

BATHYMETRY OF NEAR SHORE LAKE BOTTOM
AS DETERMINED BY WILLIAMSBURG ENVIRONMENTAL GROUP, INC.

APPENDIX F

LOCATIONS OF WATER WILLOW BEDS
AS DETERMINED BY WILLIAMSBURG ENVIRONMENTAL GROUP, INC.

APPENDIX G

DECEMBER 1997

MONTGOMERY CO., NC

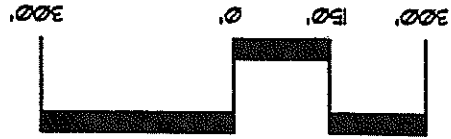
THE JOHN R. HEADAMS CO., INC.

EXISTING WATER WILLOW LOCATIONS
90 ACRE BADIN LAKE SITE

FIGURE 2-9

WILLIAMSBURG
ENVIRONMENTAL
GROUP, INC.

SCALE: 1" = 300'

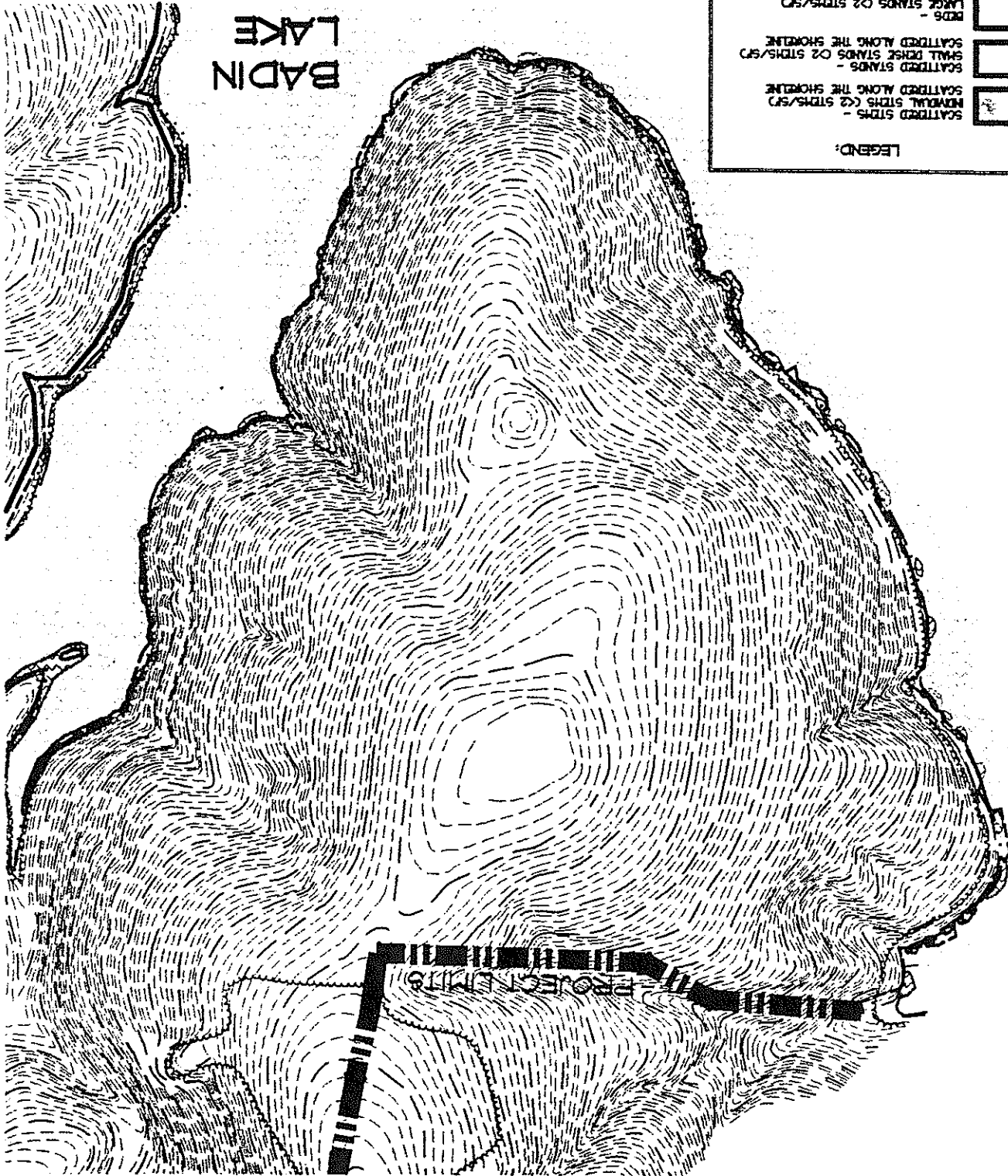


NOTE: STEM DENSITIES ARE BASED ON
QUALITATIVE VISUAL ESTIMATION AND NOT
ON QUANTITATIVE SAMPLING

- SCATTERED STEMS (< 2 STEMS/SF)
- SCATTERED STEMS ALONG THE SHORELINE
- SCATTERED STEMS - SMALL DENSE STANDS (< 2 STEMS/SF)
- SCATTERED STEMS ALONG THE SHORELINE
- SCATTERED STEMS - LARGE STANDS (> 2 STEMS/SF)

LEGEND:

BADIN
LAKE



PROJECT LIMITS

BALD EAGLE SURVEY SUMMARY LETTER

APPENDIX H



September 29, 1998

Mr. Gary Allen

KEJ Marketing, Inc./Waterfront Properties

P.O. Box 219

Mathews, North Carolina 28106

Re: Bald Eagle Perch Habitat Survey along the Badin Lake (Narrows
Reservoir) Shoreline of the Heron Bay Residential Development

98-004

Dear Gary:

At the request of KEJ Marketing, Inc./Waterfront Properties, EcoScience Corporation (ESC) conducted a survey for bald eagle (*Haliaeetus leucoccephalus*) habitat along the shoreline adjacent to the Heron Bay residential development on August 27, 1998. See the attached figure for the location of the survey area. The survey was conducted from the water with the use of a boat provided by KEJ Marketing, Inc./Waterfront Properties.

The survey was conducted by Mr. Alexander P. Smith. Mr. Smith has over 10 years experience as an environmental consultant, including extensive experience conducting wildlife and protected species surveys. He has a Master of Science in coastal biology, and his master's thesis focused on behavioral patterns of coastal birds as influenced by human disturbance. Mr. Smith has studied behavioral patterns and habitat usage of birds, including the bald eagle within its range, extensively in North Carolina, throughout the United States, including Alaska, and at various locations in Canada, Mexico, Costa Rica, Russia, and Kenya.

Information sources referenced prior to the survey include: *Bald Eagle Management Plan for Narrows Reservoir* (Yadkin, Inc. 1995), *Bald Eagle Habitat Evaluation and Survey Report: for the Yadkin Project (FERC No. 2197)* (Center for Conservation Biology 1996), and *Yadkin Project Shoreline Management Plan (Draft)* (Yadkin, Inc. 1997). In addition, ESC contacted Mr. Dana Bradshaw of the Center for Conservation Biology based at the College of William and Mary. Mr. Bradshaw has assisted Yadkin, Inc. with previous bald eagle surveys on ALCOA lakes and is familiar with eagle habitat and history in the area. Mr. Bradshaw was consulted to insure the ESC was aware of all pertinent reference literature and to confirm methodology employed in the survey.

Background Information

The *Bald Eagle Management Plan for Narrows Reservoir* (BEMP) describes important characteristics of perch habitat as follows: 1) near a water body with a good food source; 2) protected from the elements such as wind and rain; 3) near a roost site; and 4) distance from minimal disturbances caused by man. Characteristics of specific perch trees include: 1) scattered trees taller than the surrounding

DECEMBER 1997

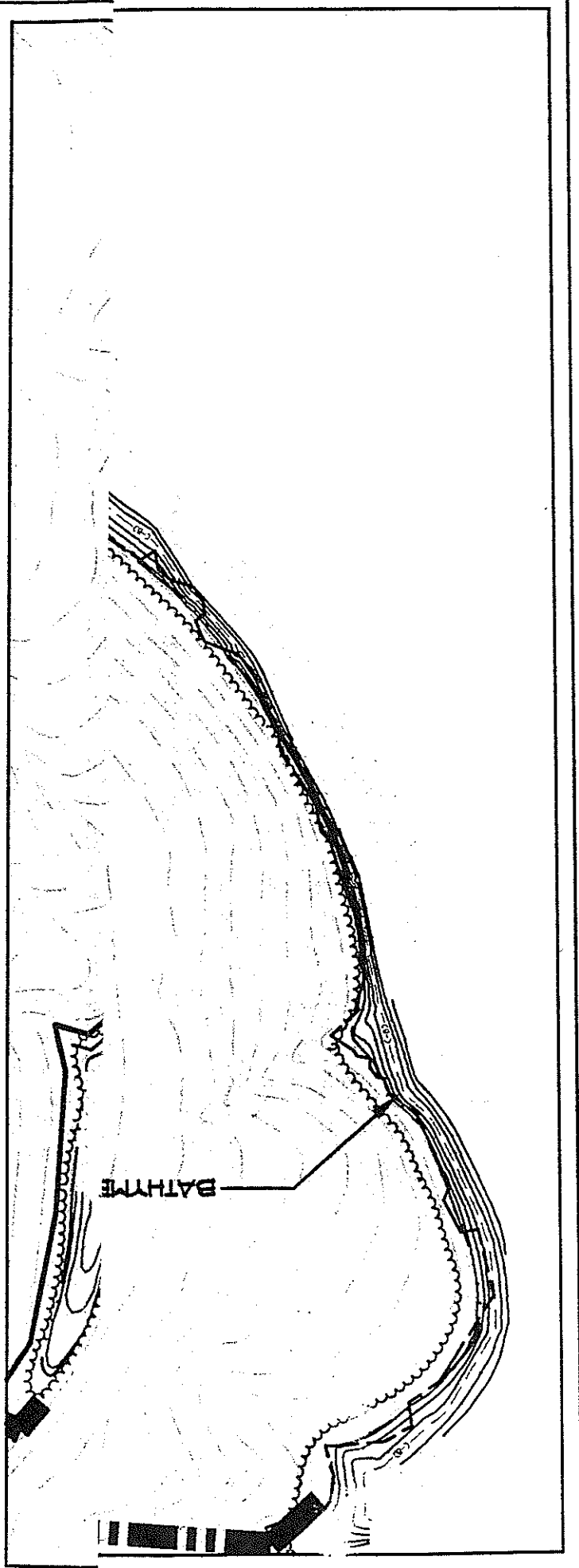
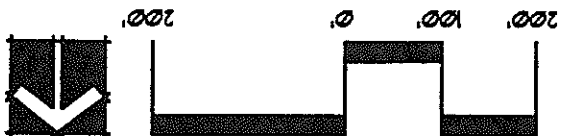
MONTGOMERY CO., NC

NEAR SHORE BATHMETRY
90 ACRE BADIN LAKE SITE

FIGURE 2-2

WILLIAMSBURG
ENVIRONMENTAL
GROUP, INC.

SCALE: 1" = 200'



forest; 2) wide, open, well-developed crown growth; 3) wide spaced, stout, lateral limbs to accommodate an eagle's wingspan; 4) either pine or hardwood trees; 5) visual access to water; and 6) visual access to the surrounding area. According to the BEMP, a shoreline habitat survey conducted in October and November 1994 identified no roosting or nesting habitat along the shoreline or on islands within the reservoir. This survey did, however, identify suitable and potentially-suitable perch habitat along the shoreline and on lake islands. BEMP Map 5.2 depicts six areas as suitable bald eagle perch habitat and three areas as potentially suitable bald eagle perch habitat within or immediately adjacent to the Heron Bay development area.

The Bald Eagle Habitat Evaluation and Survey Report provides summaries of the results of both a survey for eagle habitat on ALCOA reservoirs and a 3-year survey of eagle occurrences on ALCOA reservoirs (conducted between 1993 and 1996). The resulting data were used to identify "priority bald eagle habitats" on each reservoir. None of the five priority areas identified on Badin Lake include land or shoreline adjacent to the Heron Bay development. The closest priority area to Heron Bay is south of the development on the southwest shore of the lake on Graveyard Island.

According to the *Draft Yadkin Project Shoreline Management Plan* (DSMP), a shoreline habitat survey was conducted on Narrows Reservoir in 1996 for eagle habitat. This survey was conducted to refine information gathered during previous surveys. The 1996 survey resulted in the identification of four priority eagle areas on Narrows Reservoir. However, none of the priority eagle areas is located within the Heron Bay development area. The closest priority area is located south of and across the lake from Heron Bay on Graveyard Island.

ESC Eagle Perch Habitat Survey

The ESC bald eagle habitat survey was conducted with the use of a pontoon boat. The boat provided a stable platform from which to conduct a careful visual survey of shoreline trees. The survey primarily took place from a boat located approximately 100 to 200 feet from shore. We surveyed both the open water and cove portions of the shoreline. The boat also allowed for a close approach to shore for detailed inspection of trees. On the day of the survey, no observations were made of bald eagles (but seven observation were made of ospreys [*Pandion haliaetus*]).

The shoreline adjacent to Heron Bay supports a forest canopy consisting of a mixture of primarily oak and hickory hardwood species and pine species. Much of the Heron Bay shoreline overlooks the broad body of the reservoir (the shoreline also fronts several coves); however, due to severe shoreline slopes, the upland forest canopy prevents visual access to surrounding inland areas.

The survey resulted in the finding of no living trees along the shoreline that are obviously taller than the rest (supercanopy trees); although a few trees leaning out over the water are separated slightly from the

forest; 2) wide, open, well-developed crown growth; 3) wide spaced, stout, lateral limbs to accommodate an eagle's wingspan; 4) either pine or hardwood trees; 5) visual access to water; and 6) visual access to the surrounding area. According to the BEMP, a shoreline habitat survey conducted in October and November 1994 identified no roosting or nesting habitat along the shoreline or on islands within the reservoir. This survey did, however, identify suitable and potentially-suitable perch habitat along the shoreline and on lake islands. BEMP Map 5.2 depicts six areas as suitable bald eagle perch habitat and three areas as potentially suitable bald eagle perch habitat within or immediately adjacent to the Heron Bay development area.

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BSC Eagle Perch Habitat Survey

The BSC bald eagle habitat survey was conducted with the use of a pontoon boat. The boat provided a stable platform from which to conduct a careful visual survey of shoreline trees. The survey primarily took place from a boat located approximately 100 to 200 feet from shore. We surveyed both the open water and cove portions of the shoreline. The boat also allowed for a close approach to shore for detailed inspection of trees. On the day of the survey, no observations were made of bald eagles (but seven observations were made of ospreys [*Pandion haliaetus*]).

The shoreline adjacent to Heron Bay supports a forest canopy consisting of a mixture of primarily oak and hickory hardwood species and pine species. Much of the Heron Bay shoreline overlooks the broad body of the reservoir (the shoreline also fronts several coves); however, due to severe shoreline slopes, the upland forest canopy prevents visual access to surrounding inland areas.

The survey resulted in the finding of no living trees along the shoreline that are obviously taller than the rest (supercanopy trees); although a few trees leaning out over the water are separated slightly from the

adjacent canopy. Also, no living shoreline trees were identified with wide-spaced, stout, lateral limbs that could accommodate the eagle wingspan.

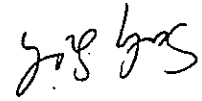
Our survey did, however, identify three dead pine trees along the shoreline that may provide perch habitat for eagles. These trees are missing much of their bark and all but the stumps of the larger limbs. This configuration provides the spacing necessary for takeoffs and landings of large birds of prey. None of these trees is a supercanopy tree but all provide visual access to open water. One of these dead trees is located on a peninsula controlled by Yadkin, Inc. and well away from the Heron Bay development (see attached figure, Tree 1); however, two dead, potential, perch trees occur along the shoreline immediately adjacent to the Heron Bay development. One tree adjacent to Heron Bay is located on the lake shoreline adjacent to Lot #16 (see attached figure, Tree 2). Tree 2 is near the waters edge, but it is located at the head of a cove where only a narrow view of the lake is available to a perching eagle. This tree appears to have been long dead and, due to the soft wood nature of pines, is not expected to remain standing indefinitely. Another dead pine tree is located adjacent to Heron Bay in the vicinity of Lot #6 (see attached figure, Tree 3). The top of Tree 3 is lower than the surrounding canopy, and the tree stands 40 to 50 feet inland of the shoreline. Live trees standing on both sides, between this dead tree and the shoreline, appear to limit visibility of the lake by a perching bird. This tree also appears to have been long dead and is not expected to remain standing indefinitely.

In summary, perch habitat for bald eagles is marginal at best adjacent to the Heron Bay development. Previous surveys have documented no eagle nesting or roosting on the Badin Lake shoreline, and no designated Badin Lake eagle priority areas are located in the vicinity of the Heron Bay development. This survey resulted in the identification of two trees adjacent to Heron Bay that may provide potential habitat as eagle perches; however, neither tree provides optimum perch habitat, and both trees are dead and are not expected to remain standing and available as perch habitat for long.

If you have any questions concerning this information, please give me a call.

Yours truly,

ECOSCIENCE CORPORATION

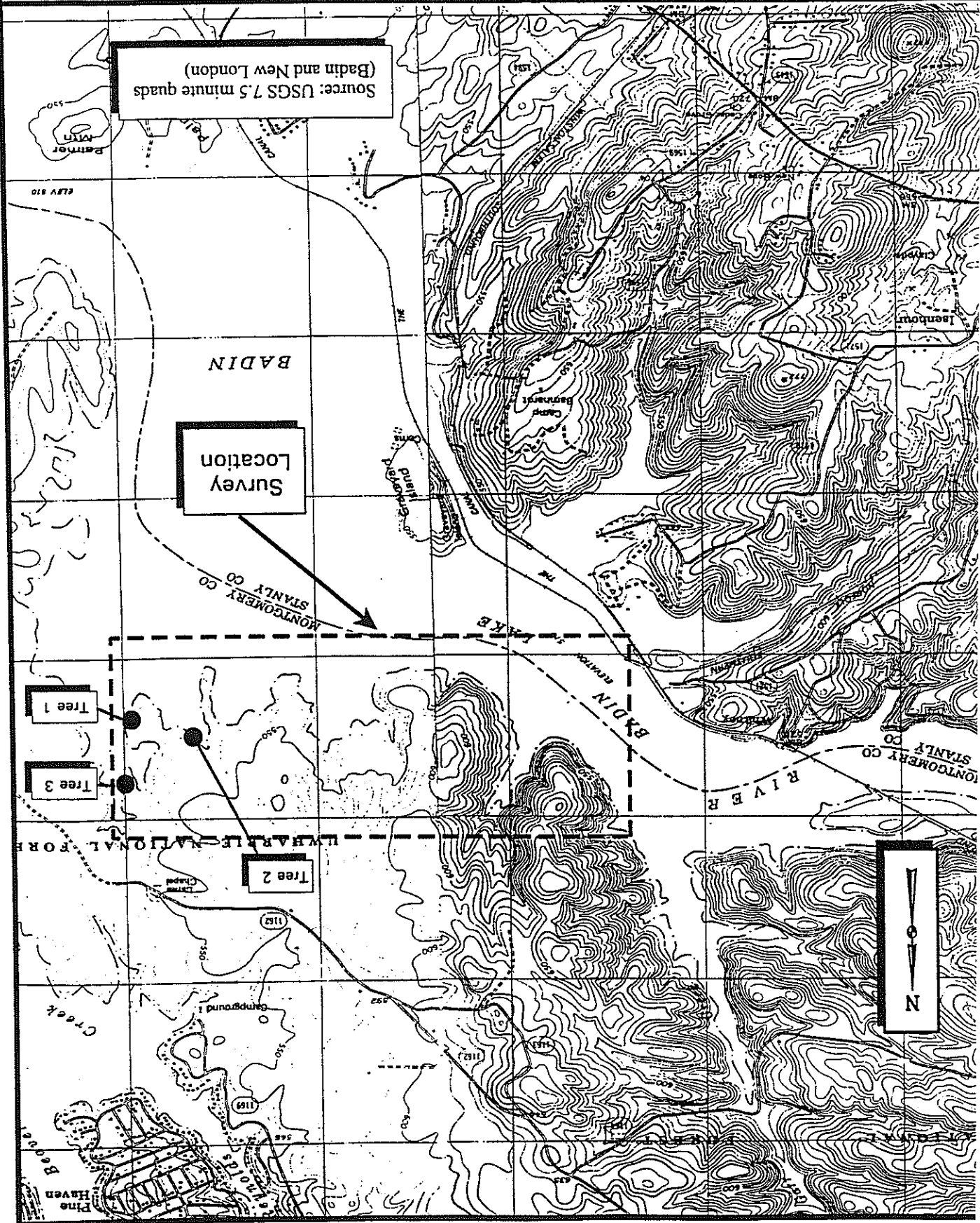


Sandy Smith
Senior Project Manager

Attachment

Badin Lake
Project: 98-004
Date: Sept 1998

**Bald Eagle Habitat Survey
Adjacent to Heron Bay Development
Montgomery County, North Carolina**



N.C. DEPARTMENT OF CULTURAL RESOURCES CORRESPONDENCE

APPENDIX I

JAN 9 1998



North Carolina Department of Cultural Resources

Division of Archives and History
Jeffrey I. Crow, Director

es B. Hunt Jr., Governor
y Ray McCain, Secretary

December 30, 1997

Donald J. Seaborn Jr.

Ecologist

Williamsburg Environmental Group, Inc.

516-B South Henry Street

Williamsburg VA 23185

Re: Heron Bay, development of adjacent tract,
Montgomery County, ER 96-9402, ER 98-8154

Dear Mr. Seaborn:

Thank you for your letter of December 8, 1997, concerning the above project.

There are no known recorded archaeological sites within the project boundaries. However, the project area has never been systematically surveyed to determine the location or significance of archaeological resources. In terms of archaeological resources, this area of the state is extremely rich in prehistoric occupation sites. Several different types of archaeological sites have been recorded within this area, ranging from temporary hunting camps, to larger base camps, to more sedentary occupation sites. Several archaeological sites of the historic period are also recorded within the study area.

Survey of the Heron Bay subdivision identified twenty-six archaeological sites in this area. We anticipate additional sites to exist within the boundaries of the proposed development area. The nature, extent, condition, and significance of these sites should be assessed prior to the initiation of construction activities. We recommend that a comprehensive survey be conducted by an experienced archaeologist to identify the presence and significance of archaeological remains that may be damaged or destroyed by the proposed project. Potential effects on unknown resources should be assessed prior to the initiation of construction activities.

Enclosed is a list of archaeological consultants who have conducted or expressed an interest in conducting contract work in North Carolina. Individual files providing additional information on the consultants may be examined at the State Historic Preservation Office's Office of State Archaeology, 421 North Blount Street, Raleigh. If additional names are desired, you may consult the current listing of the members of the Society of Professional Archaeologists, or contact the society's current treasurer, Heather McKillop, Department of Geography & Anthropology, Louisiana State University, Baton Rouge, Louisiana 70803-4105, telephone 504/388-6172, FAX 504/388-4420. Any of the above persons, or any other

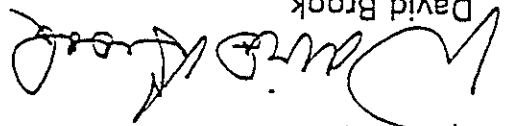
experienced archaeologist, may be contacted to conduct the recommended investigation.

We have conducted a search of our files and are aware of no structures of historical or architectural importance located within the planning area.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

Sincerely,



David Brook

Deputy State Historic Preservation Officer

DB:slw

Enclosures

cc: Norman Pierson

Yadkin, Inc.

P.O. Box 576

Badin NC 28009-0576