

Meeting Summary
H-GAC REGIONAL FLOOD MANAGEMENT COUNCIL
In conjunction with the CRS FAST meeting
October 20, 2010

MEMBERS PRESENT:

Randy Acreman	Kelly Hamby	Shashi Kumar
Louis Bergman (on phone)	Andrew Isbell	Monica Martin
Daya Dayananda	Dan Johnson	Yancy Scott
George Dixon (on phone)	Phil Jones	Mark Vogler
Cathy Dominguez (on phone)	Lisa Krobot	

MEMBERS ABSENT:

John Blount	Scott Hall	Sidney Lewis
Jing Chen	Mike Hogan	Narciso Lira
David Collins	Mark Jordan	Craig Meyers
Mike Fitzgerald	Spencer Karr	Frank Rodriguez

City of Houston/Mike Marcotte was represented by Jamila Johnson.

VACANCIES:

City of Galveston; one "At-large"

H-GAC STAFF PRESENT:

Erin Livingston, Rachel Powers, Carl Masterson

OTHERS PRESENT:

Raymond Anderson (HCPID); Annette Arriaga (Village of Piney Point); Robert Boelsche (EHRA, Inc.); Larry Boles (City of Nassau Bay); Kevin Byal (City of Dickinson); Debbie Cahoon (TWDB); Cheryl Campbell (HCPID); Jack Chiles (City of Houston); John DuPuis (City of Baytown); Alan Gibbs on phone (City of College Station); Otto Glaser on phone (Houston Inventors Association); Patrick Going (Baseline Corporation); John Grounds (TFMA); Bill Hopkins (Memorial Super Neighborhood); Matt Jenkins (City of Houston); Sean Landis (City of Seabrook); John Laser (Ryden & Associates); Randolph Littleton (City of Houston); Luz Locke (City of Pasadena); Jim Mackey (White Oak Bayou Association); Larry Mayberry (City of Sealy); Lance McLeod (Brown & Gay Engineers); Nawa R. Panthi (Ads Engineers); Jim Roberts (Lippke, Cartwright and Roberts); Adam Rodriguez (R.G. Miller Engineers); Mark Sherley (HCFCD); Kimesha Sonnier (City of Houston); Josh Stuckey (HCPID); Ray Windsor (City of Austin); Mae Wright (City of Seabrook)

WELCOME & INTRODUCTIONS

Shashi Kumar welcomed everyone and initiated self introductions.

APPROVAL OF JULY MEETING REPORT

A quorum was not present, so the consideration was delayed.

A quorum was available after the presentations, so Shashi asked for approval of the July meeting report. All present approved with a showing of hands.

MEMBERSHIP

There are two vacancies on membership, City of Houston and City of Galveston.

PANEL DISCUSSION ON BENCHMARKS

Jack Chiles, City of Houston

The City of Houston currently has 6 Continuously Operating Reference Station (CORS) monuments, with 5 reporting data to the U.S. Geological Survey (USGS). The sixth collects data, but has problems with communication. From the 1960s to 1973, 7500 monuments were installed. Since then, there has been a 75% failure rate of the monuments and total replacement costs are estimated at more than \$5 million. In about 2001, the City of Houston passed an ordinance mandating use of the National Spatial Reference System, the CORS coordinate system, since they are continuously updated.

Jack discussed the difference between Tropical Storm Allison Recovery Project (TSARP) benchmarks and CORS. Generally speaking, published elevations for TSARP benchmarks are frozen at the 2001 elevations and do not reflect the subsidence that may have occurred in an area since then. CORS on the other hand do reflect the change in elevation due to subsidence. Everything in the City's infrastructure, except for impact studies to the channels themselves, must use CORS monuments for elevation data, but also reference TSARP in order to acknowledge base flood elevations (BFE).

Q: Why do you think you lost so many benchmarks?

A: Most were lost because of construction, construction of ADA ramps, widening of streets, and construction of new driveways.

Q: What vertical datum is used for the CORS monuments and are the datum and GEOID updated when the National Geodetic Survey (NGS) makes updates?

A: CORS monuments use GEOID09. When NGS makes updates to the model the new version of the model will be used for CORS, and in fact the City is mandated to do so.

Q: Do you use TSARP's floodplain maps to regulate development?

A: Yes. If an infrastructure project has a storm sewer flowing into a channel then the impact study uses TSARP data. Each infrastructure project's plans are prepared using CORS monumentation and conversions for TSARP. TSARP data is used for all other projects.

Q: Is there a reason to use TSARP instead of the CORS datum for residential construction?

A: It is easier for those in residential construction to base everything on TSARP data because that is what BFEs are based on.

Q: How do you reconcile the interface between public infrastructure and private development when the first is based on CORS and the latter on TSARP?

A: We don't have a good answer for that yet. So far, the change is not so significant to be an issue, but we anticipate that it might become an issue.

Clifford Middleton, National Oceanic and Atmospheric Administration

Clifford began with some pictures of various types of benchmarks, including an extensometer, and information on other types. Within the City of Houston there are only eleven benchmarks we can assume are good.

Periodically Active Monitoring Stations (PAMs) use GPS to determine elevation through the use of data projected onto an ellipsoid. This type of benchmark ignores the periodic shrinking and swelling that occurs with our soils and instead focuses on long-term trends/changes.

The GEOID is a model to reconcile ellipsoid height and the orthometric (sea level) elevations and is affected by gravity. Each new version of the GEOID improves upon the previous versions due to more accurate data inputs. NGS is working to improve the model even more in the future and expects to publish a new vertical datum in 2020 to replace NAVD 88.

A standard monument is about \$200. Those that utilize metal rods cost more with materials costing up to \$2000. "Differential spirit leveling" is expensive and may only be good for a little while since elevations can change fairly quickly in this region.

USGS was spending \$1 million every five years in the Harris-Galveston area to re-level benchmarks, in part because of the distance to get to a good marker. However, they wanted more frequent re-leveling and so they began using GPS based benchmarks when they became available.

FEMA does not have a mechanism for dynamic maps. They are converting to NAVD 88, which is better than what was around previously, although on-the-ground conditions may have changed dramatically since its development.

Q: Suppose we are in Brazoria, with new floodplain maps. I can choose a subsidence-monitored monument or a static monument adjusted by VERTCON. Which monument should I use?

A: I would be more inclined to use a PAM station because it would be a more realistic value.

Q: Should a VERTCON adjusted monument be used when the floodplain maps and BFEs in that area were determined by VERTCON?

A: If the floodplain map was based on a VERTCON value then it is probably wrong too. I would want to use accurate values. Using incorrect values could cause a structure to be at greater risk of flooding.

Q: Can you use dynamic data with static maps?

A: It can be problematic. Perhaps dynamic mapping could be used to create more dynamic floodplain maps. The subsidence district would love to expand the active monitoring sites; there just aren't the resources for this at the moment.

Q: Is there a trend in the difference between the orthometric heights relative to the various GEOID datums?

A: With the last GEOID, the heights were going up (instead of down) and were problematic. The latest data seem to be much more accurate. I have much more confidence in the extensometer data.

Comment: Don't rely on OPUS without doing your own work. It can be wrong. Always do your own resolutions.

Q: If you have subsidence, would you see similar subsidence in an area that then feathers out?

A: Usually, but it can be confined to a small area. There was agreement that you not want to use a brand new, accurate data point to compare to an old map. Using the benchmarks that a map was based on maintains the relationship.

Mark Sherley, Harris County Flood Control District

Between 1,500 and 1,800 benchmarks were set in 2001-2002 after Tropical Storm Allison. HCFCD agreed to maintain the website, but there was less planning for the maintenance of the benchmarks. HCFCD is now looking at maintenance. Do the benchmarks still exist and can they still be found? Can we update the website to reflect missing monuments? How will we maintain the remaining monuments? How will we set new monuments? HCFCD plans to work with the monuments already in place as the floodplain maps are all based on them.

Q: How do you define monument maintenance?

A: First, is the monument in good shape physically? Second, is data on the website updated based on "recovery"? HCFCD plans to take control of this task.

Q: Fort Bend County, how do you handle having developers place monuments? What are the regulations? Is there a maintenance program for them once they are placed?

A: I don't know what they are basing them on. There are no maintenance requirements. All of the new monuments may be a bit problematic now, but the next time a study is conducted there will be a lot more monuments to utilize.

Q: Sugarland re-leveled their benchmarks based on benchmarks FEMA installed during the recent map revision process. These are the benchmarks we are regulating to. Should the city re-level the benchmarks every five years or should the city install PAMs?

A: I think if you are going to adjust the benchmarks you would also need to make adjustments to the floodplain maps.

Attendees pointed out the importance of freeboard and management of the floodplain. Freeboard can be used to compensate for changes or inaccuracies over time.

Benchmarks in Coastal V zones should be updated whenever subsidence data shows them to be more than 6" off. For benchmarks in riverine areas you need to compare the subsidence of the monument with the subsidence of the channel bottom. They may have changed the same amount or not.

Q: What kind of liability does a community assume when they start maintaining benchmarks?

A: Too much. Many maintainers of benchmarks use lots of disclaimers, but people may be upset when they don't see the disclaimer.

Q: As a floodplain administrator, what choice do we have?

A: Aren't you just passing along information about the floodplain as given to you by FEMA and not defending the monuments?

Comment: It's like elevation certificates that say a floodplain administrator can determine your elevation. There is liability in that too.

Q: Is it sensible to increase freeboard incrementally based on the age of the data on the floodplain map?

A: It might make sense to include freeboard in the ordinance in order to compensate for changes in elevation that are not reflected in the floodplain map.

Q: Liberty County adopted new maps in May 2008 that include no reference marks. There are some numbers (A21, AW3, etc.), but FEMA has not provided any information about what the numbers are. Does anyone know what those numbers are? BFEs are shown in the AE zones of the maps, but no one knows what benchmark they are tied to.

A: FEMA blindly publishes reference marks from NGS, but they have not been verified and may not exist. BFEs are shown in the AEs on the map. FEMA should not expect a community to adopt a map that is not tied to any benchmarks. The study that was conducted to develop the maps may have benchmarks listed that were used, but they may not. The information should be on the FEMA website. Liberty County probably was just digitized from the old maps. Probably half of the old reference marks and benchmarks used to develop the original maps are gone.

Q: Is the only way to stop subsidence by switching from groundwater to surface water?

A: Yes. It is not expected that oil and gas drilling is contributing to subsidence greatly. It will take some time once the switch to surface water is made for subsidence to stop. It can actually rebound a bit too, though probably not more than a foot. However, some geologists say that the Gulf of Mexico naturally subsides.

ROUNDTABLE DISCUSSION BY MEMBERS

Shashi asked for future presentation topics.

John Blount had mentioned substantial damage as a possible topic for a future meeting. Andrew Isbell suggested, Glen Beard, with FEMA, as a potential presenter.

The next FAST meeting will be November 4 at 1:30 PM at the Sugar Land City Hall.

Carl Masterson mentioned the Natural Resource Advisory Committee will also be meeting November 4, 2010, at 1:30 PM, at the H-GAC offices. The topic is the value of ecosystems.

Andrew Isbell mentioned that the TFMA spring conference will be in Sugar Land.

NEXT MEETING

The next meeting will be on Wednesday, January 19, 2011, 1:30 PM to 3:30 PM.

ADJOURN

The meeting was adjourned at approximately 3:10 PM.

DRAFT