CURRENT RESEARCH, DEVELOPMENTS, PROJECTS AND PROGRAMMES FOR NATIONAL GROUNDWATER RESOURCE ASSESMENT AND MONITORING (GRAM)

Title	Aim	Contact	Role-Players	Time Frames	Comments / Notes
National Climate Variability Monitor Programme.	Establish a national hydrological monitor program to observe short-term trends in groundwater recharge and saturation losses due to a climate change phenomenon.	**E van Wyk** vanwyke2@dwa.gov.za K Ngcubu T Chetty	Department Water Affairs (DWA) (National Office; Directorate: Hydrological Services and Regional Offices)	2009/2010-2014/2015	**S**ix (6) experimental Geosite's developed for Groundwater recharge estimations which are to be transferred to climate variability monitoring.
Transboundary Aquifer Monitoring Project.	Establish a representative monitoring programme on vulnerable transboundary aquifer systems as part of a SADC Water Sector initiative.	**E van Wyk** vanwyke2@dwa.gov.za Jan Makhetla (NothernCape) makhetj@dwa.gov.za Regional Director (North West).	Department Water Affairs (DWA) (National Office; Directorate: Hydrological Services) and the Governments of Botswana and Namibia.	2010/2012-2013/2014	**T**wo monitoring terrains have been identified; (i) the Kalahari-Karoo Aquifer Systems in the north-western Northern Cape (RSA-NAM), and (ii) the Ramotswa Dolomitic Water Area in the Northwest Region (RSA-BOT).
Acid Mine Drainage and Impacts on the Surrounding Dolomitic Water Areas.	Establish a groundwater level and quality monitoring network on 3 Witwatersrand Gold Mining Basins (Eastern, Central and Western).	**E van Wyk** vanwyke2@dwa.gov.za W Nyalungu. A Mabasa. T Moolman. N de Meillon.	Department Water Affairs (DWA) (National Office; Directorate: Hydrological Services and Gauteng Regional Office).	2011/2012-2013/2014	• Deep mine void monitoring requires high-end technical apparatus. Very dangerous operations and complex to verify results. Will probably require a special deep drilling operation to intersect mine voids at different elevations. • Re-**A**ssessment of the Gauteng DWA monitoring network (405 sites on 7 networks) for upgrading to real time monitoring.

Groundwater Management Plan for the Cradle of Humankind-World Heritage Site	Implementation of a groundwater monitor programme to support management of a dolomitic resource impacted by mining and agricultural impacts	**A Okonkwo** okonkwoa@dwa.gov.za E van Wyk M Musetso. T Moolman.	Department Water Affairs (DWA) (National Office; Directorate: Hydrological Services and external institutions (CSIR and GDACE)).	2009/2010-2010/2011	• All drilling operations completed (14 holes drilled). • **F**inal (draft) report by CSIR/CGS/WITS submitted for comments by the steering committee meeting.
National Groundwater Level and Rainwater Depth Monitoring Programme	Quantification of rainwater-groundwater interaction to qualify/quantify recharge figures using hydro-chemistry tracers in rainwater and groundwater and rainfall/water table responses.	E van Wyk. K Ngcubu. **W Nyalungu** nyalunw@dwa.gov.za De Meillon.	Department Water Affairs (DWA) (National Office; Directorate: Hydrological Services and Regional Offices)	2000/01 – 2014/2015	• Phasing into the climate variability monitoring project. • Special development towards real time groundwater levels and rainfall depths monitoring.
National Groundwater Quality Monitoring Programme (NGwQMP). Consisting of: Hydro-chemistry (2* annually), environmental isotopes (2006 and 2011), radioactivity (2007), and toxicity (2008) uploaded to DWA's WMS	Building a long-term Groundwater Hydro-chemistry information data base for future determination of national reference conditions for groundwater resources assessment and management. Maintenance and special additional developments of CHART linked to WMS for interpretation and presentation of NGwQIMP data.	E van Wyk (assess). T Moolman (sampling) O de Beer (CHART). N Dlangisa (WMS). E Bertram (training). IT Systems (M&D).	Department Water Affairs (DWA) (National Office; Directorate: Hydrological Services and Regional Offices) and IT System's Project Manager and Analyst/Developer	1993 – 2012 (To include One Full 19 year climatological cycle).	• **A**ll hydrochemical data is available on the CHART platform. • **D**evelopment and implementation of the hydrogeochemical (isotopic signature) components in conjunction with the Isotope Hydrology Project of the WRC.