

ASHEVILLE WATER

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I moved to Asheville from Charlotte just months before Hurricane Helene, which ravaged the southern Appalachians between September 25 and September 27 of last year. In fact, I had previously moved to Charlotte in September of 1989, just in time for Hurricane Hugo. Each storm was devastating in its own way. With Hugo, it was tremendous winds—gusting up to 100 miles per hour—ripping through neighborhoods and felling countless oaks across streets and onto houses and power lines. Nearly all of the homes and businesses in the city lost electricity, which took many weeks to restore.

With Helene in Asheville, it was water. No question, Helene's fierce winds shattered the forested southern Appalachians, and millions lost power. But Asheville's 95,000 souls, plus the thousands living in surrounding communities, will remember the storm mainly for the flooding and landslides it wrought, and for the months without clean water running from faucets. The winds and rains would subside as the storm moved on. But in the still of the days and weeks that followed, the water damage would be deafening. And while stricken by floods, Asheville also thirsted for water. As the adage goes, water can be your best friend and worst enemy. Helene battered the municipal reservoir and treatment plant, so amidst the inundation we all queued up for water to drink. Authorities issued a boil water advisory for cooking and cleaning to avert a public health calamity. We immediately discovered that water is heavy. A five-gallon bucket of the liquid weighs about 42 pounds. No wonder that when trillions of gallons rained down from the sky and were propelled down the mountainsides by the force of gravity and shocking winds destruction ensued. Helene's waters and landslides claimed countless buildings and over 100 lives in the region, including 42 lives in Asheville and Buncombe County. The flooding was historic and the clean-up Herculean.

Why did Helene strike Asheville so hard? Geography is key. Humid hurricane-force winds moving northward from the Gulf jetted up the steep Blue Ridge escarpment to condense and then release torrential rains from the cooler mountain tops. Asheville's setting in a basin in the Blue Ridge made it especially prone to flooding and landslides as rain-swollen rivers and creeks rushed down rugged slopes. When Helene blew through Asheville on the heels of a preceding storm, some 14 inches of rain soaked the city. Mount Mitchell saw over 24 inches. The French Broad and the Swannanoa rivers poured down upon the town at record levels, exceeding previous crests during the Great Flood of 1916—the grim standard for comparing floods in North Carolina. The French Broad crested above 24 feet in Asheville—exceeding its 1916 high by a foot and a half. The Swannanoa River, which runs east-west from Black Mountain to Asheville, surpassed 27 feet, an astounding five feet above the 1916 mark.

Coursing down from its headwaters atop the Blue Ridge in Transylvania County, the French Broad boiled over into the city's mile-long River Arts District in the floodplain. In the late 19th and early 20th centuries, a mix of sturdy, red-brick mills, tanneries and other manufactories filled this buildable narrow plain alongside the river and the Southern Railway tracks. These structures largely



Figure 1. *After the flood: River Arts District (Photograph by author)*

withstood the 1916 storm. Over time most were vacated and shuttered and by the 1980s, enterprising local artists and gallery owners began moving in, taking advantage of cheap and adaptable spaces facing the French Broad. In organic fashion the River Arts District steadily took shape to represent hundreds of artists and prosper as a tourist hotspot. As in the Great Flood, the district's durable industrial buildings withstood Helene, but river water and toxic mud engulfed the precious interior art spaces. One estimate has it that the flooding damaged some 80 percent of the galleries and studios in the district (Figure 1).

The Swannanoa River meets the French Broad at the south end of downtown Asheville, within the magnificent Biltmore Estate. Here lies another of Asheville's premier tourist destinations: historic Biltmore Village. It was erected for George W. Vanderbilt in the years before and after 1900 as a storybook manorial village. The collection of buildings, including All Souls Cathedral, an architectural gem in the Gothic style, occupy vulnerable bottomland beside the river. At the eve of construction, workers hauled in wagonloads of infill to lift the land above the waterway. But the village stayed in harm's way. The Swannanoa proceeded to flood the village in 1916, and soon thereafter the Vanderbilts sold off most of the property. In recent memory, the river swamped this area during Hurricane Frances in 2004. Now it was Helene's turn, and while the buildings stood firm, cresting water and mud soaked the myriad art galleries, restaurants, and shops that have come to mark the village. All Souls Cathedral, which stands at the highest point in the village, saw the river enter its sanctuary and parish hall for the first time ever (Figure 2).

In the Black Mountains east of Asheville, the North Fork of the Swannanoa River holds the Burnett Reservoir, the city's primary source of running water. In 1903, Asheville acquired 5,000 acres of the North Fork Valley from the Burnett family and others, and began piping drinking water into the city. Asheville ultimately purchased 22,000 acres of the valley's pristine forested watershed, and in 1955 created the 355-acre reservoir and North Fork dam and water treatment plant. Helene despoiled the lake and disabled the plant. Water charged down the valley



Figure 2. *Biltmore Village (Photograph by author)*

in the dark evening of the storm, uprooting trees and bucketing sand and soil into the reservoir. In this terrible whirl, the lake's bottom layers of sediment and clay were churned up to the surface, and the once-crystal blue lake turned chocolate brown. The raging water destroyed the treatment plant's distribution lines and washed-out roads leading to the plant. Just like that, the city lost its chief water supply and the means to reach the lake and assess the damage. Amidst the wreckage the dam held firm, most likely because of a massive auxiliary concrete spillway which was just completed in 2021. The spillway's first of eight massive concrete gates performed as designed: to break open in the event of a 1000-year flood. Had the spillway failed and the dam burst, the gates of Hell would have opened. A spokesperson for the Asheville Water Resources Department declared to the press, "If that North Fork dam had failed and unleashed six billion gallons of water, it would've meant complete annihilation of everything and every person between Black Mountain and Biltmore Village."

Nevertheless, flood waters and landslides struck the heavily developed Swannanoa River Valley with a fury. Asheville geologist Peter Prince, who has reported on Helene's impact on the Blue Ridge, states that some of the highest ranges in the Blue Ridge border this precarious corridor below the reservoir. The headwaters of the Swannanoa River begin to the north in the Black Mountains—peaking at about 6,000 feet above sea level. The Swannanoa Mountains to the south rise to some 4,000 feet. Thus, the swelling tributaries barreled down steep mountainsides into the Swannanoa with a vengeance, destroying everything in their path.

When Helene swamped properties which were deeply rooted in the history of the area, a sense of place suffered as well. For much of the 20th century the community of Swannanoa was intimately tied to the Beacon Manufacturing Company, the world's largest maker of cotton blankets. During the 1920s and 1930s, Beacon built a massive brick mill alongside the railroad tracks and the river, and constructed a village of modest bungalows for its workforce. The factory shut down in 2002 and

burned to the ground the following year. Only the mill village survived. In the dark morning of September 27, waters rose to the rooftops and ravaged most of the 77 mill houses—now owned or leased mostly by locals. It remains to be seen how many of these dwellings can be rescued. Surveying the disfigured landscape, Fire Chief Anthony Penland lamented to a local newspaper reporter, “There goes the history of Swannanoa right there.”

While in and around Asheville resilient property owners faced the long road to recovery, everyone began searching for usable water. H₂O questions abounded: Where could we find safe drinking water? What about water for cleaning? Showering? Flushing? When would the reservoir and North Fork treatment plant recover? Indeed, many of us had never before even heard of the North Fork, let alone about the source of Asheville tap water beyond our own nozzles. Because internet, cable, and cell services were out for weeks, families gathered round radios for daily news briefings about such things. We learned that the National Guard and volunteers were making available potable and non-potable water at distribution sites, like Pack Square in downtown. Folks pulled small wagons and pushed hand trucks up to spigots fed by pipes from ponderous water trucks idling nearby. Impromptu signs taped to storefronts or chalked onto sidewalks alerted passersby as to the whereabouts of water and other essentials. My neighbors and I drew flushing water from a nearby creek, gaining purchase on the rocks before dipping plastic buckets into the flow (Figures 3 and 4).

Others discovered non-potable water in eye-catching, industrial-grade plastic containers (or “totes”) which revealed themselves, like small miracles, at street corners across the city. In truth their appearance demanded hard work and resourcefulness. A grassroots team of volunteers named Flush AVL came together to collect donated totes, fill them with water, and truck these plastic gems throughout Asheville. Within days, Flush Avl in partnership with others

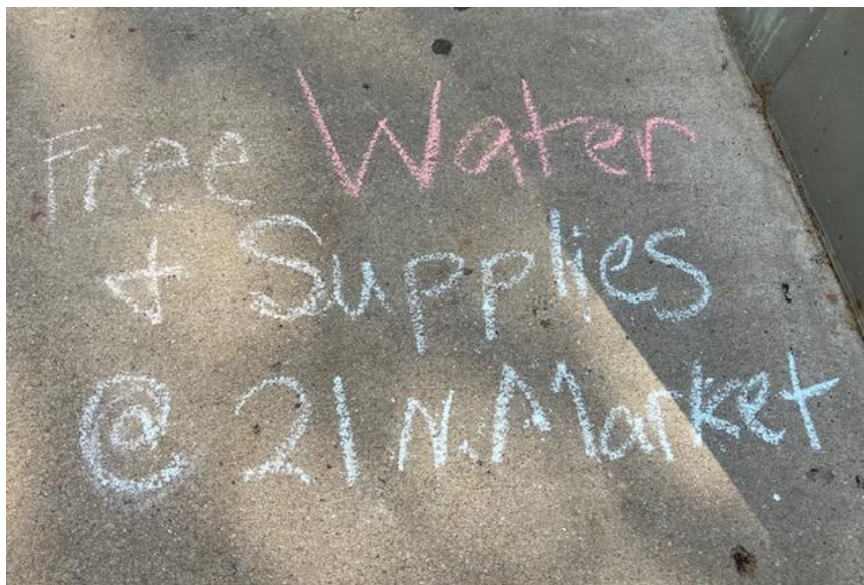


Figure 3. Directions downtown to potable water (Photograph by author)



Figure 4. Neighbors collecting flushing water at Reed Creek in Asheville's Montford neighborhood (Photograph by author)

distributed thousands of gallons of water to the needy in 400 totes. Just as extraordinary were the appearances of portable emergency water filtration units, called AquaBlocks, specifically designed to filter creek water for consumption. In a week, the charities Planet Water and Americares set up a series of metal-clad AquaBlocks in both Asheville and Swannanoa to release 17,000 gallons of healthy water daily (Figure 5).

In the mountains high above these feats, federal agencies teamed with city employees and local contractors to restore the reservoir. The labor was day and night, and Mayor Esther Manheimer called it nothing if not “heroic work.” City staff begged off committing to any sort of timeline for recovery: the results would be “measured in weeks, not days.” There was simply too much uncertainty: sediment covered the lake like chocolate milk, and the city’s entire 1,800-mile water system demanded inspection for leaks. Many of us reckoned that we would be without safe running water until Christmastime. To reduce the high concentrations of floating deposits (“turbidity levels” in the precise wording of the Department of Water Resources), workers treated the lake with doses of coagulant chemicals to sink the sediment, and installed “turbidity curtains” to strain out residue. Helene had washed out the main water pipes as well as a later bypass line. Yet by mid-October, just a few weeks after the storm, the bypass line was rebuilt and pressurized, and the city began pumping raw water--heavily treated with chlorine--into Asheville. To be sure, the mandatory boil water notice remained in effect and most of us still used bottled water for drinking, but drawing the dear commodity from our faucets was cause for applause.



Figure 5. Drinking water to the rescue (Photograph by author)

On November 18, 2024, nearly two months after Helene, came reason for cheer. On that day, Asheville residents once again drew potable water from their taps. The city lifted the boil water notice and pushed over 20 million gallons of water through the treatment plant. The destroyed transmission lines were back in action and the obdurate turbidity brought to heel. The upended waterworks were now essentially under control and back to normal.

Nevertheless, one cannot overstate how many nearby mountain communities would remain waterless for weeks to come. And to this day, in the new year, some of the more remote places hard hit by the storm are still without electricity to run their wells. In this age of climate change, the year 2025 confronts Asheville with challenges. Climatologists have termed Helene a “1000-year weather event”, which is actually not about time, but probability. There is a one in a thousand chance of a storm of Helene’s magnitude striking the Blue Ridge in any given year. As the numbers of extreme storms increase, odds will drop. How will Asheville and the region respond? At the Burnett Reservoir the Army Corps of Engineers has installed a state-of-the-art filtration system equipped to control high turbidity. And city contractors have fortified the rebuilt transmission lines with armor and buried them deeper. Appalachian architects are raising concerns about the lack of building regulations and up-to-date building codes that would mitigate the magnitude of such punishing storms.

Big questions persist about buildings in the floodplain and on the hillsides. Should portions of the River Arts District be given over to wetland serving as a natural buffer for construction on higher ground? Addressing this particular issue, the

Asheville weekly Mountain Xpress points out that the town of Brevard, near the headwaters of the French Broad, has written into law tight controls on riverfront development. Floodplain projects in the region, like those initiated in Henderson County by Conserving Carolina, a land trust, create and protect native wetlands and woodlands. Replacing buildings and other infrastructure in upriver floodplains with natural areas gives rivers space to flood and takes pressure off the water system down river, like in Asheville. On a collective scale, the city and its citizens can help safeguard Asheville with “green infrastructure”—installing rain gardens, rain barrels, and permeable drives to reduce rain runoff and flooding.

Tourism is a mainstay of the Asheville economy, and Helene packed a ferocious punch at the onset of the lucrative fall leaf season. As the city recovers, visitors are returning and sections of downtown are pulsing with purpose. But the full panoply of businesses so distinct to this Blue Ridge city—from eateries and inns, to microbreweries and rafting outfitters—will be feeling the blow for some time. The clean-up and rebuilding continue at Biltmore Village and many shop owners appear committed to return. But some will move away. Same goes for the River Arts District. Finally—just for the record—given my misfortune with moves and hurricanes, I am staying put.

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