

## Failure of Cannon Creek Dam, Quesnel (1995)

On May 27 at around 8 a.m., a 6-m high earth-filled irrigation dam about 45 km east of Quesnel failed. \*1) It caused approximately \$500,000 to the road system and other property damage. The sudden release of the storage killed 48 head of cattle, destroyed 1.5 km of a public road, damaged between 100-200 ac. (40-80 ha) of hayfield. According to the *Quesnel-Cariboo Observer*, the Buchanan's ranch lost 17 cows and 10 calves. Besides killing the cattle, it rendered half of the 600 ac. (240 ha.) Buchanan Ranch useless. The slide dumped thousands of tons of gravel and debris into the Quesnel River, about 300 ft. (90 m) below the ranch. Ironically, a day prior to the dam burst, a deal to sell the ranch fell through. Part of the reason for the failed real estate transaction were problems cited with the dam.

The dam was on a sloping hillside about 1,000 ft. (300 m) above the ranch, and 2 km south. It held back a 12 to 15-ac. (4.8-6 ha) body of water, 20 ft. (6 m) deep. The torrent cut a quarter-mile (400 m) swath down towards the Quesnel River. Some 700,000 m<sup>3</sup> of material into the river, turning it dark for 45 km.

About a 40-ft. (12 m) section of Hydraulic Road disappeared into an instant 25-ft. (7.5 m) deep ravine. A 20-ft. (6 m) piece of the roadway holding the lake blew away. According to district highways manager Grant Lachmuth, it would take up to two weeks and up to \$250,000 to stabilize Hydraulic Road. Some 2 km of the road had to be reconstructed. Road damage was later estimated at less than \$200,000.

The torrent peaked at about 8:15. The roar from the mountainside was deafening, "like a squadron of jets flying in a low-altitude mission." A wall of water, trees and debris headed directly towards the ranch. Three occupants of the ranch narrowly escaped "river as wide as the Fraser." The force of the cascading river created its own wind.

Fifteen minutes later, the flow was beginning to back off and by 9 a.m. it was reduced to a trickle. Much of the ranch's northern pasture turned into a series of ravines. In some places, these gorges dropped 300 ft. (90 m) deep, measuring more than 100 ft. (30 m) across.

For a week prior to the burst, the Buchanans had experienced trouble with their irrigation dam. Just days earlier, a diver had been hired to take a look and repair a faulty gate valve at the dam. He reported that water was running under the 16-in. (40 cm) culvert. Material was deposited around the culvert and the valve was repaired. At that point, the culvert was considered working properly.

Garth Wakelam, the region's dam inspector, suspected the failure of culvert, which either became corroded or somehow separated, as the cause. Despite an extensive search of the area, including the Quesnel River, the culvert was never found. The Buchanans, who were not insured for such an occurrence, may receive some funding from the provincial emergency program.

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\*1) The dam, one of the approximately 500 licenced in the Cariboo-Chilcotin-Bella Cooola region, had been constructed in 1962. In 1992 when last inspected, there were several improvements recommended. But the dam itself was declared a "C" hazard, the lowest category. No follow-up inspection had taken place.

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### **Dam burst wipes out ranch, tons of debris pollutes 45 km of river.**

Ranchers Dave and Vivian Buchanan watched helplessly Saturday as a wall of water cascaded down a mountainside and all but wiped out their way of life. The Buchanan's irrigation dam burst from its source, high above the 600 acre Hydraulic Road spread. Apart from killing up to 40 cows and calves, it rendered half the property useless and dumped thousands of tons of gravel and garbage into the Quesnel River. Government officials are weighing the environmental consequences of the disaster this week.

*An hour of devastation: Buchanan Ranch suffers terror and huge losses.*

What he saw when he looked through the window overlooking the south pasture of his 600 spread was the beginning of an economic and environmental nightmare. "Oh my God!" he screamed, "The dam!" Sitting at the kitchen table were his sister and partner, Vivian, 40, and hired hand Larry Wright, 52. The Buchanans had been having trouble with their irrigation dam for the past week. A diver had been hired just days before to take a look and repair the problem.

The government-inspected dam held back a 15 acre body of water that reached 20 feet in depth. Perched on a sloping hillside about 1,000 feet above the ranch, and two kilometres south, the Buchanans hoped that the repair work would hold until they could drain the lake down to lower levels in the fall. But nature and the laws of physics wouldn't wait. On Saturday morning, as Dave rinsed the grinds from his cup, a tidal wave of mud, water, trees and boulders cascaded down the mountainside, straight towards the Buchanan ranch.

Quiet, peaceful and picturesque, the brother-sister operation is perched on the southern slope of the Quesnel River, about 45 km east of Quesnel. Three hundred feet below lies the blue-green waters of the river itself. When Dave turned and ran for the door, Vivian and Larry were on his heels. They knew that if the dam had burst, all hell was about to break loose. And they were right.

As the trio scrambled down the steps of the main house front porch, Dave yelled that he would drive his van to the western boundary of the ranch. He knew from experience that if a washout was about to happen, they'd lose a portion of Hydraulic Road. And if that happened, they would be cut off from any immediate help. As Dave tore off, trying to beat the wave of water making its way across the hay field, Vivian and Larry ran towards the main pasture where more than 100 head of cow-calf pairs were trapped.

Dave raced down the dirt road, while the water poured over the fenced pasture. It was worse than he ever thought possible. A river of mud, littered with trees and rocks was pouring onto the roadway. His goal was just 500 yards away, but it seemed like miles. The water was up to the floor boards of the late-model Ford van as Dave hit the potential washout area. He knew it was going to be close. Gunning the engine, tires spinning, the van finally lurched to a halt on high ground. No sooner had Buchanan jumped out of the vehicle to see if he could spot his sister, and a 40 foot chunk of Hydraulic Road disappeared into an instant 25 foot deep ravine.

For Larry and Vivian, however, the nightmare was just beginning. Although they knew that this flood had come from the dam, they had no idea to what extent the dam had been damaged. They didn't know that a 20 foot piece of the roadway holding the lake had been blown away by sheer pressure, and that the entire contents of the dam -- the equivalent of 350 acres covered with a foot of water -- was spilling down the mountainside towards them. They were about to find out.

Vivian and Larry jumped the fence atop the west pasture. Sloshing through a foot of water, they were confronted by more than 100 head of cows and calves ready to stampede. The animals know they were in the path of danger and were looking for a way out. Vivian struggled to open the east gate which would create access to pasture on higher ground. While she worked on the gate, Larry ran after several calves caught in the torrent of mud and water. They were being swept towards the washout area and certain death. Finally, Vivian untangled the rope holding the main gate, the animals stampeded through.

By that time, Larry and Vivian knew that they were in the midst of a full blown disaster. The roar was deafening, like a squadron of jets flying a low altitude mission. The "roar" was the voice of nature as it ripped trees from their roots as the water made its own, immediate throughway in its race to the Quesnel River. And with the trees came hundreds of tons of rocks and boulders as the water peeled back layers of surface soil like wrapping paper. With the main herd scrambling for higher ground, Vivian and Larry turned their rescue attempts to the northern edge of the property. A few hundred yards away, across the road where the property flattens out and abruptly ends in a precipice overlooking the Quesnel River some 300 feet below, they spotted what must have been 50 head of cows. The two ran towards the stranded herd. By this time the water was running knee deep. The roar from the mountainside behind them become louder.

Larry went to work trying to steer the panicked herd towards higher ground. Vivian, trailing behind him, looked southward. What she saw literally took her breath away. A wall of water, trees and debris was headed directly for them. Cattle were on their backs, caught helplessly in the raging torrent. Vivian called to Larry: "Leave them! Leave the cows, we have to get out of here!" Larry balked at Vivian's pleas and turned to tell her not to panic. Then he too saw what was coming. Lunging through what had now become a river as wide as the Fraser, Larry made his way to Vivian. She clasped onto his shoulder and the two tried to make their way back to the main ranch house. If they had any chance of survival, they would have to make it to the highest ground possible. And quickly. It took less than a minute, but it became a journey. The pair stepped carefully to avoid the rocks and debris in water that by this time was almost waist deep. If they fell, they would become part of this instant river and swept over the cliffs.

Vivian looked behind her to see livestock being hurled over the bank. Her mind raced. She fought back the panic, but couldn't help but feel that there was no safe place. It would just be a question of time, of minutes. Finally, Larry and Vivian reached dry ground and raced the final few yards to the main house. Behind them they heard rumbling. It had been 10 minutes, no more, since Dave had dropped his coffee cup and uttered a complete sentence in two words. But in that time the Buchanan's way of life had virtually disappeared. Vivian and Larry watched helplessly from the porch as the river swallowed half the ranch. The force of the cascading river had created its own wind and they could feel it on their faces.

To the east of them, where they had been just seconds before, they could hear the earth collapse. Unsure if the main house was secure, or if it too would be swallowed and swept over the cliff, they decided to jump into a four-by-four and try to drive to where Dave was waiting. Again, they had no idea that a portion of Hydraulic Road was now somewhere downstream. The engine of the Toyota caught and they lumbered down the flooded roadway towards the western boundary. Within 200 yards, however, they knew it as no use. Water was up to the floor boards. Jamming the Toyota into reverse, they made their way back to the house. Had they gone another football field, they would have tumbled into a raging, muddy waterfall which by that time had cut a quarter-mile swath to the Quesnel River.

Back at the house, Vivian remembered that she had brought her cellular phone to the main house that morning. She knew Dave had his cellular with him and rang her brother in the van. She told him to line up a helicopter...in case things got worse. It was now 8:15 a.m. and the torrent was at its peak. Dave had called the provincial emergency hotline and an appropriate response, he was assured, was on its way. He and Vivian decided they would wait a few more minutes before trying to raise a chopper for rescue.

On the porch, Larry and Vivian weighed their options. Other than staying put, there were none. The roar seemed louder. Nervously, they talked about climbing the tallest tree out front of the house. But all around them in the raging waters, they could see much bigger trees being tossed around like toothpicks.

By 8:30 a.m. Vivian and Larry sensed that the worst was over. By 8:30 the flow was beginning to back off. And by 9 -- an hour after the nightmare began -- the torrent had become nothing more than a trickle. But what nature left behind was sheer destruction. A sea of mud and boulders littered what was once prime hay fields. Half the herd was missing. And much of the northern pasture, which once over-looked the Quesnel River, was now a series of ravines. It was as if a giant knife had sliced huge pie-shaped segments from the land. Instant pinnacles, spires of earth, were all that was left where once there was meadow. In places, these instant gorges dropped 300 feet deep and measured more than 100 feet across. In one hour their world and way of life had disappeared. For 45 kilometres, the Quesnel River turned dark brown until it mixed with the muddy Fraser.

By 9:30 a.m. Vivian and Larry were drinking coffee and making breakfast. Nothing to do now but wait for help to arrive. The shock of it all wouldn't wear off for a day or two. The full magnitude of what had just happened was yet to sink in. But Vivian and Larry agreed on one thing: They were lucky to be alive. Indeed, they had survived the worst hour of their lives.

**Sources:**

*Quesnel-Cariboo Observer*, May 31 and June 7, 1995;  
Ministry of Environment, Lands and Parks files.