



October 14, 2011

Patrick Henderson, the Governor's Energy Executive  
c/o Governor's Office  
225 Main Capitol Building  
Harrisburg, Pennsylvania 17120

Re: GIS and the Marcellus Shale

Mr. Henderson,

Since 1996, PaMAGIC (the PA Mapping and Geographic Information Consortium) has led many initiatives including the development of data standards, practical data sharing, and mutual education. Our group certainly has information and experience useful to the Commonwealth and in pursuit of enhanced GIS that directly relates to Marcellus Shale activities. Pursuant to this, we sent recommendations in mid-July to the Marcellus Shale Advisory Commission (MSAC) in which we suggested three actions that would benefit the Commonwealth:

- 1) Creation of a comprehensive Pennsylvania Hydrographic Dataset (PHD)
- 2) Creation of comprehensive pipeline data
- 3) Enhanced spatial data sharing among the various levels of government

In reviewing the Commission's final recommendations we see many that would rely upon the Geospatial Community and that emphasize the utility of GIS as a communications and decision-making medium:

**Recommendation 9.2.28**

Strengthen and improve effectiveness of the **permit review** process in protecting rare, threatened and endangered species. State agencies should consider, but not be limited to, ... **enhancing quality and presentation of data** on wildlife and critical habitats; identifying appropriate opportunities to **improve and manage access to such data**, upgrading computer systems, providing additional **technical and planning assistance**, increasing **acquisition of current field data**, and other options as identified.

**Recommendation 9.2.29**

DEP should develop an **environmental assessment** checklist as part of the permit application process to locate and construct a drilling site. The checklist should be used to identify all the features to which setbacks are applicable; identify all natural features that DEP is authorized to consider; and to identify those additional Areas of High Ecological Value.

**Recommendation 9.2.32**

DCNR should **monitor and document effects**, both positive and negative, of natural gas development on plants and forests, wildlife, habitat, water, soil and recreational resources.

**Recommendation 9.2.33**

The Commonwealth and its agencies should work together to promote, **encourage and establish regular communications and information sharing** among local communities, operators, environmental and conservation groups and other stakeholders.

### **Recommendation 9.2.35**

Identify legislative/regulatory changes needed to:

...

- Achieve **coordination and consistency of infrastructure planning and siting** decisions by State, county and local governments;
- Provide sufficient authority and resources for appropriate government agencies to ensure that **ecological and natural resource data** are used in the review and siting of proposed pipelines, in order to avoid or minimize impacts to these resources.

### **Recommendations 9.2.37 - 9.2.40**

*All relate to actions the PA Department of Health should take to educate the public and to document **health-related impacts** of Marcellus Development*

### **Recommendation 9.3.9**

*Documents areas where **impact fees** are appropriate, any or all of which would be enhanced through the use of spatial data.*

Although it may not be obvious, **Marcellus Shale development has benefitted greatly in its start-up phase** to a large degree from the availability of publicly generated, high-quality GIS data (primarily public data from PAMAP and County offices) in the following ways:

- Land men have been rapidly successful at lower costs in areas with high-quality **parcel data** as in Bradford, Lycoming, Clinton, and Tioga Counties. Places with less developed digital parcel information like Susquehanna County have been more difficult and costly to develop. In today's world, GIS is integral to understanding the totality of mineral rights and drilling unit definition, and the GIS-based parcel information is the basis for that mapping and decision-making.
- Modern **aerial images** are the basis for regional planning, logistics, consequence analysis, and emergency preparedness (both public and private). Road centerline GIS information from imagery is the basis not only for transportation logistics and site access but for addressing and emergency response.
- Individual well-site development and planning have benefitted from the **LiDAR-based contours** in estimating earthwork quantities, stormwater management design, road and driveway design, and environmental assessment.
- Pipeline routing and permitting depend on **all** those GIS data sets, perhaps even more than individual well-pad planning, given their linear nature and large geography covered.

The shale **gas industry's continued advance through the next stage of development**, and the economic advantages to the Commonwealth from that development are equally dependent on authoritative and high-quality GIS data, although in different ways and perhaps for different data layers:

- Analysis of shared rights-of-way for pipeline infrastructure will be dependent on **updated imagery** and **data on pipelines** already in the ground. *Note:* The pace of shale gas development has aged our base imagery prematurely (i.e. The 2006 images in the southwestern part of the state do not show most Marcellus pads, roads, or infrastructure, and more recent industry-supported flights only cover some areas).
- Ecological analysis of singular impacts, cumulative impacts, new facility siting, and of restoration opportunities would be enhanced if **the site-specific environmental data** being collected by operators and regulators were combined to improve our base data on **wetlands, threatened and endangered species, water quality, and land cover** upon which we make decisions.

- Although surface rights are represented in the maps and geospatial data recorded at Counties, the complex nature of mineral estates are not well documented outside the text of recorded deeds. It is easy to envision a time when mineral rights become even more contentious because their complexity defies analysis, which would be simplified by development of **3D land rights** recording into the future.

All those potential enhancements are relatively straightforward with today's technology; they are becoming less likely given the virtual demise of the PAMAP Program's new data development. It would take a relatively modest investment to reenergize coordinated data development, which would surely help keep the economic power of the gas business investing in PA and at the same time facilitate guardianship of our natural splendor.

PA MAGIC continues to advocate for a GeoSpatial Coordination Council that includes public, private and academic interests and ideas. A Council would ensure higher quality GIS information more quickly, and at the same time build new avenues of communication. If the concepts herein resonate, please do not hesitate to contact us through Eric Jespersen at [ejespersen@fisherassoc.com](mailto:ejespersen@fisherassoc.com); we can engage the right people from our membership to inform your decision-making and help drive the MSAC Recommendations to successful conclusion by utilizing GIS technologies.

Sincerely,

Eric Jespersen Private Industry  
Nicole Ernst Academia  
Dave Gilbert, GISP Private Industry  
Glenn Mohler County Government  
Laura Simonetti County Government  
Brady Stroh, GISP Academia/Non-profit

For the PaMAGIC Board 2011-2012

Cc: Scott Perry, PA Department of Environmental Protection, Office of Oil and Gas Management