Groundwater recharge investigation at the NCRIS Fowlers Gap Site in semi-arid western NSW

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Groundwater recharge investigation in semi-arid environments is frequently difficult due to a lack of suitable (or any) data. This lack of data was recognised in the NCRIS Groundwater Infrastructure Program and significant monitoring resources were installed at the UNSW Arid Zone Research Station at Fowlers Gap, 110 km northeast of Broken Hill. Monitoring at a remote facility, where rain may not fall for months, where temperatures frequently exceed 40 degrees, and dust is common, is particularly difficult! More so because the rain that does fall is often associated with high intensity and rapidly generates run off. To try and overcome some of these problems, a high density telemetered monitoring network has been installed that comprises 18 tipping-bucket rain gauges, a climate station, video monitoring of two creeks, level monitoring in the creeks and 12 groundwater monitoring bores located on the downstream outwash fan. Most of the data is uploaded daily using the Telstra 3G network. Daily checking of data allows equipment failure to be recognised and rectified. In January 2015, an exceptional rainfall event comprising three intense bursts of rainfall over a 36 hour period was successfully captured using the NCRIS network. The storm event produced a 2.5 m flood in Fowlers Gap Creek that caused over-bank flow and travelled many kilometres out over the plain before filling Lake Bancannia. We will present the results from monitoring of this event which greatly exceeded the previously highest rainfall in the 45 years of daily record available at Fowlers Gap. Data available so far (May, 2015) indicates that little groundwater recharge actually occurred, however a more complete set of data will be presented for the first time at the IAH/NCGRT conference.