

Statewide Mapping Advisory Committee Meeting

Minutes

Wednesday, April 19, 2017; 1:30 PM – 3:30 PM
NC Department of the Secretary of State
Conference Room, 4701 Atlantic Ave, Raleigh, NC 27604

Welcome/Introductions – Joseph Sloop, Chair, called the meeting to order and welcomed Kenneth Taylor, Alice Wilson, John Bridgers, Rich Elkins, Cam McNutt, John Farley, Hope Morgan, Camille Tyndall Watson, Sarah Wray, Tim Johnson, Joe Sewash, Darrin Smith, David Giordano, Jeff Brown, and on the phone Silvia Terziotti, Stephen Dew, Ronald Harding, Sean McGuire, Tyrel Moore, and Steve Averett.

Minutes

The committee approved the January 18, 2017 Minutes as submitted.

Framework+ Datasets

Mr. Sloop called on members to report on opportunities, development, maintenance, and issues for Geospatial Framework datasets for North Carolina.

- *ORTHOIMAGERY*

Darrin Smith (CGIA) provided a brief status report on the Statewide Orthoimagery Program funded by the NC 911 Board. Since 2015, the program has delivered imagery to Public Safety Answering Points (PSAP) to a geographic extent at least 7 miles beyond the boundaries of the county receiving a copy of the imagery. The mosaic delivered for a rectangle covering the extent is in MrSID generation 3 format with 50:1 compression. Counties bordering another state also receive a copy of imagery from that state to fill out the minimum extent.

Mr. Smith demonstrated the NC Orthoimagery Program [website](#) and the information organized by 4-year cycle and by phases within the cycles. An overview includes links to technical resources and to imagery access via NC OneMap. Upcoming enhancements include tools to display the extents of the county mosaic files. The site includes acquisition dates of imagery anywhere in the state as well as project status.

The Eastern Piedmont phase (2017) acquired imagery over the 26-county region beginning January 25 and ending February 26. This early completion ensured leaf-off conditions across the region. He explained quality indicators including a short span of acquisition for more consistent temporal conditions. The fewer the missions and the denser the acquisition the better. The project team is reviewing radiometry or color balance between samples of overlapping images from contractors at strategic locations where their study areas meet. Color adjustments will make the imagery more consistent. Delivery to the quality control application late July and will be condensed into three delivery orders from six previously.

The next phase, the Northern Piedmont and Mountains (2018), was approved by the NC 911 Board. The project team has a goal of completing all contracting by Thanksgiving to give local governments more time to plan to piggy-back on the imagery acquisition contracts to purchase other imagery-related products as needed.

- *TRANSPORTATION*

John Farley (NCDOT) explained that the Working Group for Roads and Transportation is preparing to meet and work on updating the data content standard for road centerlines. The timing of efforts and details will be influenced by forthcoming geospatial requirements for Next Generation 911 in North Carolina that will include road centerline data requirements.

Alice Wilson reported that the Local Government Committee recommends another representative on the Working Group for Roads and Transportation: Greta Bumgarner of Catawba County has experience with centerline data and 911 to bring to the group.

- *CADASTRAL*

Jeff Brown and John Bridgers (Working Group for Seamless Parcels) reported that 34 counties are updated in the NC Parcel Transformer in spring 2017. Reminders are going out this week. Only one county was not updated for 2016. A total of 47 counties are now registered with Transformer for self-operation. The NC Parcels program relies on continuous operation of the cloud application by the Carbon Project, Inc., technical assistance from the Working Group for Seamless Parcels, CGIA, and NC OneMap, with cost share from NCDOT, NCDA&CS and CGIA. Also, there was a successful session on NC Parcels at the NC GIS Conference.

Next steps are to continue with the spring updates in the NC Parcel Transformer, maintain statewide parcels in NC OneMap as web services and downloadable data, provide technical assistance to counties as needed, continue to build stock of “do-it-yourself” counties, continue to improve population of priority data fields, and find a solution for sustainable, full funding to operate and maintain statewide parcels. The project team consults with the Working Group for Seamless Parcels co-chaired by Pam Carver and John Bridgers.

Mr. Bridgers added that work needs to be done with some counties to improve the source tax data for more complete exports for application in the NC Parcels Transformer. The Secretary of State's Office is working with county assessors and county managers to completely fill in the fields in the parcel data that will ultimately be uploaded to the Transformer.

Ken Taylor explained that, as State Geologist, he is interested in properties in areas where, for example, mines or quarries once operated. For example, a property coincident with an old iron mine may be at risk for ground movement and road or building damage. Recent work in western NC has developed locations within plus or minus 20 feet. As areas develop and parcels are subdivided, more buildings may be exposed to risk. As geologic datasets gain precision and are field verified and documented by geologists,

more datasets will be available to GIS practitioners for analysis with datasets of comparable resolution and currency. Information about locations of mines and quarries, for example old gold mines beneath Charlotte, may be vital information for planning for large events like a political convention. Geological hazards located within a couple of feet are becoming practical and important to apply. Mine shafts were well documented in some cases. Currently, geologic maps are available from the State Geological Survey including [online maps](#). Dr. Taylor will consult with SMAC members about making geological datasets accessible for GIS applications.

- *ELEVATION*

Hope Morgan (Department of Public Safety) reported on North Carolina LiDAR. She cautioned that legacy LiDAR data is still the latest available for western North Carolina as the new LiDAR is still in progress for Phases 4 and 5 for the 5-phase, 4-year statewide project. She pointed out the value of the Continuously Operating Reference System (CORS) for both LiDAR and for orthoimagery, and support from both programs for CORS is appreciated.

Collection of LiDAR for Phases 4 and 5 is complete. Both phases used Geiger sensors for acquisition of 30 points per meter and delivery of 8 points per meter. Phase 4 collection was based on blocks instead of counties, but delivery of products will include county datasets. Phase 4 LiDAR classification is about half complete. Data comes to NC Emergency Management and to NC DOT Photogrammetry for a series of automated checks for quality control. Visual quality control leads to adjustments by contractors. The new technology has required some adjustments to algorithms that has delayed publication of Phase 4 data until July.

Data for the first three phases are available from the spatial data download site. Ms. Morgan confirmed that LiDAR data will be available to support ortho rectification next year in the Northern Piedmont and Mountains region.

She added that there is consideration of LiDAR acquisition with Geiger sensors in the first three regions for consistent 8 points per meter resolution across the state if funding becomes available, for example, related to Hurricane Matthew recovery. Funding may be determined as early as this summer. NC Emergency Management has also requested funding for bathymetry on the sound side of the coast to complement the NOAA ocean side bathymetry in support of flood models as well as navigation.

Also, the goal of the Spatial Data Download is to track downloads and determine what specific areas are changing and may need to be flown for updates.

- *HYDROGRAPHY*

Cam McNutt of the NC Department of Environmental Quality (DEQ) reported that the department continues to work on hydrography data and how it is cited in rules and ways to resolve differences. The department is realizing that geospatial representations of hydrography are inconsistent with what is on the ground, especially in coastal areas. Prioritization is needed. More staff have ready access to stream data and are noticing

perennial issues such as stream lines not aligning with dam locations. Mr. McNutt is building business cases for resolving stream data maintenance issues and reaching agreements about roles and responsibilities between the department and USGS for data maintenance. Currently, DEQ's business data are distributed on the "100,000-plus" stream geometry. It was originally all named streams plus permitted streams plus additional selected streams. It has about 14,000 streams. It serves most department business needs. However, a variety of stream representations are used for regulatory purposes. An ultimate solution continues to be a statewide, 100 percent accurate stream database maintained on a regular basis. Currently DEQ does not have the capacity to achieve that.

Dr. Taylor added that the National Academy of Sciences is pushing to have a study done of the USGS water program, including the workload and available staff, and there may be opportunities to partner with states. Mr. McNutt acknowledged that USGS would like to partner with states.

Mr. Johnson observed that SMAC has an opportunity to advise the GICC if SMAC has a clear message. Mr. McNutt sees the priority as getting DEQ data issues resolved and get users looking at the same stream dataset. The inaccuracy of 1:24,000-scale stream data has become a more prominent regulatory issue. References to USGS topographic maps in NC rules have become problematic. Use cases range from visual reference to navigation. DEQ is gaining some consistency by developing online applications for common use.

Ms. Wilson observed that out-of-date stream data complicates implementation of local government ordinances; the "blue line streams" based on old topographic maps may be cited. Mr. McNutt added that a lot of local governments do their own stream mapping, further complicating the situation. He welcomed comments from local governments.

Mr. Sewash observed that North Carolina studied stream mapping and developed a plan in 2004 ("Implementation Plan to Improve the Mapping and Digital Representations of Surface Waters in North Carolina," endorsed by the GICC and presented to the General Assembly through the Environmental Review Commission.)

Mr. McNutt described proposed revisions to rules that would reference "best available dataset or ground condition" but wording may need to be more specific for a rule change. He suggested that members may comment on rules as part of the comment process.

- *GEODETIC CONTROL*

No report.

- *GOVERNMENTAL UNITS*

Regarding county boundaries, Ronald Harding reported on behalf of Gary Thompson. Eight county boundary projects are in progress with the assistance of NC Geodetic Survey: Harnett-Wake-Chatham, Davie-Yadkin, Jackson-Macon, Bladen-Brunswick-Columbus, McDowell-Mitchell, Franklin-Granville, Polk-Rutherford, and Chowan-Perquimans. It is not clear what led to several recent calls for assistance.

In response to a question about Next Generation 911, Mr. Sewash explained that PSAP boundaries are independent of county boundaries.

Regarding municipal boundaries, Mr. Farley reported that NCDOT completed Powell Bill municipal boundaries for 2016. About 500 of over 700 municipalities participate in the Powell Bill, or about 70 percent of incorporated places. He confirmed that municipalities span counties in some cases, and county boundaries are not relevant in the Powell Bill which reimburse municipalities for road maintenance.

- *ADDRESSES*

Joe Sewash (CGIA) reported on behalf of *AddressNC* Program Manager Luis Carrasco. The *AddressNC* project has processed and interpreted over 80 user stories for planning requirements and is working on administrative user stories for performance metrics. Regarding implementation, the project team is engaging NCDOT Roads and Highways group and the NC 911 Board's Next Generation 911 Technology Committee to establish data requirements and plan for dataset creation. The next milestone for data aggregation will be February 2018 as a firm deadline.

AddressNC staff is working with the Government Data Analytics Center (GDAC) to develop *AddressNC* based enterprise business services using the IBM Bluemix API Connect product as the backend infrastructure. Planning will take place this summer and the project seeks partners for pilot projects in the fall for enterprise address maintenance, address verification and validation, geocoding, and/or reverse geocoding using the Bluemix platform for API services.

Mr. Farley expressed interest in a pilot project for address verification at NCDOT. Mr. Sewash added that GDAC directed *AddressNC* to find instances of address verification and other functions across the enterprise to seek economies of scale. Ms. Morgan expressed interest in address look-up services through an API. Mr. Sewash added that Bluemix will be implemented internally at GDAC first before rolling out across the enterprise. The intention is to make the API services available to local governments as a benefit to sharing source address data with *AddressNC*.

In response to a question about maintenance of *AddressNC* and its local government sourced data, Mr. Sewash explained that monthly updates are planned initially with more frequent updates anticipated after the value of enterprise services are realized.

At the national level, the Federal Geographic Data Committee (FGDC) Address Theme Subcommittee continues to meet monthly. On February 22, there was a federal agency user requirements workshop on the National Address Database (NAD). Mr. Sewash will represent North Carolina on the subcommittee's Business Process Subgroup to focus on state and local requirements of the NAD. Also, in March FGDC Steering Committee approved the Address Theme definition and the Address Theme Subcommittee completed its review of the charter for the group, to be reviewed by the Steering Committee next month, followed by public release of a website for the Address Theme.

In response to Ms. Wilson's observation that the Census Bureau in Atlanta had high praise for North Carolina in a recent meeting, Mr. Sewash added that CGIA has worked with the Census Bureau in preparation for Census 2020 since 2011, including partnership in the Geospatial Support System Initiative, and plans for a data flow from North Carolina to Census and the NAD that minimizes impact on local government operations.

Standards and Practices

See the Transportation report above.

Working Groups

WORKING GROUP FOR ROADS AND TRANSPORTATION

See Transportation report above.

METADATA COMMITTEE

Sarah Wray (NCDOT), chair, reported a successful session on metadata at the NC GIS Conference. Current efforts include online survey for gathering training requirements from state and local government data managers. Tim Mulrooney and Craig Pederson of North Carolina Central University (NCCU) have set up a YouTube channel for metadata training materials and tutorials. Planning for training sessions in the summer is in progress. The committee also plans to expand experience with and documentation of multiple tools for creating and maintaining metadata.

Ms. Wray and Jeff Brown are invited by FGDC to present at the ISO Metadata Summit in Reston, Virginia on May 24 and participate in breakout sessions. Preceding the summit, a tools workshop on May 23 is available for remote participation by members of the Metadata Committee.

Ms. Wilson added that the Local Government Committee expressed interest in assisting with training for local governments in locations across the state. Mr. Sloop expressed gratitude for a training and pointed out that metadata is required for the MapForsyth centralized data repository, with backing from city and county managers. He and Ms. Wray suggested that enforcement of metadata creation and maintenance is important and reasonable given the availability of the State and Local Government Metadata Profile and tools and techniques.

STREAM MAPPING ADVISORY COMMITTEE

Cam McNutt (NCDEQ) reported that the committee met last month and had a report from Silvia Terziotti on changes to the watershed boundary dataset, particularly the 8-digit hydrologic unit boundaries, based on LiDAR data. The drainage areas changed less than 1 percent overall, but some coastal hydrologic units changed to a higher degree. Mr. McNutt invited additional staff from DEQ for informational purposes. The committee discussed the issue again of how hydrography datasets are maintained. DEQ uses watershed boundaries for regulatory purposes, making boundaries critical for inclusion of specific facilities or not in rule implementation. Watershed boundary changes at the

national level can create discomfort for state regulators. The committee came back around to acknowledging that DEQ-maintained and federal datasets are similar, but with some variation in delineations and names. DEQ is taking a step back to inform new DEQ management about the current situation, develop an approach, and come back to the Stream Mapping Advisory Committee.

NC BOARD ON GEOGRAPHIC NAMES

Dr. Tyrel Moore (UNC Charlotte), chair, reported the NCBGN recently received proposals for the naming or renaming of four North Carolina streams or waterbodies: Buck Creek Barrens in Clay County, Gibson Creek in Buncombe County, Pittman Pond in Robeson County, Gryphon Branch in Catawba County, and Rutledge Lake in Henderson County. These were listed on the USBGN Quarterly Review Lists 426 (December 30, 2016) and Quarterly USBGN Review List 427 (March 31, 2017).

Supporting materials from multiple agencies include petitions, local and agency requirements, local responses, and proposals considered by the NCBGN and the USBGN. All requests have components that rely on local and or federal opinions. The NCBGN recognizes those efforts to maintain the critical flow of information among agencies.

Since the October SMAC meeting, Dr. Moore responded to a request for confirmation from the USBGN that the Barker Creek and Penland Creek petitions had successfully met local opinion requirements and could be placed the on the USBGN docket.

In communication with Jenny Runyon of the USBGN, he will provide quarterly reports to USBGN as well.

ORTHOPHOTOGRAPHY PLANNING

Hope Morgan reported on behalf of Gary Thompson. The group met April 17. There is still processing to accomplish to create web services for National Agriculture Imagery Program leaf-on 2016 imagery. NC Emergency Management decided not to acquire oblique imagery this year. The available funding from the US Department of Homeland Security was inadequate for a project. Mr. Thompson briefed the working group about current rules and regulations for unmanned aircraft systems (UAS) and some of the uses. The group is developing a charter to submit to SMAC in July. The group continues to plan for derived elevation products from LiDAR collected 2014 and after.

2022 REFERENCE FRAME

Mr. Sloop reported on behalf of Gary Thompson that the National Geodetic Survey has decided that the 2022 Reference Frame will be a fixed plate datum rather than temporal using velocities. This is what the working group was advocating. Mr. Thompson will have more to report at the next meeting.

Regular Status Updates

NATIONAL GEOSPATIAL PROGRAMS OFFICE

Silvia Terziotti reported that the USGS and its contractor are preparing to post data about the hydrography benefits study in consumable ways organized by types of data and types

of benefits and other perspectives. USGS is close to finishing pilot projects that integrate hydrography and elevation data. USGS efforts to acquire elevation data could be integrated with hydrography to resolve the current inconsistencies between elevation and hydrography so surfaces and line work match. The 3DEP program is funded by multiple agencies. The National Landslide Preparedness Act, if passed, would also bolster the 3DEP program. The anticipated resolution of the combined elevation and hydrography product would have streams up to 1:24,000-scale density. Intensity images and imagery are available to support the line work. The specification is to match the LiDAR surface, with flexibility on methods.

NC ONEMAP

David Giordano reported on data updates provided by NC Geodetic Survey (geodetic control points), NC DEQ (shellfish growing areas), and NC Department of Natural and Cultural Resources (natural areas, natural heritage element occurrences, managed areas, and federal lands).

He reminded the committee that web services published from the NC OneMap database are now available only through https instead for http for greater security. In addition to security reasons, the change enables easier integration of services with web applications that also use https. He urged users to get information from the [Blog](#).

NC OneMap upgraded to ArcGIS Server 10.5 and found problems in downloading imagery tiles. Also, ArcGIS Earth 1.3 had a bug with services containing a date field. The short-term solution was reversion to ArcGIS Server 10.4.1

Work Plan Prioritization and Other Data or Mapping Items from the Group

Mr. Sloop asked the committee to review the 2016-2017 work plan and help him get up to speed and identify needs to keep the committee productive. It won't be long before the next fiscal year priorities. Concerning Task 2.1—sustainable funding for NC Parcels—Mr. Brown explained this has been a topic of discussion in the Working Group for Seamless Parcels for some time. The approximate annual cost amounts to less than \$100,000. Mr. Johnson suggested a one-page description of needs and benefits. Ms. Morgan suggested including scope of work, deliverables, and how the deliverables may be applied to business needs. Mr. Bridgers agreed that a document could be completed by June.

Task 2.2 concerns elevation data products derived from LiDAR. Ms. Morgan plans to produce contours from digital elevation models. She is working on specifications for an automated process to produce contours (vectors) that are sufficient for representing elevation in increments, but would not be as cartographically refined as the legacy contours. There would be quality control but not manual smoothing for a more conventional contour product. She is committed to the one-time production of contours statewide by the end of 2017. Mr. Giordano pointed out the popularity of legacy contour data for consumers via NC OneMap. Ms. Morgan acknowledged that and explained that funding is not available for extensive manual manipulation of the output generated by a set of parameters in an automated process. The draft plan from the working group

includes examples of contours produced by NCDOT Photogrammetry from LiDAR points and from digital elevation models. Mr. Brown explained that other products in the plan include web services generated from digital elevation models. USGS is doing slope from legacy LiDAR, so that is not a current solution for a slope web service. Mr. Johnson urged the working group to complete what has become a two-year old task and find an agency or agencies to commit to producing one or more products. This task should be completed by the end of this fiscal year. Mr. Farley suggested taking down the legacy services and reassessing the need for products. Mr. Giordano added that although some users have software and the expertise to derive their own products from LiDAR, and some could be trained, a portion of the consumers do not have facility with tools and would benefit from statewide web services for work in fields like forestry. When asked, he advises users of the legacy LiDAR-derived services that a more current elevation product may be generated from new LiDAR data. More information on the cost of derived products is needed in the plan.

Mr. Sloop directed attention to other priority tasks. Task 4.5—metadata implementation is in progress. Ms. Wray pointed to the graduate student resource that will help accelerate additional training through the calendar year. Next year will include work on validation, who is adopting the profile, tools, and techniques. The goal is more adoption by data managers.

Task 4.6—the temporary working group was formed to evaluate what National Geodetic Survey was developing and proposing for the 2022 Reference Frame, to comment, and to identify implications for North Carolina. The working group needs to develop advice for the GIS community. The work may extend beyond the fiscal year, and a report to the Council is anticipated.

Adjourn --The meeting adjourned at 3:25 PM.

2017 SMAC Meeting Dates

Wednesday, July 19

Wednesday, October 18

Locations of future meetings are to be determined in consultation with the Chair.