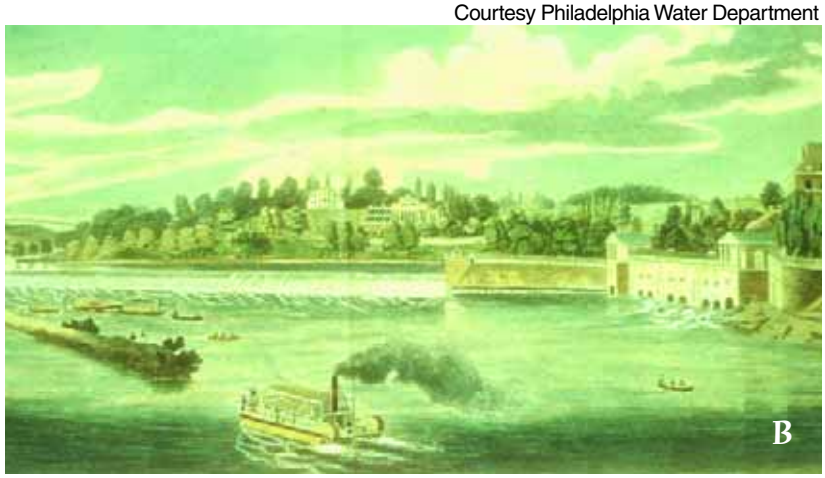
When the Center Square facility was established, planners chose the Schuylkill, which, in the original Dutch, means "hidden river" – so named because the first explorers of the Delaware River couldn't find the mouth of its largest tributary, which was hidden by a broad wetlands area and eluded detection for quite some time.

The water department chose this river because there was already a vigorous debate about the quality of larger, nearby Delaware River's water and the level to which sewage and effluent from the city had polluted the waterway. In what was perhaps the first discussion of its kind anywhere on the continent, the department ultimately decided that the Delaware was not a suitable source of potable water.

By comparison, the area around the more dis-

Courtesy Philadelphia Water Department

Courtesy Philadelphia Water Department



Storied Service: *The Fairmount Water Works was a source of artistic inspiration through much of the 19th Century, as seen in an unknown artist's 1819 engraving of the Engine House (A), the first structure at Fairmount. From the start, in fact, the facility was such a point of pride and fascination that every aspect of the complex was a subject for*

tant Schuylkill was as yet undeveloped and, as Centre Square Works designer Benjamin Henry Latrobe described it, had water "of uncommon purity." Thus begins a long tale of water treatment, frenzied industrial development, environmental destruction and, ultimately, reclamation.

Latrobe was in town building a bank when the City Council asked him to develop a proposal for delivering water to Philadelphia's growing population. Using Latrobe's original plan, the city became the first to construct a city-wide, publicly owned and operated water-distribution system since ancient times.

(There were water utilities in Europe early in the 19th Century, but at the time the companies were all privately owned and had been built to supply only certain sections of major cities with water.)

The bold plan was quite a milestone and also something of a clarion call: Philadelphia became the first American city to take on responsibility for providing potable water to all of its citizens through a single public entity. This started a powerful trend, during which time a large number of major American cities – including Baltimore, Pittsburgh and Chicago among many others – followed suit and established systems for public water distribution.

(To this day, most large U.S. cities have a public water utility of some kind, although a great many private water distribution companies operate here and most are owned by European companies or their subsidiaries. Indeed, the French and Germans are leaders in U.S. water-system ownership.)

Finding A Site

With the failure of the Centre Square Works, its chief engineer, Frederick Graff, explored available options and settled on an area along the Schuylkill known as Faire Mount. The site was perfect: It occupied the highest point adjacent to the city, and it was easily accessible from the river.

Work started with construction of a huge reservoir at the top of the hill and, at the river's edge, of the Engine House – the first of many waterworks structures and an important visual symbol of the complex even today with its striking Federal-style architecture.

The Engine House had two steam engines for redundancy: When one of the boilers broke down (or blew up), the other was brought on line. (Shrewdly, the planners made the reservoir large enough to hold several days' worth of water in the event both engines were down simultaneously.) The engines drove double-action, piston-style hydraulic pumps that could deliver four million gallons of water per day to the reservoir.

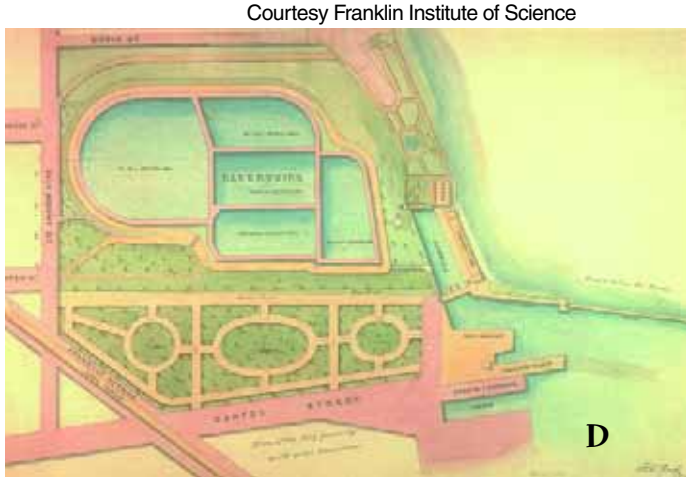
For all of the vision and foresight of the original plan, however, the design was flawed by its dependence on unreliable technology: The steam engines continued to explode, killing several workers through the years. By 1819, city leaders decided to abandon the "new-fangled" steam technology and revert to tried-and-true water power.

By 1822, the city had built what was at the time the longest dam in the world, the main purpose of which was to direct a portion of the river's flow behind a new waterworks building that would later become known as the Old Mill House. Controlled by a series of gates, the channeled water flowed powerfully over a series of eight massive waterwheels, each 15 feet wide and 16 feet in diameter. The waterwheels and their associated pumps sent water to an expanded series of reservoirs in the upper areas of Faire Mount Park, an area that is now the site of the Philadelphia Museum of Art.

In all, five large basins served as reservoirs and were constantly replenished by the eight pumps. And flow the water did, with the only "treatment" at that time encompassed in the fact that the water was held in the reservoirs long enough for

Courtesy Philadelphia Water Department

Courtesy Franklin Institute of Science



illustrators, with the dam seen in an 1821 engraving by Thomas Birch (B), for example, and the waterworks featured in an 1822 lithograph by the Ligny Brothers (C). The reservoirs (sketched in D) ultimately were replaced; on their site now stands the Philadelphia Museum of Art.

large particulates to settle.

The new dam and pumping system initiated the Golden Age of the Fair-mount Water Works. From the 1820s through the 1850s, the facility was an icon of American industrial might and a symbol of sophisticated urban planning. And it was indeed an extraordinary infrastructure: The presence of the water-distribution system was a foundation for the explosive industrial and population growth that characterized Philadelphia in that span.

Revolutionary Foresight

During this era, *everything* was made in Philadelphia, from locomotives and clothing to equipment for factories. The waterworks provided water that made it all possible.

An integral part of the waterworks "system" had to do with the development of Fairmount Park itself – although its *lack* of development may be more to the point. Indeed, one of the truly visionary aspects of the city's plan was to set aside an expanse of riparian area along both banks of the river to be maintained as unspoiled parkland.

The idea was to protect the watershed as a way to ensure continuing water quality, so no commercial, industrial or residential development was allowed in the area, which to this day serves as a 9,000-acre recreation center for city residents. It was, in fact, a great idea that worked right through the first half of the 19th Century.

But efforts to protect the river – one of the first attempts in U.S. history at watershed management for environmental purposes – proved futile during and after the Civil War, when another period of rapid industrialization and population growth upstream of Philadelphia overwhelmed and very nearly destroyed the Schuylkill with pollution.

But in its heyday, Fairmount Park and the waterworks were among places in which Philadelphians loved to see and be seen. Tours of the waterwheels and pumps were extremely popular, as was boating and rowing on the pristine river itself. There was even a restaurant on the grounds that overlooked both the river and the proud waterworks.

Unfortunately, for all the visibility the facility garnered for the issue of water treatment, few recognized that an environmental disaster was in the making.

All across the country in the second half of the 19th Century, cities such as Philadelphia simply lost the social will to maintain and control water quality. Large industries of the day wielded tremendous political and economic clout, and any attempts to force them to stop polluting the country's major rivers were roundly rebuffed. During this time, rivers came to be used (and seen and smelled) as open sewers, and the water became increasingly foul and polluted.

Even the bucolic Schuylkill, once teeming with fish and rich riparian shores, became fetid and, at the worst of times, even deadly.

Pains of Neglect

During the 1890s, typhoid epidemics hit Philadelphia and killed thousands of people annually. Over in Chicago, a similar sequence of outbreaks killed even more. Cholera and other waterborne diseases were also profound challenges to public health at that time, and Philadelphia was among many municipalities facing a true crisis.

The city responded with technology, using filtration for the first time in a large-scale water-delivery system. The slow sand/gravity filters proved effective in removing large quantities of solid waste from the water, but they took several years to complete and come on line. When they did, however, deaths from typhoid and cholera dropped substantially. And by 1912, the city began chlorinating the water – at which point incidents of waterborne disease all but ceased.

Water treatment now meant that pol-

luted river water could be made safe. Although nobody would claim much joy at the aesthetics of the water, it was possible for the first time in decades to take a drink of water from the tap without risking life and limb. Ironically, this also meant there was no immediate public concern for the rivers themselves, and they went almost completely unprotected through the first half of the 20th Century.

It is difficult to describe the awful conditions that had beset the once-pristine waters of the Schuylkill and dozens of rivers like it through this period. Many species of fish, birds and other animal life that depended on these rivers either became extinct or were all but wiped out. The first steps toward reclamation of Pennsylvania's rivers began in 1904, with the establishment of the state's health department, which had a primary mission of dealing with wastewater and started its work by requiring all cities in the state to submit a plan for wastewater treatment – this at a time when waste was still being dumped freely into the rivers.

Philadelphia submitted its preliminary plan in 1905. The final plan in 1914 included a system of intercepting sewers to capture wastewater and route it to three treatment plants. But sewage never has been politically sexy, so full implementation of the plan was stalled until after World War II, when the city taxed its citizens to pay for a sewage-treatment system. With funding in place, the city turned implementation over to the Philadelphia Water Department, a wise choice in that this was the organization with the largest stake in cleaning the river.

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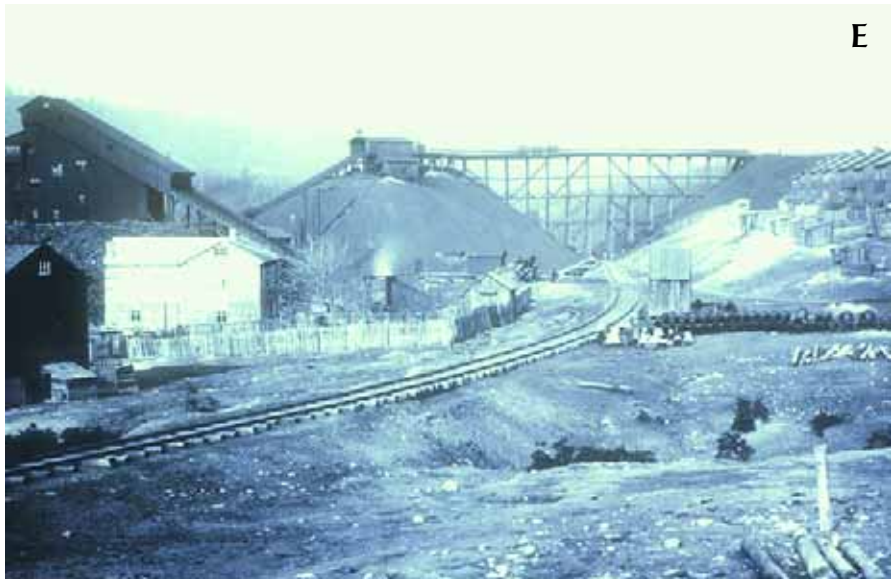
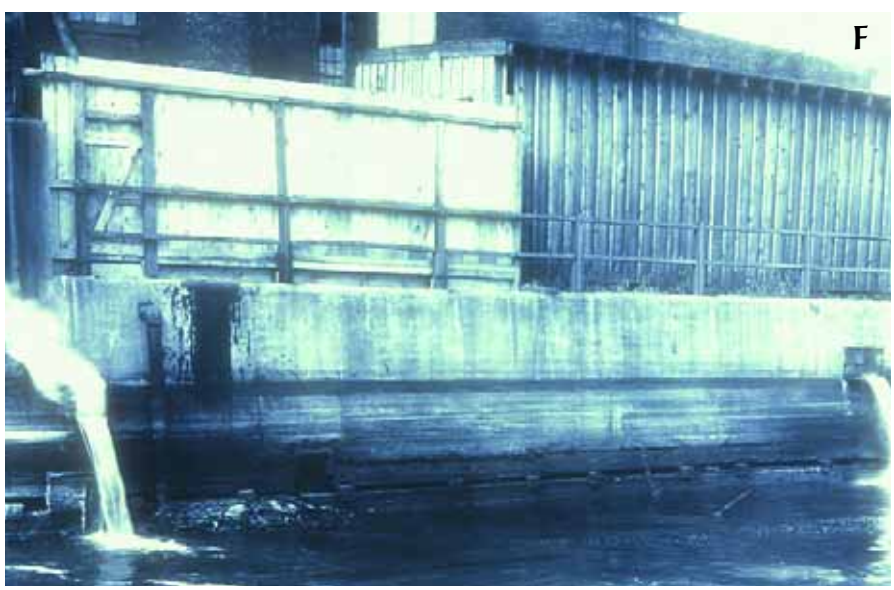


Courtesy City of Philadelphia Archives



Courtesy City of Philadelphia Archives

Courtesy Philadelphia Water Department

Amazing Challenges: *The Schuylkill was beset by enormous environmental challenges beginning in the middle of the 19th Century and can only now be said to be approaching a reasonable recovery. Effluent from upstream operations including coal-breaking plants (E, seen ca. 1890) and slaughterhouses (F, ca. 1921) entered the river unchecked and in huge volumes, and for the best part of a century the river was basically an open sewer (G).*

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Presented by James van Sweden

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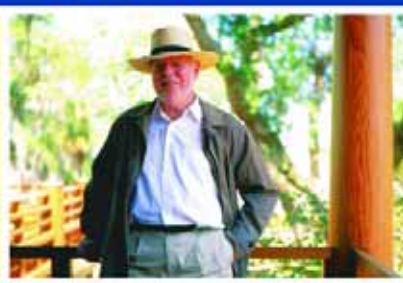

James van Sweden

POND AND WATER GARDEN DESIGN

Presented by Anthony Archer-Wills

Join one of the world's top authorities on ponds and water gardens as he shares his spectacular projects and inspiring design ideas. Archer-Wills has been instrumental in developing many of the new techniques used in the construction of ponds with both concrete and flexible liners, and is author of the two leading books on pond and water garden design. Taking principles and ideas from garden design and landscape architecture, he will provide a fascinating look at the many possibilities for bringing the changing face of water into the landscape environment.

Anthony Archer-Wills

ILLUMINATING THE NIGHTTIME LANDSCAPE

Presented by Janet Lennox Moyer

Often underutilized by designers and builders, landscape lighting is an important facet of the outdoor environment that can bring your clients added appreciation of their projects while providing you with a new profit center. You'll have the opportunity to learn about the growing niche market for landscape lighting from one of the world's foremost authorities on the subject. This informative session will include dramatic project examples that illustrate beautiful and unique illumination effects that you can apply to your own projects.

Janet Lennox Moyer

GENESIS 3 DESIGN GROUP

Come to the AQUA Show this November and learn from these three industry icons, plus other hand-picked experts such as Feng Shui master Ileana Davis, Ph.D. and computer graphics/digital imaging legend Chris Quilsch. The Genesis 3 Design Group, in partnership with AQUA, has assembled a multi-faceted educational program targeted to pool, spa, pond and landscape designers and builders. The four-day program offers classroom instruction as well as new product introductions, seminars, demonstrations and one-on-one consultations. Call today for a complete conference schedule and registration details.

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By 1957, the plan originally developed in 1914 finally came into service, and in the years that have followed, the water quality of Philadelphia's rivers has improved dramatically.

The Road to Recovery

It wasn't until 1972 and the passage of the Clean Water Act that dramatic improvement could be seen and the rivers were given a real shot at returning to something resembling a natural state.

By 1984, Philadelphia had implemented a secondary water-treatment system using microorganisms to treat waste in water being discharged into the rivers, and both the Delaware and the Schuylkill have been profound beneficiaries – and begun their returns to healthful beauty.

Today, we've come almost full circle: More than 40 varieties of fish have returned, including Striped Bass, American Shad and Hickory Shad. All sorts of fish-eating birds and terrestrial predators have returned as well, and the rivers simply look better, even beautiful. Today, in fact, 80% to 90% of the pollution that actually makes its way into the river is the result of storm runoff, a problem that afflicts a great many waterways.

As for the waterworks, it carried on as something of a public attraction even after it began a gradual decommissioning process in 1909. By 1911, a large aquarium was set up in one building and drew millions to see a wide variety of salt and freshwater fish before it closed in 1962. A public swimming pool was established on the site in 1963, but it was destroyed in the flood generated by Hurricane Agnes in 1972.

Much of the facility had fallen into disrepair before Agnes came along. The hurricane only accelerated the process of decline to a point where the facility was little more than a ghostly eyesore along the riverbanks.

A call for rehabilitation was finally heard in 1974, when the Philadelphia Junior League joined with the Water Department and the Fairmount Park Commission to restore the buildings and put them back to public use. The plan gained public acceptance through several years and gained a strong level of added support in 1998, when the Fairmount Parks Commission formed the Fund for the Water Works.

At that time, a huge fundraising effort was mounted with cooperation from a variety of public and private organizations including the William Penn Foundation, the Delaware River Port Authority and Pennsylvania's Department of Environmental Protection. The federal government participated as well: Initial design for the exhibits at the new interpretive center was made possible from a grant from the U.S. Environmental Protection Agency (EPA).

A Place to Learn

The interpretive center is both an homage to the waterworks' history and a rallying point for future environmentalism. All of the interior walls have been left in their historic unfinished condition, while the buildings' exteriors have been beautifully restored to their original glory. Inside are 40 mostly high-tech, interactive exhibits that tell the story of watershed management in the area and educate visitors in the fundamentals of aquatic and environmental science.

The first exhibit starts with a molecule of water and shows how all living creatures from dinosaurs to fish and human beings have consumed the same molecules of water that have been on the planet since time began. There's also an exhibit that demonstrates the effects of precipitation, runoff, evaporation, percolation and transpiration into the atmosphere.

Fully a third of the exhibits are focused on watersheds and how land is used – and how those uses affect water quality in rivers and other surface-water resources. There's a display on tidal estuaries that is essentially an educational watershape with a model of the old waterworks and dam that shows the six-to-eight-foot tidal variation in the level of the river. This interactive exhibit defines the water levels relative to the waterworks and the dam, which can be seen right outside the window.

Yet another exhibit, this one provided by the U.S. EPA, shows the way runoff operates in a variety of settings, including a seaport and an urban area as well as wilderness and farmland areas. Another shows how activities in the home pollute water and how that pollution is removed before the water returns to the river.

Two local firms, Steve Feldman Design and Talisman Interactive, designed the exhibits. In both cases, the work they've done is imaginative and amazing.

The buildings themselves have been beautifully restored and remodeled under the guidance of local architects at Mark B. Thompson Associates and brought up to date with office space,

Prepared for the Flood

As you can see in the photo of the restored facility on page 55, there are doors at the base of the waterworks building adjacent to the river.

As storms make the river rise to flood stage, the doors are opened to permit the water to flow into the interpretive center. This meant that everything had to be designed so that the lower areas of the center could be cleared in a matter of two or three hours in anticipation of a flood (as monitored by the Water Department).

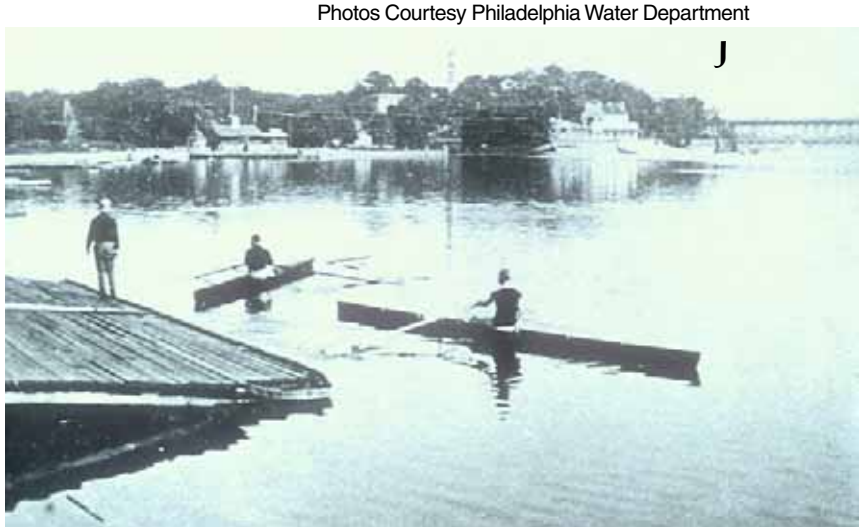
We accomplished this by making exhibits of aluminum and fiberglass to withstand submersion. The electronics for the exhibits can all be easily disconnected and carted to a level where they will avoid damage, and some of the larger exhibits are set up with winching systems that will raise them to a safe height.

The facility's ability to flood is both practical and symbolic, demonstrating the idea that humans and nature *can* coexist, even in an urban setting such as Philadelphia.

– E.G.

Photos Courtesy Philadelphia Water Department


H


J

Incredible Comeback: *Concerted efforts through the past 100 years have brought both the Schuylkill and the Fairmount Water Works back to good form. The construction of wastewater-treatment plants (H) diverted upstream and urban waste away from the river, and eventually work began toward restoring the waterworks structures (I) as a center for education and research. The goal has been to make the river pristine once again – a complete resource for the community and its recreational needs (J).*


I

classrooms and a lab that can accommodate more than 30 budding scientists conducting research on water-quality issues. For the most part, the buildings' interiors still have their original rough edges, with walls and surfaces telling their own stories about the development of the site – including the long subterranean corridor built in 1812 to speed worker passage from the boilers to the pumping rooms. Many of these original features have been left in place and now set off the colorful exhibits.

The park itself includes a number of waterfeatures in the forms of fountains and natural springs that have long been a key part of the experience of visiting the property. A highlight of the south garden of the waterworks is the soon-to-be-restored Marble Fountain, which was installed in the 1830s and originally featured a 40-foot plume driven pure-

Educational Resource: *In addition to housing research labs dedicated to study of water-quality issues, the old waterworks structures also host an interpretive center designed to educate current and future generations about the preciousness and fragility of natural water resources. The facility itself is largely seen in its original rough-edged condition, but the displays are strictly state of the art and reflect the latest available information on pollution prevention and watershed management. (For more information, visit www.fairmountwaterworks.org)*

ly by gravity and head pressure.

Higher Purpose

Our main mission with the facility's exhibits is showing people how rivers and watersheds work – how each and every one of us fits in with the systems, how we influence water quality and how we can all help sustain or improve it. This sort of public education is particularly important in areas such as the water-rich northeast, where the resource is abundant and people have historically taken a ready water supply for granted.

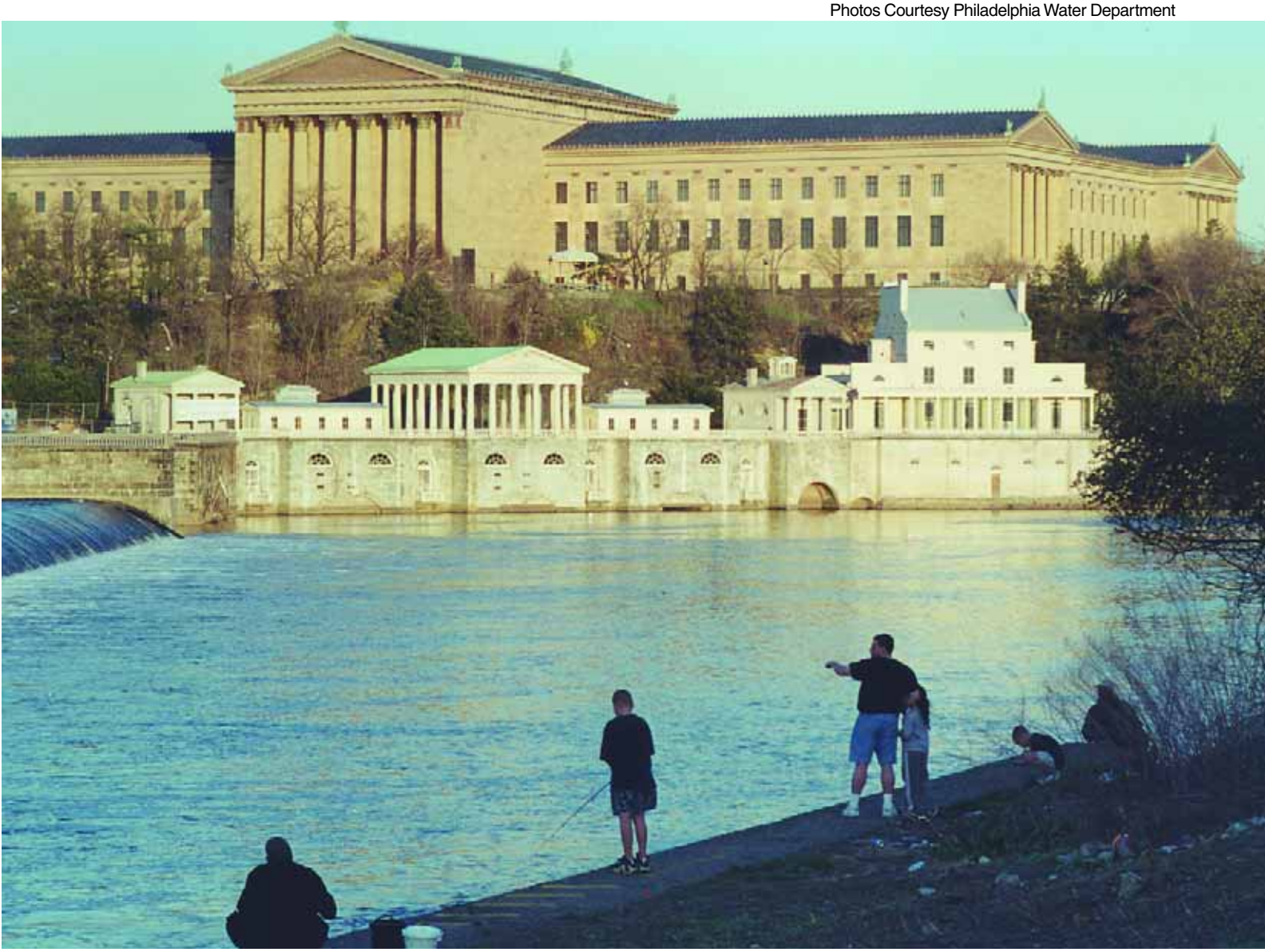
There couldn't be a much better place to tell this important story, given the central role the Fairmount Water Works has in the history of water quality in the region. It's also still one of the few places in the city where you're right on the river in a parkland setting and can see hunting ospreys, jumping fish and the river running muddy after a big rain.

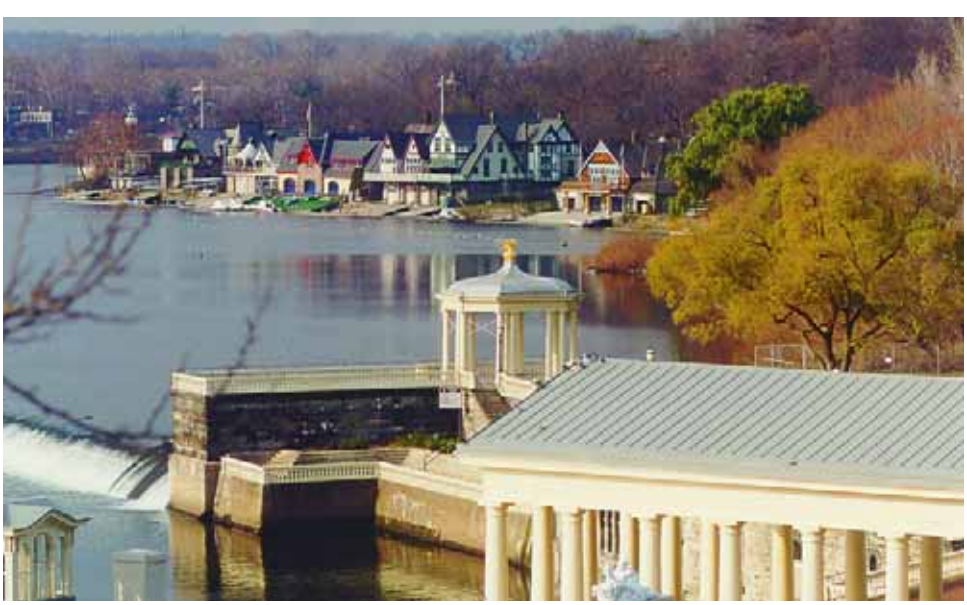
The facility does important work with a variety of partners, including the Building Department, which now encourages use of porous hardscape to minimize runoff, and the school district, which is mounting a campaign to encourage "green buildings" in which runoff from the rooftops and storm gutters is directed into drainage areas for use in irrigation systems or flows to marshlands or retention and percolation basins on school property.

The park itself has never been more popular. The adjoining boat house accommodates more than 2,000 rowers and their sculls per day, and there's an eight-mile running circuit that passes the Water Works and is always packed with walkers, runners, bikers and skaters. All of these people see in very direct ways how river and watershed management have an influence on their daily lives.

Although the work of protecting our rivers will never be done, it can be said that the story of water treatment in Philadelphia and countless other cities is now one of developing ways to serve people *and* nature.

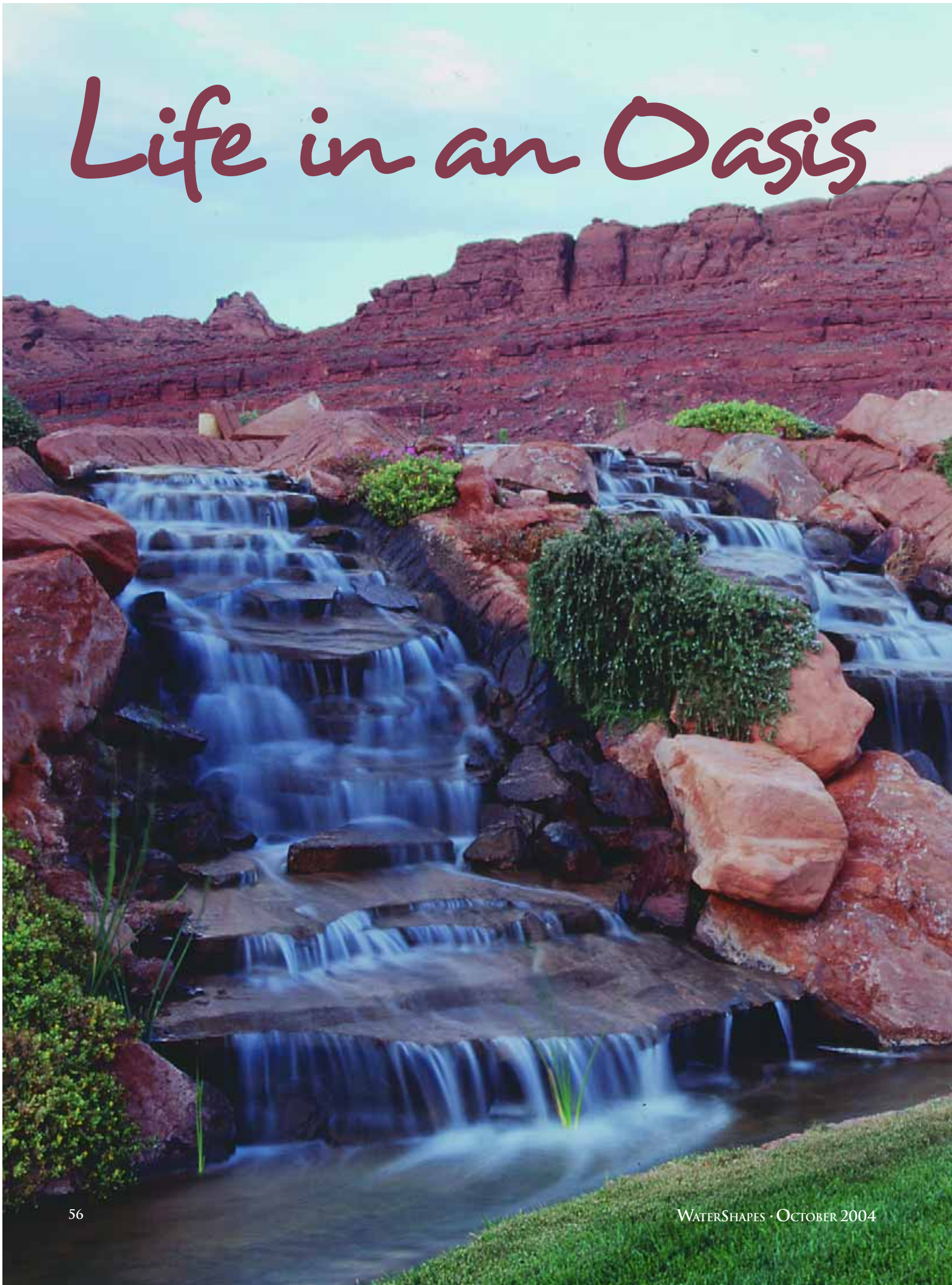
Photos Courtesy Philadelphia Water Department

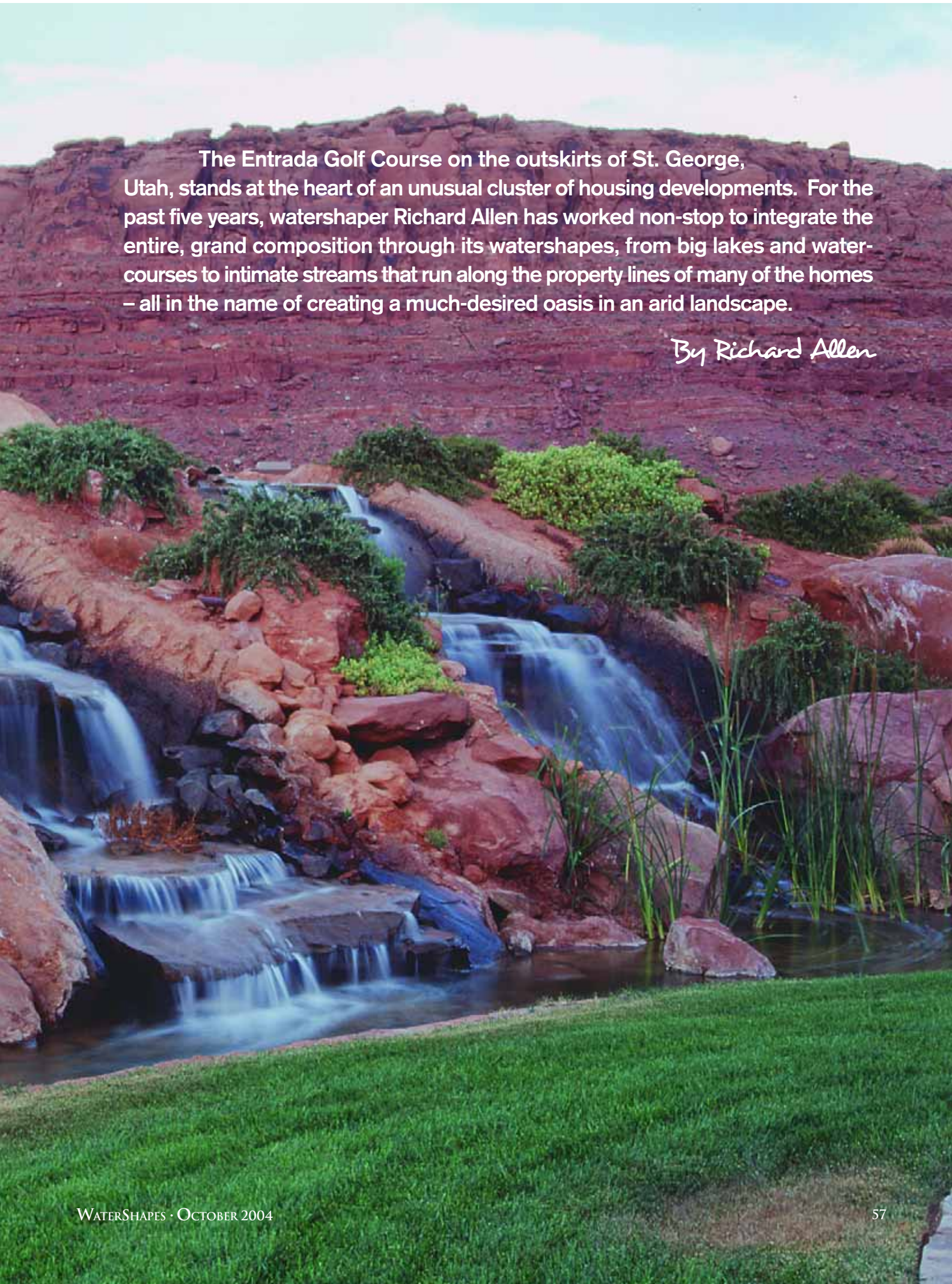




Community Pride: Rather than blighting the Schuylkill waterfront, the restored Fairmount Water Works now stands alongside picturesque boathouses as a gleaming monument to pioneering 19th Century technology of urban water distribution. The river itself offers rolling testimonial to the power of environmentalism to salvage and preserve our waterways.

Life in an Oasis





The Entrada Golf Course on the outskirts of St. George, Utah, stands at the heart of an unusual cluster of housing developments. For the past five years, watershaper Richard Allen has worked non-stop to integrate the entire, grand composition through its watershapes, from big lakes and water-courses to intimate streams that run along the property lines of many of the homes – all in the name of creating a much-desired oasis in an arid landscape.

By Richard Allen

Photos by Amy Snow, St. George, Utah

When people talk about how much they love living in the desert, I've come to believe that what they really mean is that they love living in an oasis looking out onto the desert.

That's profoundly ironic, but our clients in St. George, Utah, have all decided for one reason or another to move to an extraordinarily arid place and seem universally to crave the presence of water in their immediate surroundings. This is indeed one of the most important things they're looking for in homes in our developments.

It's one of the reasons why our company, Split Rock Inc. of St. George, has for the past five years been involved in a series of high-end housing developments built around Entrada, a championship golf course designed by Johnny Miller. My role has been to manage the design, engineering and construction of watershapes interspersed along the golf course and four adjacent housing developments.

The bodies of water range from massive lake and stream systems containing millions of gallons of water to smaller, decorative waterfeatures for individual homes – along with a few high-end swimming pools. It's an undertaking that has led me to a fuller understanding of how powerful water is when it comes to defining a space and attracting people who are looking for someplace special to live.

Rugged Beauty

The entire set of projects originated with the golf course, which was built about nine years ago. The course is actually a separate business entity from which our company has purchased the surrounding land for the purpose of development. We are currently developing the fourth and fifth phases and in fact now hold almost all of the available

land around the course.

Through the process of developing our properties, we have naturally sought to integrate the designs of the homes and their exterior spaces with the golf course, which has in turn led us into a relationship with the course owners whereby we've installed extensive watershapes within the boundaries of the course itself. That's a lot of water on its own, but the watershapes in the developments are actually more involved.

The land is located on Snow Canyon Parkway, which leads to nearby Snow Canyon State Park. The topography and geology of the area is quite spectacular, with mountainous outcrops of Navajo Red sandstone interlaced with extensive lava flows. This is indeed a unique spot, perched right where the Colorado plateau, the Great Basin of Utah and the Mojave Desert all converge with high-altitude plateaus, sandstone cliffs and a vast expanse of desert dotted with such sculptural plant structures as yuccas, sages and desert willows.

It's a diverse and beautiful area, and the design challenge from the start has been to craft watershapes and associated stone structures that fit within this spectacular setting. That has meant working with thousands of tons of rock quarried nearby. It has also meant spending countless hours studying local rock formations and closely observing exactly how water has carved the landscape – and selecting natural features we can mimic in our own landscapes and watershapes.

The homes themselves have a southwest, Santa Fe-style architecture, drawing their colors from the surrounding rockwork with their earth-tone stucco finishes. Although the associated watershapes vary in size, complexity and function, there's homogeneity in their styling – a key step in integrating the entire property.

In effect, the watershapes all follow the same program, with large, rugged rockwork that evokes the local sandstone. Fortunately, there's a lot to be accomplished with this palette, because the sandstone boulders are found in a variety of shapes and sizes and can be used to create effects from the bold and dramatic (using boulders weighing more than 60 tons in some cases) to the more subtle and understated.

Natural Plans

My work in this area began in 2000 on the first development. Known as Kachina Cliffs North, its central watershape is the first we built on site – a 700-by-125 foot lake that sits between a row of houses and Hole 7. The idea was to provide a backdrop for homes that would double as a buffer zone between

Among our many ambitions was transformation of the golf course's utilitarian watershapes into decorative elements that helped conjure the image of a desert oasis in the minds of prospective homeowners.

the residences and the field of play.

There was already a watershape in this spot, but it was a utilitarian, 300,000-gallon irrigation reservoir that offered little by way of aesthetics. So we expanded the original lake to one that now holds two million gallons, is surrounded by rock formations and boasts stream and waterfall compositions on each end.

The lake is contained within a PVC liner, but there's a broad and well-concealed concrete shelf around its edges that we set up to support the rockwork. On one end is a 300-foot stream that flows to a six-foot waterfall flanked by several smaller cascades; on the other is a set of small waterfalls with their own winding, 600-foot stream. The streams are fed by a 30-horsepower pump that feeds two small stilling wells that serve as their headwaters.

The development is graded with two-foot elevation changes between lots, so we had about 12 feet of vertical drop to work with between the headwaters and the lake.

We were pleased by the results of this first watershape but immediately saw how we could do things far more effectively in future installations with a more deliberate planning process that took elevations, transitions, stream courses and the placement of the large rock formations into account on the drawing board. This led to changes within our own organization, from which point I was part of the design

team in the early planning stages for subsequent developments.

By planning for the watershapes from the outset, we were able to lay out the housing locations, streets and other details of the developments with the idea that they would interact with more extensive stream, waterfall and lake features. Indeed, our design goal is to have every home's backyard within 15 or 20 feet of a stream, waterfall or lake edge.

This put a premium on making sure

Learning by Doing

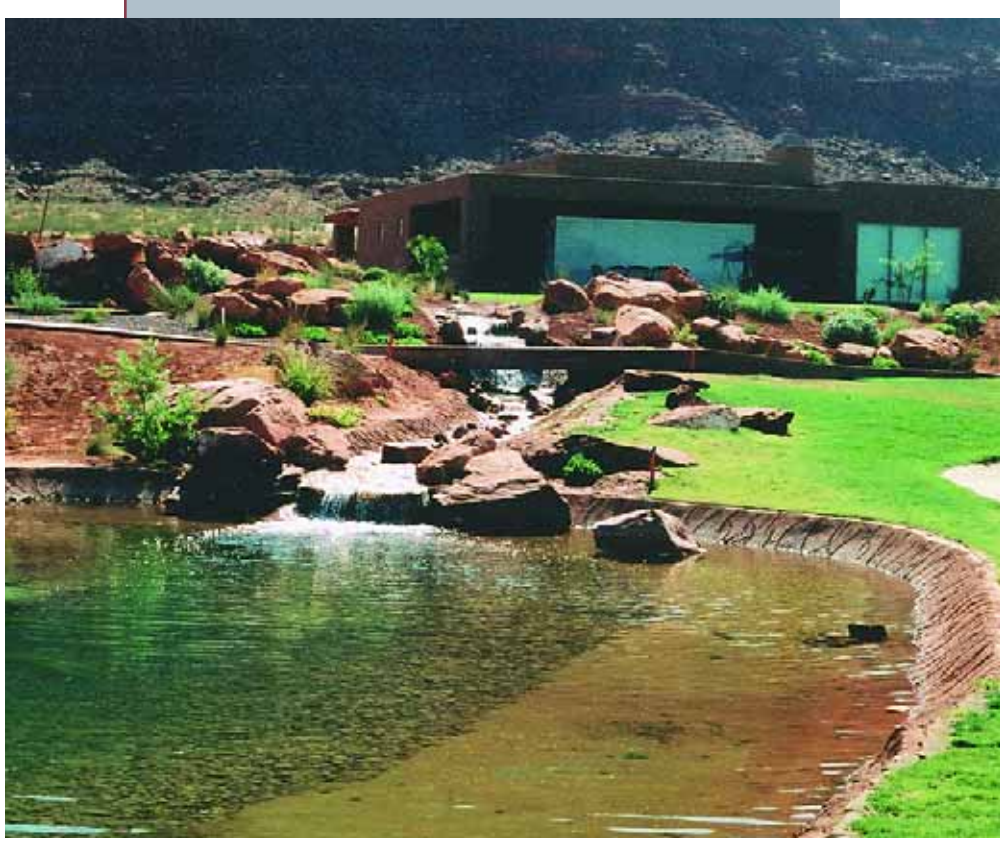
One of the biggest evolutions in the way we get things done has to do with the finesse we now apply in managing flows and water volumes in our streams.

In running waterways through and around residential developments, we always knew clearly of the need for varying flows in different places. In some intimate spots, for example, smaller flows and gentler waterfalls are needed. In others, where the views are from more public areas, a far more vigorous flow may be the answer.

Where our earlier projects may have sought a middle ground by setting up 100-to-150-gallon flow rates, we now tend to start with larger, vigorous flows of, say, 300 gallons per minute, and then reduce the flow downstream by branching off into wider, multiple streams and cascades. At that level, it's all about control.

This is just one example of how early planning for watershapes results in easier work on site. Although large watershape projects are always challenging and the unexpected will arise, these days our work really does seem to fall into line with regularity. The results – that is, satisfying views from all of the homes, walkways, streets and cart paths – give our developments their defining characteristic.

– R.A.



The homes exist in intimate proximity to the golf course – set back far enough to be buffered from errant shots but close enough to share in the sights and sounds of the abundant watershapes that feed the course's lakes.

every linear foot of watershape was designed and installed with top-notch aesthetics and expertise. And it worked because we had real control, from the design stage forward, of the specifics of elevation changes, headwaters locations, plumbing runs, equipment locations, primary focal points and the placement and orientation of big rock formations.

Once we hit our stride and fully integrated the watershapes into overall subdivision planning, the work began to unfold for all of us like a beautiful tapestry. Where Kachina Cliffs North has done well with two surface-acres of water spread among five lakes and 2,000 feet of streams with a combined flow of 9,000 gallons per minute, the next development, Kachina Cliffs South, includes about a dozen 20-foot waterfalls that feed an interconnected three-lake system.

The subsequent development phases each seemed to get even more elaborate and visually compelling. Indeed, Kachina Cliffs East (our most recent) is truly spectacular, with 21 waterfalls, 3,500 feet of streams and an acre's worth of combined surface area.

Greater Lengths

Our new planning regimen also has enabled us to enhance our involvement with the golf course itself. Where Kachina Cliffs East abuts the course, for instance,

The backdrop for the homes, the golf course and all of our watershapes is truly spectacular. Indeed, we took ample inspiration from the natural terrain in organizing the housing developments and mimicking the contours of the land and its rugged outcroppings.

One of our assumptions in laying out the developments was an integration of water so complete that no home would be more than a few paces away from it in one or more forms – stream, cascade and/or lakeshore.

we installed a faux-rock retaining wall all along the front of the green on Hole 7 that ties in geologically with the red cliff bands in the mountains in the background.

It's more than helpful that our work with the golf course has always been collaborative. In fact, all of our watershapes are now filled using irrigation water from the course that originates in a system of wells. We're also working on developing a system that will incorporate a secondary-use water supply to maintain the long-term reliability of the wells as the local need for water increases.

Through the years, we've built a number of decorative features on the course, including the watershapes for holes 5, 6, 7 and 8:

- Hole 5 is a 175-yard par three where, from the tee, you can see a waterfall and a stream meandering along the side of the cart path.
- On Hole 6, there's a 400-foot lake that varies in width from 80 to 120 feet and is fed by streams at both ends that reach the lake via small cascades.
- Hole 7 includes the largest watershape I've ever built: the above-mentioned 700-by-125-foot lake fed by two streams and, up by the green, another 140-by-90-foot lake with a faux-rock retaining structure, big waterfalls and more than 300 feet of stream. Portions of the cart path had to be removed to make way for the streams. Instead of piping under the path, we constructed bridges that provide beautiful up-close views of both streams and waterfalls.
- Hole 8 has a 500-by-125-foot lake along its side. The most interesting detail here is a split stream that flows down around two sides of the tee area. It looks great up close, but the view looking back from the green is truly spectacular.

Our work in the developments surrounding this spectacular golf course is far from finished. We're currently involved with a brand new development

It'd difficult to look at the Entrada site as anything other than an integrated whole, with the homes, exterior spaces, watershapes and golf course all rising from a singular vision and expressing the forms and textures of an eminently civilized desert oasis.

called the Reserve at Entrada – four subdivisions, all with extensive watershapes woven through and blending with the area's network of lava flows.

We're also constructing a series of smaller lakes and streams for the Inns at Entrada, a development nearby that features four integrated water systems that will provide intimate sights and sounds even for higher-density units.

Facing the Future

Creating all these watershapes has been a tremendous and exciting personal challenge. The volumes of rock we move and the sizes of the equipment we bring in to shape the land and place the big boulders are awe-inspiring, and it's been fun to watch everything come together.

The greatest satisfaction I take in my work, however, comes in the form of comments from residents of our various Entrada projects who have told me over and over again that the reason they enjoy living where they live is because our developments create oasis-like enclaves in the desert that are unique – and uniquely desirable.

Quality Issues

The extensive nature of the watershaping at the Entrada developments has taught us many lessons, some of the most important having to do with maximizing the energy efficiency of our systems.

For starters, we use large plumbing on simple runs – pumps that range from 15 to 50 horsepower and pipes ranging from 10 to 24 inches. We also make the most of gravity. In several places, water from streams ends up in small ponds that serve as secondary sources and is then piped from that reservoir to several falls at lower elevations. By creating extra falls but only having to pump the water to the top, we let gravity do its thing.

Again, planning and integration of watershape concepts at the start of the design process is the key: Making the most out of every inch of every vertical transition is not something that can be accomplished by on-site improvisation!

– R.A.

Of Interest

The following information has been provided to WaterShapes by product suppliers. To find out how to contact these companies, look for the Product Information Card located on page 72.

Landscape Granite

Circle 135 on Reader Service Card

COLD SPRING GRANITE offers landscape features in granite, including split-face, tumbled and flag forms for use in walls, stairways and paths as well as sawn and split pavers and a variety of landscape features, fountains and waterfalls. The company runs its own quarry and also imports material from worldwide sources to provide designers with stone in a variety of colors and patterns. **Cold Spring Granite,** Cold Spring, MN.

Pond Skimmer/Filter

Circle 136 on Reader Service Card

SAVIO ENGINEERING introduces the Compact Skimmerfilter, a smaller version of the company's Skimmerfilter platform. Designed to provide complete, multistage filtration at affordable rates, the device includes skimming action, macrofiltration, a UV clarifier option and biological filtration in one package for ponds up to 700 gallons and skimming for ponds up to 3,000 gallons. **Savio Engineering**, Santa Fe, NM.

Stone Treatments

Circle 137 on Reader Service Card

LAYORCARE offers a complete line of products for the treatment and sealing of stone surfaces. The cleaners will remove calcium, mineral deposits and efflorescence or serve as pre-treatments for sealing, while the sealing products come in a variety of sheens and will preserve or restore the luster of various stone surfaces, including pavers. Cleaner/sealer combination packages are also available. **LayorCare,** Scottsdale, AZ.

Commercial Pool Pumps

Circle 138 on Reader Service Card

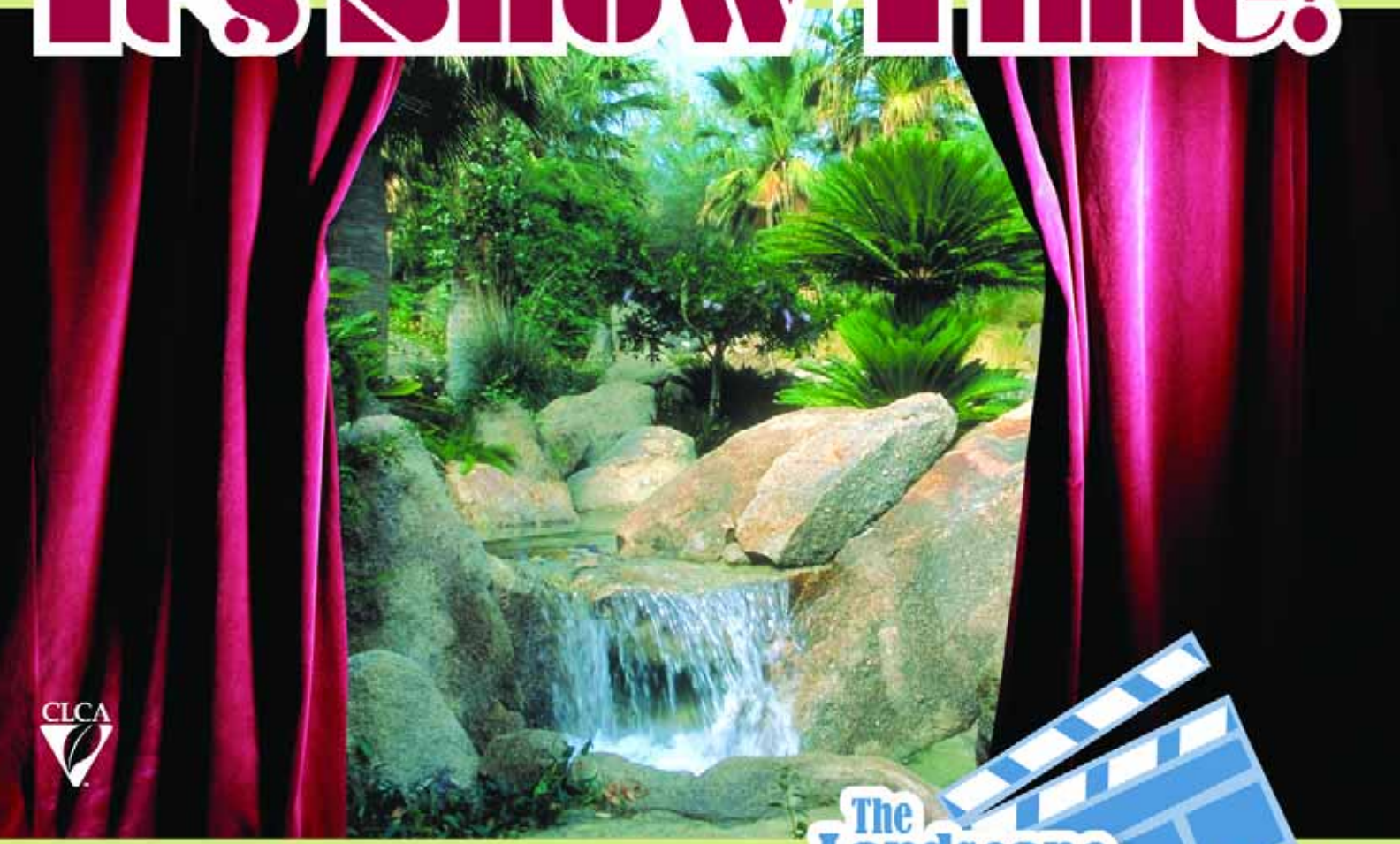
PENTAIR announces the EQ series of pool pumps. Designed for maximum efficiency, the lightweight, self-priming pumps feature an efficient impeller design that offers longer motor life and quiet, stable operation, a bolt-on strainer pot and a clear lid for convenient servicing. The units come with 6-inch suction and 4-inch discharge connections and are available in single- and three-phase models. **Pentair**, Sanford, NC.

Continued on page 68

new venue!

February 16–17, 2005
The Los Angeles Convention Center

It's Show Time!



The Landscape Industry Show 2005

Presenting the 2005 Landscape Industry Show!

Performances include water garden professionals with new ideas, irrigation and maintenance solutions, seminars to expand your knowledge, seminars to earn CEUs needed for many industry-related certifications and networking with the best in the industry

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Watch for pre-registration information and how to receive your free admission badge.

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Lighted Vase

Circle 139 on Reader Service Card

FIBERSTARS has introduced a lighted-vase waterfeature with a spillway. Designed to put on a focused sound and light show, the vase can be added to an existing illuminator and comes with 45 feet of pre-attached fiberoptic cable. Lightweight and easy to plumb and install, the vase comes in two standard colors – white or tan – and features a paintable surface for adaptability to any poolside look. **Fiberstars**, Fremont, CA.

Concrete Dimensioning Tools

Circle 140 on Reader Service Card

CONCRETE IMPRESSIONS makes components for use in adding dimension to concrete surfaces. Products include flexible texturing mats, rigid texturing tools, texturing skins and aluminum imprinting tools – a complete range of products designed to reproduce the look and texture of everything from cobblestones and slate to wood planks. Stains and colorants are also available. **Concrete Impressions**, San Antonio, TX.

Self-Contained Equipment Systems

Circle 141 on Reader Service Card

VAK PAK designs and manufactures self-contained equipment systems and vaults for swimming pools, spas and fountains for hotels, theme parks, zoos and backyards. Designed to simplify the selection and installation processes, packages have been designed and stubbed out with a wide range of applications in mind to provide prime flow rates and turnover times and top filtration and hydraulic performance. **Vak Pak**, Jacksonville, FL.

Miniature Underwater Light

Circle 142 on Reader Service Card

FOCUS INDUSTRIES has launched the SL-40, the newest member of its brass underwater-light family. At just over two inches in diameter, the small fixture is designed for maximum design flexibility in creating dramatic effects while the light source goes relatively unnoticed beneath the water's surface. The light features a cast-brass housing and comes with an MR-11 lamp. **Focus Industries**, Lake Forest, CA.

Continued on page 70

The Platinum Standard

A retrospective pictorial highlighting 25 key projects covered in the first six volumes of WaterShapes – projects that have defined the state of the art, pushed the envelope of creativity and given us all a glimpse into the fabulous potential of the watershaping arts.

Part idea book, part tribute to design achievement and in all ways a celebration of the magazine's history and development, it's our gift to you for use in your projects to come.

Coming in the December issue of WATERSHAPES

INTERACTIVE WATERPLAY

Circle 143 on Reader Service Card

EMPEX WATERTOYS manufactures Sprayparks for installation at aquatic facilities and waterparks. The colorful aquatic playgrounds offer the safety of a shallow pool along with an abundance of water activity to keep children busy, happy and cool for hours. The line includes a variety of central climb/slide stations as well as various spray features, ground jets and interactive watertoys. **Empex Watertoys**, Uxbridge, Ontario, Canada

HAND-PAINTED TILE

Circle 144 on Reader Service Card

STEUBEN TILE offers hand-painted, double-fired, gloss-glazed tiles for swimming pools. Designed to withstand harsh chemicals, radical temperature changes and UV radiation, the tiles retain their bright colors and feature opulent designs from the classical to the contemporary. Some of the 6-by-6-inch tiles stand alone; others are in linked series with two, three or four tiles to a sequence. **Steuben Tile**, Hornell, NY.

POOL-FINISH ADDITIVE

Circle 145 on Reader Service Card

PYRAMID CEMENT PRODUCTS offers Silicone Shield, a blend of silicone-tread mineral powders that is added to standard cement-based pool-plaster mixes on the job site. Designed to make the plaster surface impenetrable and resilient, the material exploits the fact that silicone is a natural deterrent to bacteria and algae growth while reducing long-term plaster staining. **Pyramid Cement Products**, Fort Mill, SC.

PAVER LIGHTS

Circle 146 on Reader Service Card

SUPER VISION offers its Model SV-PAVER4X4, a fiberoptically illuminated paver for use in marking or accenting brick patios, paver decks, driveways, walls and more. Made with an ABS plastic body topped by a frosted, high-impact polycarbonate surface, the lightweight, 4-by-4-inch paver is illuminated with a 25-strand fiberoptic cable and is designed to radiate a soft, subtle, yet special glow. **Super Vision**, Orlando, FL.

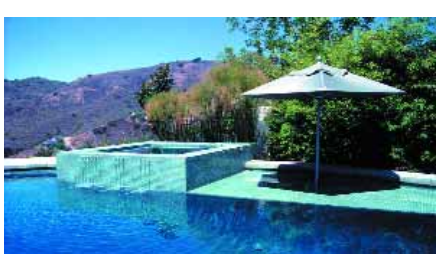
Continued on page 74

HOW GOOD DO YOU WANT TO BE?

GENESIS 3
LEVEL I DESIGN SCHOOL
October 27-31, 2004
Morro Bay, California

CURRICULUM HIGHLIGHTS

- Limited number of participants to ensure the highest level of instruction
- Each class is taught by industry professionals
- Special focus on design, engineering, vanishing edge details, construction, drawing and presentation techniques, hydraulics, the history of swimming pools and fountains, plus much more!
- Tuition includes classroom time, supplies, first-class accommodations and food. Airfare is not included.
- Participants are encouraged to bring a guest or spouse. Please call for more information and prices.



Genesis 3 Lifestyle Program
October 7-10, 2004
Villagio Inn & Spa, Napa Valley, California

Spend three nights in the heart of the Napa Valley with your Genesis 3 friends and associates, learning to relate to high-end clients while experiencing food, wine and the good life. Private winery tours, barrel samplings with winemakers, guided wine tastings and an interactive cooking class are all part of the plan, along with deluxe resort accommodations with full-service spa facilities on the premises.

Genesis 3 at the Aqua Show
November 8-11, 2004
Mandalay Bay Hotel, Las Vegas, Nevada

Genesis 3 returns to the Aqua Show to bring the design/build segment of the pool industry to Las Vegas starting with a full-day perspective-drawing class taught by David Tisherman and followed by three days of seminars included within the show's educational program. Genesis 3 will also have a prominent role on the show floor, with our own educational/exhibit space. And don't forget the Genesis Family Reunion!

Now Open to Membership:
The Association of Professional Watershape Designers

Those who have attended our Genesis 3 schools, seminars and programs and have accumulated sufficient credits are encouraged to contact us about the Association of Professional Watershape Designers (APWD) — an organization filled with professionals who share a common goal of advancing the quality of our work through education.

For more information on events or APWD, contact Lisa Haberkorn toll-free at (877) 513-5800.

Association of Professional apwd Watershape Designers

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Of Interest Index:

135	Cold Spring Granite (pg. 66)
136	Savio Engineering (pg. 66)
137	LayorCare (pg. 66)
138	Pentair (pg. 66)
139	Fiberstars (pg. 68)
140	Concrete Impressions (pg. 68)
141	Vak Pak (pg. 68)
142	Focus Industries (pg. 68)
143	Empex Watertoys (pg. 70)
144	Steuben Tile (pg. 70)
145	Pyramid Cement Products (pg. 70)
146	Super Vision (pg. 70)
147	Bobcat (pg. 74)
148	Tuscan Imports (pg. 74)
149	BioLab Commercial Pool Care (pg. 74)
150	Kryton Group (pg. 74)
151	Quaker Plastics (pg. 76)
152	Cantera Especial (pg. 76)
153	Innovative Pool Products (pg. 76)
154	Scotia Slate Products (pg. 76)
155	Imerys (pg. 77)
156	StoneAge Lighting Creations (pg. 77)
157	National Pool Tile Group (pg. 77)
158	Pacific Clay Products (pg. 77)

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Continued on page 76

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r **February 1999** (Vol. 1, No. 1)
Tisherman on working in difficult soils; **White** on edge treatments; **Lacher** on expansive soils.
r **June 1999** (Vol. 1, No. 3)
Phillips on water and decks; **Parmelee** & **Schick** on soils and geology; **Anderson** on water sounds.
r **August 1999** (Vol. 1, No. 4)
Anderson on stream design; **Adams** on community waterparks; **Gutai** on spa hydraulics.
r **October 1999** (Vol. 1, No. 5)
Holden on aquatic-design history; **Mitovich** on dry-deck fountains; **Tisherman** on site geometry.
r **December 1999** (Vol. 1, No, 6)
Finley on Japanese gardens; a roundtable on pools and landscape design; **West** on color rendering.
r **February 2000** (Vol. 2, No. 2)
Hersman on lighting design; **Macaire** on faux-rock installations; **Andrews** on glass mosaics.
r **March 2000** (Vol. 2, No. 3)
L'Heureux on project management; **Long** on steel cages; **Forni** on installing and maintaining lakes.
r **April/May 2000** (Vol. 2, No. 4)
Schwartz on garden access; **Anderson** on streambeds; **Nantz** on watershapes and architecture.
r **June/July 2000** (Vol, 2, No. 5)
Holden on fountain-design history; **Bibbero** on large stones; **Anderson** on making streams work.
r **September 2000** (Vol. 2, No. 7)
Davitt on designing for small spaces; **Altvater** on the importance of aeration; **Hetzner** on sheet falls.
r **Nov./December 2000** (Vol. 2, No. 9)
Arahuete on John Lautner; **L'Heureux** on stretching laminar flows; **Benedetti** on satellite surveying.
r **January/February 2001** (Vol. 3, No. 1)
Holden on a retro-look design (I); **Fleming** on upscale approaches; **Gutai** on pump technology.
r **March 2001** (Vol. 3, No. 2)
Moneta & **Farley** on site-specific design; **Benedetti** on fiberoptics; **Alperstein** on golf-course water.
r **April 2001** (Vol. 3, No. 3)
Jauregui on inspired clients; **Dirsmith** on frosty fountains; **Tisherman** on deluxe finishing.
r **May 2001** (Vol. 3, No. 4)
Reed on sculpture gardens; **L'Heureux** on sequenced water; **Brandes** on restoring riverfronts.
r **June 2001** (Vol. 3, No. 5)
Winget on fun-inspired waterforms; **Holden** on survey formats; **Schwartz** on classic stonework (I).
r **July/August 2001** (Vol. 3, No. 6)
Rugg on pond basics (I); **Ruthenberg** on perimeter overflow; **Schwartz** on classic stonework (II).
r **September 2001** (Vol. 3, No. 7)
Rugg on pond basics (II); **Urban** on energy savings; **Pasotti** on interactive waterplay.
r **October 2001** (Vol. 3, No. 8)
Tisherman on hilltop views; **Hagen** on natural stream work; **Schwartz** on classic stonework (III).
r **Nov/December 2001** (Vol. 3, No. 9)
Straub on Kansas City's fountains; **McCloskey** on the Getty Center; **Tisherman** on Fallingwater.
r **January 2002** (Vol. 4, No. 1)
Phillips on Hearst Castle's watershapes; **Bower** on the Raleigh Hotel pool**; Roth** on Katsura Rikyu.
r **February 2002** (Vol. 4, No. 2)
Marosz on project integration; **Moneta** on spa-edge details; **Affleck** on scupture and water.
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Anderson on pond essentials; **Pasotti** on interactive waterplay; **Gibbons** on 'stellar' fiberoptics.
r **June 2002** (Vol. 4, No. 6)
Altorio on civic fountains; **Gutai** on skimmers; **Beard** on working with landscape architects.
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Rosenberg & Herman on site-sensitive design; **Dirsmith** on long-term design; **Gutai** on filters.
r **October 2002** (Vol. 4, No. 9)
Copley & Wolff on modernizing fountains; **Bethune** on imitating nature; **Tisherman** on edgy colors.
r **Nov/December 2002** (Vol. 4, No. 10)
Holden on Villa d'Este; **Hobbs** on Maya Lin's watershapes; **Phillips** on water in transit.
r **January 2003** (Vol. 5, No. 1)
Fleming on high-end ambitions; **Harris** on decorative interior finishes; **Gutai** on surge tanks.
r **February 2003** (Vol. 5, No. 2)
The **Beards** on collaboration; **Yavis** on custom vinyl-liner pools; **Mitovich** on Microsoft's campus.
r **March 2003** (Vol. 5, No. 3)
Fowler on habitats for marine mammals; **Benedetti** on outdoor kitchens; **Dews** on planting pockets.
r **April 2003** (Vol. 5, No. 4)
Shoplick on watershapes as teaching tools; **Gutai** on water flow; **Schwartz** on Maya rockwork.
r **May 2003** (Vol. 5, No. 5)
Zaretsky on sensory gardens; **Freeman** on hydraulic retrofitting; **Hanson** on water/stone sculpture.
r **June 2003** (Vol. 5, No. 6)
Gunn on fountain whimsy; **Tisherman** on water-shaping for an art collector; **Holden** on tile.
r **July 2003** (Vol. 5, No. 7)
Fintel on attracting birds; **Lacher** on structural engineering; **Alperstein** on golf course design.
r **August 2003** (Vol. 5, No. 8)
Miller on site-specific fountains; **Gutai** on plumbing joints; **Holden** on period-sensitive restoration.
r **September 2003** (Vol. 5, No. 9)
Hebdon on borrowing naturalism; **Ruddy** on indoor designs; **So** on modernist sculpture.
r **October 2003** (Vol. 5, No. 10)
Mitovich on dry-deck fountains; **Roth** on liner issues; **Marckx & Fleming** on glass tile.
r **November 2003** (Vol. 5, No. 11)
Holden on carved stone; **Shaw** on roles of consultants; **Forni** on period-sensitive renovation.
r **December 2003** (Vol. 5, No. 12)
Five-year article and topic indexes; five-year index for all columns, 1999-2003.
r **January 2004** (Vol. 6, No. 1)
Ruddy on enclosures; **Lacher** on steel and concrete; **Forni** on water quality for natural watershapes.
r **February 2004** (Vol. 6, No. 2)
Varick on nature and architecture; **Benedetti** on protecting stone; **Kaiser** on grand-scale watershapes.
r **March 2004** (Vol. 6, No. 3)
Morris on kinetic sculpture; **Cattano** on collaboration; **Hebdon** on water and settings for healing.
r **April 2004** (Vol. 6, No. 4)
Hayes on water, art and spirituality; **Gutai** on concrete-spa jets; **Gregory** on water and high art.
r **May 2004** (Vol. 6, No. 5)
Rowley on main-drain safety; **Ewen** on purposeful restoration; **Dallons** on high-wire watershaping.
r **June 2004** (Vol. 6, No. 6)
Dallons on a hilltop treasure; **Mitovich** on the D-Day Memorial; **Slawson** on Japanese inspiration.
r **July 2004** (Vol. 6, No. 7)
Benedetti on fortifying concrete; **Shaw** on fountain 'standards'; **Holden** on Italy's watershapes.
r **August 2004** (Vol. 6, No. 8)
Bravo on Olympic-scale restoration; **Martin & Tester** on water and music**; Jauregui** on clients and styles.
r **September 2004** (Vol. 6, No. 9)
Abaldo on a grand-scale vision; **Gutai** on valves;

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NATIONAL POOL TILE GROUP has published marketing materials to inform consumers as well as contractors about its modular, pre-fabricated barbecue islands. Designed for installation by one person in less than a day, the islands arrive complete – grill, sink, accessories and tile all in one shipment – and modules are so lightweight and manageable that no cranes or forklifts are needed. **National Pool Tile Group**, Anaheim, CA.

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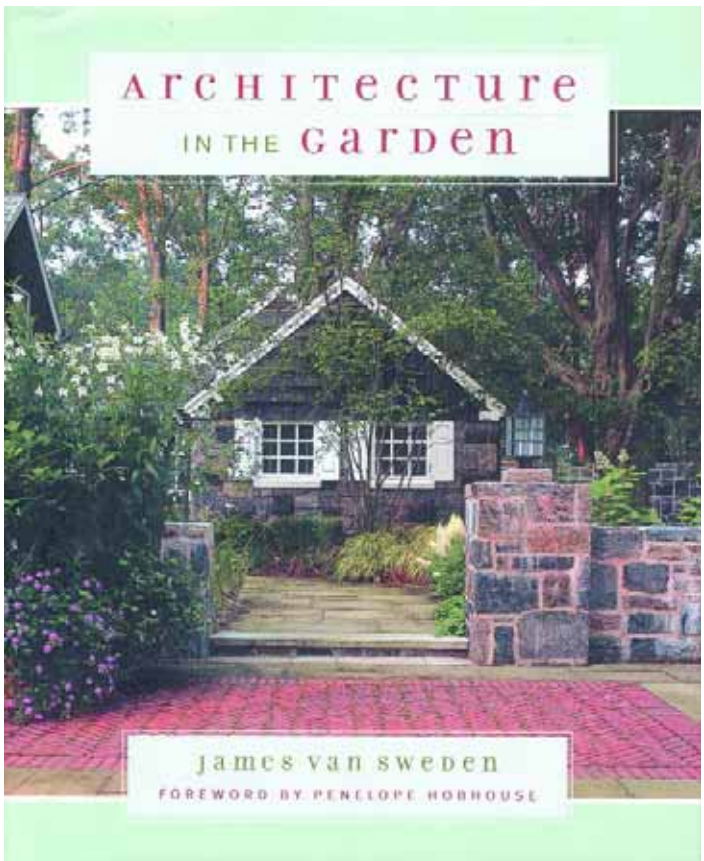
By Mike Farley

Good Bones



I may be biased, but I think that James Van Sweden is the most important and certainly one of the most influential landscape architects working today. His work in suburban residential settings has influenced an entire generation of designers, and his signature use of ornamental grasses, stacked ledger walls and well-designed pathways can be seen in thousands of spaces across the country.

Van Sweden's latest book (his third) is *Architecture in the Garden* (Random House, 2002), which is all about designing spaces that have, as he puts it, "good bones." What he means is that without a design that takes the architecture of the home, a site's characteristics and the tastes of the client firmly into account, even spaces that include beautiful materials, lush plant life and gorgeous watershapes will fall short of their full potential.

Most of the beautifully illustrated 270-page text takes the form of case studies in which design theory is put into practice. Where his first two books, *Water in the Garden* and *Bold Romantic Gardens*, dealt with a mix of commercial and residential settings, his latest is exclusively about residential spaces, covers a wide range of designs and offers a wealth of useful details.

The examples are broken into six categories: art in the garden; small spaces and town homes; large country spaces; seaside settings; stone in the garden; and blending the architecture of the home with garden structures. In each, he offers guidelines that are often not so much earth-shattering revelations as examples of the smart application of familiar ideas.

In the section on designs for small spaces, for example, he goes into depth about the use of cut stone with geometric lines and shapes as a way to harmonize with the urban-ness of the setting. In large country spaces, by contrast, he makes an argument for the use of sweeping lines that blend the home with surrounding landforms. Moving onto seaside settings, he focuses on the use of pathways and decks both to take advantage of views and to manage "circulation" through the space. He also states his preference for using wooden structures that evoke associations with piers and docks.

The section on blending architecture with the garden is particularly interesting and useful. He advises designers to look for opportunities to pick up materials of the home's design and incorporate them in structures within the garden, for example, and writes at length about the use of line in the form of pathways, walls and overhead structures as a way to link architecture with outdoor spaces. (In this section, there's a terrific discussion of his work on Oprah Winfrey's home.)

The last section of the book shows scores of examples of specific architectural features, including walls, pathways, stairs, gates, bridges and watershapes.

For those of us who design and/or build spaces that include water, Van Sweden offers a range of beautiful examples throughout the book. In fact, water is treated in his work on the same level as plant material and dry hardscape, which I've always taken as a token of professional encouragement from one of the leading lights in landscape architecture.

To my mind, anyone designing backyard spaces especially should take a serious look at this book – then rush out and grab copies of the other two. WS

Mike Farley *is a landscape architect with more than 20 years of experience and is currently a designer/project manager for Gohlke Pools in Denton, Texas. A graduate of Genesis 3's Level I Design School, he holds a degree in landscape architecture from Texas Tech University and has worked as a watershaper in both California and Texas.*

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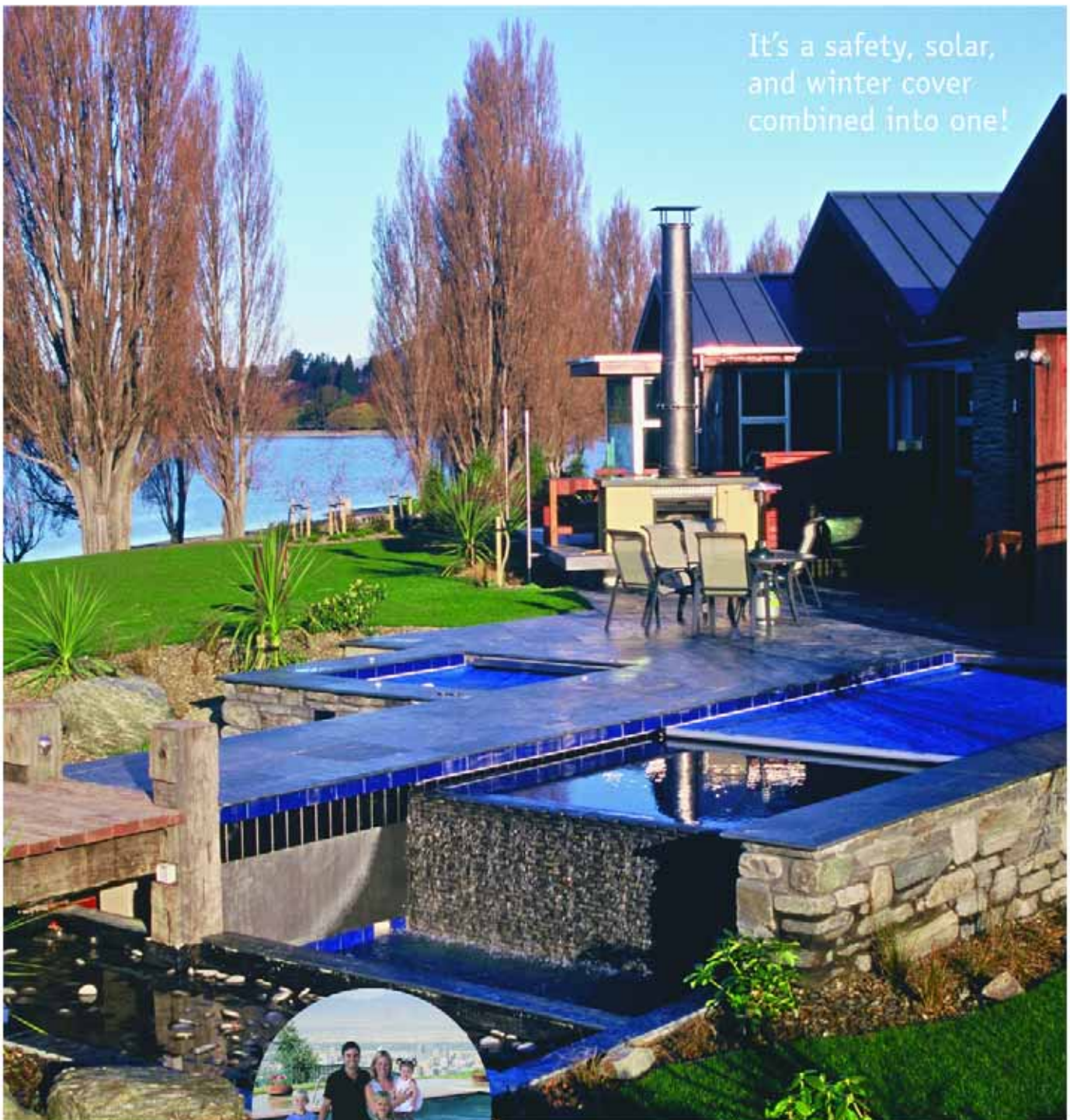

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