



A window of opportunity

The flood of '82 was clearly tragic in terms of life and property loss. But the area of impact was quickly recognized as a place for learning, and scientists gathered to study the impacts of the flood, especially the recovery of high altitude ecosystems. The studies will continue for decades. Here are some research findings:

Plant succession

35 species of willows and grasses were found growing after the first full season.

Bird populations

The number of bird species living in the area has increased since the flood.

Dam break modeling

Predictive models helped to reconstruct the behavior of water in such a flood.

Sedimentation studies

Revealed downstream movement of distinctive lobes of fine sediment.



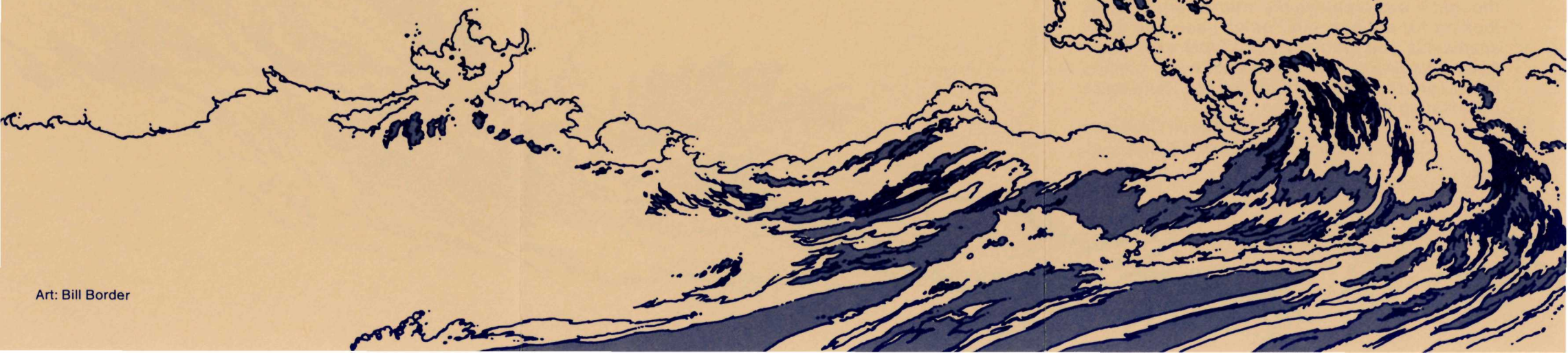
Out of disaster comes knowledge —

In this instance both of the workings of nature and the failures of mankind's works. The lessons are sharp, but they do give guidance for the future. Those lessons are now being applied across the nation, to manage or remove other high mountain dams.

WARNING:

Streambanks are lined with dangerously unstable boulders. For your safety stay on the paved trail.

The Flood of '82



The Lawn Lake flood of July 15, 1982 is an experience the people in the Estes Valley will remember for a long time. It affected many people that day, but months passed before the events could be reconstructed through field studies and eyewitness accounts. This is a summary of those events as they transpired.

The setting

Before settlers came, Lawn Lake was a natural lake formed some twelve to thirteen thousand years ago by the debris of retreating glaciers. It was enlarged in 1903 by an irrigation company, however, prior to the creation of Rocky Mountain National Park. Spring meltwater was stored behind the dam, and released later each season to meet the needs of crops growing on the dry plains surrounding Loveland, Colorado. And it was full on the day the dam failed.

July 15, 1982

It was a clear and brilliant morning as the sun touched the Mummy Range in the northern part of Rocky Mountain National Park. All was still and quiet — except on the south side of Lawn Lake. Here, water percolating through a failed outlet valve eroded the earthfill of Lawn Lake Dam, and at last the embankment gave way with a rush. The time was about 5:30 a.m.

Swiftly, 674 acre feet of stored water plunged down the steep drainage of Roaring River. Boulders and trees were ripped from the earth, the destructive mass swept along the valley floor, and in a narrow canyon the frothing deluge rose until it was 25 to 30 feet deep. On it swept at varying speeds, toward Estes Park.

"I started to hear a sound like an airplane. Also, there were loud booms. It got louder and louder. I thought it was breaking the sound barrier. I kept looking for a plane, but couldn't see one. I got suspicious and started to look upstream. I saw trees crashing over and a wall of water coming down. I started to run for high ground. There was a devastating roar."

Steve Cashman
Camper at Big Rock Campsite, 5:30 a.m.

On steep slopes the "wet brown cloud" tore through the ground and scoured 50 feet or more into the earth. On gentler slopes the water dropped sand, gravel, boulders, and battered trees in patterns dictated by currents and the speed of water. Within 45 minutes the boiling slurry advanced the five miles to Horseshoe Falls on the edge of Horseshoe Park. The time was 6:15 a.m.

"... I heard what I thought was a jet crashing. It was dirt, branches of trees — I didn't know what was happening. I thought at first it was an airplane coming in there. Then I knew it was water and thought, 'Oh, Lawn Lake broke!'"

Steve Gillette

Witness at Lawn Lake Trailhead, 6:21 a.m.

Horseshoe Falls lies at the junction of two valleys, Horseshoe Park and the hanging valley of the Roaring River perched high above it. Here the advancing mass, now a mixture as much solid as liquid, crashed onto the floor of Horseshoe Park, and with shocking violence and noise quickly covered the land with its load. Within an hour an alluvial fan of sand and rocks buried a part of the valley floor with up to 44 feet of debris. Boulders weighing as much as 452 tons, reflecting the force of the water's flow, were dropped first. Finer debris was carried the farthest. In the process the Fall River within Horseshoe Park was dammed, and immediately a lake began to rise upstream of the alluvial fan. And onward the water swept.

Thanks to the level character of Horseshoe Park the flood waters slowed. But Horseshoe

Park filled, then the water crashed forward — over Cascade Dam, through Aspenglen Campground on the edge of Rocky Mountain National Park, and down Fall River. Inevitably, it entered Estes Park. Residents watched helplessly as the mass of mud and debris advanced down the main street and rose until the flow was six feet deep. The time was 8:30 a.m.

At 8:47 the debris reached Lake Estes behind Olympus Dam. The lake began to rise, but the flow was readily accommodated by the lake's size and the release of excess water. At last the flood's advance was halted.

In less than three and a half hours the water of Lawn Lake had advanced fourteen and a half miles and dropped over 3,500 feet from Lawn Lake to Olympus Dam. In route it created new features that will last until the next advance of glaciers. It also destroyed \$31 million in property and killed three campers within Rocky Mountain National Park — one sleeping in a backcountry campsite above Horseshoe Falls and two others caught by a surge of water in Aspenglen Campground after Cascade Dam collapsed upstream.

