

Land Use/Land Cover Mapping Recommendation and Request

Submitted to the Rivanna River Basin Commission by the Rivanna River Basin  
Commission Technical Advisory Committee

September 20, 2007

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Recommendation: *The RRBC Technical Advisory Committee recommends and requests for the RRBC to join in the collaborative purchase of a land use map of the Rivanna Basin. The total project cost will be approximately \$65,000, and the River Basin Commission's cost will be approximately \$25,500.*

Overview: StreamWatch, The Nature Conservancy (TNC), Albemarle County Water Resources Division, and Albemarle County Natural Heritage Committee (NHC) have identified the need for an updated land use/land (LU/LC) cover map. For the first three groups, the map would fill gaps in information about current LU/LC as it relates to watershed processes and stream health. For the NHC, the map would help guide recommendations about conserving the County's ecological and biological diversity.

The organizations have met five or six times since November 2006. The group has developed a scope of work, and an approximate cost has been determined via estimates given by potential contractors. GIS experts within the group have been Rick Odom (NHC), Chris Bruce (TNC), and Damon Pettit (Albemarle County).

Concurrent efforts by official and unofficial project partners are serving to mitigate costs. Albemarle County is completing a county-wide map of impervious surfaces, so only those portions of the Rivanna basin outside of Albemarle need to be analyzed for imperviousness. The City of Charlottesville is mapping land cover and imperviousness. Charlottesville will contribute these data, obviating the need for any expenditure on the Charlottesville portion of the map.

Project Scope: Based on 2007 aerial imagery, all land within the Rivanna Basin and Albemarle County will be classified into one of the following five categories:

- Deciduous forest
- Coniferous forest
- Mixed forest
- Open land
- Impervious surface (road, driveway, sidewalk, parking lot, roof)

The product will be superior to previous land use maps because . .

- . . . it will be based on 1 meter imagery (rather than 30 meter)
- . . . it will be based on current imagery

- . . . it will be developed according to carefully defined specifications (minimum mapping unit, error tolerance . . .)
- . . . it will be subject to a quality control and approval process by partners' technical experts (Albemarle County and The Nature Conservancy have each volunteered to perform this function)

Need: Effective watershed management and conservation hinges on the ability to accurately characterize land use and land cover. The map will be essential to any threat assessments the RRBC may commission in the future, including threats represented by hydrologic alteration and sedimentation. The map will support work already underway by StreamWatch, TNC, and Albemarle Water Resources Division. Specific uses identified by collaborating partners are listed below.

- more effective targeting of conservation acquisitions (TNC)
- modeling the relative importance to stream health of multiple factors operating at multiple scales (population density, agriculture, imperviousness, forest cover, local habitat condition, stream morphology, sediment, etc.) (SW, RRBC, TNC, Albemarle)
- aid in the establishment of a stormwater utility (Albemarle)
- help target restoration projects, particularly riparian forest installations (Albemarle) and bank stabilization projects (TNC)
- help guide recommendations for the protection of biodiversity in Albemarle County (Albemarle Natural Heritage Committee). (Note: The strategies recommended to protect biodiversity will almost certainly also help protect water quality).

Cost and Cost Sharing: Cost will be approximately \$65,000. TNC and StreamWatch have each committed \$7K. Albemarle County has committed to fund half the remainder, leaving a gap of approximately \$25,500. We recommend the River Basin Commission commit to filling this gap in order to complete the funding of the project.