JUNE 6TH STORM ANALYSIS OVER BRIGHTON, CO

Prepared by Gerald Blackler, PE, PhD – Enginuity Engineering Solutions

Background

On June 6th 2016 an intense thunderstorm produced rainfall amounts up to 2.48 inches of rain in less than 2 hours over the BeeBe Draw drainage basin in Brighton, CO. The City of Brighton requested a brief analysis of the storm event to better understand the storm frequency and intensity.

With assistance from the Urban Drainage and Flood Control District (UDFCD), Gage Adjusted Radar Rainfall (GARR) of this particular storm was developed by Vieux Inc (http://www.vieuxinc.com/rainvieux.html). A screen shot of this storm event is presented below in Figure 1.

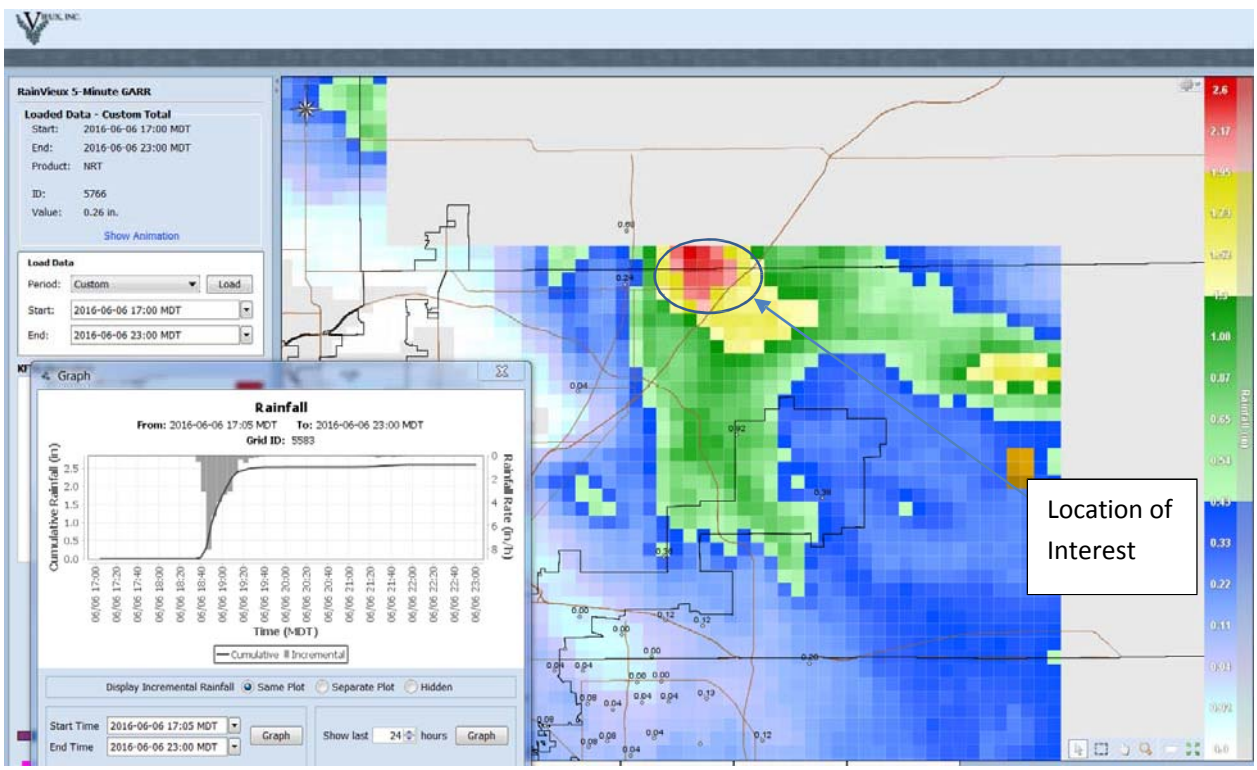


Figure 1 - GARR Provided by Vieux Inc of the June 6th Storm Event over Brighton, CO

The storm event was analyzed in two ways, one is the peak rainfall occurring over one square kilometer (grid) that is located above the BeeBe Draw Basin, and the second was to average the rainfall over the BeeBe Draw

Basin from many grids. The average storm is always lesser than the peak within the storm's center. Table 1 and Figure 2 summarizes the results from the June 6th 2016 Storm over BeeBe Draw basin in Brighton, CO.

Table 1 – Rainfall Depths and Intensities from the June 6th 2016 Storm over BeeBe Draw

	Total Rainfall Depth (inches)	Max 1 hr Intensity (inch/hr)	Max 5-Minute Intensity (inch/hr)
Average	1.87	1.75	4.63
Max Grid ID 5744	2.48	2.41	7.24

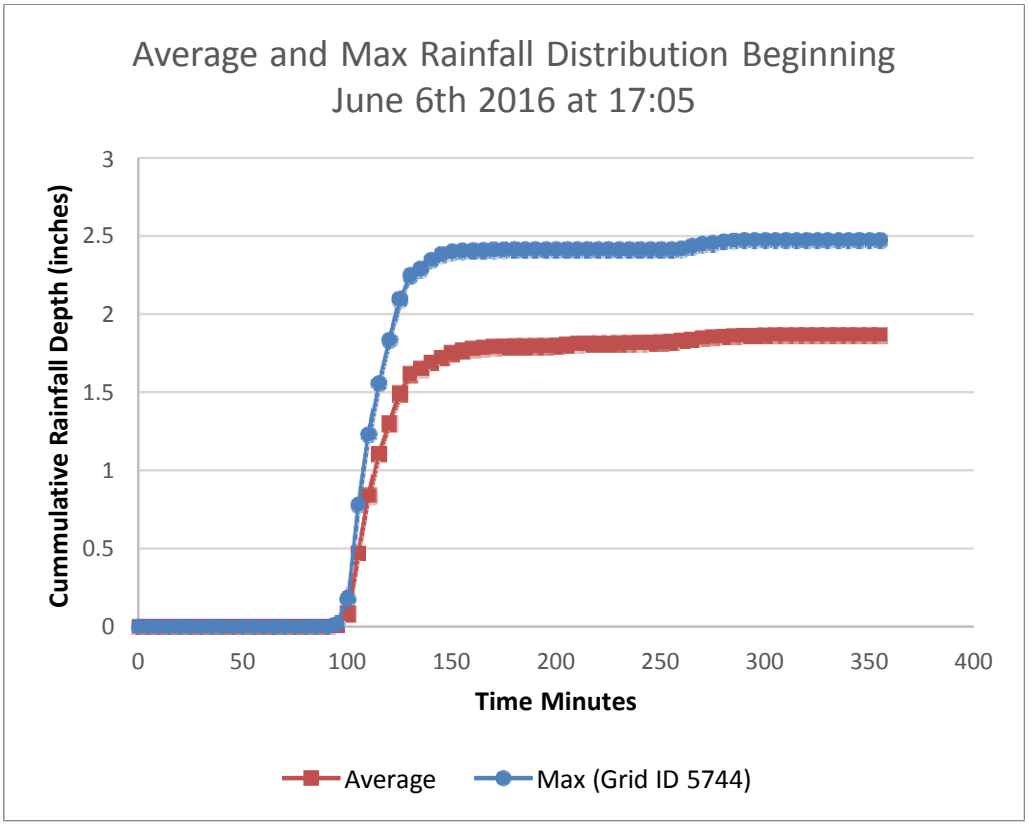


Figure 2 - Cumulative Rainfall Depths from the June 6th Storm over BeBee Draw

Values from Table 1 and Figure 2 are graphed against a rainfall depth frequency curve taken from the National Oceanic and Atmospheric Administration (NOAA) Precipitation Depth Frequency Atlas (NOAA Atlas 14). As shown in Figure 3, the one-hour intensity of 2.48 inches per hour is close to a 1% annual chance rainfall event, also called the 100 year rainfall.

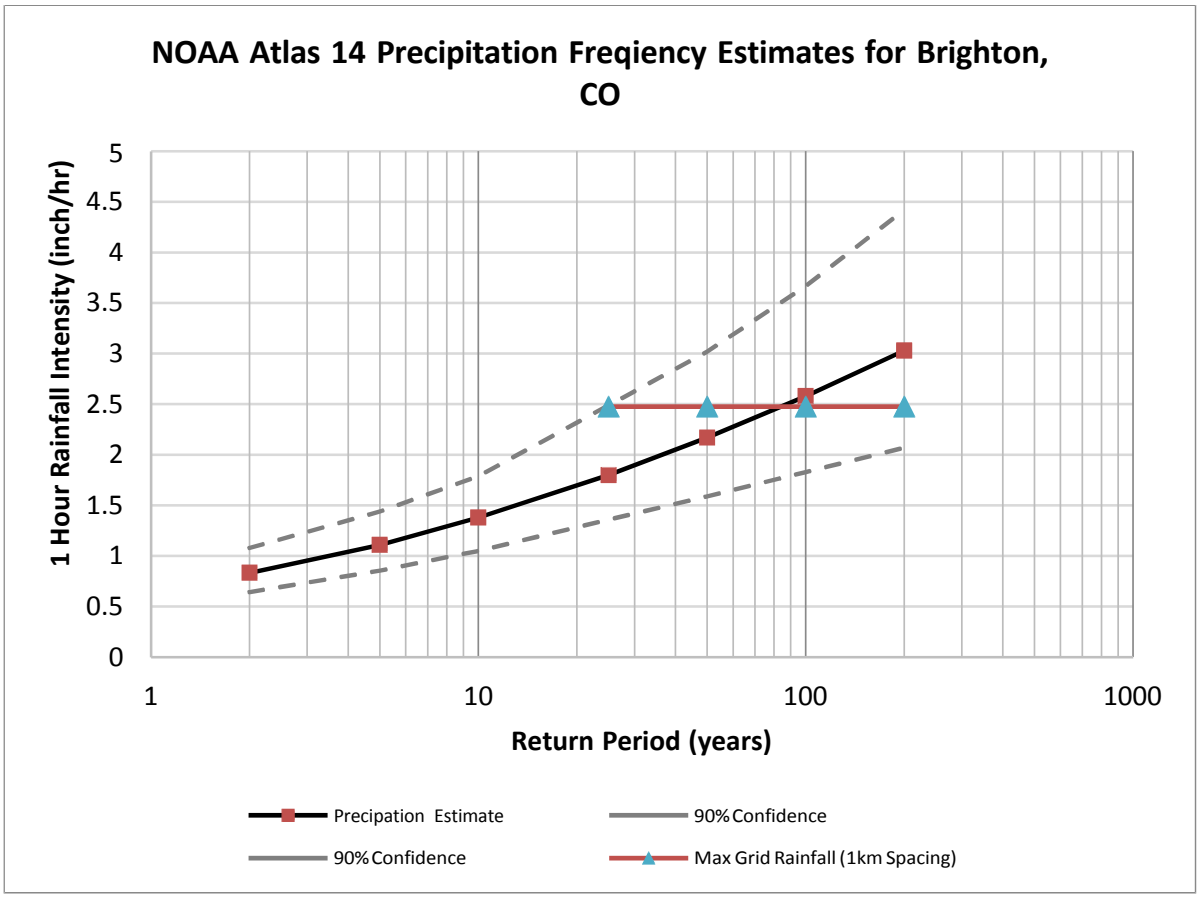
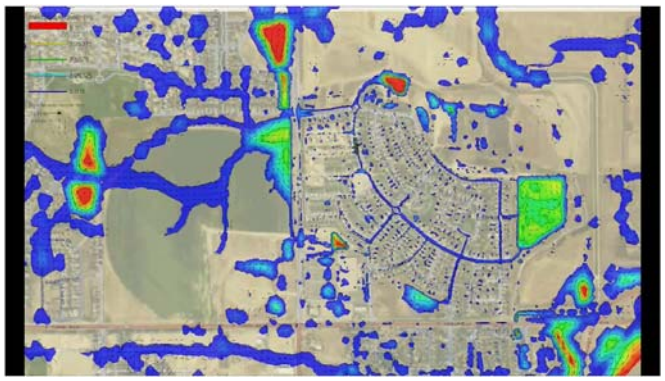


Figure 3 - June 6th Storm Intensity Graphed over Rainfall Depths from the NOAA 14 Atlas

Below is a video of a 2D rainfall and runoff model re-creating the event. A high resolution of detail was included around the neighborhood that experienced severe flooding.



VIDEO REMOVED by UDFCD

Contact Gerald Blackler with [Enginuity Engineering Solutions]() to request a copy.