Lidar Work Group
Notes from 12/5/2018 meeting

Attendees in person: Gale Blackmer, Eric Jespersen, Joe Petroski Jeff Zimmerman, Dave McNaughton, Scott Dane
Attendees by phone: Ken Juengling, Matt Mercurio

Quick Information Updates

2018-2019 State Funding Updates

Late October commitments of $400K by DOT and $200K by PA Turnpike Commission made the total we had for the BAA application $2.15M.

2018-2019 Federal Funding Updates
- FEMA Region 3 - Western PA PAMAP Lidar Replacement is current as a High Priority on SeaSketch site; unlikely to be part of a 2018-2019 procurement.
- NRCS (Marcie Dunn) - PA NRCS's $207,000 has been committed for updated lidar in Lancaster County, in support of but not part of our BAA application.

BAA Application Status

Gale built the application based upon $2.15M funding, concentrating on 22-county area of interest (AOI), including 6 counties identified in FEMA western PA priority area. Complete application was submitted about November 1.

Final narrative as submitted in application included here for clarity of these notes:

Five partner state agencies (DCNR, PEMA, DEP, PennDOT, Turnpike Commission) and the Susquehanna River Basin Commission propose to collect QL2 lidar data for a block of 22 counties in eastern and central Pennsylvania (PA). The inner boundary of the block is adjacent to a block of counties for which QL2 lidar was collected in 2018 by NRCS and USGS. QL2 lidar was collected to 3DEP specifications for the remaining counties in southeastern PA during the period 2014-2016. The collection proposed herein will replace QL3 data collected during 2006-2008 under the PAMAP program (administered by DCNR). The proposed area overlaps with and is adjacent to areas identified as Federal priorities in BAA Attachments F, G, and H. Federal agencies with particular interest in the area are FEMA and NRCS.

Critical needs for this data collection include:

- *Updating hydrography datasets to serve as an accurate basis for:*
  - *Chesapeake Bay Program agricultural assessments and technical assistance by NRCS*
  - *Riparian buffer program development and execution by DCNR*
  - *Clear connection of MS4 stormwater control measures to natural drainage*
  - *Integration of headwaters and wetlands with modernized hydrography*
- *Statewide change detection from 10-year-old QL3 data, particularly investigating major landscape changes from shale gas development, including: regional economic development effects, ongoing transportation planning, forest fragmentation, hydrographic changes from stormwater management*
- *Identification and mitigation of flood hazards by PEMA and FEMA*
- *Infrastructure development, including natural gas pipelines*
- *Regional landslide and sinkhole hazard analysis and mitigation*

PEMA's NG911 program is now acquiring 6-inch resolution, 4-band, leaf-off color imagery statewide on a continuous cycle. The utility of new lidar will increase by standardizing it with historic PAMAP lidar and new PEMA imagery to seamlessly integrate the datasets.

PASDA, PA's open geospatial data portal and node on the NSDI, currently provides public access to the entire PAMAP lidar data library. Following QA/QC and approval of proposed lidar products and derivatives, PASDA will prepare the data for distribution through online access to FTP, map services, and applications. PASDA will ensure meeting national and international standards for metadata, data formats, access, delivery, and long-term preservation.

Lidar data is a shared public asset used by numerous entities for countless purposes. In 2017 DCNR, PEMA, and PaMAGIC recognized the need to organize efforts to complete QL2 lidar coverage for PA and to coordinate regular lidar updates thereafter. The Lidar Working Group was formed by representatives of state, federal, and interstate agencies, academia, and geospatial professionals. Federal partners include NRCS, FEMA, USGS, and USFS. The Lidar Working Group is the driving force behind this proposal.

Application Networks

Core Team of Petroski, Zimmerman, Dane, McNaughton, and Jespersen met by conference call on November 19 to prepare for the meeting of December 5. We decided to keep the original application subgroups listed below and include a new General subgroup for data handling utilities, to wit:

General	*Juengling leader*
Vegetation	*Petroski leader*
Hydrography	*Jespersen leader*
Structure/Infrastructure	*Leader TBD*
Topography & Surfaces	*Leader TBD*

Lidar Inventory – Petroski and Dane merged their two separate lidar inventories into a single spreadsheet to catalogue coverage, data format and datum, year collected, point density, and more. This is posted on the LWG website and will inform application development.

Website Evolution to Support Application Networks – Zimmerman explored potential for SRBC hosting of applications with the SRBC IT staff. Obvious issues included traffic if successful, cybersecurity, management time required to keep the site current, and variability of contributor inputs if we are successful. We arrived at the conclusion we should investigate GitHub or some other developer-oriented site already existing. Mercurio offered to share what he knows about GitHub. It had already been decided that the LWG site would not host data.

Application Information Template – McNaughton created a Word doc as template for application sharing. Although use of GitHub might obviate the need for our own listing we left open the possibility that we host a summary spreadsheet with some catalogue infor that would lead one to GitHub.

Test Bed Concept Viability – Jespersen led the discussion of creating testbeds with ground truth for specific applications. Although no specific testbed was created/determined there were many discussed:

Ft. Indiantown Gap – Vegetation, Utilities
PSU Main Campus – Utilities, Infrastructure
Chiques Creek – Hydro
Sullivan County QL1/QL2/QL3 area – vegetation
Turnpike – infrastructure corridor

The team agreed that the concept is viable, and that it would be good if specific lidar data extracts already clipped to a test bed area were directly downloadable at PASDA in their discrete area and with the ground truth data.

Promotion and Growth of Application Networks – This discussion evolved quickly into the setting of 2019 Goals for the LWG. We will discuss how to achieve them in the January and February meetings.

2019 Goals for the LWG

- Two test beds active by May 2019
- Five Network Leaders in place and coordinating by EOY 2019
- Active promotion of Application Sharing to increase: Use of lidar data, number of individuals involved in LWG, University involvement in LWG. Metrics to be established by March 2019.

New Action Items

- Mercurio to lead small team in investigating GitHub by showing what he already knows as a starting point
- Dane to see whether an Elevation Navigator similar to Imagery Navigator at PASDA is possible.
- Dane to explore whether there is a path for PASDA to host Test Bed data, including files containing ground truth and to create some data retrieval applications we could link from the LWG website
- Team to discuss articulation of developer site with our LWG website, and possible limited catalogue.
- Team prepare Application Network promotional material for use during a BAA promotional session
- Set and verify meeting dates and places for first six months of 2019. Rotate a meeting to FTIG?

2019 LWG Calendar

Team agreed to meet monthly, 60-minute conference call or 2-hour live meeting
January 16, March 13 – Conference call, 11AM
February 13, April 17 – Live meeting, 10-12 location TBD