

Red River dance

Manitobans on the flood plain live by the rhythms of the river

By Greg Pindera



IT HAD BEEN AN unusually long winter with heavy snow that had fallen on land still saturated from autumn's torrential rains, and fallen, and fallen until even the bison fled to more hospitable ground. Then, all at once, spring arrived and the Red River, named for the red-brown silt it carries, rose and kept on rising until there was nothing to do but abandon everything and run.

Before that spring in 1826, it had seemed a tall tale when native people talked of how, some 50 years earlier, the normally placid river had turned into a sea. For almost two months, the story went, the only land visible for kilometres around the junction of the Red and Assiniboine rivers — which would become The Forks in the heart of Winnipeg — was Stony Mountain and Birds Hill, about 20 kilometres to the north and northeast.

But here it was, May, and the normally 100-metre-wide river, which can threaten to dry up in mid-summer, was spread across the prairie. When its crest crossed the fork of the

The ring-diked town of Morris, Man., sits low and dry at the heart of the “Red Sea,” the vast tract created when the Red River (whose meandering, tree-lined course is seen here) swelled to its second highest level in recorded history this spring. The ring dike, hastily erected against flooding in 1966 and since improved, held.

DOUG DEALEY

Return of the 'Red Sea'

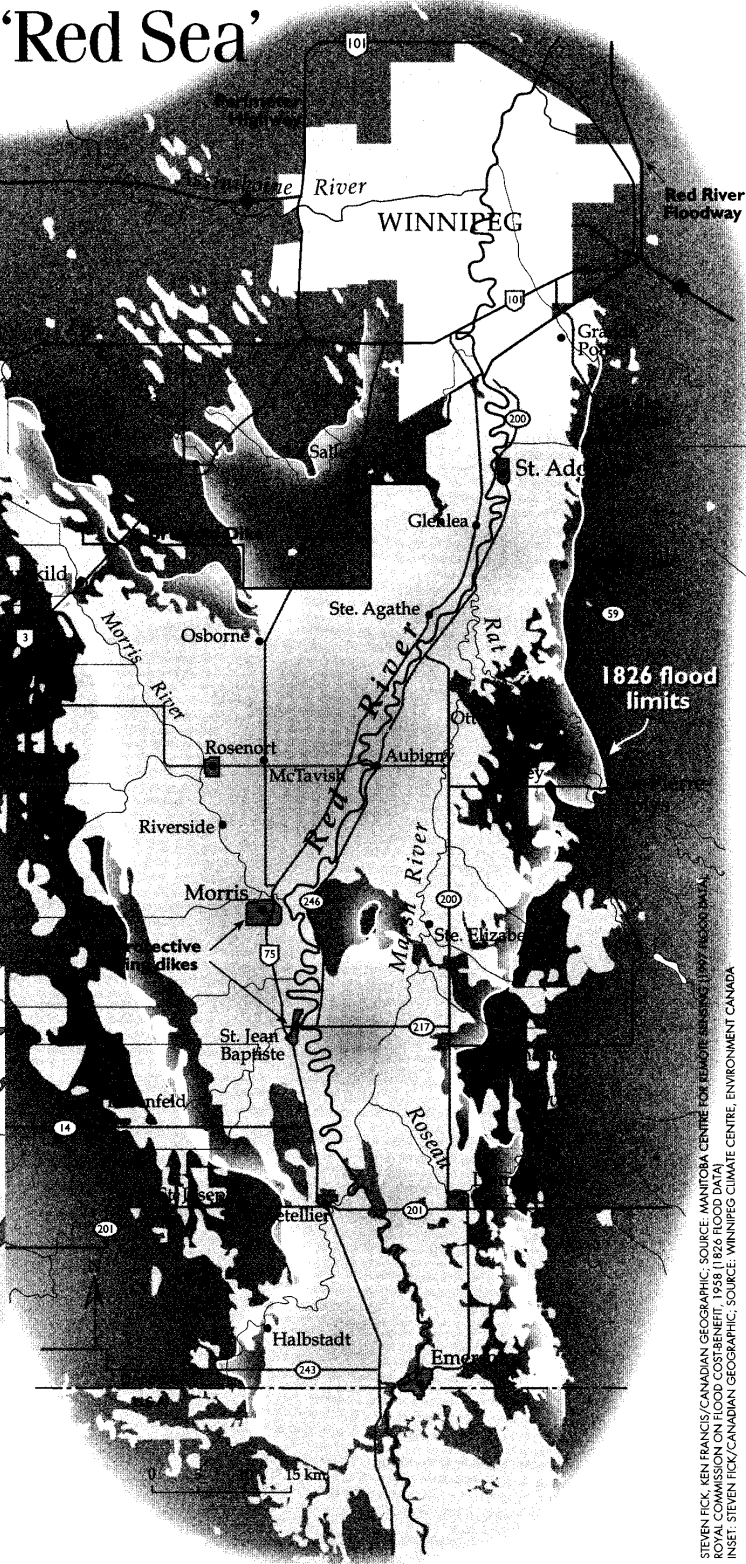
Some 2,000 square kilometres of the Red River valley were underwater (shown in blue), mocking the modest dimensions of the riverbed itself. The land behind the hastily completed Brunkild Dike and the eight permanently ring-diked towns were spared. Higher than normal winter precipitation (BELOW) helped set the stage for this spring's floods, along with cool temperatures and the still-frozen northern reaches of the Red.



Precipitation
November 1, 1996 to April 20, 1997,
compared to annual average*

- Less than 50%
- 50 to 100%
- 100 to 150%
- 150 to 200%
- Over 200%

*Based on preliminary data. Data south of Bismark have been extrapolated.



STEVEN FICK, KEN FRANCIS/CANADIAN GEOGRAPHIC; SOURCE: MANITOBA CENTRE FOR REACTIVE SERVICES (1997 FLOOD DATA); ROYAL COMMISSION ON FLOOD COST-BENEFIT, 1958 (1826 FLOOD DATA); INSET: STEVEN FICK/CANADIAN GEOGRAPHIC; SOURCE: WINNIPEG CLIMATE CENTRE, ENVIRONMENT CANADA

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More than 8,600 soldiers built sandbag dikes (LEFT) and rescued stranded citizens in the biggest unarmed military operation in Canadian history. Machine-filled sandbags (BELOW) will be landfill-bound after contamination by flood waters.

DOUG DEALEY



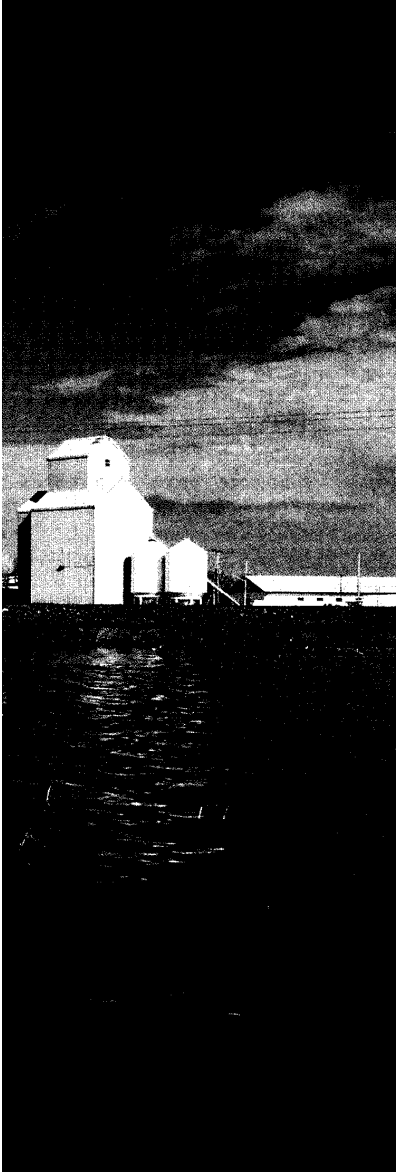
...rivers, it stood at 36.5 feet above the river bed. “The shrieks of children, the lowing of cattle and the howling of dogs added terror to the scene,” wrote fur trader and historian, Alexander Ross, in his memoir.

Almost everyone — including 400 people that Lord Selkirk had coaxed into settling around Fort Garry about a decade before — were forced to “fly from their homes.” Governor George Simpson predicted the 1826 flood would be “a death blow to the colony.” He was wrong.

When the waters struck with a fury again in 1852, Ross was one of the “wretched inhabitants” who had been stubborn enough to stay in this swamp in the middle of a flood plain. The 1852 deluge crested two feet (Manitoba still measures the river’s crest in feet) lower than the 1826 mark, but the population had grown and with few preventive measures and little warning, havoc prevailed. “Dwelling houses and barns were floating in all directions like sloops under sail, with dogs, cats and poultry in them. Outhouses, carts, carioles, boxes, cupboards, tables, chairs, feather beds and every variety of household furniture drifting along added to the universal wreck,” wrote Ross. Damage was estimated at 25,000 pounds sterling (approximately \$2 million in 1997 dollars).

‘I don’t say that we Manitobans are more steadfast than other Canadians. It’s just that they’re not tested so often.’

— Duff Roblin, premier of Manitoba from 1958 to 1967, praising the fighting spirit of Manitobans during the 1997 flood



THE RED RIVER'S WALTZ with its human inhabitants had begun in earnest. Flooding in the valley of silty loam left behind by the retreat of Lake Agassiz 7,700 years ago is an annual ritual. Some years are simply more memorable than others. In terms of crest levels, 1826 remains the worst in recorded Manitoba history. By 1861, when another great flood hit (32.5 feet), the settlers, who had fretted the smaller freshets each spring, knew to clear out before the water rose.

Throughout the 1800s, improved rail and water transport helped Winnipeg grow while a land drainage program in the valley — the first megaproject launched by the Manitoba government — enticed more farmers to cultivate the once forsaken marshland. By 1881, 320 kilometres of drainage ditches had been etched throughout the valley. Today, the figure is in the tens of thousands of kilometres.

The drainage system, coupled with consistently favourable weather, helped grant southeastern Manitoba a reprieve from severe floods between 1916 and 1948, when a near-flood jogged the memory of the Red's old dance partners. On May 1 of that year, the water at The Forks reached 23.4 feet. Hastily constructed dikes protected low-lying areas.

Two years later, on April 11, citizens were warned that a repeat of 1948 was pending. Again, the dikes went up. Information was relayed to authorities by phone from river stations between Fargo, N.D., and Winnipeg, with additional data provided via aerial reconnaissance. A week-long cold snap slowed the river's flow and authorities began to downplay the threat. But a burst of

warm air and heavy rains followed and, by May 19, the waters measured 30.3 feet in the provincial capital — population 400,000. With the help of 5,000 military personnel, almost 80,000 fled from the city and close to 20,000 people were evacuated from rural areas. About 13,000 homes and farms were flooded and final damage estimates stood at \$125 million (\$606 million in 1997 dollars).

The massive flooding triggered a call for a comprehensive plan to tame the Red. In response, almost 800,000 cubic metres of Manitoba's dense clay were piled alongside the Red and Assiniboine rivers in the Winnipeg area — a total length of 109 kilometres — and 31 pumping stations were built to keep the city sewer system from flooding. The dikes, comprising an artificial secondary bank at 26.5 feet-james (the elevation at the James Avenue pumping station in downtown Winnipeg), became a permanent part of the urban landscape. In 1968, work was completed on the \$63-million Red River Floodway — a 47-kilometre-long channel that diverts the Red around the eastern edge of the city where it continues on to its final destination, Lake Winnipeg. To control the flow of the Assiniboine into the city, the Shellmouth Dam and the Portage Diversion were built upriver.

By the early 1970s, permanent dikes — serving as raised railways and roads — were built around eight towns in the valley between the U.S. border and Winnipeg and then around some 700 rural homesteads. Many are as high as the eavestroughs of town buildings. All were put to their first big test in 1979 when waters, similar to 1950 levels,

'It's no mystery why farmers like to grow crops in the Red River valley. There's deep, fertile soil, abundant rainfall, flat land and no stones. There's floods, too, but the farmers are used to battling them.'

— Don Flaten, director of the School of Agriculture, University of Manitoba

THE TOLL ON WILDLIFE

AFTER YEARS OF WORRYING that Manitoba's white-tail deer population was out of control, conservation authorities now suggest that the flood could result in a serious decline.

"We had a severe April blizzard and now the flood, and I think if anything, our concern for the deer is going to have to shift to too few rather than too many," says Bob Carmichael, Manitoba's chief of game and fur management. While most of the Red River valley's 2,000 to 2,500 white-tail deer likely kept ahead of the rising water, several would have starved after water surrounded the higher ground they had escaped to. As well, does were already in rough shape after the long winter, Carmichael says, and with the flood waters still high during the spring fawning season, finding optimum shelter would have been difficult. All of this is expected to seriously reduce the survival rate

of fawns. While any decline is expected to be temporary, a more accurate picture will not be available until late summer when the waters have completely receded.

The Red's deluge was also devastating for smaller mammals such as mice, voles and ground squirrels (gophers), whose limited range of movement stopped them from fleeing.

The region's fish, on the other hand, could benefit, says Dr. William Franzin, a research scientist with the federal Department of Fisheries and Oceans in Winnipeg. The number of walleye and sauger, which spawn upriver from Lake Winnipeg, could see a surge due to the increased water flow carrying larvae and young fish back to the lake. "Pretty well all the years that we've had floods, we've had good numbers of hatches," says Franzin.

And, finally, there is the question of mosquitoes. Once again, Manitobans are at the mercy of the weather.

A drought would bring relief. Unfortunately, says Franzin, rainy weather leaves little doubt that 1997 will go down as a banner year for the biting insects.

— Mary Vincent

Slittish deer seek respite from flood waters near Morris, Man.



raced through the valley. Many of the low-lying areas had been built up and the dams and dikes, by and large, did their job. This time, 7,000 people were forced to flee the Red. In the aftermath, many of the dikes were raised still further as an extra precaution.

Then came the spring of 1997. Record levels of snow fell on ground saturated through a wet autumn. In early April, just days after runoff had begun, a major storm dumped an additional 50 to 70 centimetres of snow and freezing rain on top of a near-record snowpack of 250 centimetres.

Still, Manitobans, particularly the 662,000 Winnipeggers protected by the floodway, remained cautiously optimistic that they were prepared for the worst. There were those massive, modern engineering projects and smaller helpers — sandbags, sump pumps, and sewer back-up valves — available to almost everyone. And flood forecasting had become a high-tech affair. The confidence gave way to nervous anticipation as television pictures started carrying images of the disaster in Grand Forks, N.D., and Manitoba authorities started to adjust their estimates.

AL F WARKENTIN, Manitoba's Natural Resource's flood forecaster for 27 years, is the province's modern-day Paul Revere, except that he rarely had to leave his paper-littered River Forecast Centre in a strip mall office in suburban Winnipeg to get his warnings out.

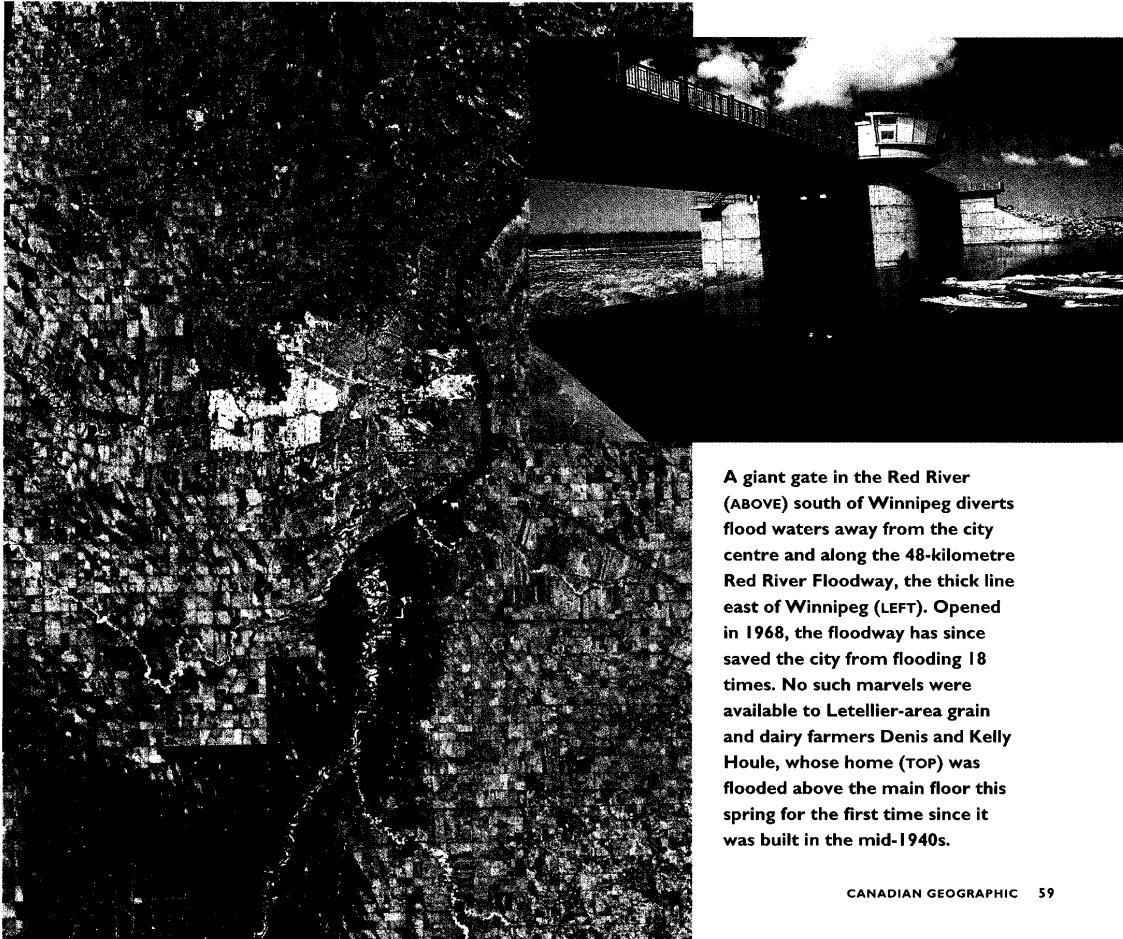
Back in February, snow and soil measurements, gathered by aircraft and satellites, were applied to run-off formulas based on decades of historical data. Additional information was generated as the melt began, combining

'We're not that upset. We've been through it before.'

— Kelly Houle (TOP RIGHT), on moving back to the family farm near Letellier, Man., tackling flood damage, and looking forward to spring planting



BOTH: DOUG DEANEY



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A giant gate in the Red River (ABOVE) south of Winnipeg diverts flood waters away from the city centre and along the 48-kilometre Red River Floodway, the thick line east of Winnipeg (LEFT). Opened in 1968, the floodway has since saved the city from flooding 18 times. No such marvels were available to Letellier-area grain and dairy farmers Denis and Kelly Houle, whose home (TOP) was flooded above the main floor this spring for the first time since it was built in the mid-1940s.



Flood facts

- Rising river: 877 kilometres in length, the Red is prone to floods in part because its headwaters, located in the south, thaw in the spring before its northern Manitoba reaches are free from ice
- Flooded farms: this spring's flood covered 202,500 hectares, or about five percent of Manitoba's farmland. Losses to dairy farmers are estimated at \$1.3 to \$2 million. Some 2,000 cattle and 45,000 laying hens were moved to safety
- Military muscle: 8,612 soldiers from across Canada participated in Operation Assistance. Their equipment included more than 2,500 military vehicles, 58 vessels and 33 aircraft, which logged more than 1,500 flight hours
- Damage tally: major flood-control projects have provided increased protection against the rising Red. With 28,000 Manitobans evacuated, the damages of this year's flood are pegged at more than \$150 million, compared to the 1950 flood that cost \$606 million and forced 100,000 people from their homes



The flag flew right through the trial by water endured by Jules and Lucille Mourant at St. Norbert, Man., south of Winnipeg. Up to 40 people helped pile sandbags into a four-metre-high dike around the house; some of the workers were friends of the Mourants, others were strangers who came by and helped. The house stayed dry.

data from a dozen automatic water-level gauges installed throughout Manitoba's portion of the river basin, field measurements of flow, and manual gauge readings. By the time the state of emergency was declared on April 23, Warkentin, a grey-haired, somewhat ruffled hydrologist, was working flat out producing daily water level predictions. Warkentin's calculations were sent out by phone, fax and via the centre's website.

His "inexact science," as Warkentin calls it, proved remarkably accurate. The only trouble spot was in trying to estimate how the flow over the banks of the Red River would affect communities such as Grande Pointe, a suburb of 150 homes a few kilometres southeast of Winnipeg, which had seldom flooded since a diversion was built in 1967. The water rose two feet higher than predicted a week before the crest hit. North Dakota authorities underestimated the crest at Grand Forks by almost five feet days before it struck.

Without the floodway, dams and dikes, estimates are that the 1997 crest would have measured 34.3 feet, almost five feet higher than the 1950 deluge. Almost 80 percent of Winnipeg would have been underwater and more than 550,000 city dwellers evacuated. Instead, the floodway kept the water level at 24.5 feet and even controlled the river's descent, preventing banks from collapsing under the weight of six million sandbags piled to protect several hundred houses along the river side of the primary dikes. In the end, 28,000 Manitobans were evacuated (6,000 from Winnipeg), more than 202,500 hectares of

'The enemy was the Red River.
And the enemy did not sleep.
It was relentless.'

— Major Doug Martin, third-generation Canadian Armed Forces flood fighter. His grandfather fought the 1950 Winnipeg flood, his father battled the Red in the 1960s



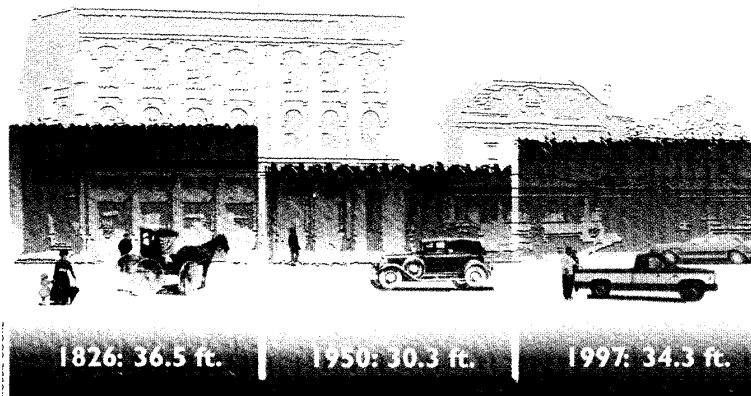
One hundred thousand Manitobans fled the great flood of 1950, when waters lapped even at the Manitoba Legislature (LEFT) in downtown Winnipeg. Evacuations this spring were a quarter of that. Flood level comparisons, measured from the river bottom, are shown below.

farmland flooded under a 2,000-square-kilometre "Red Sea," and 2,500 properties between the U.S. border and Winnipeg damaged. About two dozen Winnipeg homes were damaged. While the ring-diked valley towns escaped serious damage, costs of repairs to roads, bridges, farms and homes is estimated at about \$150 million.

Now, as has happened time and again, Manitobans have returned to their lives with tall tales of their latest round with the Red. And, once again, they are exploring what more can be done. There is talk of turning temporary dikes into permanent ones, of reinforcing old ones, of setting up a cross-border commission to seek joint solutions. Discussions are being held with American authorities on whether or not dams or diversions might help south of the border — where most of the Red's drainage basin lies.

But there is one question no one can answer. For all anyone knows, the 877-kilometre Red River could again fall into one of its 30-year sleeps. Or, then again, it just might feel like dancing again next spring. ♦

Greg Pindera, a Winnipeg journalist, was born in 1962, when the river crest rose to a healthy but largely unthreatening 19.8 feet.



'The waters continue to fall regularly at the rate of one foot in twenty-four hours ... Crops appear above ground the third day after being planted, which is no doubt owing to the moisture of the ground ... Clouds of mosquitoes as usual.'

— July 4, 1826, journal entry of Francis Heron of the Hudson's Bay Company, Red River Settlement, following one of Manitoba's most severe floods