CANALS AND DAMS: THE RAPPAHANNOCK NAVIGATION

Following independence from Britain, the new American nation expended tremendous energy to develop a commercial infrastructure to support its growing industrial capacity. In 1784, for instance, the Virginia legislature chartered both the James River and the Patowmack Companies to link the Shenandoah Valley to the ports of Richmond (via the James) and Alexandria (via the Potomac).

In 1785, both enterprises moved forward. By 1799, the Patowmack Company had constructed a canal on the Virginia side of the Potomac River. This canal ceased functioning in 1830, however, because the system relied on use of the riverbed and was only usable during a portion of the year as a result. The more elaborate Chesapeake and Ohio Canal, constructed on the Maryland side of the Potomac, eventually supplanted this early effort and extended 182 miles from Georgetown to Cumberland. On the James, two canal sections had been completed around the falls of that river by 1805. Other sections of this canal system also relied on the riverbed, with wing dams diverting water to provide passable channels for bateaux. In 1835, the James River and Kanawha Company established private ownership of this latter canal and commenced many needed improvements. By 1840, the canal linked Richmond to Lynchburg. By 1851, the James River navigation system extended 197 miles to Buchanan, 37 miles of which relied on slackwater on the riverbed.

Canal-related activity began in the Fredericksburg area in 1811 when the Virginia Assembly responded to a local petition and authorized a stock subscription to capitalize the Rappahannock Navigation Company. Under the new federal government, Fredericksburg was no longer designated a port-of-entry for overseas trade. The river became the focus for maintaining at least a regional trade network. A canal could provide the means to bring timber and bulk farm goods from the upper reaches of the watershed to the Fredericksburg wharves. Sufficient shares were not sold in the allotted time, though, and the General Assembly had to reauthorize stock subscriptions in 1816, in response to another petition. At that time, the legislature also created the Fund for Internal Improvements and the Board for Public Works, to assist in building roads and canals in the Commonwealth.

The new board's engineer, Laomi Baldwin, soon came to Fredericksburg to examine the Rappahannock River. His 1817 survey called for a canal to run from Carter's Run to Fredericksburg, a drop of 323 feet over 50 miles. Total estimated cost was $357,680. Still, sufficient funds remained unavailable to allow work to commence. The entire nation was then experiencing an economic depression, so this financial difficulty is certainly understandable.

In 1825, the Erie Canal was completed, providing significant commercial benefits to New York and renewing interest in other canal systems. In 1826, the Virginia

Assembly once again authorized the Board of Public Works to assist in funding an improved waterway project on the Rappahannock, although with some modifications to make it less expensive. When stock subscriptions were still too slow, the Common Council of the Corporation of Fredericksburg subscribed for $10,000 in shares and the Rappahannock Company finally had enough funds to formally incorporate. Another state engineer, Claudius Crozet, conducted a new river survey in 1828 to change the construction plans from the long canals originally envisioned to a lock and dam system that used more of the riverbed.

In 1829, after decades of trying to raise funds, the Rappahannock Company began work to make the river above Fredericksburg more conducive for moving bulk cargo. Laborers constructed a canal system upriver toward the confluence, but by 1831, the cost-cutting measures kept the new waterway from being very successful. Wooden locks instead of stone, for example, needed constant maintenance, and excessive reliance on the riverbed made use of the system difficult at times of low water, much like the Patowmack Company had experienced.

The Common Council of Fredericksburg stepped in twice more to financially assist the faltering enterprise, once in 1832 and again in 1836. Some of the problems with the canal building effort are suggested by the conditions under which the Fredericksburg Council invested its funds. The Mayor was instructed to influence the Rappahannock Company to employ a civil engineer to ensure the work was accomplished by competent contractors. Still, by 1844, the canal had not been extended far enough to be of benefit to upriver farmers and the company quietly ceased to exist for lack of capital.

In 1845, with yet another infusion of funds from bonds subscribed by Fredericksburg's Common Council, the Rappahannock Company renewed its charter as well as its efforts. With additional funds borrowed from the state, the company systematically rebuilt all of the locks and dams and by 1849 navigation had been provided from Fredericksburg to Carter's Run at Waterloo. Total costs exceeded $400,000 and did not include improvements to navigation on the Rapidan. This latter stretch had been dropped from the plans in 1826, to make the project financially possible. There are mill sites and mill races along the Rapidan, but no indication that there was ever a passage for boats along that river.

When completed, the Rappahannock navigation system had 33 locks (18 stone and 15 wooden), 20 dams - 14 of which had guard locks (7 stone), and 14 canal sections totaling 15 miles. The dams were constructed as cribs of criss-crossed timbers filled with stone and made watertight with planking. These dams resulted in a series of navigable ponds. Each dam had either a lock for the passage of boats or a canal with a guard lock to protect the canal from floods as well as one or more locks at the lower end of the canal to allow boats to reenter the river. By the end of 1849, 25

boats were carrying cargo on the new system.

Records are scarce for cargo carried on the Rappahannock Navigation. The engineer Crozet described boats 65 feet in length with a capacity of 200 barrels. Another engineer noted that the locks he inspected were capable of handling boats carrying 25 tons. Only the records for the period September 1849 to September 1850 are sufficiently complete to reveal the nature of canal boat activity. During that 12 month span, the following traffic was reported:

Descending

25,859 barrels of flour
34,356 bushels of wheat
2,748 bushels of corn
348,221 feet of lumber
1,183 cords of wood
300 bushels of oats
616,649 pounds of merchandise
39,516 pieces of barrel timber

Ascending

931,965 pounds of merchandise
1,700 tons of plaster
1,015 bushels of clover seed
137 barrels of fish
1,188 sacks of salt
174,539 pounds of guano
84,122 pounds of lime
154 barrels of whiskey
58 barrels of tar
48,800 bricks
13 tons of agriculture salts

The Rappahannock Canal, however, never proved profitable. Even as it was being laboriously constructed, the Little River Turnpike was already available to serve farmers in Loudoun and Fauquier Counties. The advance of the railroad also ensured its imminent demise. Steam technology, first used in the late seventeenth and early eighteenth century to pump water from mines, had evolved to self-propelled engines by the end of the eighteenth century. Steamboats held promise for canals, including one that was tried on the Rappahannock Canal, but innovations in laying tracks and

making wheels that could stay on those tracks brought railways into more general use during the early nineteenth century. By 1852, the Orange and Alexandria Railroad, incorporated in 1849, had already been built through Manassas, had crossed the Rappahannock River, and was reaching toward Gordonsville. The turnpikes and railways effectively undercut the canal company's market, and the state foreclosed on the Rappahannock Company in 1853 for unpaid debts. Subsequent owners were equally unsuccessful and the company issued a final pitiful report in 1860.

While the canals fell into disuse, the river's water power continued to support various riverfront industries. In 1855, for instance, John Chase, of the Rappahannock Navigation Company, built a crib dam across the Rappahannock (just above Hunter's Island) for the Fredericksburg Water Power Company. This dam's function shifted the primary emphasis of the town's canal system from transportation to water power. A number of new mills were constructed in the upper end of town to join the older milling enterprises already there.

Most of the remains of the Rappahannock Canal that are still visible date from the 1846-1849 construction period. Most of the stone locks are below Kelly's Ford, built under the supervision of an engineer named John Couty who went on to build locks for the Rivanna Navigation. Locks above Kelly's Ford were primarily of wood construction. There are no towpaths in the Rappahannock system, the canal bateaux having been propelled by poles or oars. The specific sites identified below are within the City of Fredericksburg's riparian property. The numerous additional sites outside these boundaries are not shown.

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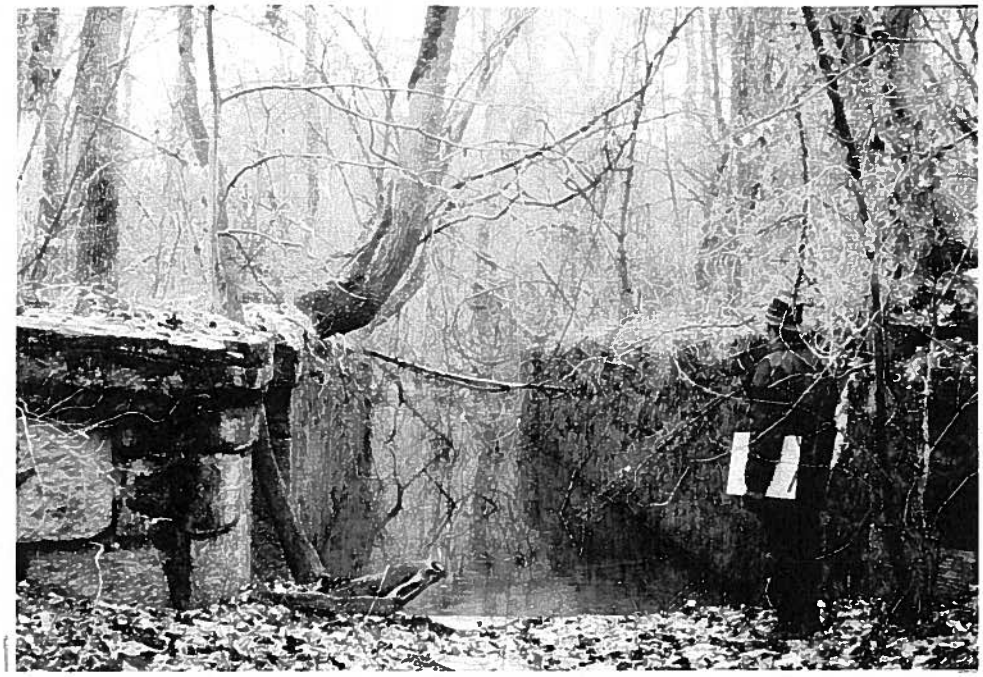
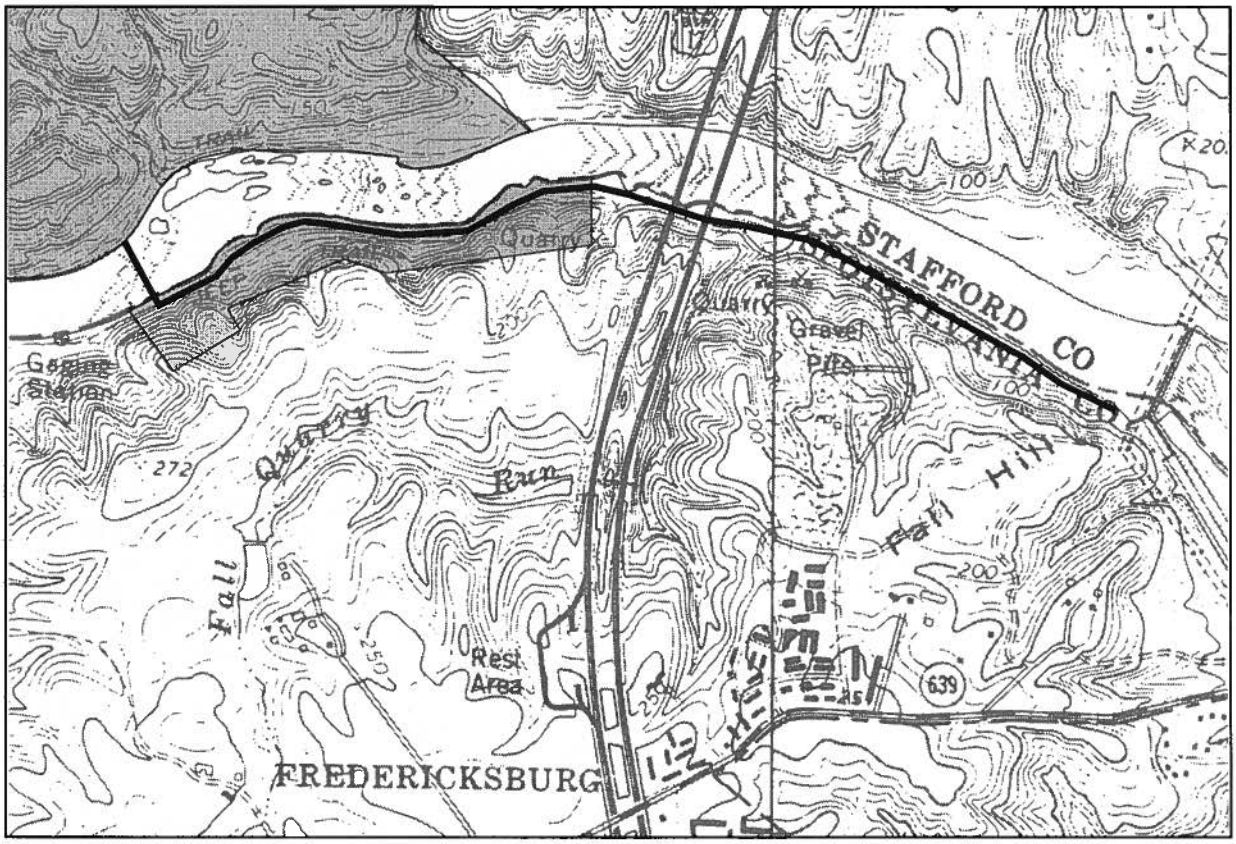
Maps

- "Map and Profile of the Rappahannock River and Its Improvements," 1848.
- Braxton, Carter and Stewart Chase. "Map of the City of Fredericksburg Water Power Company's Dam, Canals and Mill Sites," 1853/54.



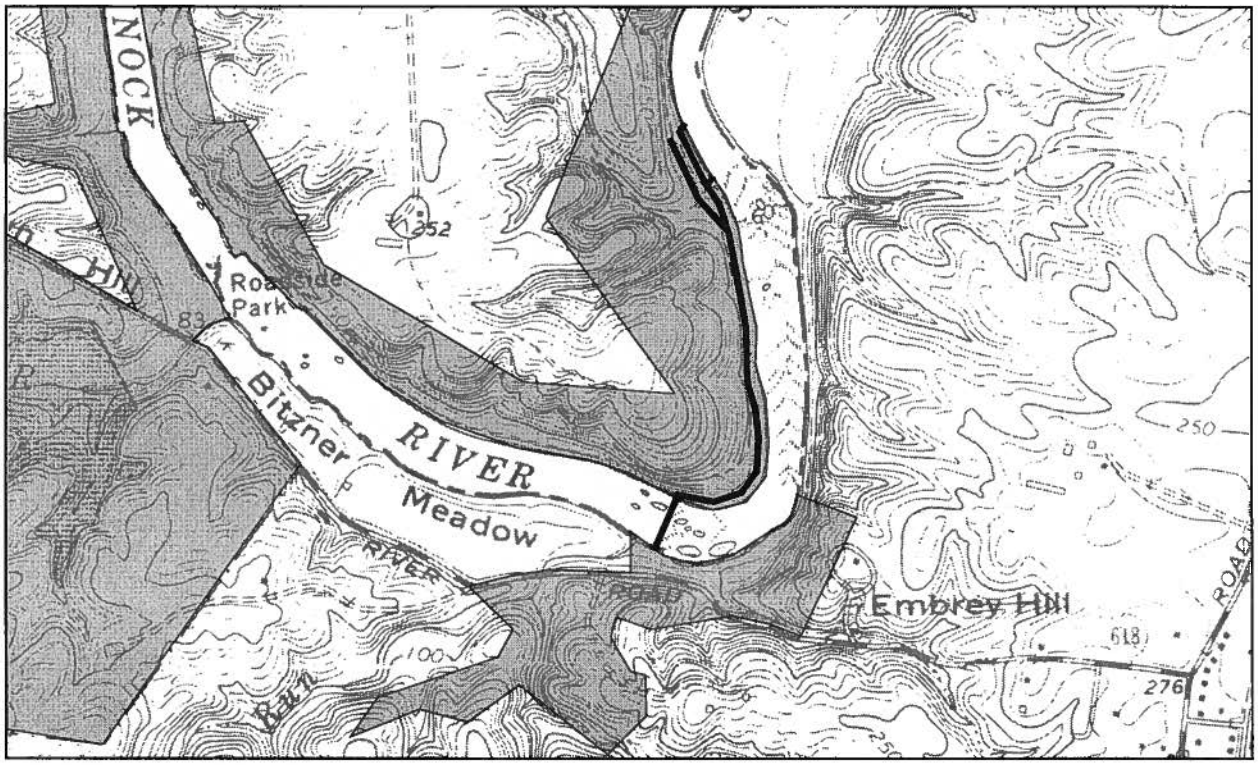
Though hidden in the woods, many portions of the Rappahannock Navigation are clearly evident. Shown here is Lock 7, in Spotsylvania County. View is north to south. Note the cut stone construction.

Taylor's Dam and Canal - Taylor's Dam extended across the Rappahannock River just downstream from an area that is called Butzner Flats. The dam is now in ruins, but the stone guard lock on the Fredericksburg shore is in excellent condition. The canal, from this point, extended all the way to Fredericksburg, passing through Lock 1 (Minor's) where the Interstate-95 bridge is now located. Minor's Lock was removed to accommodate construction of one of the Interstate bridge abutments. The lower end of the canal was partially flooded out when the 1855 crib dam was constructed by the Fredericksburg Water Power Company. Most of Taylor's Canal upstream of the Interstate-95 bridge is within the City of Fredericksburg's riparian holdings.



Map 9. Taylor's Dam and Canal.

Bank's Dam and Canal - The canal builders constructed Bank's Dam at the bend in the river where River Road drops down into the stream valley. There is a solid stone dam abutment on the Spotsylvania shore and a fairly intact stone guard lock on the Stafford side. Some remaining timbers are still visible in the river at times of low water, although the crib dam has long since collapsed. The canal extends downstream along the Stafford shore, approximately 3,200 feet, to locks 2 and 3. Both locks are stone and in a good state of repair. The canal also included a branch at its downstream end that powered Scott's Mill. Portions of this branch canal are still evident. Bank's Canal is entirely within the City of Fredericksburg's riparian holdings.



Map 10. Bank's Dam and Canal.

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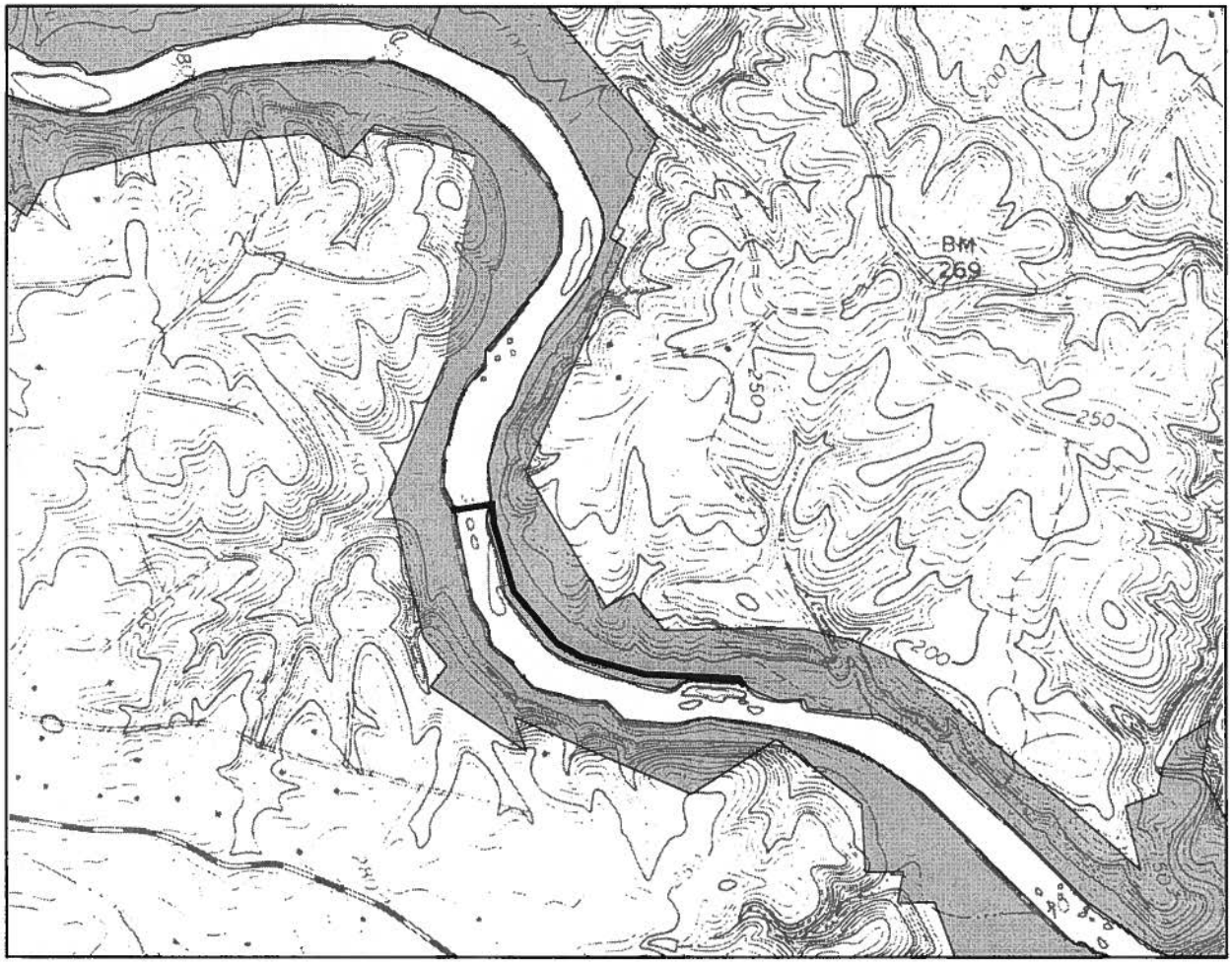
Ballard's Dam and Canal - The ruins of Ballard's Dam are located roughly midway between Horsepen Run and Rocky Pen Run. A stone guard lock, standing on the Stafford shore, remains in excellent condition. One side of the lock consists of the natural rock bluffs. The canal extends approximately 2,500 feet downstream to Lock 4, where another dam once stood (also called Ballard's). Lock 4 is of stone construction and remains intact. Ballard's Canal is entirely within the City of Fredericksburg's riparian holdings.



Map 11. Ballard's Dam and Canal.

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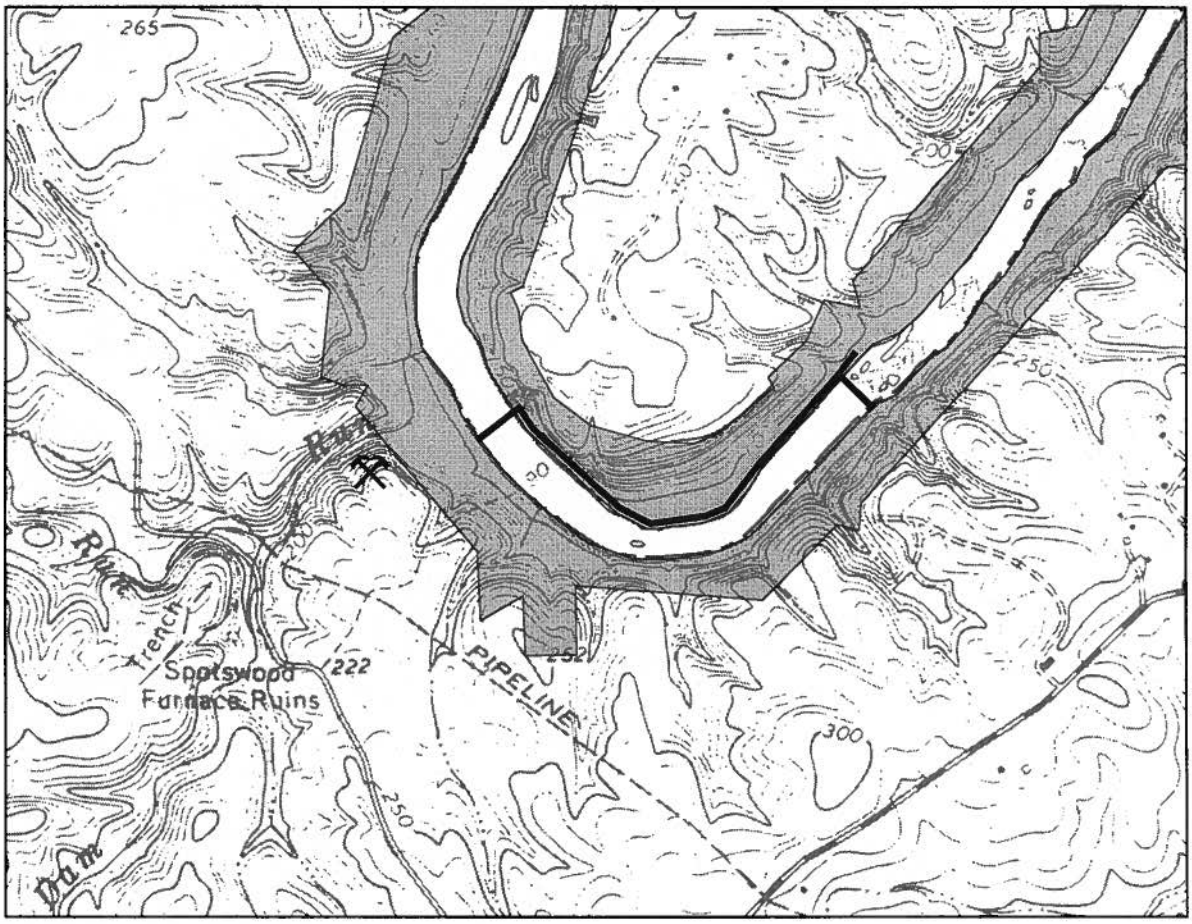
Scott's Dam and Canal - Scott's Dam was located approximately 800 feet downstream of Pipe Dam Run. The guard lock stood on the Stafford shore and was of a different construction than the downstream locks. The ends were cut stone (which remain intact) while the lock walls were a timber crib filled with stones (which have collapsed).

Porch's Lock (Lock 5) is located at the downstream end of Scott's Canal which is approximately 3,200 feet long. It is a stone lock which remains in excellent condition. The canal apparently washed out, however, and navigation was restored by constructing Porch's Dam at Porch's Lock. The remnants of Scott's Canal and its intact locks are entirely within the City of Fredericksburg's riparian holdings.

B.L. Blackford's 1863 map of Stafford County shows the Porch House within this peninsula and shows a road descending toward the river. This road may have provided access to Scott's Dam, but this is not shown on the above referenced map. Field research did not uncover evidence of this road trace on the city's property.



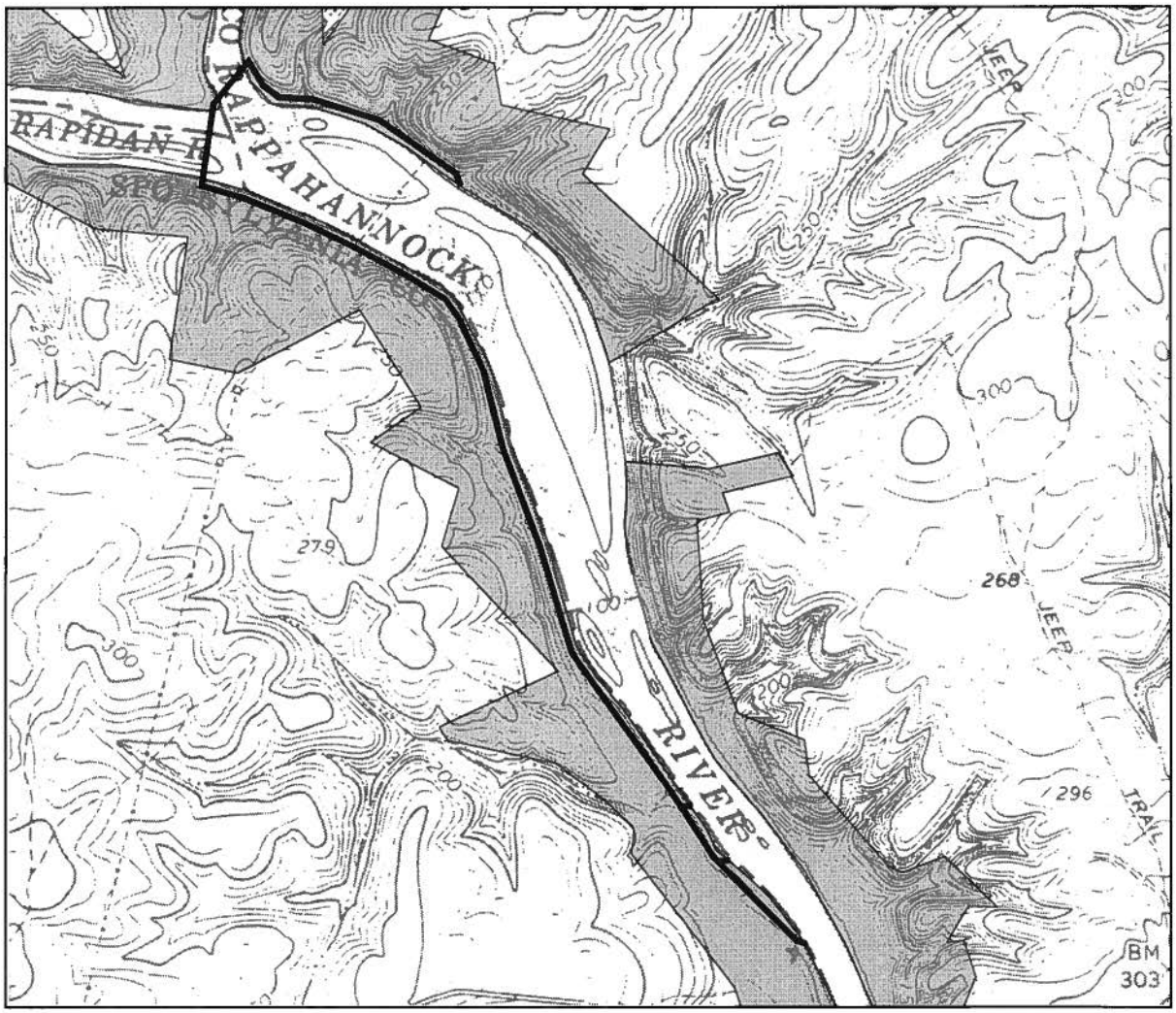
Map 12. Scott's Dam and Canal.

The Confluence Dams and Canals - The confluence of the Rappahannock and Rapidan Rivers is the scene of an intriguing variety of canal remnants. A dam in this area extended across both rivers and some of the spikes that anchored timbers to the bedrock are still visible at low water. Also in this area, on the Stafford shore, is a remaining portion of the earlier canal, built in the 1830s. It extends from the confluence to what is now a power line crossing, where two wooden locks were located. The timbers used to construct these locks are long gone, leaving only some long piles of stone. Approximately 3,400 feet downstream of the wooden lock remnants are the ruins of the wooden U.S. Ford dam. Dr. William Trout, of the Virginia Canals & Navigations Society, thought this remnant may have either been part of the 1830s navigation effort or used for placer gold mining.

On the Spotsylvania side is a substantial section of the Rappahannock Canal. A stone guard lock stands at the head of this canal and once anchored the crib dam across both rivers. The canal itself extends approximately 8,000 feet and includes four locks and three spillways. Lock 6, in the U.S. Ford area, is silted over, but is of flagstone construction and should be well preserved as it is almost entirely encapsulated. In close proximity are Locks 7 and 8, both of which are in excellent condition. Lock 7 is of stone construction while Lock 8 is also constructed of flagstone.

Several hundred feet above Lock 8 are stone abutments from a road bridge where the U.S. Mine Ford Road crossed the Rappahannock Canal. Like Locks 6 and 8, these abutments are of flagstone construction. The old road is still extant as it ascends the hill, but has disappeared where it crossed over the canal into the river floodplain. On the section of the canal between the bridge abutments and Lock 9 are three spillways. One of these is constructed of dressed stones to provide a 5-foot wide gate in the canal wall. Two other spillways are the more typical depression in the canal wall, although these consist of piled stones rather than the more elaborate spillways made of cut stone that are found on other canal sections. Finally, at the power line crossing is Lock 9, where one side of the lock chamber consists of the natural bedrock, much like Ballard's Dam. Also of note is the large stone wall that constituted the canal bank and which extends from the guard lock to a point approximately 500 feet below the power line. Where the stone wall ends, the canal wall becomes a simpler pile of stones (perhaps the remnant of crib construction).

There is evidence of numerous quarries along the length of this canal section. The Rappahannock Scenic River Atlas indicates gold mines are located in the canal, but the field investigation associated with this study did not find these excavations into the bedrock to be consistent with other gold mining areas. Without definitive documentation, this feature must remain a question. The historic resources in this area are entirely within the City of Fredericksburg's riparian holdings.

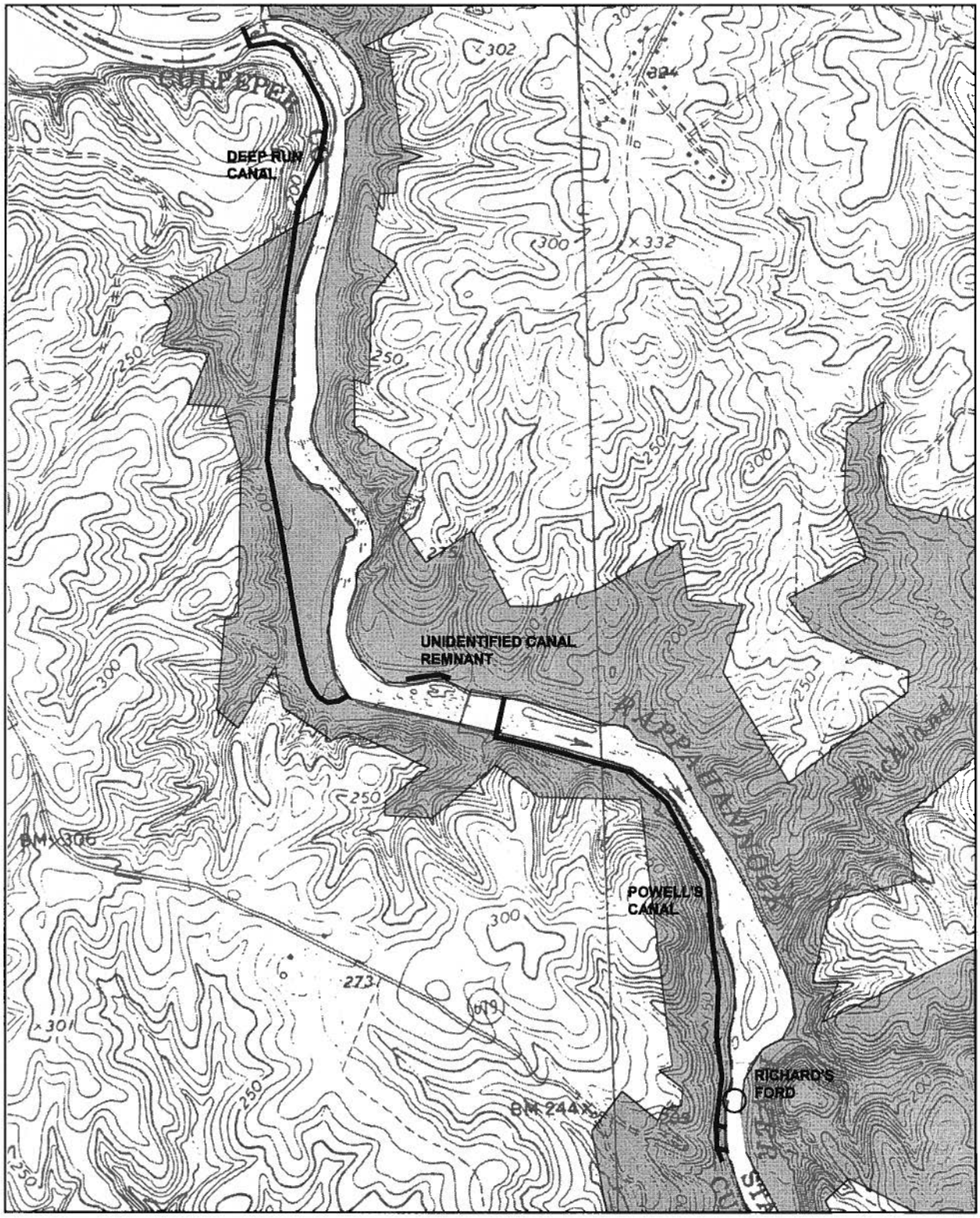


Map 13. Confluence Dams and Canals.

Powell's Dam and Canal - Powell's Dam extended across the Rappahannock below a bend in the river that is approximately 1.75 miles (by water) above the confluence. The stone guard lock on the Culpeper shore is much battered, but still visible. The canal extends approximately 4,500 feet to the Richard's Ford area. There are three locks at the lower end of the canal. Lock 10 (wooden) is silted over. Locks 11 and 12 are of stone construction and in excellent condition. Of note is the double configuration of the canal in this area. Deed records label one of these as the "old boat canal" and the other as the "old mill canal." There is also evidence of numerous quarries in the hillsides adjacent to the canal. Powell's Canal and the mill race are entirely within the City of Fredericksburg's riparian holdings.

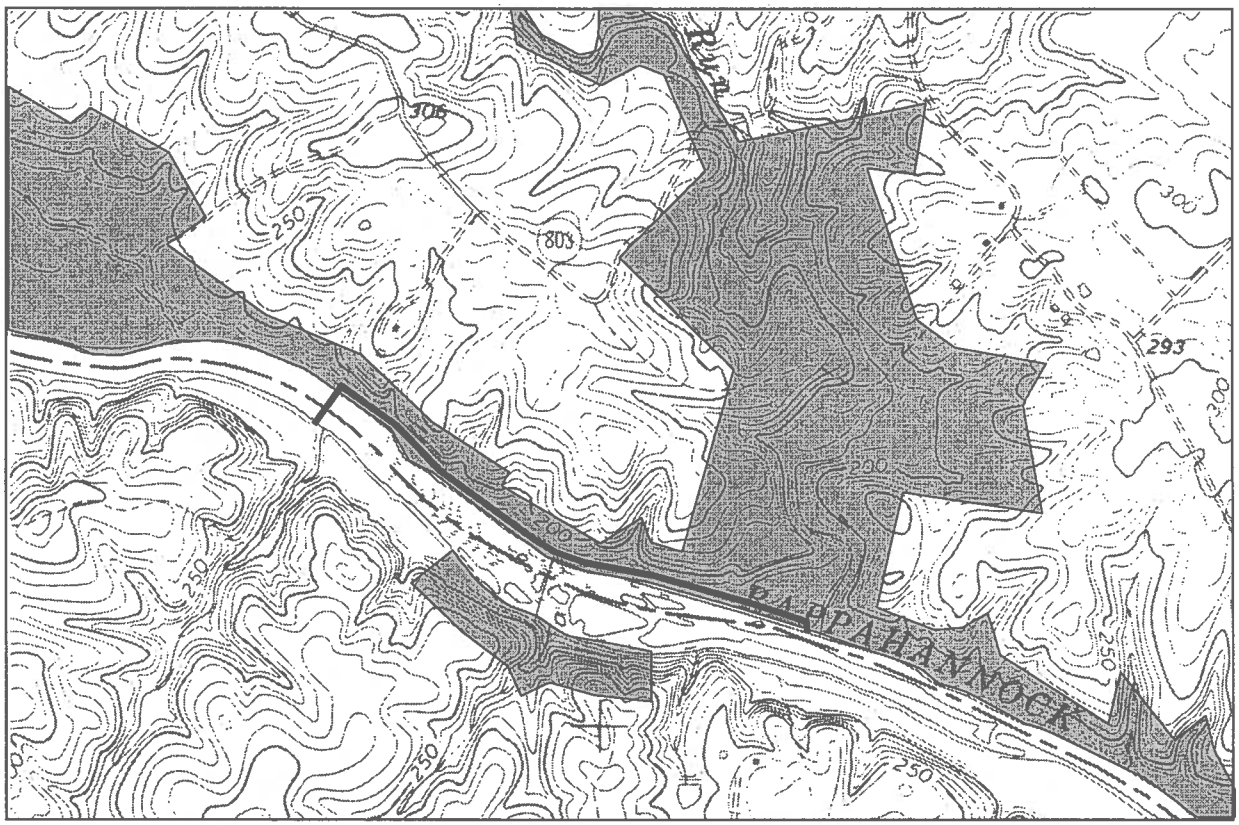
Of additional interest is a canal section on the Stafford shore where the Rappahannock River takes a sharp bend to the east. A linear depression in this area appears to have a water power function. There are remnants of stone construction at its upriver end, suggesting a guard lock and dam. There are also stone remnants at its terminus. This canal may be part of the unsuccessful 1830s navigational canal effort or it could be a mill site. This site, which is entirely within the City of Fredericksburg's riparian holdings, merits additional field investigation and archival research. It does not appear in Dr. Trout's Rappahannock Scenic River Atlas.

Deep Run Dam and Canal - Deep Run Dam was constructed just upstream of Deep Run. The guard lock, on the Culpeper shore, is silted in. The canal extends approximately 6,800 feet downstream where it is separated from Powell's Canal by two short rapids. The canal sections could not be connected because a steep bluff comes up to the river's edge. The lower end of the Deep Run Canal is anchored by Lock 13, the largest and most impressive lock in the Rappahannock navigation system. It is of stone construction and had an impressive 12-foot lift. Midway along this canal section is a stone aqueduct that carried the canal over a small stream while accommodating the stream passage through a culvert underneath. This stone feature also includes a spillway. The lower two-thirds of this navigation canal are within the City of Fredericksburg's riparian holdings.



Map 14. Powell's Dam and Canal; Deep Run Dam and Canal.

Skinker's Dam and Canal - Skinker's Dam extended across the river downstream of Sumerduck Run. The guard lock (on the Fauquier shore) was of wooden construction and only some cut stone and linear piles of loose stone remain. The combination navigation and power canal extends approximately 3,800 feet downstream to an area just above Rock Run. The lock at the lower end of the canal (Lock 14) is of stone construction and beautifully intact. Portions of the canal are obscure, but other sections consist of intact stone walls, particularly near Skinker's Mill (site). Between the millsite and Lock 14 is a cut stone spillway. Several rock quarries are also evident along the canal. Skinker's Canal is entirely within the City of Fredericksburg's riparian holdings.



Map 15. Skinker's Dam and Canal.

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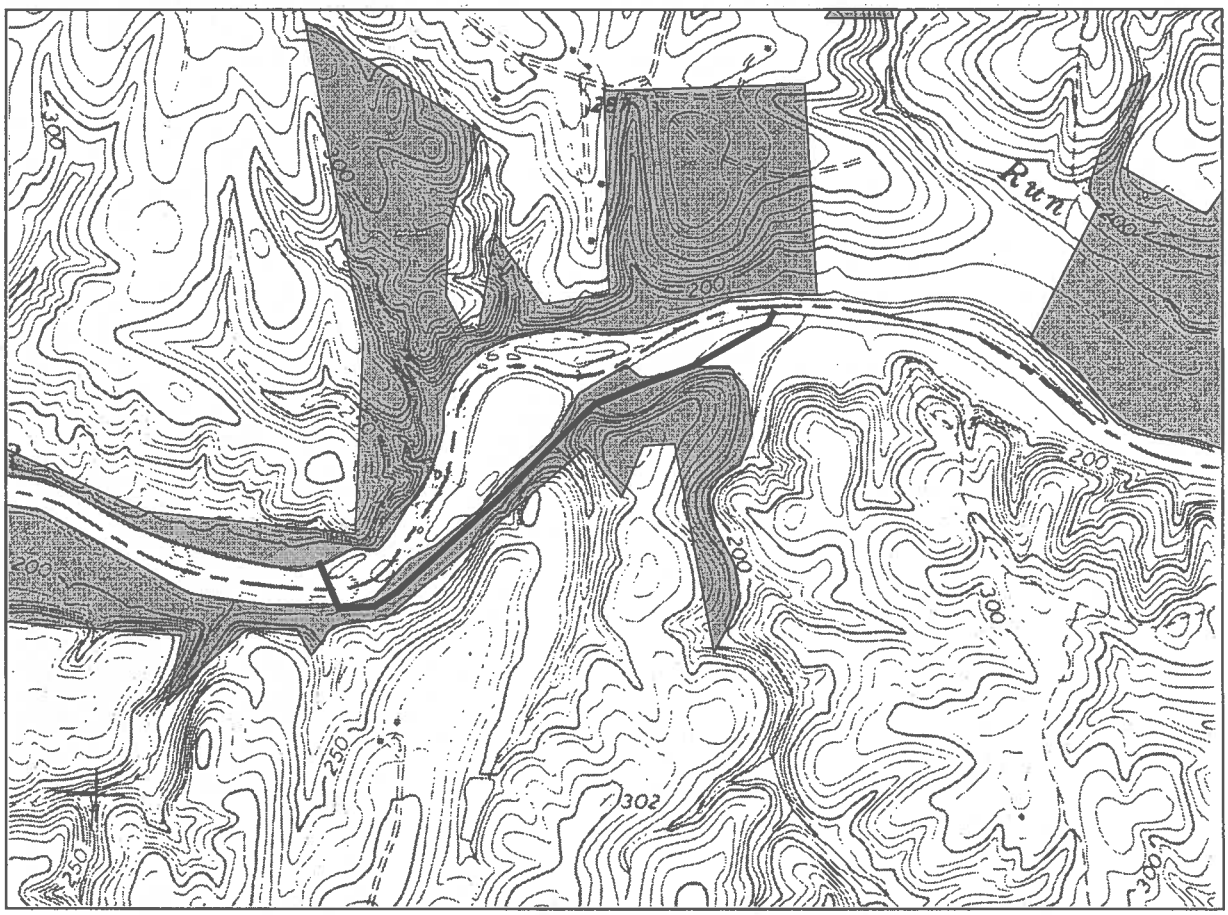
Snake Castle Dam and Canal - Snake Castle Dam was built at a place called Snake Castle Rock. A wooden guard lock stood at the head of the navigation canal, on the Culpeper shore, but this structure has since washed away. The canal itself extends approximately 3,900 feet to Ellis's Ford. Lock 15, at the lower end of the canal, was planking over stone, but this structure is currently covered in silt. Lock 16 was also a wood lock, but had cut stone ends which remain in excellent condition. The upper two thirds of Snake Castle Canal are within the City of Fredericksburg's riparian holdings. A smaller power canal on the Fauquier shore extended from Snake Castle Dam to Ellis's Mill.



Map 16. Snake Castle Dam and Canal.