

SUPPLEMENTAL PROJECT REPORT

FY 2008 Task 47

**GWRC's CZM Technical Assistance Project:
Development of Public Internet Visualization Tool(s) For
Viewing Coastal Zone Resources & Regional Growth Patterns
in a Rapidly Developing Area**

This project was funded, in part, by the Virginia Coastal Zone Management Program at the Virginia Department of Environmental Quality through Grant **#NA07NOS4190178** of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.



Virginia Coastal Zone Management Program
FY 2008 Task 47:
GWRC's CZM Technical Assistance Project,
Development of Public Internet Visualization Tool(s) For
Viewing Coastal Zone Resources & Regional Growth Patterns
in a Rapidly Developing Area

Product #1: Coastal Resource Management Planning Meeting Summary Report
Kick-Off Meeting: Jan 25, 2008

Attendance List

Attendee	Representing
Kevin F Byrnes	GWRC Staff
David Lee	GWRC Staff
Laurel Hammig	GWRC Staff
Kelly Price	VA DEQ-CZM Office
Adrienne Kotula	VA DCR-Chesapeake Bay Local Assistance
Patrick Mulhern	Spotsylvania Co Planning Dept
Sandra Palmer	Spotsylvania Co GIS Dept
Kevin Utt	City of Fredericksburg Planning Dept
Phil Brown	City of Fredericksburg Public Works Dept
Angeline Mitchell	Caroline Co Planning Dept
David Nunnally	Caroline Co Planning Dept
Amber Forrestier	Stafford Co Planning Dept
Michael Lott	Stafford Co Planning Dept
Kyle Conboy	King George Planning & GIS

AGENDA:

1. Roundtable Introductions
2. State Agency Staff Reports (Price & Kotula)
 - a. CZM Program Overview & Update (Price)
 - b. Overview of the Coastal GEMS GIS (Price)
 - c. Use of Ecological & Carbon Footprint Calculators (Byrnes)
3. GWRC Technical Presentation on GIS Data Browsers and Visualization Tools
 - a. Background on CZM Internet Browser Special Project (Byrnes)
 - b. Demonstration of Google Earth ArcGIS Explorer and Discussion of ArcGIS Server Options (Lee, *See Appendix in Final Project Report*)
 - c. Use of Google Sketch-Up to Illustrate 3D Development Model Development (Hammig)
4. Group Discussion: Selection of Project Corridor
 K. Byrnes led the discussion, explaining that staff was recommending the special corridor animation project focus on a transect of the Region, following the Rappahannock River as an important ecosystem that touches all five local governments. Staff recommended building a study corridor of ¼ mile on either side of the river shoreline. Local staff suggested a ½ mile buffer which became the consensus choice of the group.
5. Local Planning & GIS Project Reports: No discussion

Summary of Project Implementation Issues

This section is intended to provide some explanation for differences between the anticipated project products, as described in GWRC's grant proposal, and the final products delivered and described in the project's final report. Upon completion of the technical assessment phase of the project and meeting with local government staff on January 25, 2008 to get local input on the selected study corridor, GWRC staff initiated the collection of data components and software tools to undertake the actual product elements. In the process of doing this, considerable staff time was invested in "trial and error" attempts to overcome technical problems with multiple desktop computer systems that proved inadequate and "under-powered" to perform the spatial data manipulation tasks required. Ultimately, GWRC financially "over-matched" the project by purchasing a refurbished workstation (with Intel Core2Quad Q6600 processor at 2.4Ghz and 4 Gb of RAM). With this computer platform, GWRC staff was able to perform various data processing tasks which had previously failed or could not be completed within a reasonable processing time. As a consequence of these technical complications, budgetary adjustments were necessary. Some originally-anticipated software expenses were avoided, while other hardware and software expenses were incurred (all within the original budget limits established for the project).

We found that purported software compatibility between some plug-in tools (e.g. Sketch-Up plug-in for ArcGIS and ArcGIS plug-in for Sketch-Up) was not reliably the case. Attempts to build TIN files (for 3D terrain visualization) using Sketch-Up Pro were unsuccessful due to the required digital elevation model format for input data files which were not available from State-supplied 2 foot contour data. Attempts to build 3D models with ESRI's 3D Analyst were never successful, causing repeated system crashes. **The large file size of the orthophoto image tiles caused system crashes during the movie export process. The large file size also made it impossible to import all the images into Sketch-Up.**

Another consideration which affected the final delivered products was the width of the study corridor selected by the study committee on Jan 25th. In order to produce a composite view of the study corridor that encompassed a ½ mile buffer from the river shoreline (as requested by local committee) along with the actual width of the river, the resulting elevation of the virtual camera fly-over made it difficult to interpret any parcel-level detail as a data layer to be loaded on top of the imagery. Also, since the animated "fly-over" movie was built from the Virginia Base Mapping imagery, using various orthophoto image tiles that were flown on different days in the same year and between flights flown in 2006 and 2007, the resulting imagery did not reflect consistent color patterns for the natural landscape captured in the imagery.

Finally, while technically feasible to build animation projects with both ESRI's ArcScene and ArcGlobe program tools, we found these two programs to perform differently in this application. The color resolution of the imagery was better when viewed with ESRI's ArcScene program; however, this program became unstable when multiple images were opened and crashed before the entire project area could be loaded. Consequently, GWRC staff had to resort to making the movie using ArcGlobe, in spite of the lower orthophoto image quality when viewed with this program.

Product #4: Wrap Up Meeting Summary Report

Meeting Date: October 1, 2008

Attendance:

Kevin Byrnes & Laurel Hammig, GWRC Staff
Raymond Ocel, Fredericksburg Planning Director
Wanda Parrish, Spotsylvania Co Planning Director
Jeff Harvey, Stafford Co. Planning Director
Jack Green, King George Co Planning Director

AGENDA:

Among other regional planning agenda items discussed (e.g. affordable housing, review of FY2008 CZM program components, sharing and discussion of local planning issues), GWRC staff shared with attending Planning Directors a draft outline of the GIS data collection stored on the GWRC ftp site, accessible with the ArcGIS Explorer browser. The movie file of the Rappahannock River corridor was played for the group and there was some discussion about:

- the problems of color consistency from tile to tile resulting from different flight dates and some inconsistency in software display of the orthophotos,
- the degree of resolution necessary to accommodate a ½ mile buffer on either side of the River shoreline (as requested by the technical committee), making parcel level determinations and considerations very difficult, and
- the hardware requirements to achieve the final movie product.

GWRC staff outlined plans and mechanisms to be used to make the public aware of the availability of the new GIS data browser tool for viewing regional growth and development patterns in relation to sensitive environmental areas of the coastal zone. These outreach plans include:

- Project demonstration at future GWRC Board meeting and GWRC Green Government Commission meeting
- Presentation to regional environmental groups & Chamber of Commerce groups
- Press release to local newspapers, and
- Feature article in GWRC newsletter and project links on GWRC website.

The project wrap-up report includes a summary of the mapping project, including future project development recommendations. Supplemental materials such as the Rappahannock River corridor movie presentation will also be included with the final project report.