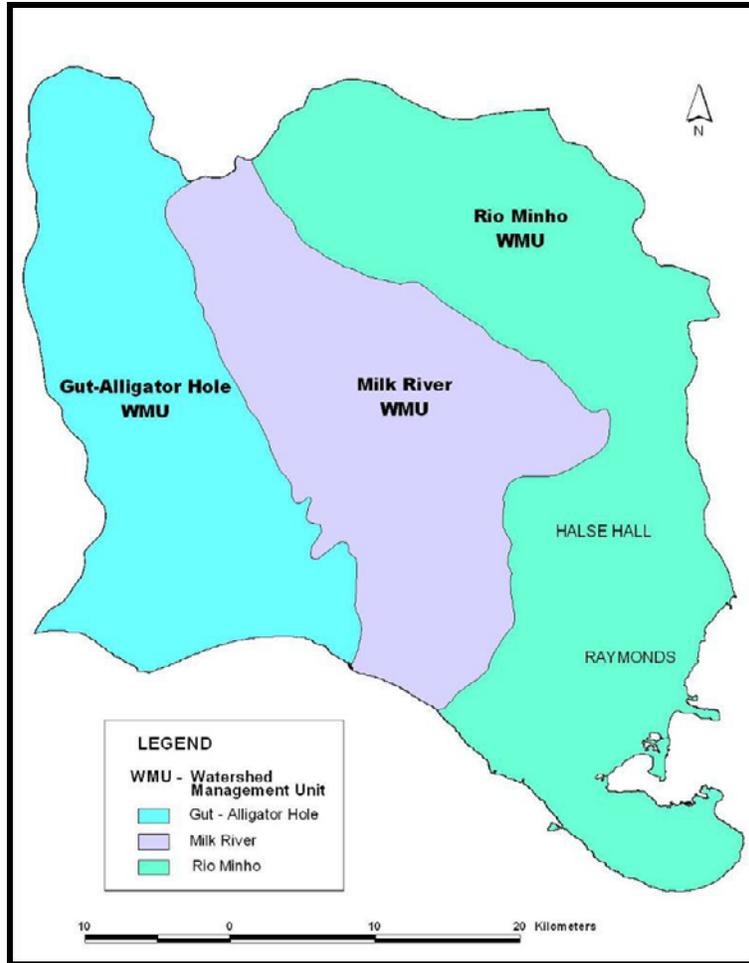
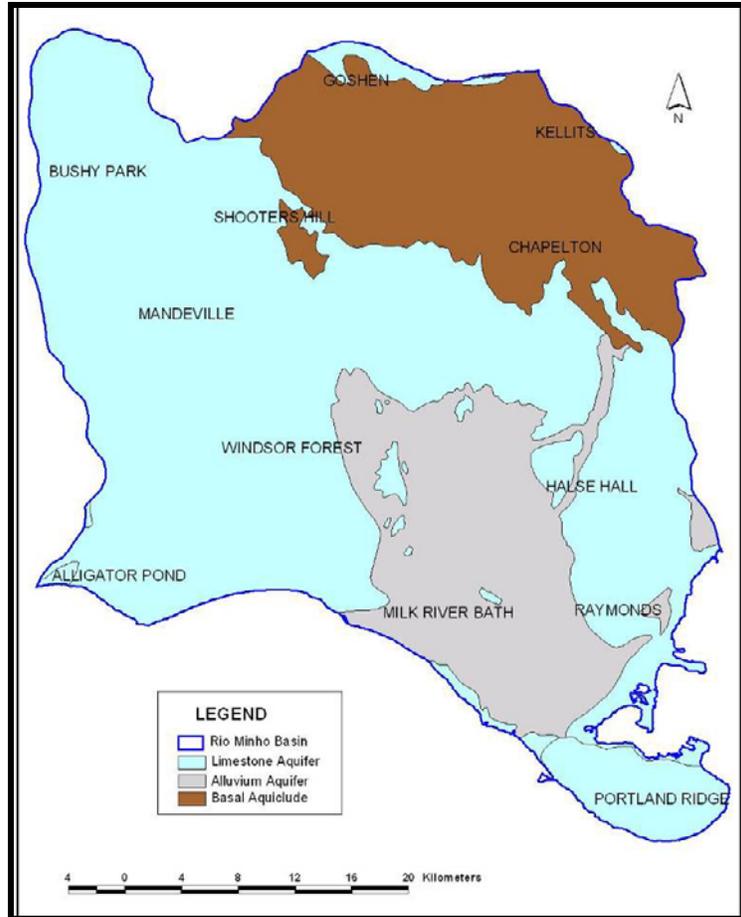


**FIGURE 3-4: BASIN LOCATION**



**FIGURE 3-5: Basin Watershed Management Units**

The Rio Minho Hydrologic Basin extends over an area of 1,705 km<sup>2</sup> (Figure 3-4). The Basin is subdivided into 3 sub-basins and 3 hydrostratigraphic units (Figure 3-6). Table 3-3 below summarizes the area for each catchment.



**Figure 3-6: Hydrostratigraphy Map of Project Areas**

**TABLE 3-3: AREAS of the Hydrostratigraphy Units of the Sub-divisions of the Rio Minho Hydrologic Basin**

Sub-basins	Hydrostratigraphic Units (km <sup>2</sup> )			Total	Percent
	Basement Aquiclude	Limestone Aquifer	Alluvium Aquifer (Aquiclude)		
Upper Rio Cobre	362	31	NIL	393	23
Clarendon Plains	6	528	415	949	56
Manchester Highlands	NIL	358	(5)	363	21
Total	368	917	420	1,705	----
Percent	22	54	24	----	100

### **3.3.1.2 HYDROGEOLOGIC CHARACTERISTICS**

The REFINERY is located within the Clarendon Plains subdivision (Rio Minho Watershed Management Unit) atop the limestone aquifer (Figure 3-7). The limestone formation is a member of the White Limestone Group of Tertiary Age (7-28 million years). The alluvium of Pleistocene Age (2 million years) has been deposited atop the limestone (Figure 3-8).



**FIGURE 3-7: Location of REFINERY**



**FIGURE 3-8: Geology of Area**

The White Limestone acts as a single hydrogeological unit. The main member the Newport Formation covers most of the Rio Minho basin to a considerable depth. It outcrops in the hills of the Braziletto Mountains and underlie the alluvium of the plains, where it is the principal source of groundwater. The exact thickness of the limestone is not known but the UNDP/FAO water resources project estimated that in the southern area of the basin the thickness exceeds 1,200 metres as proven by an exploratory oil well drilled at Portland Point.

The primary limestone formation under the refinery is the Newport Limestone Formation. This formation extends throughout the Rio Minho Basin and is the major aquifer that provides water to the wells that support irrigation, domestic and industrial water in the parish. The Newport is essentially a micrite and in its lowest horizon is characterized by an abundance of corals. The majority of the monitor wells drilled by Jamalco penetrated the middle to lower horizons of the Newport Limestone as marked by the abundance of fossils such as gastropods, corals and bivalves.