Southern Environmental Law Center

200 West Franklin Street, Suite 330
Chapel Hill, NC 27516-2520
919-967-1450
Fax 919-929-9421
selcnc@selcnc.org

May 3, 2001

Mr. Michael K. Buckley, P.E.
Director, Technical Services Division
Mitigation Directorate
FEMA
500 C St., S.W.
Washington, D.C. 20472

Re: FEMA April 27, 2001 Meeting in Columbia

Dear Mr. Buckley:

Enclosed for your review, please find copies of materials presented by [redacted] at the above-referenced meeting.

If you have any questions, please feel free to contact me at (919) 967-1450.

Very truly yours,

[redacted]

cc: [redacted]

[redacted]
Enclosures

1908 upstream breaks

- "The Morris quarry is one vast lake. The dams and dykes have been obliterated, tools and machinery are under water and the power house has caved into the water…The dikes at the Ross quarry have held so far but they are giving way now and will go under the increased stage of water that is due." *August 27, 1908*

Two-breach combinations for 10 questionable sections

(1,2) (1,3) (1,4) (1,5) (1,6) (1,7) (1,8) (1,9) (1,10) (2,3) (2,4) (2,5) (2,6) (2,7) (2,8) (2,9) (2,10) (3,4) (3,5) (3,6) (3,7) (3,8) (3,9) (3,10) (4,5) (4,6) (4,7) (4,8) (4,9) (4,10) (5,6) (5,7) (5,8) (5,9) (5,10) (6,7) (6,8) (6,9) (6,10) (7,8) (7,9) (7,10) (8,9) (8,10) (9,10)

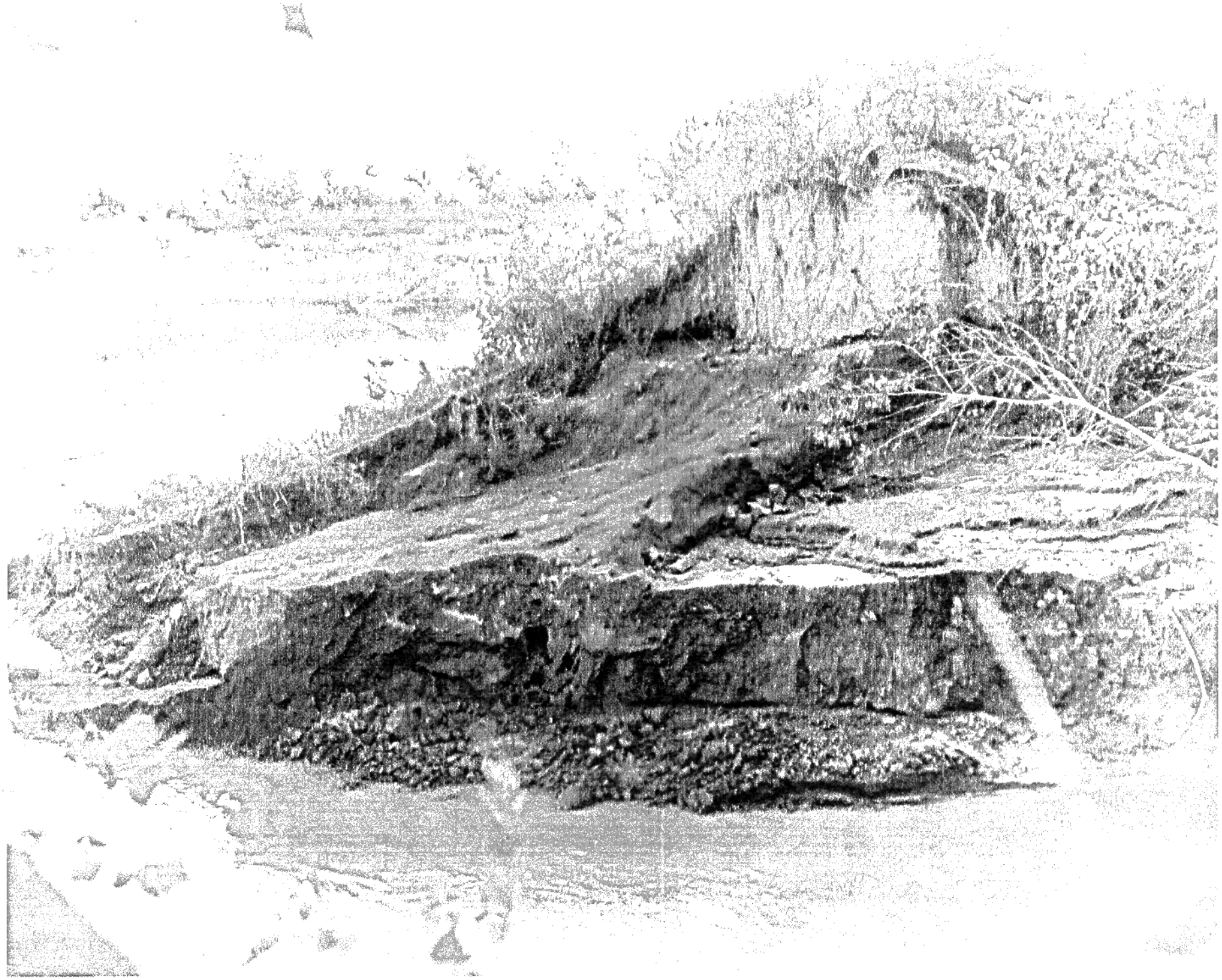
Two levee breaks

- "We consider this dual breach scenario to be very unlikely" *Exponent, 2/14/01*

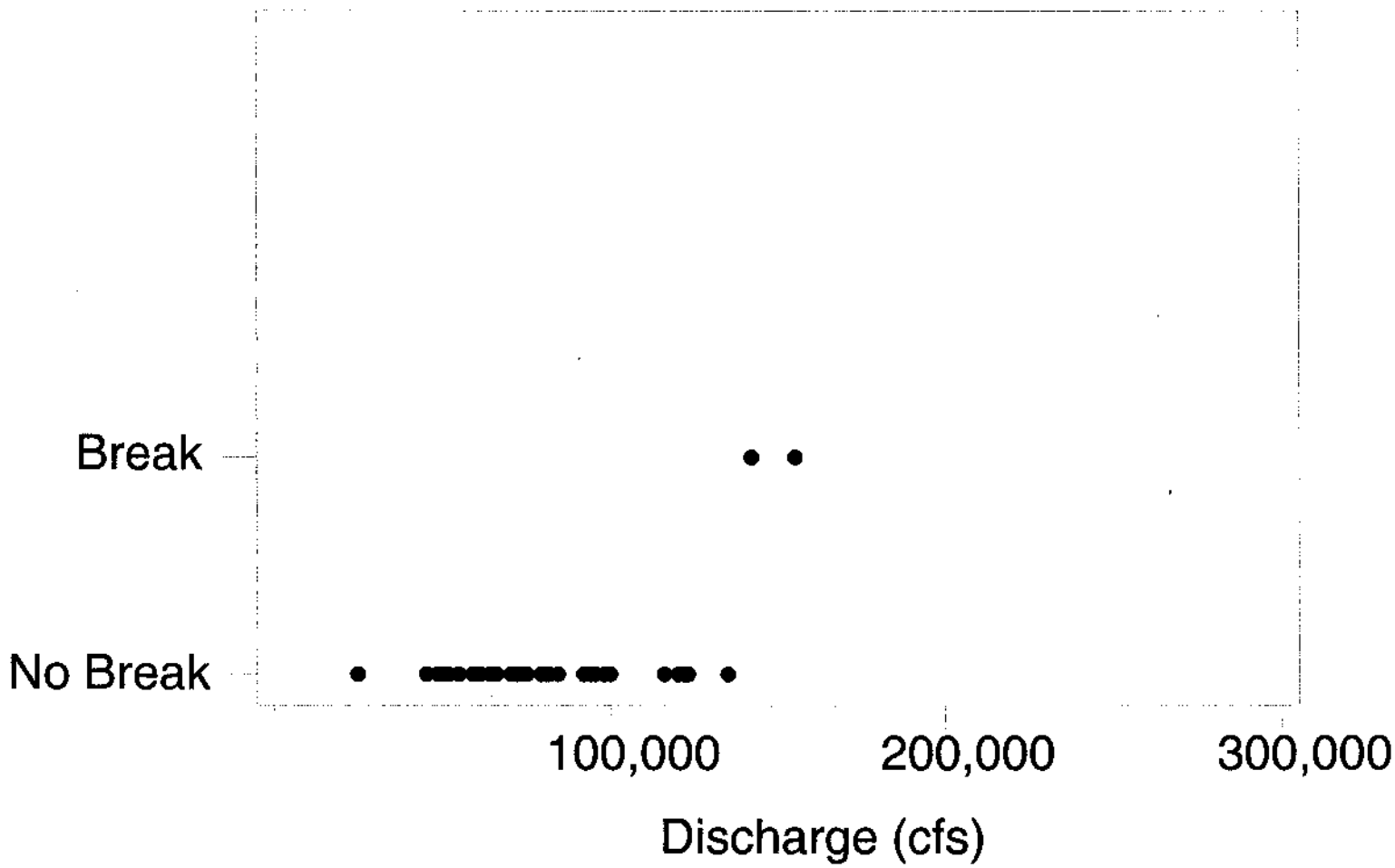
Floodway delineation

- "The steady state RMA-2 model results have been misinterpreted. FEMA interpreted the steady state model velocities greater than 1 foot per second…as effective flow, but the model simply shows that the area is filling. This is confirmed by the following facts taken from the double piping breach scenario…" *10/26/00*

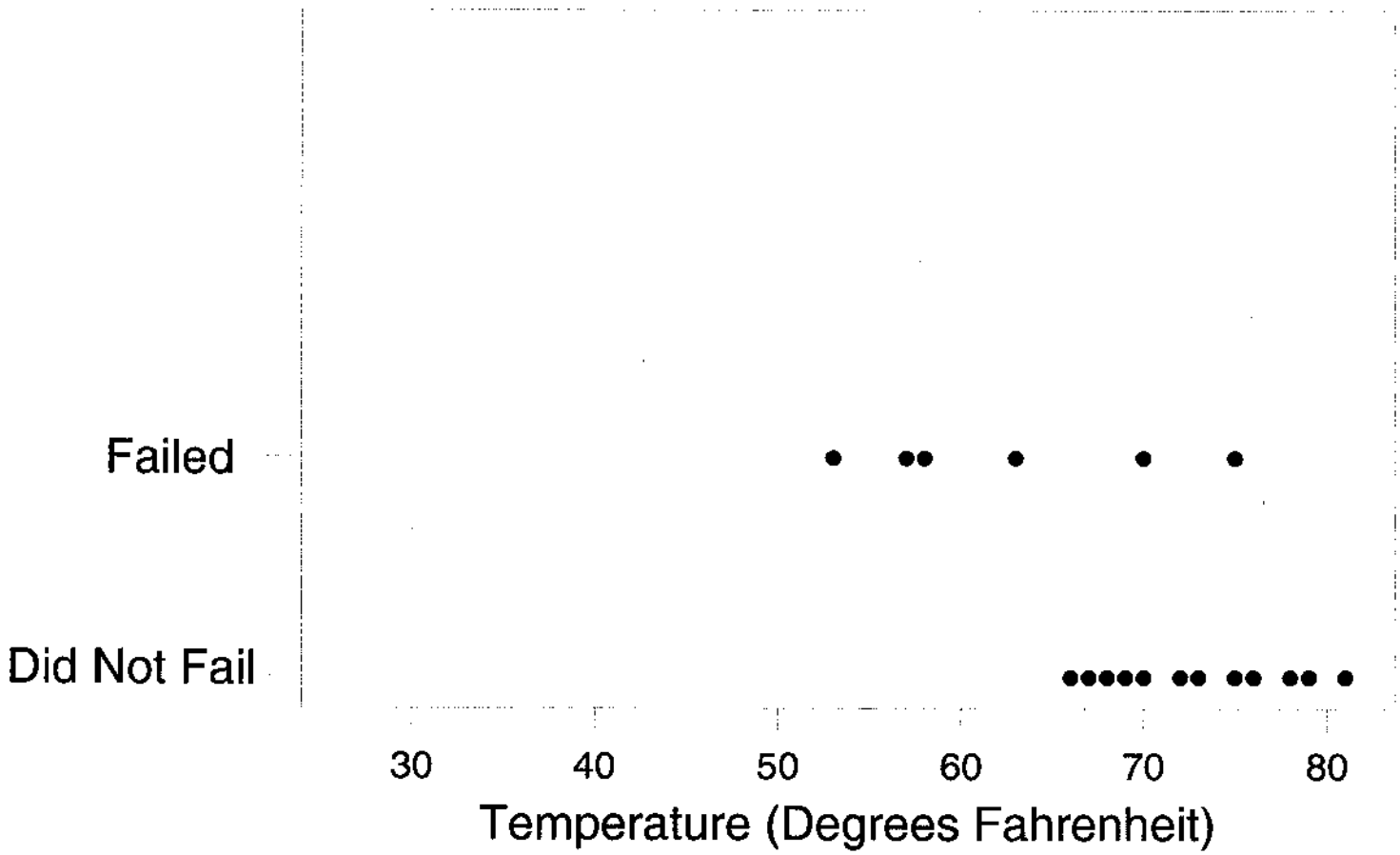
HEWLETT PACKARD HEWLETT PACKARD HEWLETT PACKARD



Levee Failure Data 1960-1998



Space Shuttle Challenger O-Ring Failure Data



FEMA 9/26/00 justification for separate BFE models

- "…***it is evident*** that the maximum flood elevations for the Congaree River floodplain in Lexington County will occur prior to the breach of Manning's dike. In order to simulate this scenario, the existing conditions model for Lexington County considered no conveyance behind the Manning's dike in Richland County."

1930 flood--a spillway event

- "All gates of the Saluda dam of the Lexington Power Company, above Columbia, were open and the lake was maintaining its level by spewing out as much water as entered from the Saluda watershed…the four penstocks, 16 feet in diameter, were opened to water for the first time…" *The State, Oct 1929*

Method 2 adjustments of spillway events

Date	Actual Regulated Congaree	Method 2 Adjusted Congaree
4/8/36	231,000	204,000
4/10/64	142,000	121,000
6/16/65	68,400	32,000
4/19/69	94,200	61,000

Weighting

- "Therefore, it may be appropriate to weight the more defensible approach and less complete data of method 2 and the more questionable approach and more comprehensive data of method 3B." *USGS, July 30, 2000*

Eight largest floods

- 1908 (364,000 cfs)
- 1852 (330,000 cfs)
- 1888 (313,000 cfs)
- 1928 (311,000 cfs)
- 1929 (303,000 cfs)
- 1916 (272,000 cfs)
- 1886 (272,000 cfs)
- 1912 (256,000 cfs)

Eight largest floods

- ~~1908 (364,000 cfs)~~
- ~~1852 (330,000 cfs)~~
- ~~1888 (313,000 cfs)~~
- 1928 (311,000 cfs)
- 1929 (303,000 cfs)
- ~~1916 (272,000 cfs)~~
- ~~1886 (272,000 cfs)~~
- ~~1912 (256,000 cfs)~~

- "The swamps of the Congaree river yesteday resembled…an immense river bespecked with trees, houses, tops of corn stalks and broadly beaming unbroken expanses of hurtling muddy water--***in short it was like the Congaree river on flood***--the raging waters travel at such rapid speed that progress in a rowboat, with auxiliary paddles, could not be negotiated without superhuman effort." *The State, August 18, 1928*

07 01:41:18

97 01 01 28

Bulletin 17B--Multiple Sources

- "When it can be shown that there are two or more distinct and generally independent causes of floods it may be more reliable to segregate the flood data by cause, analyze each set separately, and then to combine the data sets."

1888 Conveyance

- Superintendent Lipscomb had several boats hurriedly made at the Penitentiary yesterday, sent in wagons to Griffin's place. The work of the rescuers was very perilous as the fields were swept by a furious torrent." *Charleston News & Courier, Sept 13, 1888*

1888 Conveyance

- The five State farms--Big Lake, Green Hill and Gadsden, of Seeger's and Spigner's and Aughtry's--were good for 1,600 bales of cotton and 40,000 bushels of corn…Perhaps not 10 percent will be saved." *Charleston News & Courier, Sept 13, 1888*

1888 Conveyance

- "The ruin of the river planters in lower Richland is complete. Take for instance the two State plantations owned by Mr. John C. Seegers. His crops, which were magnificent, are utterly ruined." *News & Courier, Sept 12, 1888*
- "The swamp was full of water, running like a mill race." *News & Courier, Sept 13, 1888*

1888 Conveyance

- "This morning the beautiful corn and cotton fields of yesterday were transformed into a sea of rushing yellow water…All the crops on the bottom lands on the big plantations of Aughtry, Griffin, Seegers and others are submerged and destroyed." *Charleston News & Courier, September 8, 1888*

1888 Stage

- "…at 3 P.M. today, the river had risen to a point less than 2 feet from the flooring of the bridge." *Charleston News & Courier, Sept 12, 1888*

1888 Stage

- "At 12:30 the river was 33 feet and slowly rising. The sills supporting the flood of the Columbia bridge are barely one foot from the water." *News & Courier, Sept 12, 1888*
- "At 6 o'clock this evening the Congaree at the Gervais street bridge had fallen to 26 feet. Its highest point yesterday was 33 feet 9 inches." *News & Courier, Sept 13, 1888*

1886 Conveyance

- "The whole swamps are submerged, and houses in them seven feet above the ground are waist-deep in water, and can be paddled all over in boats…few have escaped who had stock in their swamps." *Charleston News & Courier, May 24, 1886*

1886 Stage

- "…the water at its highest was within five feet of the flooring." *News & Courier, May 24, 1886*
- "…the water rushed under the bridge about five feet from the floor." *News & Courier, May 22, 1886*
- "…In May, 1886, the highest was 31 feet 6 inches." *News & Courier, Sept 12, 1888*

1886 Stage

- "The water covered the great granite buttresses of the old bridge, about five feet below the flooring of the present structure…Old observers say the river is three feet lower than it was then (in 1852)…the water was at noon within five feet of the flooring of the bridge." *Charleston News & Courier, May 22, 1886*

1852 Conveyance

- "The plantations below have suffered severely. Col. Hampton, Col. Singleton, and Mrs. Taylor are among the heaviest sufferers." *Charleston News & Courier, Sept 3, 1852*

1852 Stage

- "…the water was still as high as the flooring, though gradually receding. It had then fallen about two feet." *Palmetto State Banner, Sept 7, 1852*
- High water mark at Rawl's mill is 1.5' greater than high water mark for 1888 flood *Report on Protection and Drainage of lowlands of Congaree River Valley*

1852 Stage

- "The river gauge is painted on the first stone pier…of the Gervais street toll bridge. Bench mark…elevation is 102.59 feet above zero of gauge. Highest water was 34.4 feet in September 1852." *Daily River Stages, 1896, NWS*

1796 vs. 1840

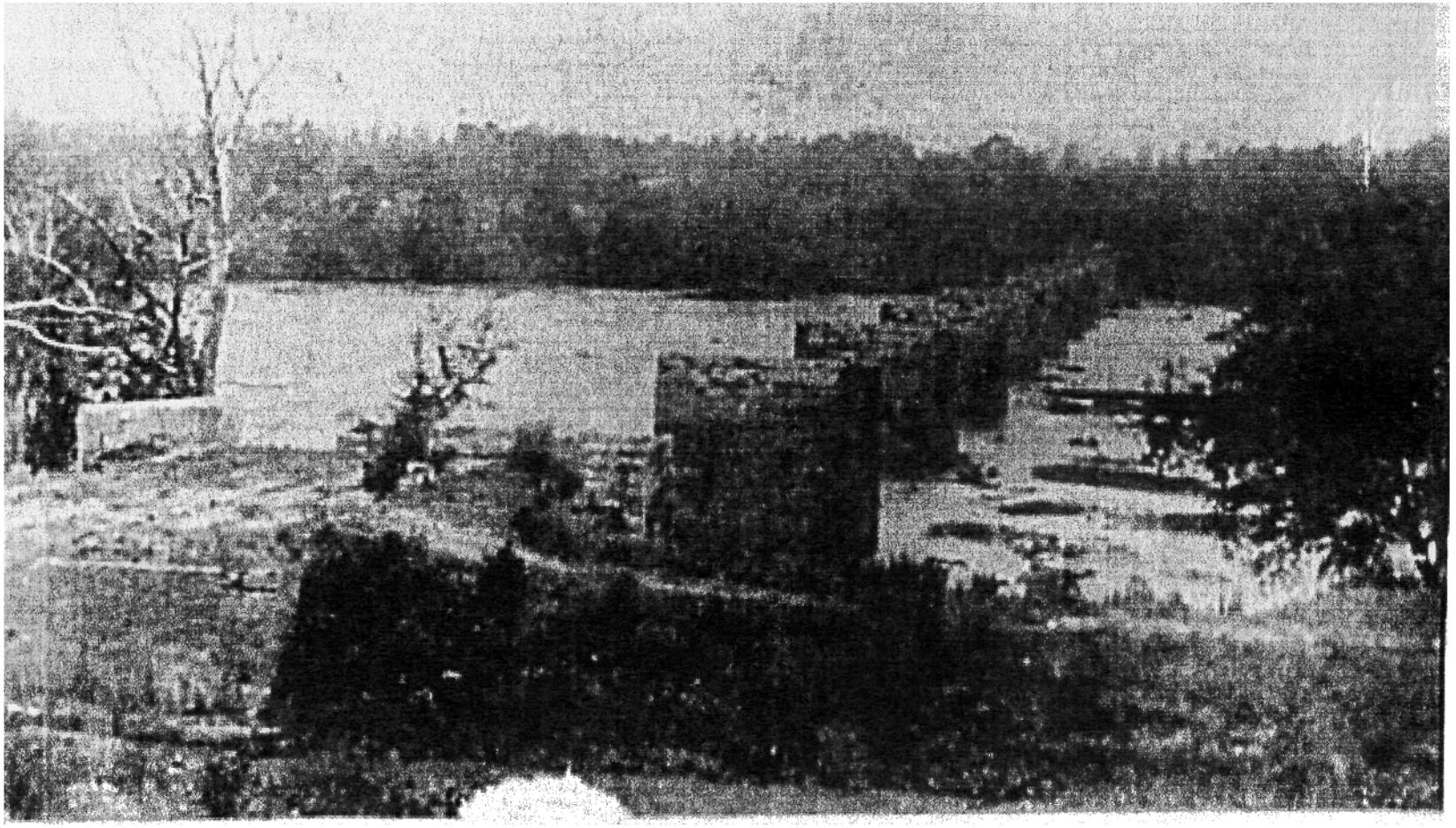
- "From the best authorities we learn that at the Columbia Bridge the height of the river was equal to that of 1796--the great Yazoo Fresh, as it was called--a few miles below Columbia the water was lower by two feet--in many places there was a great variation." *Carolina Planter, June 17, 1840*

1840

- "At the Columbia River bridge the water was within 15 inches of the floor" *Carolina Planter, June 3, 1840*
- "The immense dams at Col. Hampton's and Col. Singleton's were broken, and their whole plantations inundated." *Ibid*
- "Mr. B.F. Taylor's and Col. Peay's plantations have suffered severely from the current." *Ibid*

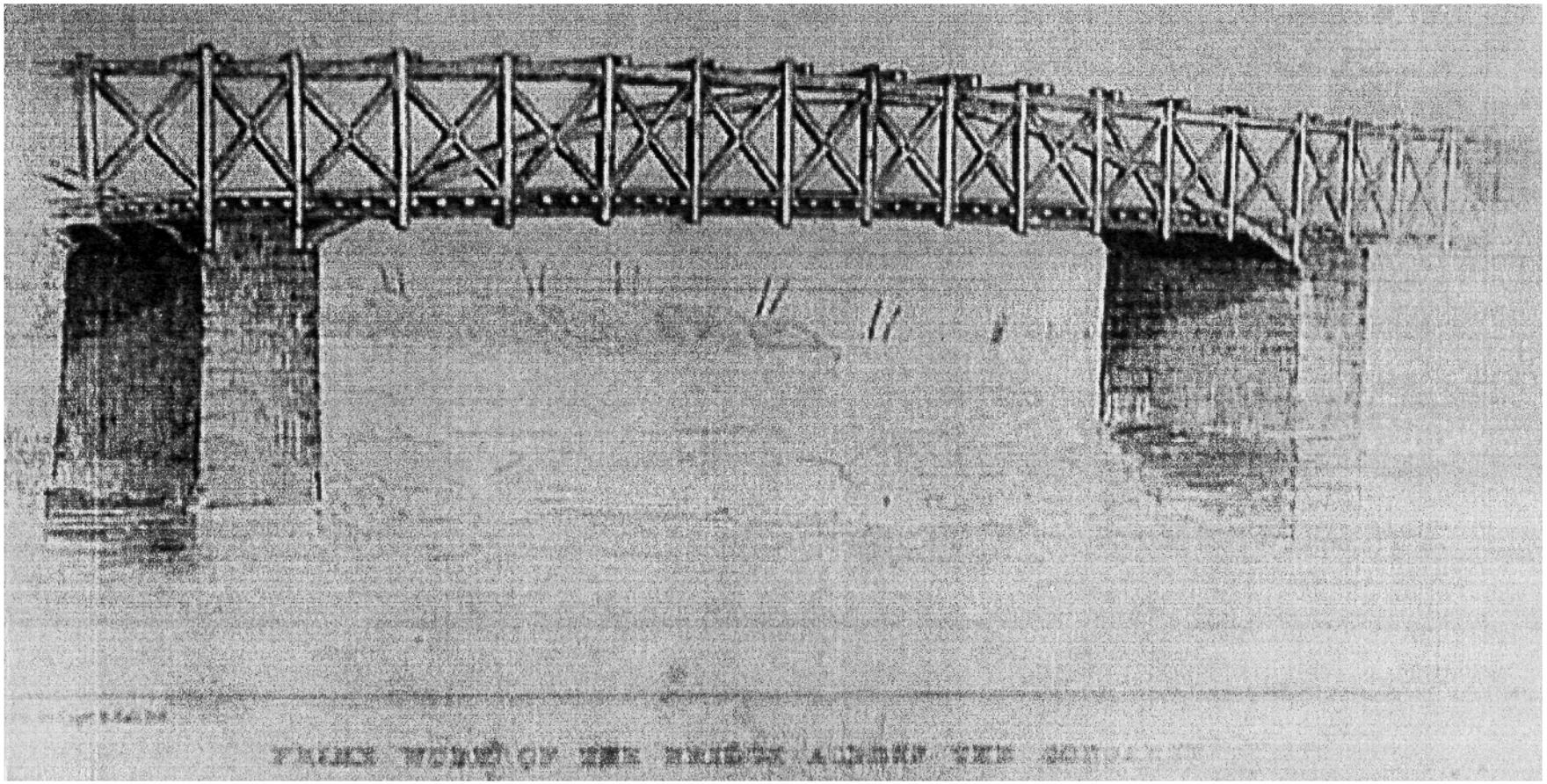
Congaree at Columbia Gauge

- "…arrangements have been made to have daily tests of the depth of the river made at the Congaree bridge and sent to The News and Courier. The reports…will be printed immediately below the Signal Service weather reports." *Charleston News & Courier, January 19, 1884*



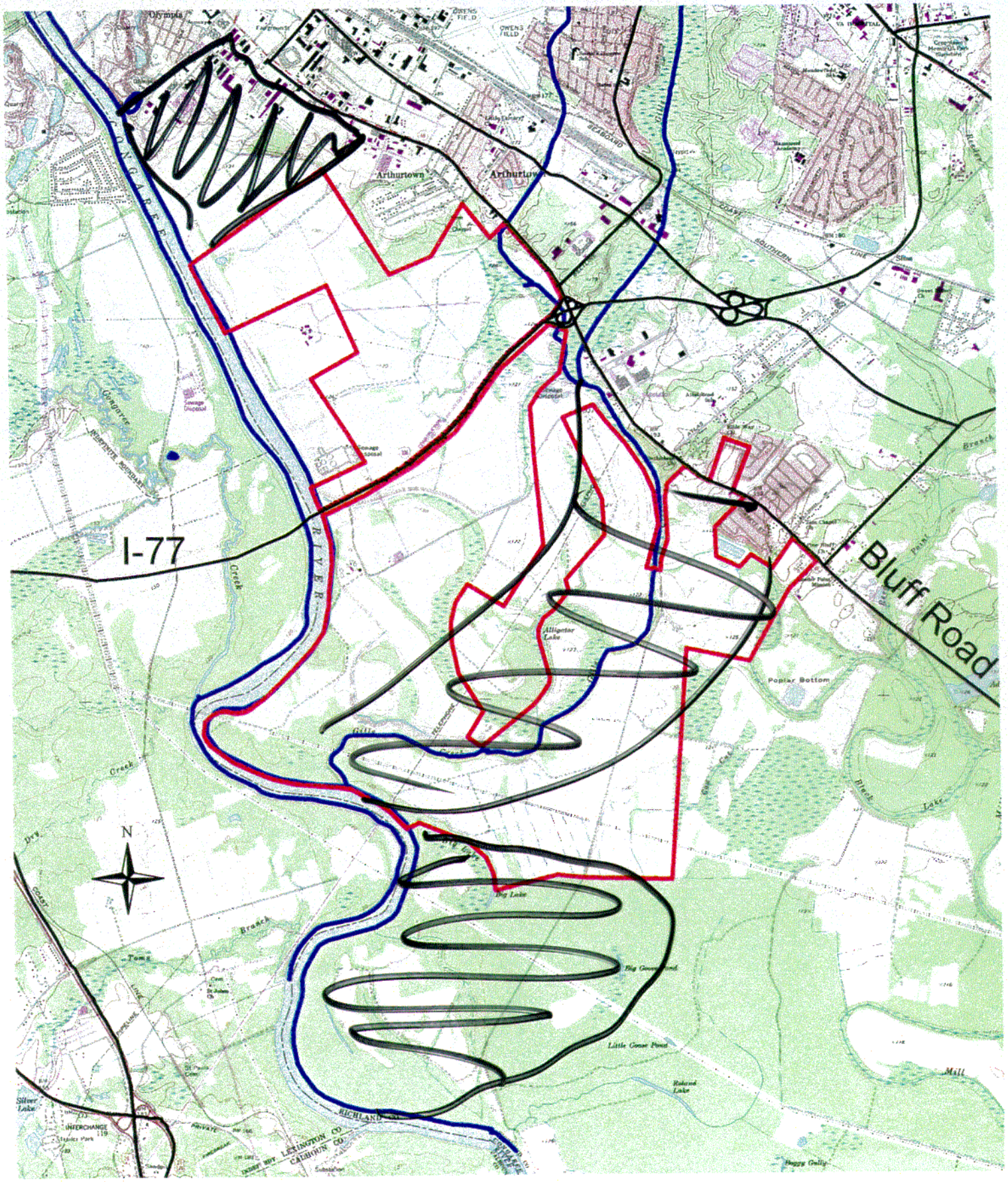
Columbia After Sherman's Visit
Bridge Over the Congaree River

CONGAREE RIVER BRIDGE.



FRONT WORK OF THE BRIDGE ALONG THE [illegible]

- "Wisely indeed did the early city fathers when building the city that must be on the fall line and at the junction of two large rivers, they put most of it high on the hills and out of reach of those hungry, grasping, water." *The State, Oct 4, 1929*



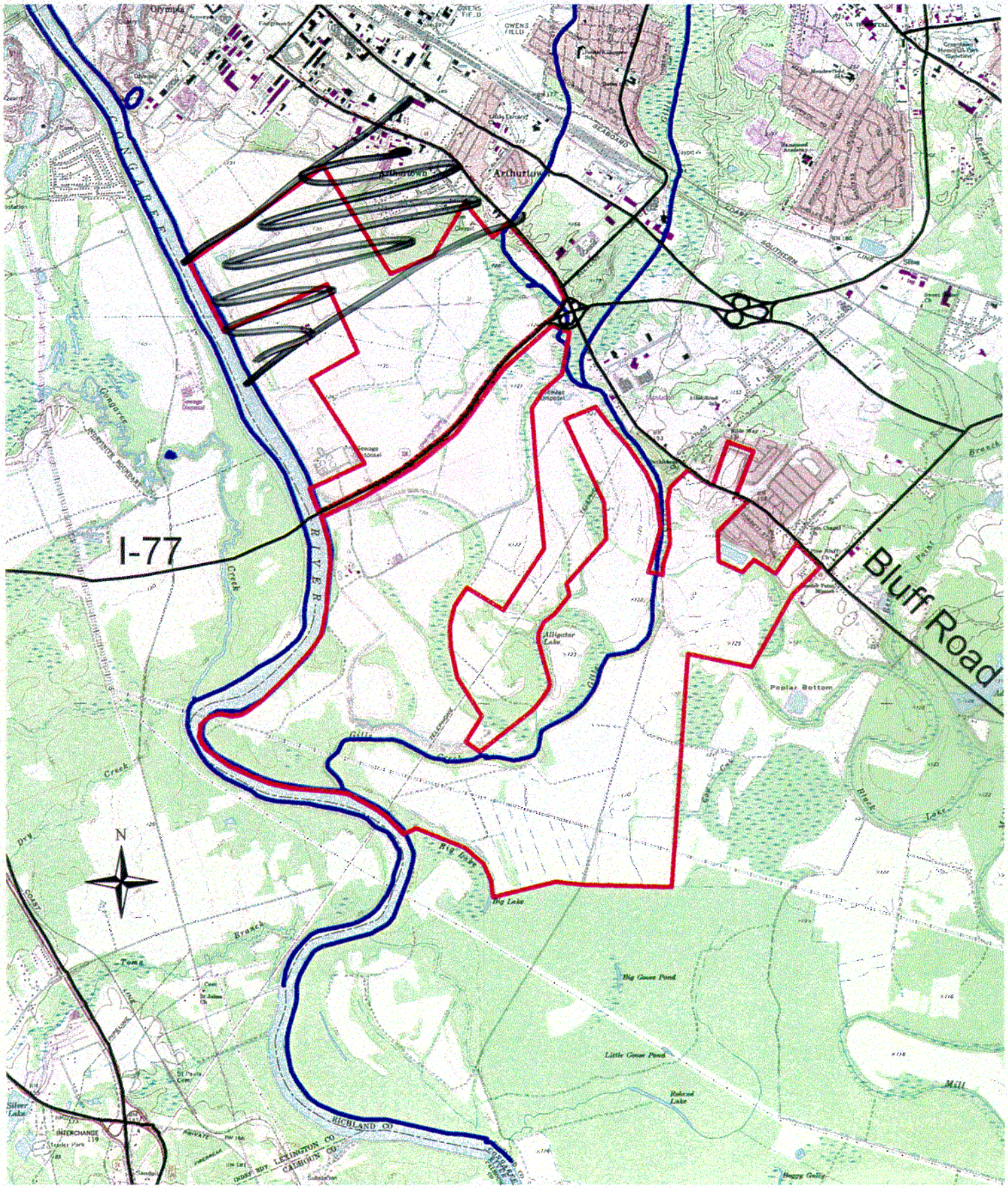
Portions of Richland and Lexington Counties

Major roads

Burroughs & Chapin property boundary

600 0 600 1200 Meters

HEWLETT PACKARD



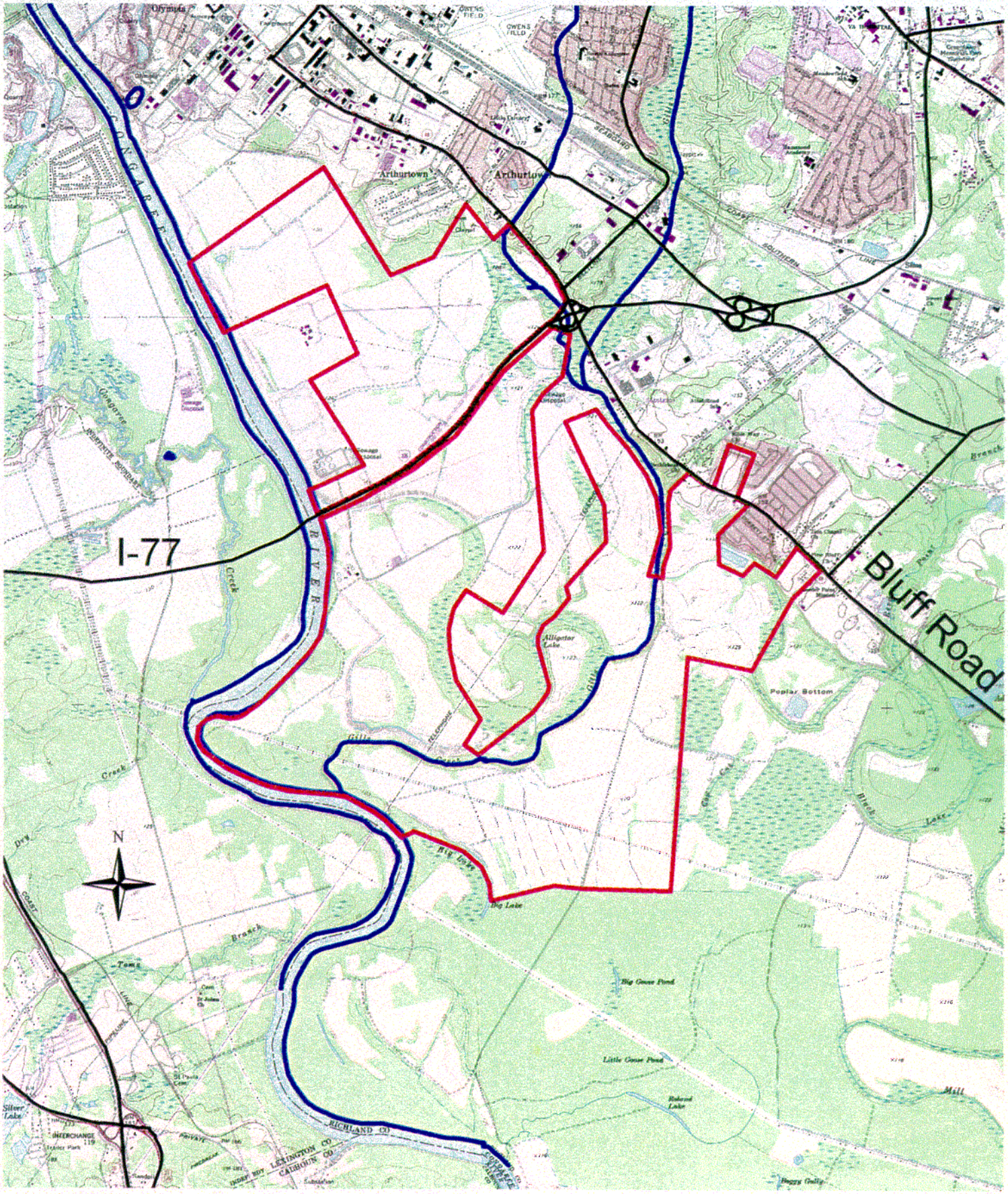
Portions of Richland and Lexington Counties

Major roads

Burroughs & Chapin property boundary

600 0 600 1200 Meters

HEWLETT PACKARD

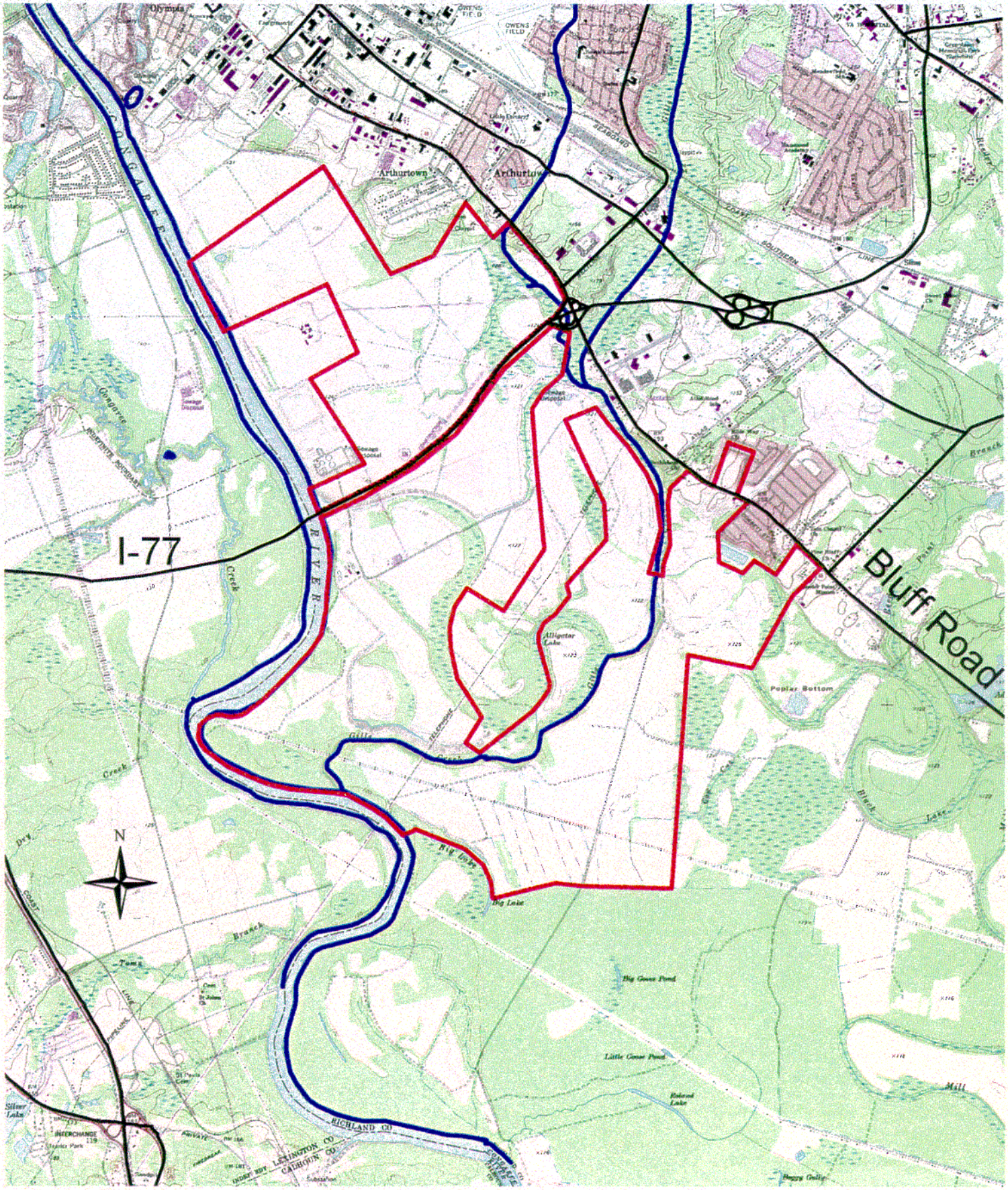


Portions of Richland and Lexington Counties

Major roads

Burroughs & Chapin property boundary

600 0 600 1200 Meters

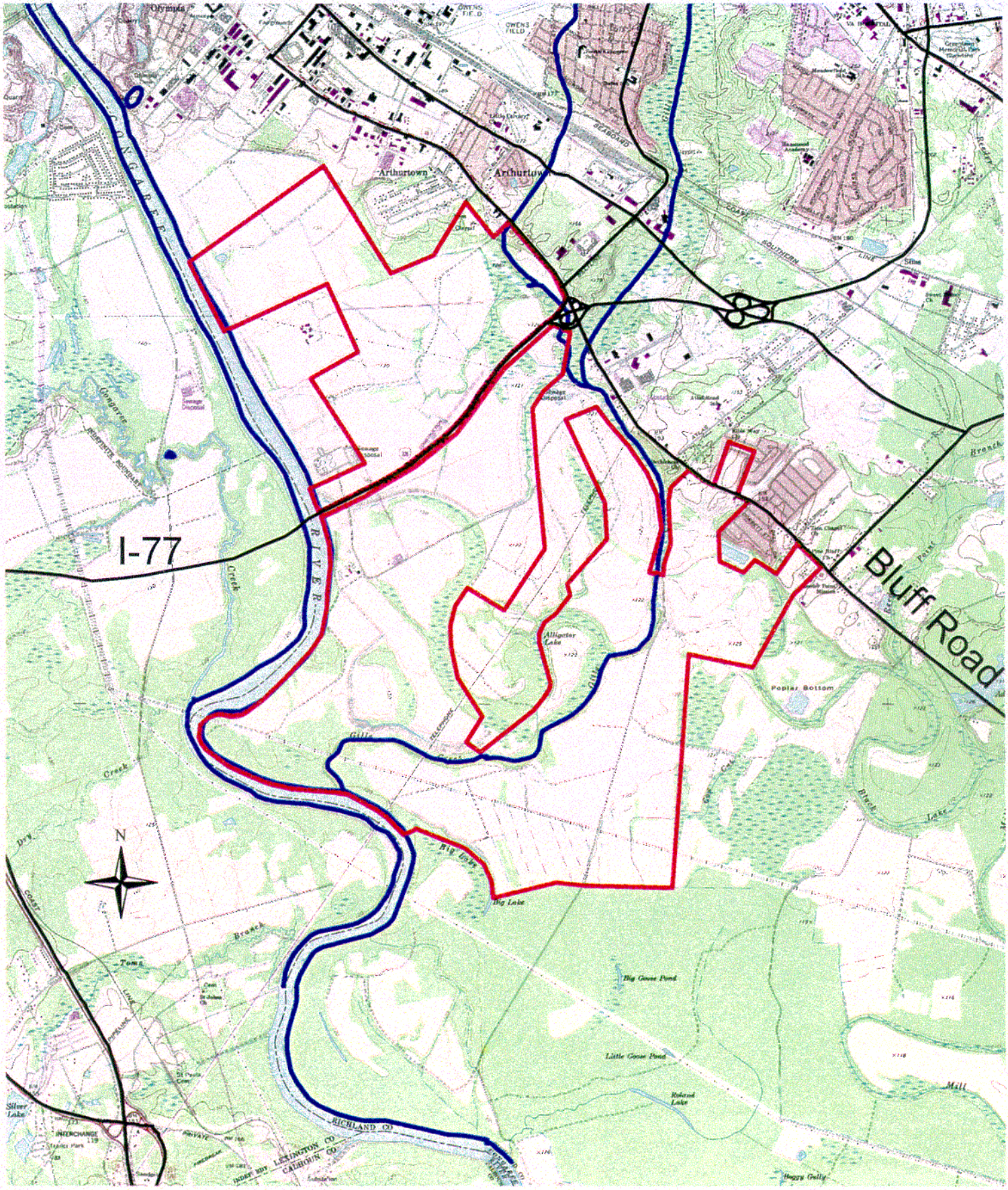


Portions of Richland and Lexington Counties

Major roads

Burroughs & Chapin property boundary

600 0 600 1200 Meters

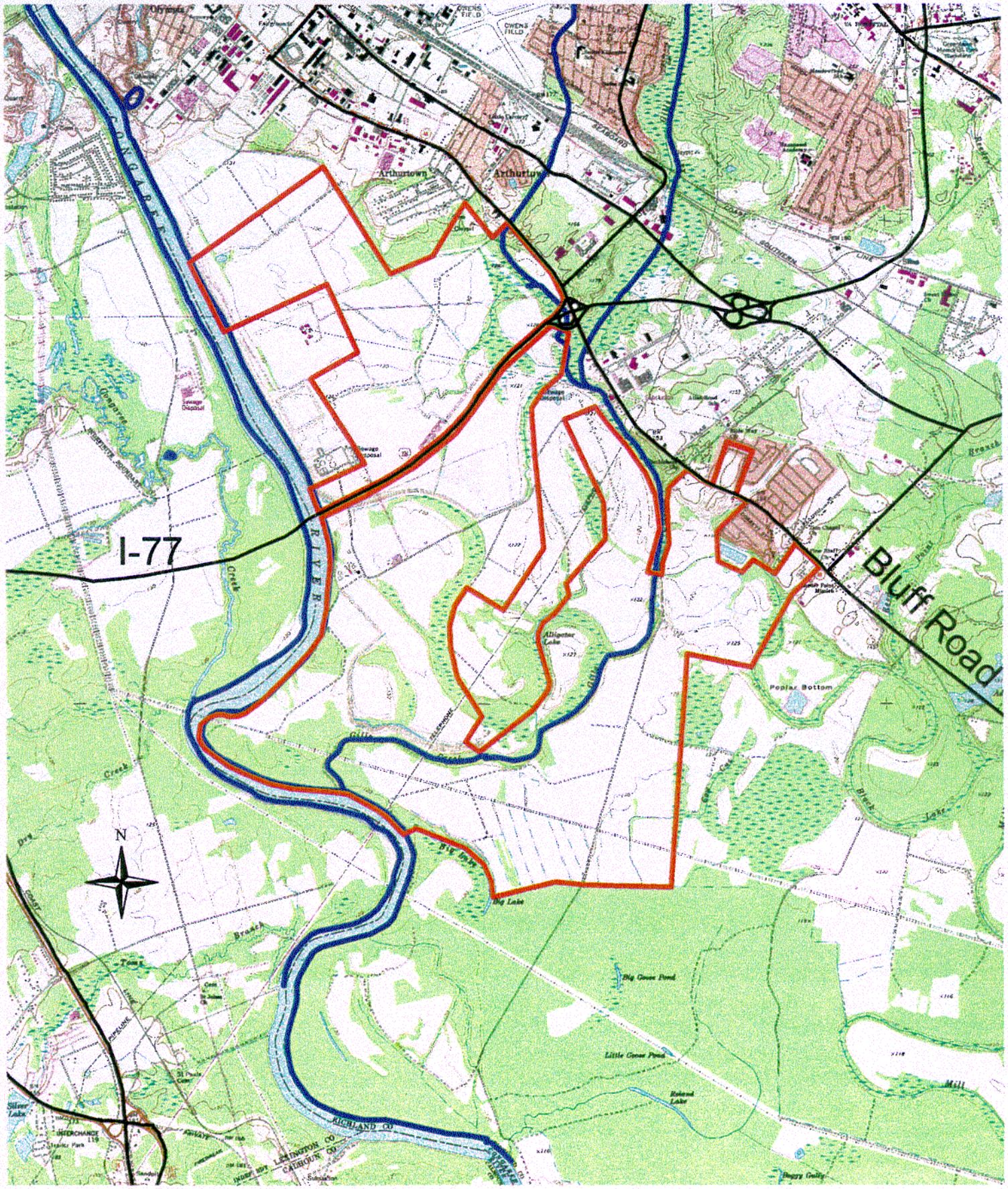


Portions of Richland and Lexington Counties

Major roads

Burroughs & Chapin property boundary

600 0 600 1200 Meters



Portions of Richland and Lexington Counties

Major roads

Burroughs & Chapin property boundary

600 0 600 1200 Meters