

going with the flow

For at least 200 years, city building has meant moving water off the land as quickly as possible. Rainwater collects in eavestroughs and gurgles down the downspouts, rushes along road gutters and into catchbasins, and pours down into the network of stormsewers under the streets. Where does that water go? Straight into the nearest lake, river, or creek, carrying with it all the oil, grease, road salt, animal feces, heavy metals, lawn and garden chemicals washed off lawns and pavements, plus whatever people pour down the storm drains. This noxious mixture makes life very difficult for fish. And the sudden volume of water in heavy storms can cause dangerous floods. Many cities have literally turned streams into stormsewers, encasing them in concrete channels or even buried pipes. But lately, such practices have been changing. Enlightened citizens and politicians, landscape architects and government staff are beginning to work with nature rather than against her, and to treat water as a resource rather than a nuisance.

By Dan Mollaf Photography by Robert Burley



In Toronto, the Don River watershed is the focus for ambitious regeneration plans. It's a huge challenge, for the 360-square-kilometre watershed is more than eighty percent urbanized, seventy-one percent of its volume in high flow comes from stormsewers, the lower river is channelized, without a mouth or delta anymore, and many of its tributaries are truncated or buried.

But through the efforts of groups like the City of Toronto's Task Force to Bring Back the Don and the Don Watershed Regeneration Council, administered by the Metropolitan Toronto and Region Conservation Authority (MTRCA), there are now regeneration strategies for the whole watershed. By reintroducing marshes, "daylighting" buried creeks, cleansing dirty stormwater, re-creating and connecting diverse native habitats, and other projects, the Don's advocates aim to make it a healthy, vital place for wildlife and people again.

The first three regeneration projects are models of the more holistic philosophy of going with the flow of water, designing with nature and working with local communities.

Until last fall, Harding Park, located in the headwaters of a major Don tributary, German Mills Creek, was largely a manicured suburban park. As well as a baseball diamond and children's play area, it contained a stormwater retention pond (a depression that fills up when it rains, and drains when it doesn't, to control flooding in the nearby stream). Then the Town of Richmond Hill rose to the challenge posed by the Don Council's regeneration plan, Forty Steps to a New Don, and decided to turn the dirty stormwater from the surrounding streets into water fit for fish. To achieve the \$150,000 transformation, last year they hired landscape architect Paul Cosburn of Unionville and hydrologist Brian Adeney of Gartner Lee Ltd.

As Cosburn and I view the three connected ponds leading from the stormwater outfall into the creek, the improvement in water quality is striking. The first pond is café au lait in colour and floating with unsightly scum. "This is road-type contamination," says Cosburn. "You can see the oil. There'll be fertilizer and animal waste in there too." Much of the polluted sediment goes to the bottom and the pond will be dredged regularly.

The water in the second, larger pond is much more inviting. A female mallard paddling along its edge, followed closely by six fluffy ducklings, is an encouraging sight. That means the water is already clean enough to support what ducks like to eat.

We make our way through the new native plantings of pioneer species like birch and trembling aspen along with slower growing hardwoods like red

oaks, butternut hickory and beech, to the third very shallow pond. In time this "wet meadow" will be entirely filled with native wildflowers. Water running in slowly from the second pond will saturate the soil and roots, and be filtered biologically. Today the wet meadow is still quite bare. Two brilliant yellow goldfinches are bathing vigorously in a rivulet of clear water trickling towards the creek.

What makes the ponds work so well are two "hickenbottom drains," which sit like stout tin salt cellars between the ponds, in jarring contrast to the natural surroundings. They regulate the flow of water between the ponds. "Everybody is using this new hickenbottom technology," comments Cosburn. "Now we've got to work on the aesthetics of it."

Brian Adeney reports that pond systems like Harding Park's can "knock the sediments out by sixty percent or more, the heavy metals thirty to forty percent, and phosphorus forty percent, just through settling." And the cattails and bullrushes will take up more phosphorus, nitrogen, and metals.

While cleansing stormwater is the major aim at Harding Park, far downstream at the Don Valley Brick Works that's considered a by-product of the new wetlands. Here the main goals are to restore the historic industrial buildings into a living museum, and to create an extensive wetland in the quarry by bringing back the stream that used to run through it.

The sixteen-and-a-half-hectare Brick Works site at Bayview Avenue and the Don Valley Parkway is rich with history. For a century, the red and yellow bricks manufactured here helped build the City of Toronto. They can be seen in such landmarks as Massey Hall and the legislature building. The north face of the quarry attracts geologists from around the world, for its sediments contain a rare record of the last warm interglacial



Left: One of the hickenbottom drains at Harding Park that serve to regulate the flow of water between the ponds. Above: At the historically rich Brick Works site, located at Bayview Avenue and the Don Valley, several heritage buildings are being restored. Under the direction of Oleson Worland Architects, the \$5.1 million regeneration project will open to the public next summer. Below: An original shale-walled channel will carry filtered water away from the quarry, through the building complex and into the Don.



period in this part of North America.

Over the years, the deep quarry has been filled with construction rubble, and the seventeen historical industrial buildings have fallen into ruin. Thanks in large part to local residents determined to rescue the Brick Works from developers, the MTRCA purchased the site in 1987. Last year the Authority hired Oleson Worland Architects to lead the \$5.1 million restoration and natural regeneration project, which will open to the public next summer.

"We're recreating Mud Creek," says David Oleson. "This is the first daylighted stream in Toronto." To "daylight" is to resurrect into the light of day a stream that has been buried in a pipe, often for decades. It's a new idea sparking interest in the U.S. and Canada. Mud Creek, which drains a large urban area from Downsview Airport to Bayview, is buried for much of its

pond will allow sediment and contaminants to settle. Then, as the water becomes cleaner by flowing through the natural ponds, the aquatic habitats should become more complex, with a variety of fish, turtles, frogs, birds, and other wildlife moving in. Already, a green heron stalks along the edge of the first pond, a flock of red winged blackbirds clings to the bullrushes in the second, and hundreds of dark brown tadpoles wriggle in the shallows of the third pond. When work on the buildings is complete, the water will leave the quarry through an original shale-walled channel the restorers have discovered flowing through the building complex and emptying into the main river.

"This site almost designs itself," sums up David Oleson. "Wetlands were here naturally from seepage, and we're just trying to give them a hand. We've organized and expanded the wetlands and made them part of a whole land-



journey to the Don. It flows in a natural channel in Moore Park Ravine just west of the quarry, but returns underground for its last leg to the river. A typical urban stream, much of its flow is stormwater.

"Mud Creek exposed the deposits of clay originally, and was used in the brickmaking process, so there are good reasons for incorporating it back into this site," says landscape architect Rod MacDonald of The Landplan Collaborative in Guelph, Ont., designer of the quarry wetlands, which at this stage are an expanse of five connected ponds filled with groundwater seepage and the low flow from Mud Creek.

A "splitter box" in the creek will divert much of its flow from the underground pipe into the quarry ponds. As at Harding Park, the first siltation

scape on the quarry floor."

To a neighbourhood a couple of kilometres downstream, the best thing about the Brick Works project may be that Mud Creek will now be a lot cleaner when it enters the Don. Chester Springs Marsh was once a scrubby floodplain meadow with nothing growing more than knee-height. The reason: three inches of topsoil covered a turn-of-the-century landfill. Now, just south of the soaring arches of the Bloor Street Viaduct, is a two-hectare newly minted pond and emerging marsh habitat protected by orange erosion fencing.

Chester Springs Marsh achieves the balance between concern for water, nature, and the human community that is the hallmark of good regeneration

projects. It was dreamed up by the citizens' Task Force to Bring Back the Don, which honed the plan through four public meetings, and hired landscape architect Glenn Harrington of Harrington and Hoyle in Markham to bring their dream to reality.

As at the Brick Works, cattails signaled that water was already gathering at the site. The new pond is designed to take overflow from the Don River when it is in flood. It invites the river to spread out into and fertilize its floodplain again, in sharp contrast with the "control it, hem it in" philosophy that has held sway in the lower Don since the last century.

Carefully planned habitat features invite wildlife in too, to find their niches and create a natural complexity in this pocket amid expressways, roads and railway tracks. When asked whether there were plans to remove the "dead trees" in the pond, Harrington protested. "We brought those in! To hunt here a kingfisher has to perch on something. And the insects in these rotting trees will bring in woodpeckers." Similarly, the flat rocks in the pond are for turtles, and two odd piles of rocks like ancient burial mounds are snake cairns. The project's most stunning wildlife attractor can't even be seen. It is a second wetland on the west side of the river, inaccessible to people.

"The army reserve Second Field Engineering Regiment came in June to help us plant the marsh," recalls Mark Wilson, who as chair of both Bring Back the Don and MTRCA's watershed-wide Don Council, is one of the watershed's most effective advocates. "They pulled volunteers back and forth across the river on their ferry boat with ropes, so we could get to both ponds." Two ponds, one for people to enjoy the marsh sights, the other only for wildlife – both planted by volunteers. Working with volunteers saved \$70,000 to \$80,000 of the \$300,000 planting budget. But more important was the fostering of community spirit.

How do you tell whether your regeneration efforts are succeeding? Are there more scientific measures than anecdotal wildlife sightings? More meaningful ones than water quality tests? In its year-long research to produce the first "Don Report Card," the members of the Don Council learned that cer-

tain wildlife species – their presence or absence, whether they are visiting or nesting – can be key indicators of water and habitat quality.

At Chester Springs Marsh, volunteers will be watching for three species, explains Harrington. The short-term indicator species of whether the pond is working correctly, and whether it is productive, is pike. If all goes well, pike (which have been sighted in the Don) should swim into the pond when the

river is flooding, spawn in its reeds, and swim back to Lake Ontario. When wood ducks nest here, probably in the wildlife-only pond across the river, that will show that the water is clean enough to produce food for them.

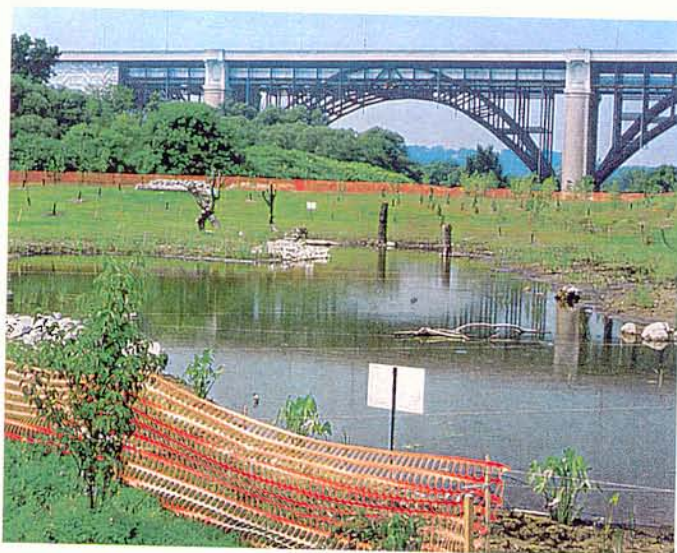
The long-term indicator of the lower Don's health is bullfrogs, whose polliwogs overwinter in deep ponds below the ice, such as these at Chester Springs. "What is needed for bullfrogs to use this pond is more marshes all along the river, and a well functioning floodplain for them to move around in," says Harrington. In a far-sighted plan to recreate portions of the huge delta marshes that historically made up the lower Don, Chester Springs represents two of five marshes planned.

Harding Park, the Brick Works, Chester Springs. "These projects are a start, a turning point," says Mark Wilson, relaxing in his living room after our visit to the marsh. "We filled in the Don one wetland at a time, and we have to bring it back one wetland at a time."

Through the window, I notice Wilson's new backyard. Interlocking patio bricks allow rain to seep into the ground, and the land slopes slightly towards the shady rear, where Wilson and his wife Marlene hope to plant boggy natives like skunk cabbage. Neighbourhoods are part of a watershed's tableland: the more water that infiltrates the ground here, the less dirty water rushes through the stormsewers to pollute and flood creeks, and the more baseflow is available to replenish streams.

"The critical thing is to treat water as a resource," Wilson emphasizes. "Get more water on the site, disconnect the downspouts from the drains, and then use the water to create a unique little place."

Once you've worked with a river, you view water differently, even in your own backyard. **A**



Left: Landscape architect Rod MacDonald is using all native plantings, in more concentrated groupings than are found naturally, for the regeneration of the Brick Works' wetlands. Above: Landscape architect Glenn Harrington was hired by the citizens' Task Force to Bring Back the Don to re-create a balance between water, nature and the human community in Chester Springs, the new two-hectare pond and emerging marsh habitat just south of the Bloom Street viaduct. Below: Dead trees and rock cairns were introduced into the Chester Springs Marsh to provide a habitat for birds and snakes.

