WATER WORLD

A PORTLAND DEVELOPMENT MAKES WATER ITS CIVIC DUTY

BY ROBIN CRAIG, ASLA

EVER-GROWING CITIES HAVE REQUIRED THE DEVELOPMENT OF ELABORATE NETWORKS OF SUPPORT SYSTEMS: Systems to supply and distribute clean water, dispose of and treat waste, control flooding and conduct storm water. Some of these systems have dramatically reshaped the fabric of the modern city. Others have remained invisible underground, unknown to the residents they serve. Even natural systems have been altered, removed and sometimes buried to meet the needs of the ever-developing city—another invisible system separating people from season, place and nature.

The expression of human and natural systems in landscape architecture represents a design opportunity to explore a new civic realm shaped by water. Civic, meaning "connected with the duties and obligations of belonging to a community," implies a mutual relationship as a population and responsibility to future generations. Storm-water facilities, linear bioswales, green streets and flow-through planters placed in public facilities, parks, open space, street right-of-ways and urban plazas underscore their civic importance and the community's role to steward its storm water and protect its watershed; hence storm-water facilities become civic sites and represent a new civic ecology.

Civic space represents a common ground among residents of a city, neighborhood or community and intrinsically ties the community to place. Using water to create civic ground, Headwaters at Tryon Creek, Portland, Ore., defines its common space with a newly daylighted creek.

GAINING CIVIC GROUND

The Headwaters at Tryon Creek development is a 2.88-acre (1.2-hectare) mixed-residential development in southwest Portland, which was completed in January. The development consists of a variety of housing types, including affordable senior housing, town homes and market-rate apartments owned by the city of Portland. Dolph Creek Townhomes currently are in the process of receiving Silver LEED certification from the Washington, D.C.-based U.S. Green Building Council. Headwaters Apartments and Village at Headwaters senior housing were built with green guidelines established by the city's Green Building Policies but currently are not pursuing LEED certification. All housing faces the armature of the daylighted stream, which acts as the spine of the site.

The goal of the developer and design team was to integrate the building architecture, parking, plazas, bridges and other site elements into a cohesive sustainable site development that elevates the stream's possibilities. To achieve this goal, the design team collaboratively worked with multiple

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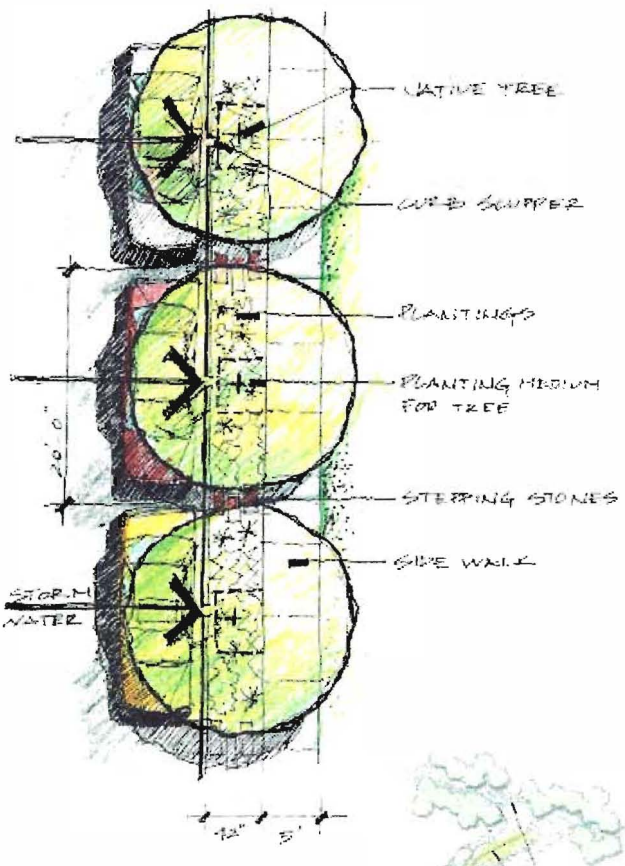
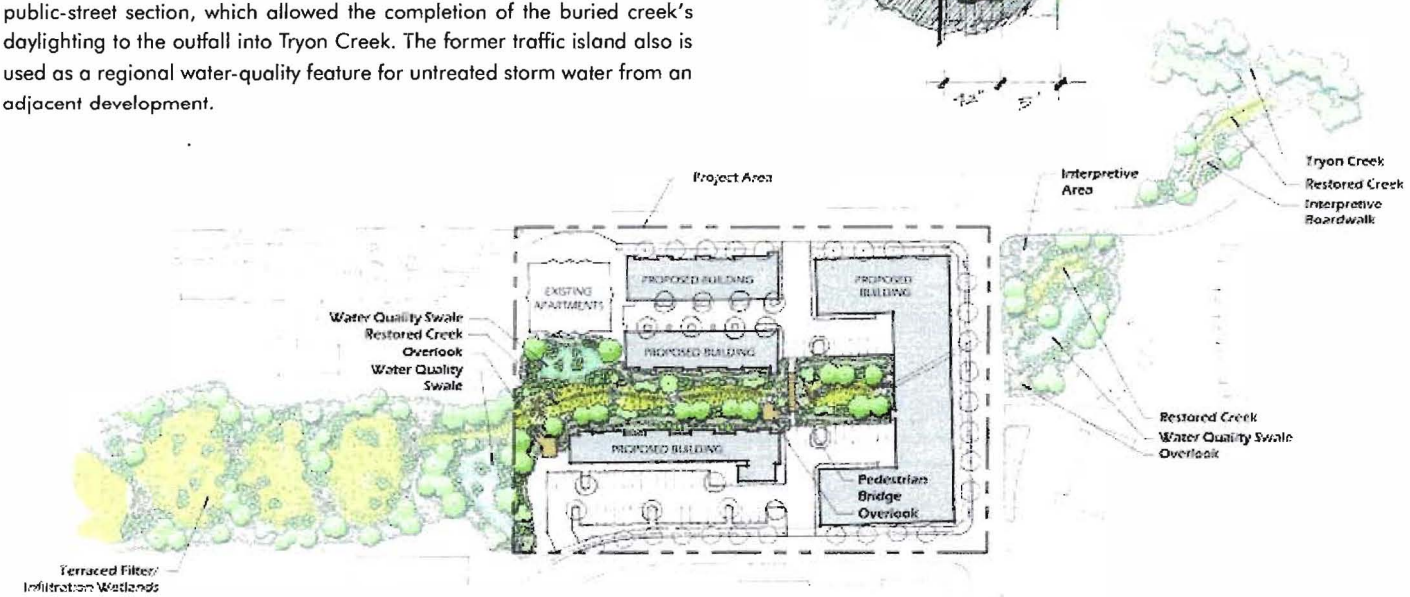
Portland agencies, including the city of Portland, Portland Development Commission, Portland Parks and Recreation, City of Portland Bureau of Environmental Services, City of Portland Office of Transportation, City of Portland Office of Sustainable Development, Oregon Housing and Community Services, Oregon Watershed Enhancement Board, and Metro/U.S Fish and Wildlife Service.

The city was extremely flexible during the technical permit process. Its main concern surrounded meeting the needs of the 100-year storm. Marie Johnson, City of Portland Bureau of Environmental Services, was one of the first proponents to suggest pulling the buried stream to the surface. The developer, Jim Winkler, Winkler Development Corp., Portland, became the champion to improve the stream's ecological health and create an identity for the development.

Tom Liptan, City of Portland Bureau of Environmental Services, attributed the success of the project to the tenacity, commitment and integrity of Winkler. "Because of Jim's actions, the city became a partner in the stream restoration and the sustainable storm-water improvements up and down the stream," Liptan asserts. All the attention to the stream was despite the stream lies high in its basin and only flows during wet months.

The developer, design team and supporting agencies underscored the importance of connectivity through the site linking an upstream forested wetland, a Portland Parks and Recreation site, with a downstream 0.5-acre (0.2-hectare) traffic triangle. The connection improved accessibility to the stream for the public with water-quality swale overlooks and interpretive boardwalks. The connection was made possible by the removal of a public-street section, which allowed the completion of the buried creek's daylighting to the outfall into Tryon Creek. The former traffic island also is used as a regional water-quality feature for untreated storm water from an adjacent development.





GREEN TEAM

- **DEVELOPER** / **Dolph Creek LLC**, an affiliate of Winkler Development Corp., Portland, Ore., (503) 225-0701
- **DOLPH CREEK TOWNHOMES ARCHITECT** / **Sullivan Architects**, Portland, (503) 225-1272
- **VILLAGE AT HEADWATERS AND HEADWATERS APARTMENTS ARCHITECT** / **Vallaster & Corl Architects**, Portland, www.vcarch.com
- **LANDSCAPE ARCHITECT** / **GreenWorks PC**, Portland, www.greenworkspc.com
- **STREAM RESTORATION** / **Inter-Fluve Inc.**, Madison, Wis., www.interfluve.com
- **CIVIL ENGINEERS** / **MGH Associates**, Vancouver, Wash., www.mghassociates.com

MATERIALS & SOURCES

- **VEGETATED ROOF** / Sopra Nature from **Soprema**, Wadsworth, Ohio, www.soprema.us
- **POROUS PAVEMENT** / SF Rima from **Basalite Concrete Products LLC**, Dupont, Wash., www.basalite.com
- **EROSION- AND STREAMBANK-CONTROL PRODUCTS** / woven biodegradable coir fabric from **Bros India**, Allepey, India, www.brosindia.com, and nonwoven biodegradable coir fabric from **North America Green**, Evansville, Ind., www.nagreen.com

WATER CELEBRATION

The tributary was buried beneath the property in a private storm-water system and is a headwater to the Tryon Creek in the Willamette River watershed. Portland did not have an easement to the waterway. A grant was received by the Oregon Watershed Enhancement Boord, Community Incentive Fund, and METRO/U.S. Fish and Wildlife Service, which assisted with the costs associated with daylighting the stream.

The daylighted stream is modeled after natural stream flow with a subsurface gravel lens for improved infiltration, nutrient recycling and groundwater storage. The enhanced storage condition allows for the release of cool water downstream during the dry seoson, a significant benefit to rearing trout and salmon. Root snags and native plantings assist in mitigating storm flow and providing habitat for amphibians and birds. Native plantings also help shade the stream and create a natural vegetated buffer. The entrance to the development allows the stream to take center stage with the breezeway entrance from the street. One's view is immediately directed to the ground plane and sinewy form, which disappears into the horizon. The architecture folds and frames the stream by creating a courtyard with balconies, boardwalks, seat walls and bridges to embrace the view.

Each surface of the development celebrates water and models natural processes, such as infiltration. For example, porous pavement is used in the parking lots to reduce storm-water volume. Flow-through planters capture and treat roaf runoff, and individual downspout gardens diffuse and infiltrate storm water from the roofs. Green street infiltration planters artfully display the conveyance of storm water from a series of pools that accept and emit the storm flow.

> "In this vast system of circulation, ceaselessly renewed there is not a drop of water that is not busy with its allotted task of changing the Earth's surface... .Day by day the process is advancing."
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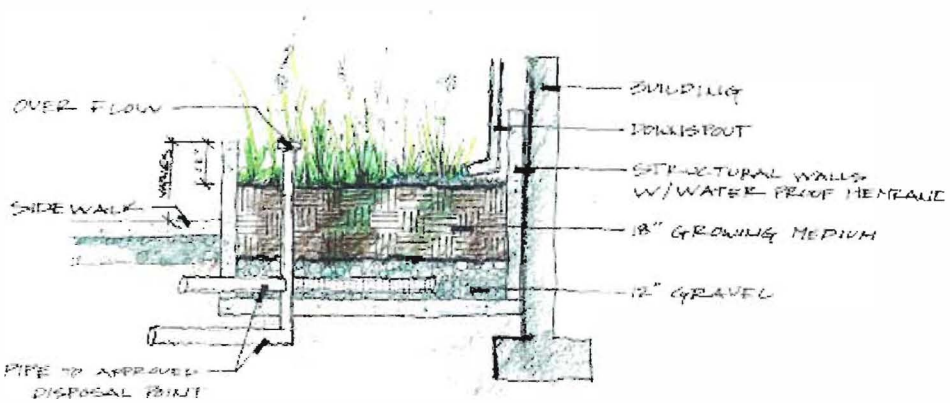
> —*Sir Archibald Drake*

Reducing storm-water volumes allows greater recharge of the groundwater table and protection of the stream from increased water temperatures and volume. A sustainable storm-water strategy of green streets reveals



THE DAYLIGHTED STREAM IS MODELED AFTER NATURAL STREAM FLOW WITH A SUBSURFACE GRAVEL LENS FOR IMPROVED INFILTRATION, NUTRIENT RECYCLING AND GROUNDWATER STORAGE.THE ENHANCED STORAGE CONDITION ALLOWS FOR THE RELEASE OF COOL WATER DOWNSTREAM DURING THE DRY SEASON, A SIGNIFICANT BENEFIT TO REARING TROUT AND SALMON.

the civic nature of the street and sidewalk. The sustainable strategies also include modeling the natural process of evapotranspiration with vegetated roofs on the three buildings, as well as street trees and native plantings.

"The project showcases the entire list of sustainable storm-water solutions," says Mike Faha, principal of Portland-based GreenWorks PC, the project's landscape architect. "It captures 74,450 square feet [6916 m²] of starm-water runoff area, including the areas of the porous paving and ecoroof. Over 1,595,061 gallons [6 million L] of storm water a year is intercepted and treated prior to reaching the new stream."

Water shapes space. Through streams, rivers and floods, water sculpts surfaces with its ability to scour, polish and carve. Human systems also can be modeled to embrace natural systems civically and hydrologically. Shaping its space with the passage of water from the sidewalks, parking lots and rooftops, Headwaters at Tryan Creek connects its residents to the natural world and a new civic realm.

Robin Craig is an associate of GreenWorks PC, Portland, Ore., a landscape architecture and environmental design firm that focuses on integrating people and nature through creative and sustainable design. She can be reached at robinc@greenworkspc.com or (503) 222-5612.