

## Climate Adaptation Suggestions

Listening Session Testimony – 05/28/2014

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Good afternoon, thank you for holding this listening session. My name is Gretchen Heldmann, and I am here to provide a geospatial perspective on climate adaptation, particularly in regards to geospatial data needs as they relate to managing increased storm flows and flooding. I work for the Town of Hampden as their GIS/IT Specialist and manage all of the geospatial data for the town, including map/data layers for stormwater infrastructure, topography/contours, shoreland zoning, and more. I live in the Town of Eddington, a much smaller community, and I serve on the Planning Board there, where we consider development applications and have had people come to us with concerns about increased water levels, flooding, etc – so I have a range of perspective on these issues. I would like to take a couple minutes today to talk about the geospatial scene in Maine, and where improvements could be made – improvements that will help us plan for climate adaptation issues. We can talk all we want about conceptual scenarios, but if we do not know what we have on the ground, and keep it up to date, those conceptual scenarios are not going to be as useful or applicable in real life events. So I want to talk about the geospatial scene in Maine and in particular, the programs currently being coordinated and conducted by the Maine GeoLibrary Board. As a matter of full disclosure, from 2006-2012, I volunteered and served on the State of Maine Library of Geographic Information, AKA GeoLibrary Board, and for the last two years of that term, I was Chair.

The GeoLibrary Board is currently in its third year of a five-year cycle to update all imagery across the entire state, at two-foot base resolution for organized areas and 3.3 foot for unorganized areas. This imagery is different than what you will see in Google Earth, which you can get for “free”, because this imagery will have known specifications that will make it much more useful for use in climate change geospatial analyses, such as tracking changes in vegetation location or health. This imagery is also not proprietary, and is in the truly free public domain, where anyone – municipalities, engineers, scientists, surveyors, etc – may use the imagery for whatever needs they may have. The reasons updated imagery is important to municipalities are many. For one, the imagery is used as the basemap for creating and updating many other data layers. I mentioned storm flows, stormwater infrastructure, and flooding earlier. We are seeing increased intensity of storm events, which puts increased pressure on our existing stormwater conveyances, and can cause severe flooding issues – much of which could be attributed to climate change. One of the data layers I maintain is impervious cover, which we use to keep track of and manage how much percent imperviousness there is in a particular watershed, such as for Sucker Brook, which is an impaired watershed and is our Priority Watershed under our Stormwater Permit. This permit is given to us by MDEP under delegated authority from the EPA under the Clean Water Act. There are many requirements to this permit, one of which is to identify a Priority Watershed and in our case, work to restore it –

knowing percent impervious cover is very helpful as it correlates with water quality of the stream. Another requirement we have is to map all of our stormwater infrastructure. Keeping imagery updated on a regular cycle helps us keep our maps up to date and stay compliant with the permit. We cannot afford to fly imagery on our own, so with the GeoLibrary Board's program, we can tag along with that, pitch in a little extra money, and "buy up" to the higher resolution we need – and we just did this, as imagery for this area was just collected last month. We spent just \$13,000 to have our town covered at a six-inch resolution, vs. nearly \$40,000 spent in 2006 for the same resolution. The ability to update imperviousness from orthoimagery saves a lot of time and money of field work. Also, although not as sophisticated as Hampden, in Eddington we do use imagery often on the Planning Board when we evaluate development applications, examine shoreland zoning issues, and more.

Another issue I wanted to touch on is flooding. I am sure you have all read some stories in the news about changes to FEMA floodplain maps in southern Maine, and the controversy around all of that. Another initiative the GeoLibrary Board is working on, is acquiring lidar data for the entire state. Lidar data is where a plane flies in the air, shoots millions of laser pulses to the earth surface, and then based on the timing of the rate of return for the laser to bounce back to the plane, a true surface model of the earth can be created, including singling out layers for vegetation, buildings, water, and more. One of the main products that can be derived from lidar data, is highly accurate, high resolution contour data to the tune of two-foot intervals or better depending on the lidar specifications. These data can then be used to develop much more accurate floodplain maps, which could potentially save a lot of people a lot of time, money, and aggravation.

If you have concerns about costs for geospatial programs, that is understandable. Please know that the GeoLibrary has conducted a Return on Investment study, and with just three case studies of stormwater, forestry, and transportation, they were able to demonstrate a minimum of over 400% return, and that is just when considering the ROI for orthoimagery. Geospatial programs are well worth the investment.

Lastly, an interesting article came across my email this week, where apparently in Illinois, the Farmers Insurance Company is suing multiple counties there for their alleged failure to maintain stormwater infrastructure, which resulted in a lot of flood damage from heavy rains in April 2013. So I thank you for taking the initiative to hold these sessions and really begin to dig in and deal with climate change and related issues, and I hope you will keep the need for regularly updated geospatial data at the top of your list.