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WATER AND SANITATION FOR ALL: PARTNERSHIPS AND INNOVATIONS

Geohydrological approach for intergrated planning

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THE CHALLENGE OF the water industry in South Africa has been confirmed: to supply up to 19 million people with water up to a 200m walking distance with 25 litre per day as absolute minimum Government should not play the role of the implementing agent but must rather increase its role as monitoring and auditing agent, and to supply Local Government with support to plan and implement. With a stretched capacity of Geo-personnel in government and basically no capacity in Local Government, our approach needs to be something special to develop sources for implementation without any professional "mistakes".

The integrated planning process addresses various topics, i.e. Infrastructure, Demographics, Environmental, Information Systems, Landuse, Surface Water, Groundwater and many more. As a major source in a water scares country groundwater development needed to be treated with the respect it deserves.

The philosophy is to plan at local government level for each area that logically groups together as a planning unit. These area planning forums must be provided with sufficient information that they as laymen can understand to allow them to make intelligent planning and implementation decisions and to produce an area plan for the development of these water sources.

Method

The methodology is to use all existing groundwater products, simplify the results, include local knowledge and experience from the private sector and prepare a groundwater planning manual that will put any person in a position to make intelligent decisions on the kind of source to use for any specific community or groups of communities. Information from the following topics is used for the manual.

Demographic maps with each community needs assessment information.

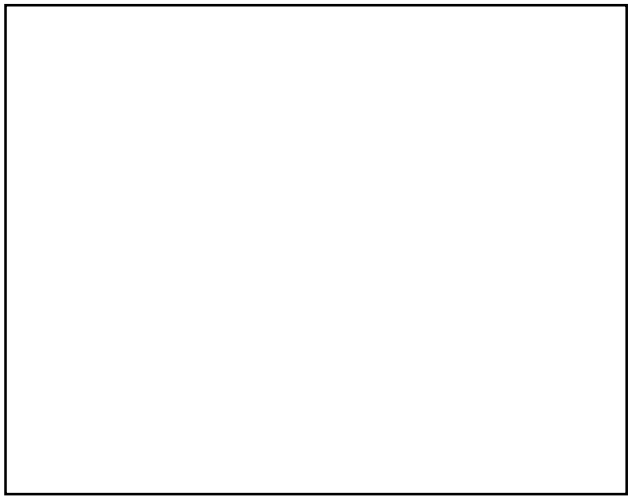
Other information like population and water demand is also coupled to the map on a road map information manner.

Simplified geological maps with only the major rock types to reflect the aquifer type and drilling conditions. Geohydrological units and average yield maps are overlaid with short descriptive notes of each. All existing problems are used e.g. "Vegter Maps".

Groundwater potential maps is used with scriptures to explain the different areas of low to high potential for groundwater usage. A structural overlay is used to highlight possible exceptions.

Groundwater chemistry maps reflects the chemistry of the four main contributors name nitrate, TOS, fluoride and chloride. As many existing borehole chemistry as possible is used. Each borehole is represented by a circle with four quadrants. Each quadrant represents one of the four elements, coloured from blue, green, red and purple to reflect respectively the quality class of water, from very good to very bad. Poligons with 60 per cent

Yield distribution per yield area



representatively are then drawn to indicate possible quality limitations (again existing guidelines are used).

Groundwater planning maps are the end result. Here we took all previous information and compile an area map to indicate each committee's advantages and/or restrictions in the use of groundwater.

- The area of influence is shown by a circle around the community, this is derived from the water demand and harvest potential.
- Possible number of holes to be drilled from the average yield and borehole prospects maps.
- The most possible class of water from the chemistry map. If the circles from the above overlap than an area or regional supply has to be investigated.

Other topics directly associated are a cost model that uses all the above information, an information system, environmental issues on pollution sensitivity and similar manuals for all the other integrated planning topics. Area planning consultants then uses this information and together with local government re-evaluate and validate the data. The namual is then used with all the other topics of the planning strategy to give direct guidance during the identification and phases before project selection takes place. Time spend on pre-feasibility and feasibility studies will be drastically reduced with the production of the manuals on an area planning basis.

Conclusion

It is possible to support local Government in integrated planning with a national approach with a technical subject like geohydrology. What is of paramount importance is not the maps or the books but the process and the recipe. This process can be duplicated to other developing countries to assist in area planning and the integrated planning approach.

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