

DATA ON GROUNDWATER

Groundwater has been used in Mauritius as from the eighteenth century from large diameter dugwells. Groundwater exploration and exploitation started in the 1960's and since then has been intensively developed.

There are five main aquifers in Mauritius which account for most of the groundwater resources of the country. The annual groundwater recharge has been estimated at 370 million cubic metres. The groundwater utilisation as at October 2005 was of the order of 150 million cubic metres per year. The contribution of groundwater to the potable water supply was about 51 %.

Groundwater exploration

Since the early 1960's to October 2005, 1649 wells were drilled for different purposes. Table 4.1 lists the number of wells drilled in the stated period.

Period	Number
1960 - 1970	152
1971 - 1975	448
1976 - 1980	350
1981 - 1985	178
1986 - 1990	119
1991 - 1995	148
1996 - 1999	131
2000-2005	123
Total	1649

Table 4.1 – Number of wells drilled from 1960 to 2005

The different types and purposes of the 1649 wells are given hereunder in Table 4.2

<u>Diameter</u>	<u>Type of Well</u>	<u>Number drilled</u>	<u>Purpose</u>
Less than 100 mm	Corehole	447	Geology/Groundwater investigation
150 – 200 mm	Small well	505	Irrigation/Hand-pump Scheme
Greater than 200 mm	Borehole	595	Domestic/Industrial
10-12 feet	Dugwell	102	Domestic/Industrial/Irrigation
	TOTAL	<u>1649</u>	

Table 4.2- Types and purposes of existing wells.

Out of the 1202 boreholes/small wells/dugwells, 376 are presently in use for domestic, irrigation and industrial water supply. The Central Water Authority operates 97 groundwater pumping stations.

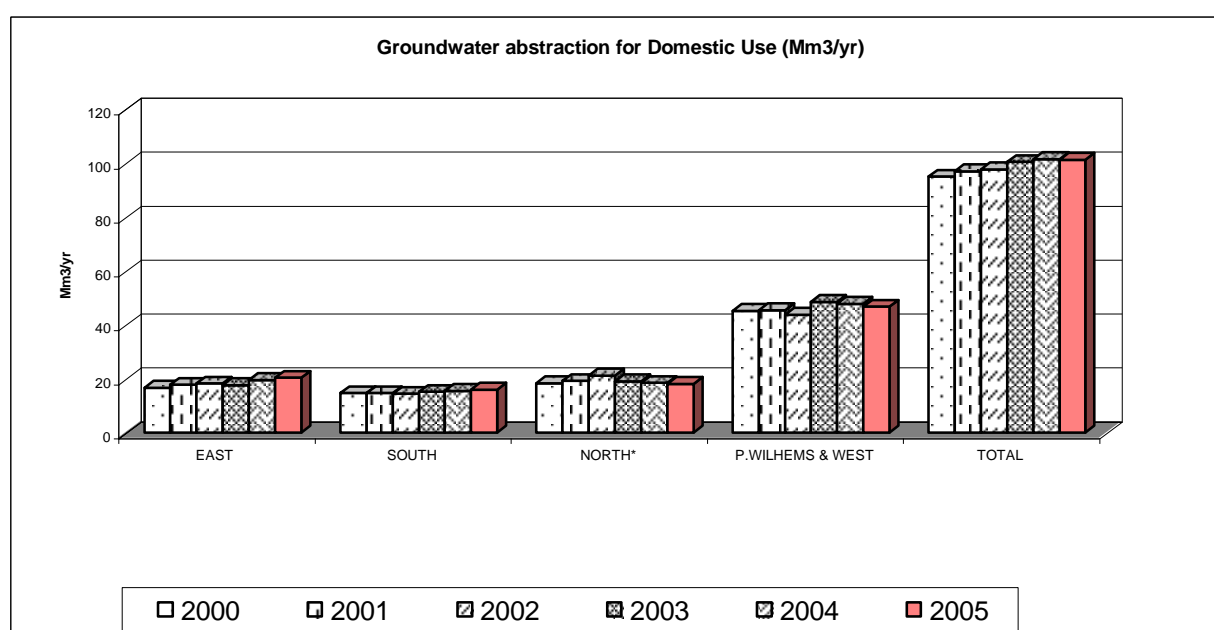
Groundwater exploitation

Table 4.3 shows the distribution of the CWA pumping stations in the water supply system of the island:

<u>System</u>	<u>No. Of Pumping Stations</u>
MAV Lower	27
MAV Upper	8
Port Louis System	8
DWS - (East)	7
DWS - (South)	12
DWS - (North)	36
TOTAL	<u>97</u>

Table 4.3 – No. of pumping stations in different water supply systems.

The chart below (Fig 4.1) shows the ground water abstraction for domestic use.



*La Louisa borehole off, since March 2003

Fig. 4.1 – Groundwater Abstraction

Table 4.4 indicates the estimated volume of 150 Mm³ of groundwater used by different sectors of economy in Mauritius as at October 2005.

Ground water utilisation	Volume (Mm³)	No. of Boreholes
Municipal (Domestic, Tourism)	115	113
Industrial	11	131
Agricultural	24	148
TOTAL	150	392

Table 4.4- Groundwater Utilisation

During the period Nov.1999 to Oct.2005 nine boreholes were drilled and commissioned, increasing the groundwater production by some 19,980 m³/day. A list of seven boreholes commissioned is given in Table 4.5.

No.	Location	Code	Tested Yield m ³ /hr	Area Supplied	Remarks
1	Beau Bois	825	45	North	
2	Beau Bois	871	88	North	
3	Chamarel	796	18	MAV	
4	New Yemen	853	136	MAV	
5	Trianon No 2	903	135	MAV	
6	Melrose	900	340	East	
7	Nouvelle France	960	70	South	

Table 4.5 – Boreholes commissioned during period 1999 to 2005

Fresh water-Sea water Interface

To monitor coastal aquifers, conductivity and salinity profiles are observed in 29 locations in the coastal regions. Below is a graph showing fresh water – sea water interface at Sottise, in the Northern part of the island, about 700 m from the sea.

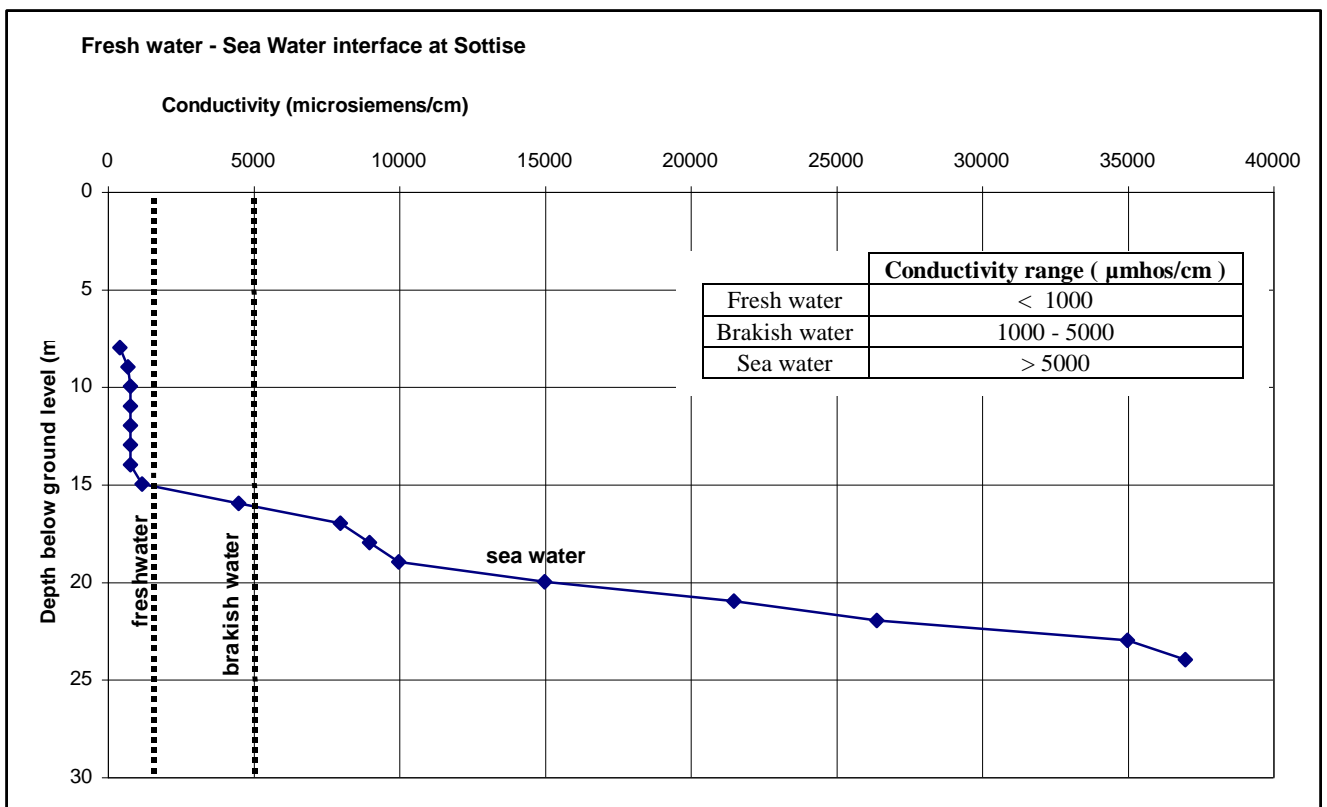


Fig. 4.2 Fresh water – Sea Water interface at Sottise

Data Loggers

Twenty boreholes in Mauritius are equipped with data loggers (Fig. 4.3), including one at Camp Thorel which is fitted with a GSM System and can be interrogated from the Water Resources Unit Office at Rose-Hill. A data logger is an electronic device that measures water level, temperature and conductivity by means of a pressure-measuring cell. This cell measures the hydrostatic pressure of the water column via a capacitive pressure diaphragm and converts this measured value into an electrical signal. The data logger is integrated in a probe that stores the measuring values in pre-set intervals and is connected to a standard logistic unit via a connecting cable. The data are stored in the internal memory of the probe. Data are downloaded via the logistic unit using a Hydrum Unit and then transferred into the database of the computer.

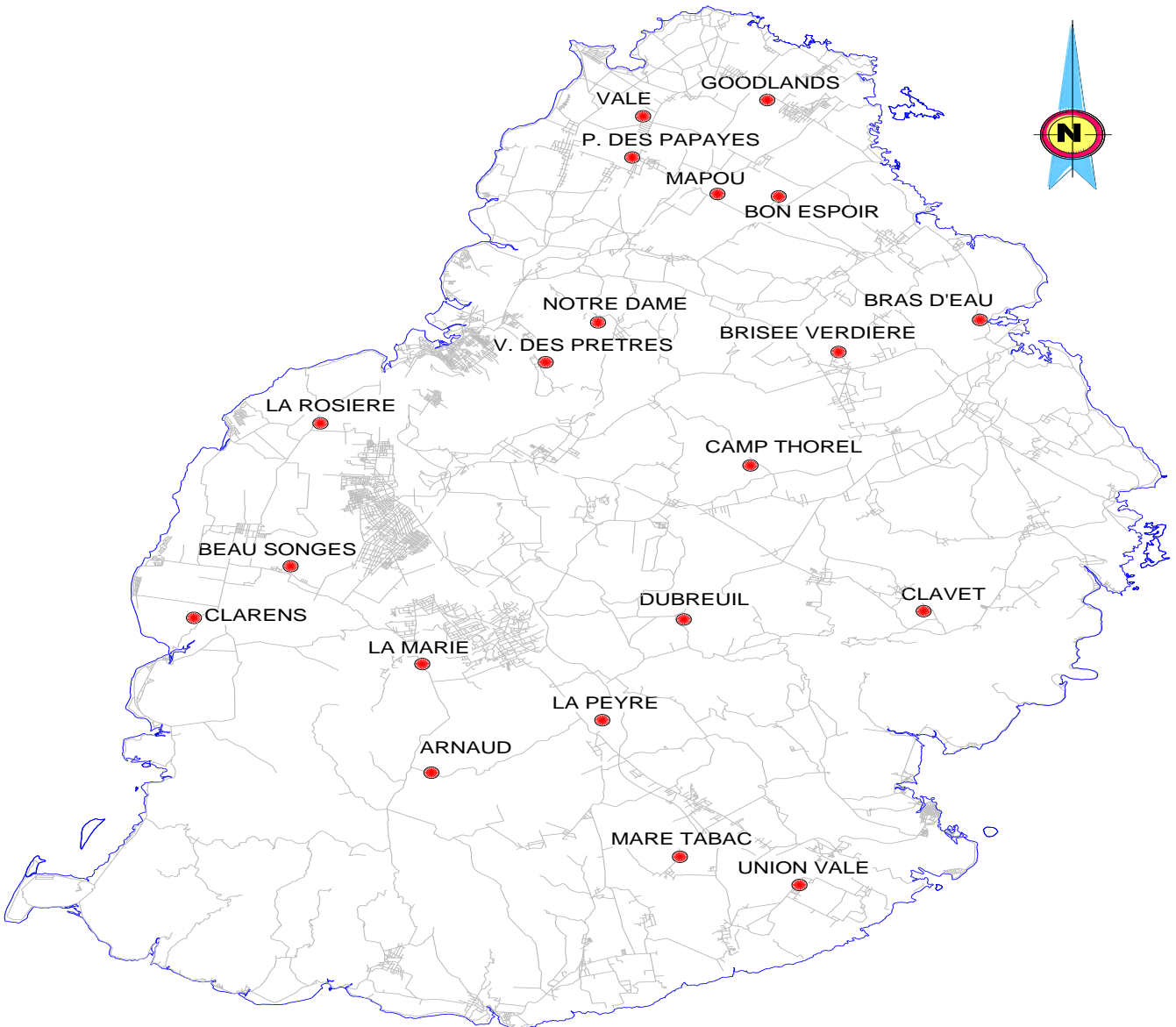
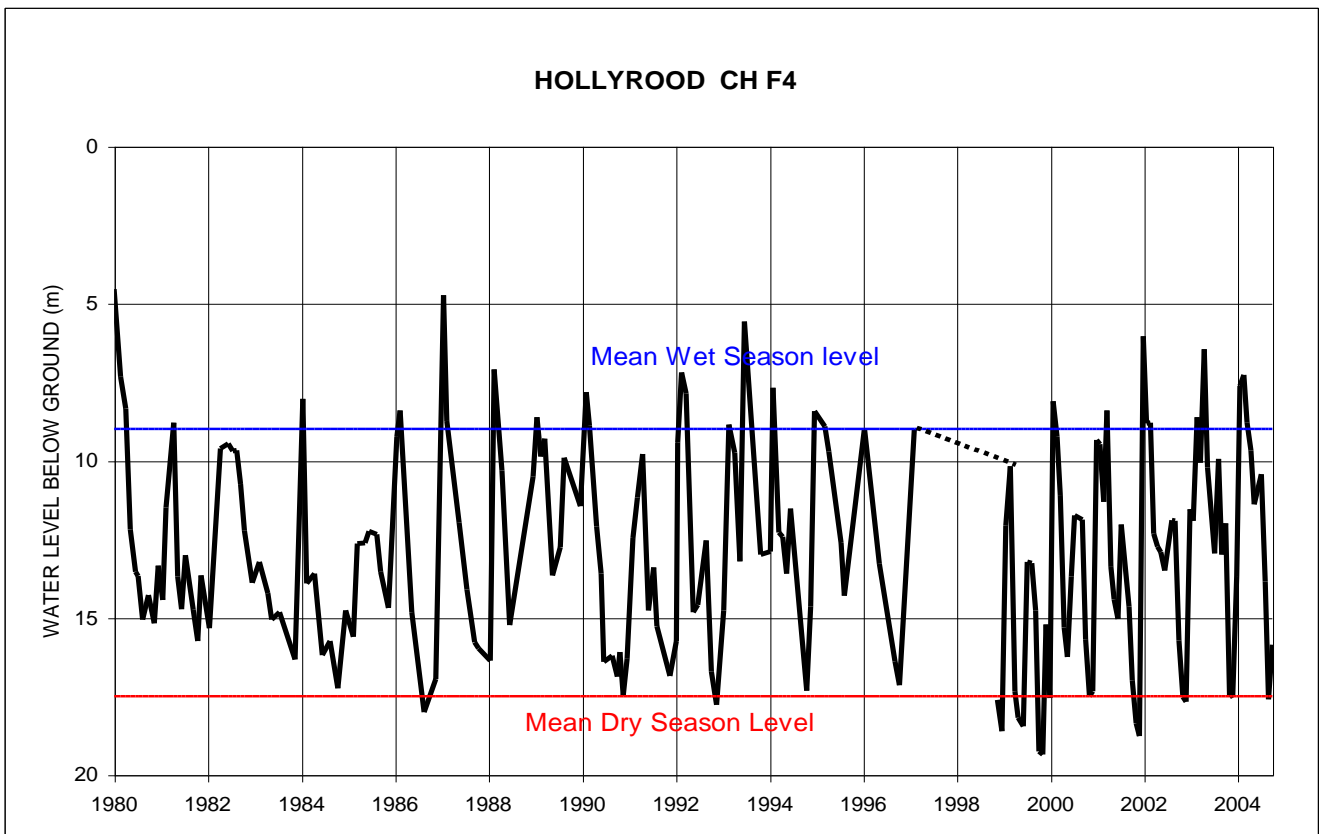
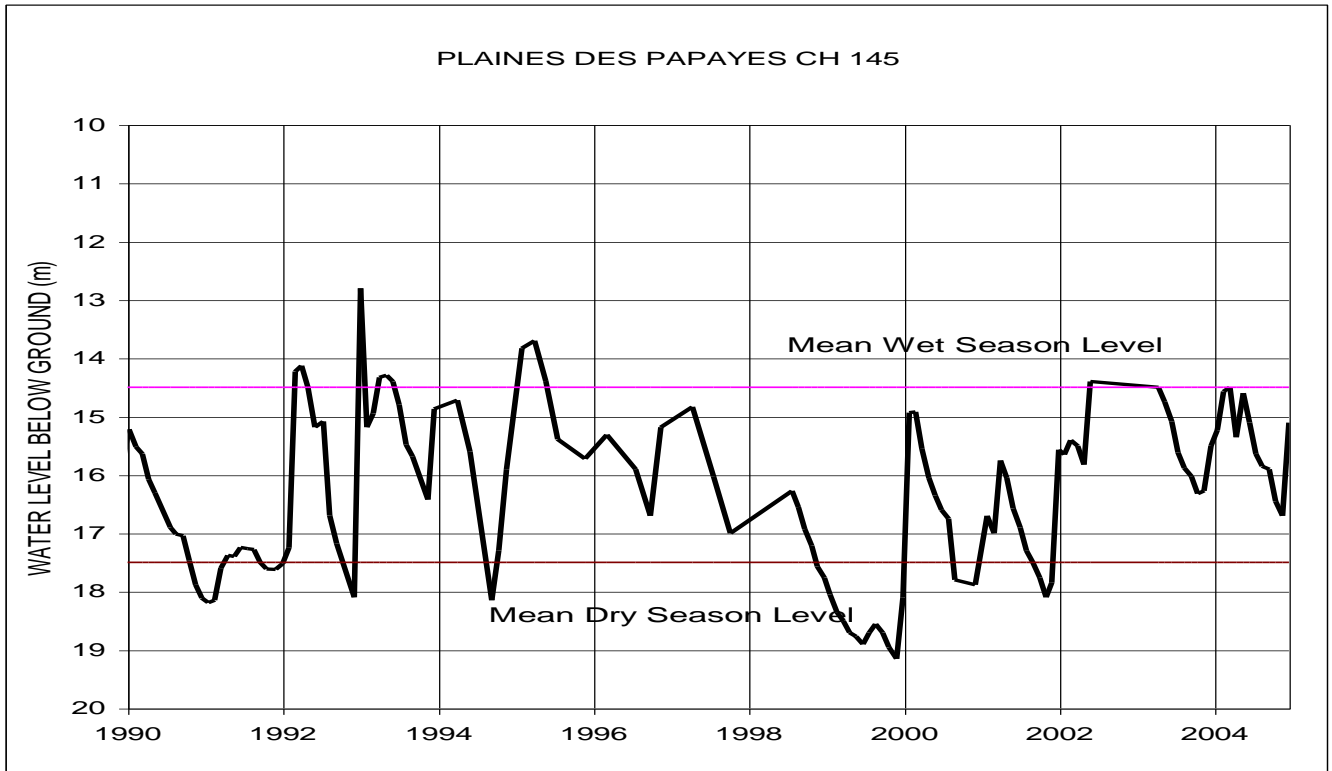


Fig. 4.3 Location of Data Loggers in Mauritius

Piezometric Level Variation

Groundwater levels (piezometric levels) are observed at 350 locations. The piezometric level variation for 4 observation wells is illustrated in Fig. 4.4 below. Tables 4.6 and 4.7 indicate the well characteristics, variation in piezometric levels and their uses



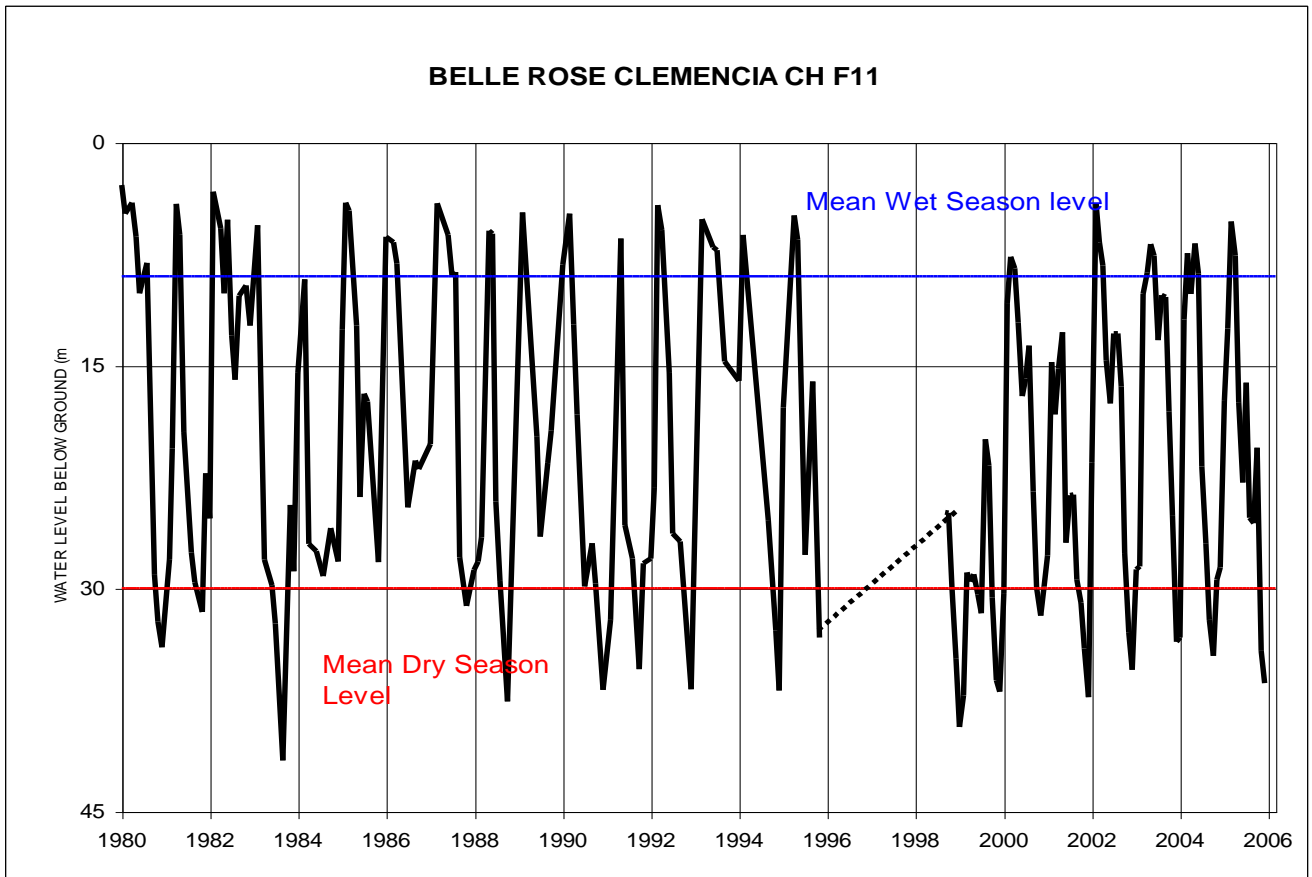
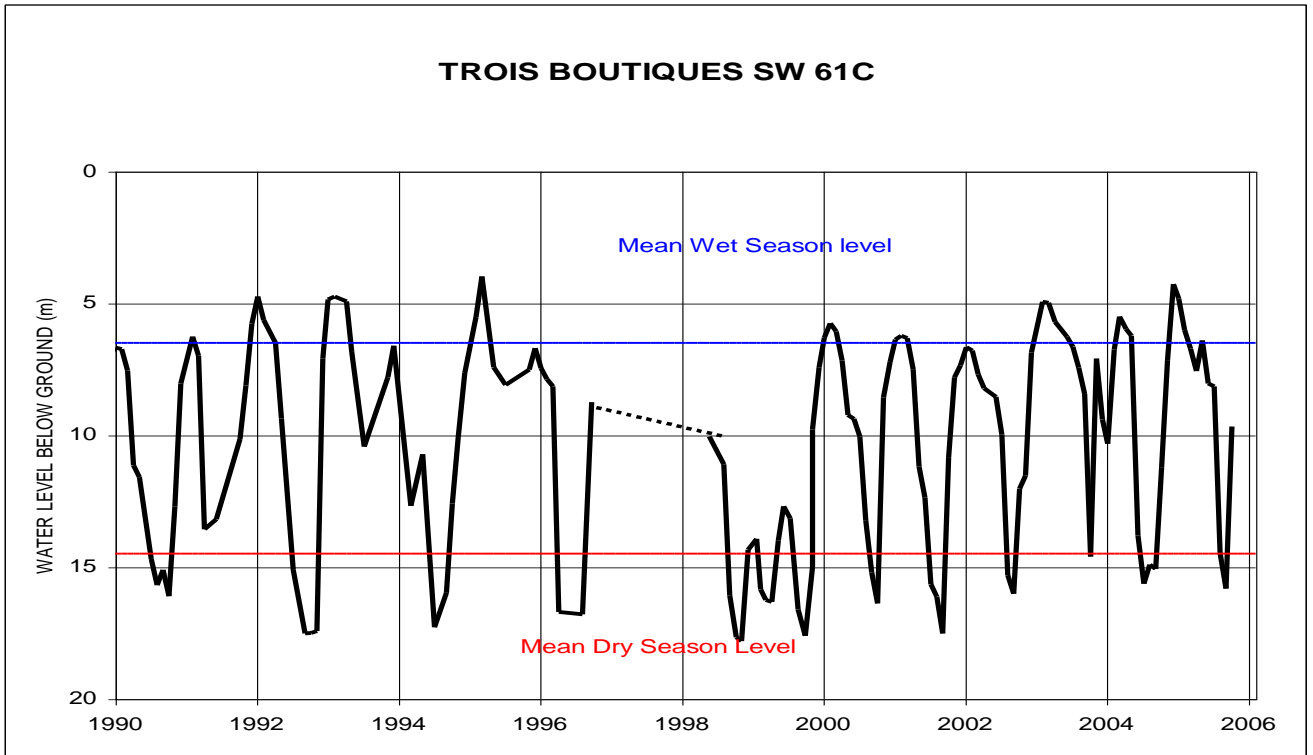


Fig. 4.4 Piezometric Level Variation

Fig 4.5 depicts the mean groundwater level contour map which is prepared using the various piezometric levels collected throughout the island.

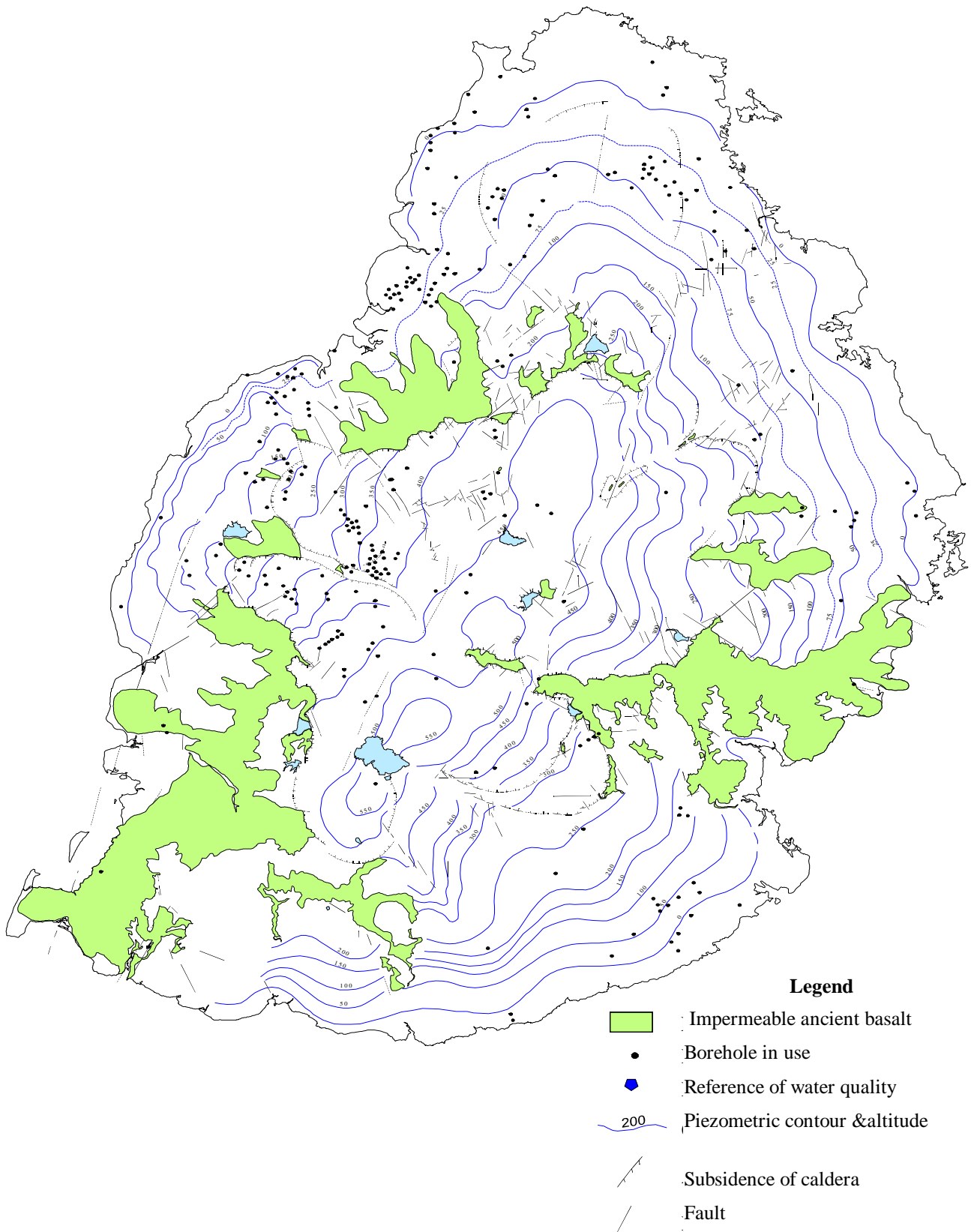


Fig. 4.5 – Groundwater level contour map