

# Scratching the Surface: Using GIS to Understand Richmond Archaeology

Jolene Smith, Virginia Department of Historic Resources

Ellen Chapman, College of William & Mary

## [SLIDE 1] Introduction

In 1985, the Virginia Commonwealth University Archaeological Research Center (or VCU-ARC), published the Richmond Metropolitan Area Archaeological Survey [2]. This two-volume, 400 page document was the culmination of a large regional survey, intended to be a resource for long range planning in Richmond (an independent city) and the surrounding counties of Chesterfield to the south of the James River and Henrico to the north. [SLIDE 2] This report was one of many large-scale regional planning surveys, also known as RP3 (Resource Protection Planning Process) Reports. By the end of the 1970s, the Cultural Resource Management (CRM) industry was coming into its own as states and localities initiated projects like this to comprehensively identify above- and below-ground historic properties to aid in compliance with the National Historic Preservation Act and other new legislation. While these RP3 reports did not always encounter an environment supportive of preservation environment, they do provide excellent regional archaeological data and a sense of priorities from three decades ago. This project uses new technological tools like geospatial software, database analysis, and open mapping in order to examine some general trends in Richmond's archaeological landscape and to provide elements of the RMAAS dataset to contemporary archaeologists and preservation planners. Particularly, in this paper we will be focused on our use of land cover analysis to assess the likelihood of archaeological site destruction across the 40 planning units in the Richmond region, and our use of statewide data on archaeological surveys and data recovery projects to identify regional trends in archaeological work.

## [SLIDE 3] Archaeology in Richmond

Richmond is located at the Fall Line of the James River, where the the coastal plain of Tidewater gives way to the low hills of the Piedmont Region. This map itself tells a story about

the river; it winds through the city, with the counties surrounding. It should come as no surprise that this River is central to the narrative of many Richmond sites. While the current geopolitical boundaries are a modern invention, this place has always been a zone of transition. The environs of the city of Richmond have been a significant and long-term locus for human habitation, with known sites dating to at least the Middle Archaic period (6500–2500 BC). The region comes into clearer focus during colonial contact in the seventeenth century, when the Fall Line of the James was described as a boundary between the Powhatan chiefdom and the Monacan lands to the west. Once the town was settled in the 1730s by British colonists and their enslaved laborers of African descent, Richmond expanded as a critical trade and industrial location, especially for tobacco, milled wheat flour, and ironworking. Richmond holds a prominent place in the narrative of American history, most notably through the Revolutionary and Civil Wars and the domestic slave trade, but considering the city's reputation as an historical destination, archaeological resources have had relatively little public attention until recently.

### **Assessing Thirty Years in Richmond's Archaeology: A RMAAS Review**

**[SLIDE 4]** [4] The RMAAS survey was designed initially to provide a proactive approach to preservation planning and archaeological mitigation across metropolitan Richmond. Covering Richmond city, Henrico County, and northern Chesterfield County, the project divided the region into 40 planning units based on geographical features, political boundaries, and other natural breaks. **[SLIDE 5]** The authors of the 1985 study developed a relational database that stored site attributes that were used to classify and identify significance of archaeological sites by individual component. The RMAAS report itself synthesized findings to a great degree, but the real treasure, as the authors acknowledged, was the aggregated information. The bad news is that the digital database (tape, in this case) has become corrupted. While we have transcribed some data as a part of this project, there is more data entry and digitization work to be done before we can realize the full value of information from RMAAS. Considering the extensive

predictive model, identification of over 400 unconfirmed sites in the region, and other survey accomplishments, this re-analysis is only beginning to scratch the surface of RMAAS project data and the ways in which interpretations could contribute to contemporary preservation planning.

This reanalysis used a combination of ESRI ArcGIS tools and CartoDB, a web-based geospatial visualization platform. Many of the maps you see here are available in interactive form on CartoDB, although the data will ultimately be stored in stable digital formats in DHR's archives and available for further analysis. Since the CartoDB interactive maps are publicly available, site locations have been slightly randomized to prevent damage from looters.

**[SLIDE 6]** As part of the 2015 GIS work, one of our first tasks was to map planning units by current site density, in order to focus our own attention on specific areas. We plotted site points on the map and divided the dataset into two groups: archaeological sites recorded through the end of 1985 (shown in yellow) and sites recorded from 1986 through the present (in orange). When viewed over time, it is interesting to note the trend in movement from the river outward. The first sites in the region are concentrated around the James. Moving through the years, more sites are recorded into the surrounding counties.

**[SLIDE 7]** We also mapped Phase I, or identification-level, archaeological survey areas prior to and after RMAAS using the statewide dataset maintained by the Department of Historic Resources. Unsurprisingly, there are more formal Ph I surveys recorded after 1985 as the CRM industry picked up steam, and the linear nature of shapes you can see on the map demonstrates how very transportation-driven the region's archaeology has been in the intervening years. While it is beyond the scope of the current project, the authors would like to deepen analysis of the types of environmental compliance projects triggering archaeology in the Richmond region over time.

Between 1985 and 2013, archaeological activity has moved from the northwest to the southeast portion of the study area. Most activity in the region after 1985 has been driven by

environmental compliance activities related to large infrastructure projects, whereas prior to 1985, archaeological activity was driven more by avocational or research-based archaeology, or a product of general planning activities. Post-1985 archaeological data recovery (n=11) likely resulting in site destruction occurred in Richmond City as well as in Chesterfield and Henrico Counties, while intensive level surveys (Phase II investigations) were conducted throughout the southeast quadrant of the study area. The scarcity of documented sites in some of Richmond City's most historic areas is likely associated with a lack of local, state, or federal requirements related to archaeology. Many areas of high archaeological potential have never been surveyed.

**[SLIDE 8]** As a proxy for development intensity, we examined landcover data from 1992, 2001, and 2011 from the National Land Cover Database. We then analyzed site activity from V-CRIS (survey, discovery, and data recovery events) over the three decades since the survey. Using zonal analysis (ArcMap's Tabulate Area Spatial Analyst tool), we then calculated the proportion of each planning unit marked by low, medium, and high likelihood of archaeological disturbance, and calculated a change in disturbance level from 1992 to 2011. Analysis of these maps illustrates that rural areas of Chesterfield County have seen the biggest increase in development intensity, but most destructive development conditions are still located within the urban city core, southern Henrico, and gravel quarrying and industry along the south side of the James River. Chesterfield appears to have started off much more rural in 1985 and continues to contain less high intensity development, with the exception of rapid development in a few planning units. This pattern has not resulted in a considerable increase in recorded sites, probably because the undertakings did not trigger the National Historic Preservation Act or other regulations. Viewing development activity comes with a major caveat: it is important to note that even areas of urban density (like Shockoe Bottom) can have substantial intact deposits based on individual histories of fill episodes, vacant lot areas, and developments that do not include a substantial subterranean footprint. Our analysis of development patterns may give us a general

idea of sites and areas that have been impacted, but specific research and ground-truthing for each site is necessary for a thorough understanding.

### **[SLIDE 9] The Richmond Area's Most Important Sites: Where Are They Now?**

The RMAAS project organized sites into an evaluation framework, taking site integrity, potential for research value, and suitability for interpretation to identify especially significant resources with the highest research potential. Sites listed as a 3 or 4 on this scale were considered to be “exceptional, and deserve exceptional conservation and management efforts” (Mouer et al 1985b: 32). As part of this analysis, we digitally revisited these highest priority sites to examine their fates over thirty years of development. Using V-CRIS site location information and current satellite photographs, the 57 sites in the Richmond metro area were visually inspected for their likely condition. Of these high evaluation sites, 44 appear to have good potential for preservation, 7 appear to be partially impacted, and 5 appear to likely be destroyed or heavily damaged. Although a Federal Wildlife Reserve is responsible for protecting some of these sites, most of the rest appear to simply be on private rural land that has not been subject to extensive development.

### **Conclusion**

One of the more sobering conclusions from this review is that the RMAAS project was an initial foray into proactive preservation planning, a movement that was losing steam even at the time the survey was done (Papazian 1992, Scarpino 1992). By and large, few municipalities have approached stewardship of their archaeological resources in a proactive manner, and so Richmond is perhaps not unusual in the eventual fate of this report. While a copy of the report was curated at the Department of Historic Resources and at the City of Richmond, the information regarding regional archaeological sensitivity appears either largely unknown or underused by regional preservation planners. Occasional cultural resource management companies have reviewed the report as background research for their own projects, but otherwise the interpretive potential of RMAAS has left unfinished because access to and

application of the information in it has been very limited. While the authors of the RMAAS report themselves stated that the goal of RMAAS was further analysis (Mouer et al 1985b: 2), this communication gap, lack of preservation planning funding, and dissolution of the VCU-Archaeological Research Center seems to have created substantial challenges to enacting the recommendations of these reports.

More optimistically, there is considerable power in the data that comprises RMAAS and in its potential as a planning and educational tool moving forward. Our analysis has shown that the archaeological landscape has remained somewhat static in Richmond, which also makes the information in RMAAS still valuable for ongoing research. Additionally, the debate over Shockoe Bottom's archaeological potential has introduced an interest in archaeology to new people and groups in the city. Discussions and surveys of RVA Archaeology members shows that education regarding the archaeological discoveries and potential in the city is a high priority. A recent statewide public survey conducted by the Department of Historic Resources echoes this value for archaeology<sup>1</sup>. New types of technology, open access data practices, and new enthusiasm about archaeology in the city have the potential to free the information and synthesis created by RMAAS as part of a digital product that connects people with archaeological sites in their neighborhoods. Because the first volume of the report was written to be of interest and use to non-archaeologists, much of the language describing city neighborhoods and existing resources is already very accessible and written to avoid exposing site locations.

As a result of the current research, much of RMAAS is now available to planners and researchers for ongoing use and has become part of the digital archive at the Virginia DHR. Many recent Richmond developments, including the Shockoe Bottom stadium proposal, multiple condo developments along the river, the Washington DC football training camp, and modifications to Oregon Hill and Historic Tredegar, have proven controversial in part due to real

---

<sup>1</sup> 2015 Statewide Comprehensive Plan Survey, DHR

or perceived lack of historical integrity to be impacted by planned construction. Having archaeological and historical information more readily accessible to construction managers may allow for more informed city development decisions and for projects to be influenced earlier in the planning stages when the stakes are lower. Beyond the relatively small and specific region described in the study area, this information may be useful to other local governments within and outside of Virginia. Patterns of change, types of sites identified and impacted, and drivers of archaeological investigations over time could be very relevant to a wider world concerned with preserving heritage and important places.

## **Bibliography**

Mouer, L. Daniel, William C. Johnson, and Frederic W. Gleach.

1985a. "Richmond Metropolitan Area Archaeological Survey. Volume One. Archaeological Sites of the Richmond Metropolitan Area: A Guide to Planning and Management." Richmond, Virginia.

\_\_\_\_\_.

1985b. "Richmond Metropolitan Area Archaeological Survey. Volume Two. Technical Report." Richmond, Virginia.

Papazian, Lyssa Djuna.

1992. "Getting a Seat at the Table: A Role for the State Historic Preservation Plan." University of Pennsylvania Masters Thesis. [http://repository.upenn.edu/hp\\_theses/531](http://repository.upenn.edu/hp_theses/531).

Poole, Meredith.

1991. "Resource Protection Planning Revisited: James City County, York County, and City of Williamsburg." [http://research.history.org/Files/Archeo/MajorStudies/RP3 Revisited.pdf](http://research.history.org/Files/Archeo/MajorStudies/RP3%20Revisited.pdf).

Scarpino, PV.

1992. "Planning for Preservation: A Look at the Federal-State Historic Preservation Program, 1966-1986." *The Public Historian*. <http://www.jstor.org/stable/3378268>.