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Nature's chisel

The Flood of '96 resculpts the Deschutes and Clackamas rivers

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The foundation under the River Island Sand & Gravel Co. office along the Clackamas River washed away when the river skirted a dike and roared through the middle of the gravel-mining operation.



DOUG BEGHTEL/The Oregonian

By BRIAN T. MEEHAN
of The Oregonian staff

DESCHUTES CANYON — On the morning of Feb. 8, the Deschutes River made a hard left past a terraced mountain of ancient basalt and roared over Harris Island, a high-desert glen of alder and cottonwood.

The swollen river boomed as it thumped television-sized boulders along the bottom. Like a scythe, it quickly skinned the sod off, gobbled soil and tore away a picket line of alder trees.

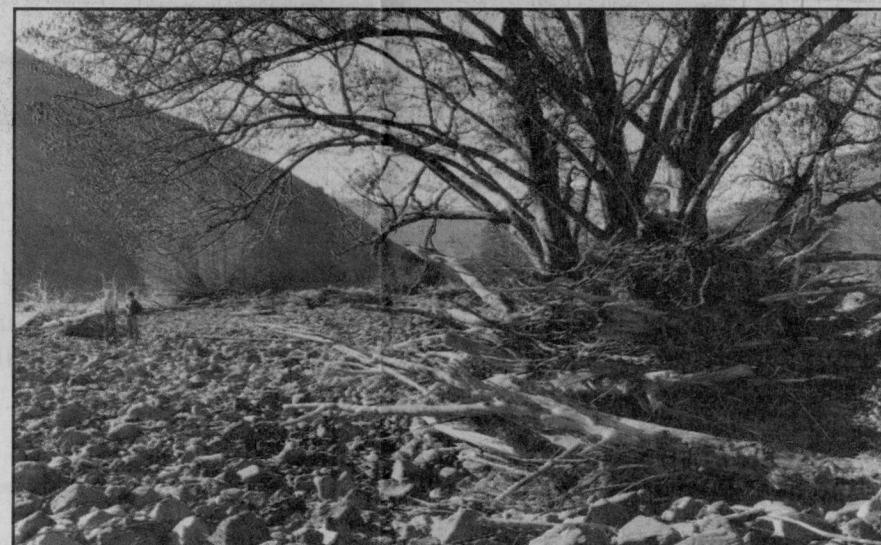
The river had deposited rich soils on the lush island during quieter floods. But on this day of record flows, the Deschutes cleansed the head of the island of its past labors. River gravel was blown downstream like snow in a blizzard. Where the river paused, it dumped gray sand and 10-foot-high logjams.

In the same moment, the Deschutes destroyed and created.

When the flood receded, the river offered a snapshot of its dynamic personality. It demonstrated that rivers are not static channels but elastic ribbons that bend through the years.

Oregon's rain-on-snow torrent became a hydraulic chisel that resculpted the Deschutes and the Clackamas, two popular recreational rivers. The changes will influence where fish are caught and where boats are paddled for years. The changes also may shift perceptions of efforts to muzzle a river's wild character. At times, a river will not be denied.

Gordon E. Grant, a research hydrologist with the U.S. Forest Service, flew by helicopter to the Deschutes to glimpse a once-in-a-career opportunity.



DOUG BEGHTEL/The Oregonian

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The rampaging Deschutes swept gravel clean and piled brush on Harris Island, 12 miles from the river's confluence with the Columbia River.

Rivers: Torrents destroy and create in the same moment

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"These are the geologically formative events," said Grant, as he stood on the island's newly revealed rock core. "It is patterns of renewal and patterns of destruction simultaneously."

The Flood of '96 caused tremendous human misery. In the lonely Deschutes basin, homes were inundated, roads washed out. But underneath the headlines is the latest chapter in a story as old as the basalt that formed the canyon 16 million years ago.

As wildfire is to the forest, so floods are to the river. These destructive events belong to long cycles that reinvigorate forests and rivers. Islands are formed and destroyed. Gravel bars are washed away and rebuilt downstream. New channels are cut as the river recreates its path with cobble, sand and debris. Sharp contrasts in climate and geology guided the different marks left on the Deschutes and Clackamas rivers.

Although the Clackamas drains an area only 6 percent the size of the Deschutes basin, the river west of the Cascades pumped more water during the flood. A huge difference in rainfall makes westside rivers more likely to flood. The lower Clackamas also snakes through a wider valley, home now to astounding changes.

The volatile Clackamas jumped course as it roamed its floodplain. Near Barton Park, the river sliced a new channel through a gravel-mining operation.

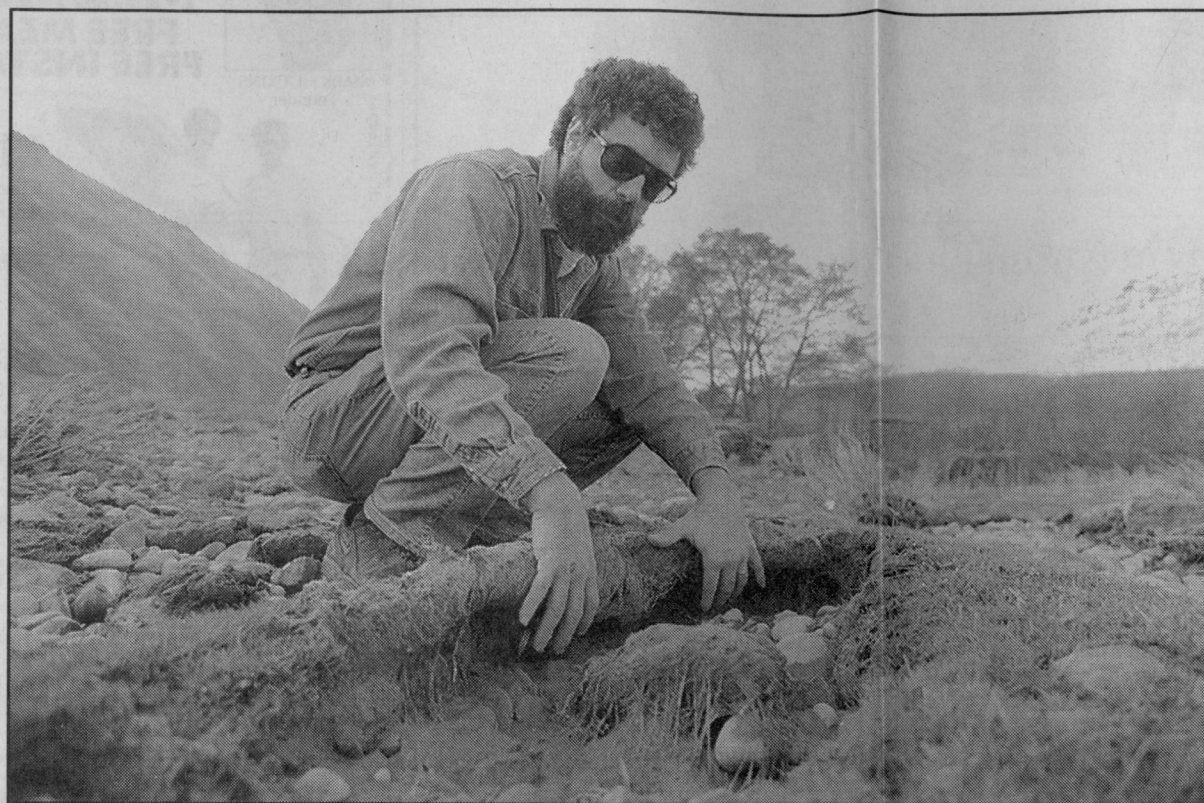
The Deschutes, bound by bedrock in a steep canyon, did not change course. Most of its major rapids endured. However, the flood's legacy may last longer in the arid eastside drainage.

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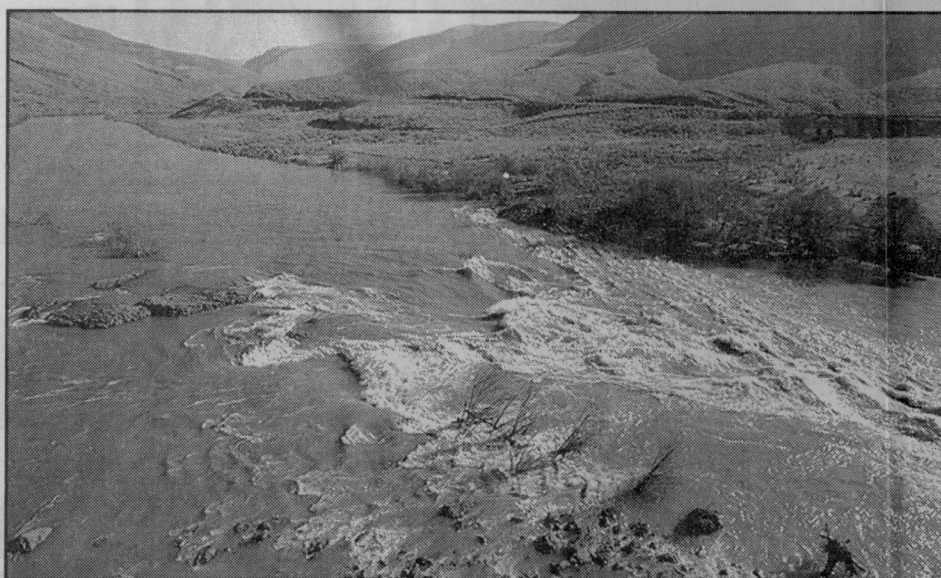
The volcanic sponge

The Deschutes, which drains a basin bigger than Maryland, has the most stable flows of any river its size in the country. Floods are rare. Usual peak flows are two or three times the low flows of summer. In most systems, the gap between high and low water is much wider. Usual peaks on the Clackamas, for example, are 15 times the volume of summer.

A dry climate and volcanic geology shape the Deschutes. The river is fed by snowmelt, and its alpine basin acts like a great volcanic



Above: Gordon Grant, a research hydrologist, shows how swift currents peeled a sod layer off Harris Island in the Deschutes River.



Left: The Muddy Springs Rapid, which was created by a Fourth of July flash flood, survived February's record flood levels on the Deschutes River.

Photos by
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otes that have come to scavenge for stranded fish.

"The river has re-created a seedbed for itself," Grant said. "In the course of a couple of years, there will be thick vegetation through here."

Grant said management practices that removed cattle were tested during the flood. The riparian brush, fostered by the absence of grazing, broke the flood's velocity and combed logs and mud from the river.

"This was a superhighway of rocks," Grant said at a spot where swift current moved tons of gravel.

"It wasn't a conveyor belt. It was more like traffic. Things would sit for a while, and then a whole clump of things would go at once. This was changing on a minute-to-minute basis."

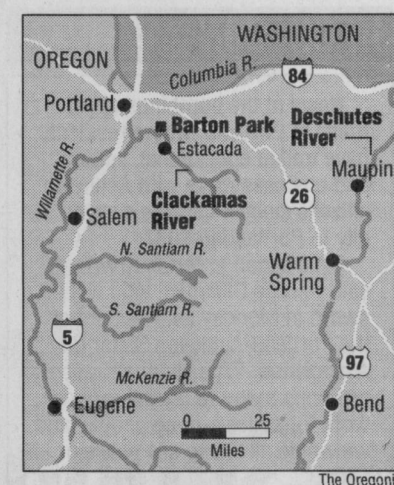
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Clackamas changes course

On the lower Clackamas, the story of river-carving is different. A wider floodplain allowed the raging Clackamas to cut major new channels.

In places, the fickle river showed little respect for the labors of humans. Homes and businesses were flooded as the river reasserted itself.

Bob Toman, a fishing guide, has boated the Clackamas for three decades. After the flood, he steered his jetsled into a place he'd never been



— just four miles from his riverside home.

"I was shocked when I saw it," he said as he piloted his 22-foot boat up a new channel, punched through the middle of a gravel mine.

Chris Wheaton, a state biologist along to view the changes, said, "That is pretty spectacular. We think we are in control until something like this happens."

The River Island Sand & Gravel Co. has operated near Barton Park for 21 years. Other operators mined gravel before in a stretch of river dotted with islands and braided channels.

A long dike, running parallel to the main flow, had shunted the river to the east bank, allowing the gravel operation to mine rock where the river once spilled.

During the flood, the river severely eroded Shoe Island, a boot-shaped island upstream. Floodwaters tore away the corner of the island and poured around the dike. The entire river jumped course and hammered through the gravel mine. The stone-processing plant was submerged,

and the company's office sloshed under 5 feet of water.

When the water went down, the office dangled over the relocated Clackamas.

"I was totally awed by the magnitude and power of Mother Nature," said Bob D. Traverso of River Island.

He said the company, which has been given a green light by Clackamas County to expand, has not decided what to do.

The course change nearly shut off water to the east-bank channel, where generations of salmon anglers have fished popular holes such as Clark's Eddy.

For fishing guides such as Toman, the lower Clackamas is vastly changed. It deepened the Dog Hole, a popular salmon spot, by 14 feet. At another hole, boat-sized rocks were swept 100 yards downstream.

"Every inch of this river is different. Every inch of it," said Toman, whose riverside home was flooded.

"The '64 flood widened it out. It has been progressively getting shallower since then. This flood has made it deeper and pooled it up again."

Toman said he will find the new spots where spring chinook and steelhead lie. He looks forward to re-discovering the Clackamas.

Fishing holes and channels shift, but the mercurial personality of the Clackamas endures. Change is the strongest current in the life of the river.

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A dry climate and volcanic geology shape the Deschutes. The river is fed by snowmelt, and its alpine basin acts like a great volcanic sponge. Snowmelt leaks through porous rock and finds the river in the form of springs.

During the flood, driving rain unlocked the mountain snowpack. The river's west-bank tributaries gushed scary volumes. Shitike Creek, a rivulet that runs through the Warm Springs Indian Reservation, was running 6,000 cubic feet a second, almost double the summer flow of the Deschutes.

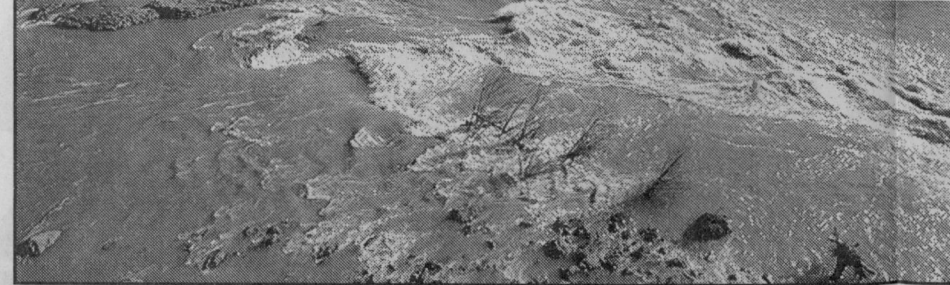
The Warm Springs River stormed at 33 times its usual flow and smashed Kah-Nee-Ta Village, a resort on the reservation. Water swirled through the restaurant and riverside cottages. The swimming pool was partially filled with silt and logs.

The Deschutes reached its highest recorded flow, 78,500 cubic feet a second, more than 10 times its usual winter flow. The island near the state park at the mouth was blown out. Upstream campgrounds at Macks Canyon and Beavertail were damaged severely. Several cabins were swamped.

In the lower river, water lapped over the anglers' trail on the west bank. The east-bank road was washed out in spots, including a 40-foot gap at Ferry Springs.

"It took the river back to what it looked like in old aerial photos," said Jeannette Bondsteel, manager of Deschutes State Park. "It's just Mother Nature purging the waterways."

On Harris Island, Grant picks through rubble like a detective combing a crime scene. All around are the clues of river mayhem: gravel piled in water-swept hedgerows, huge clumps of wood jammed against cottonwoods, a new riffle. In the lee of alder, the river dumped sediment. Already, the gray beach carries tracks of raccoons and coy-



otes that have come to scavenge for stranded fish.

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