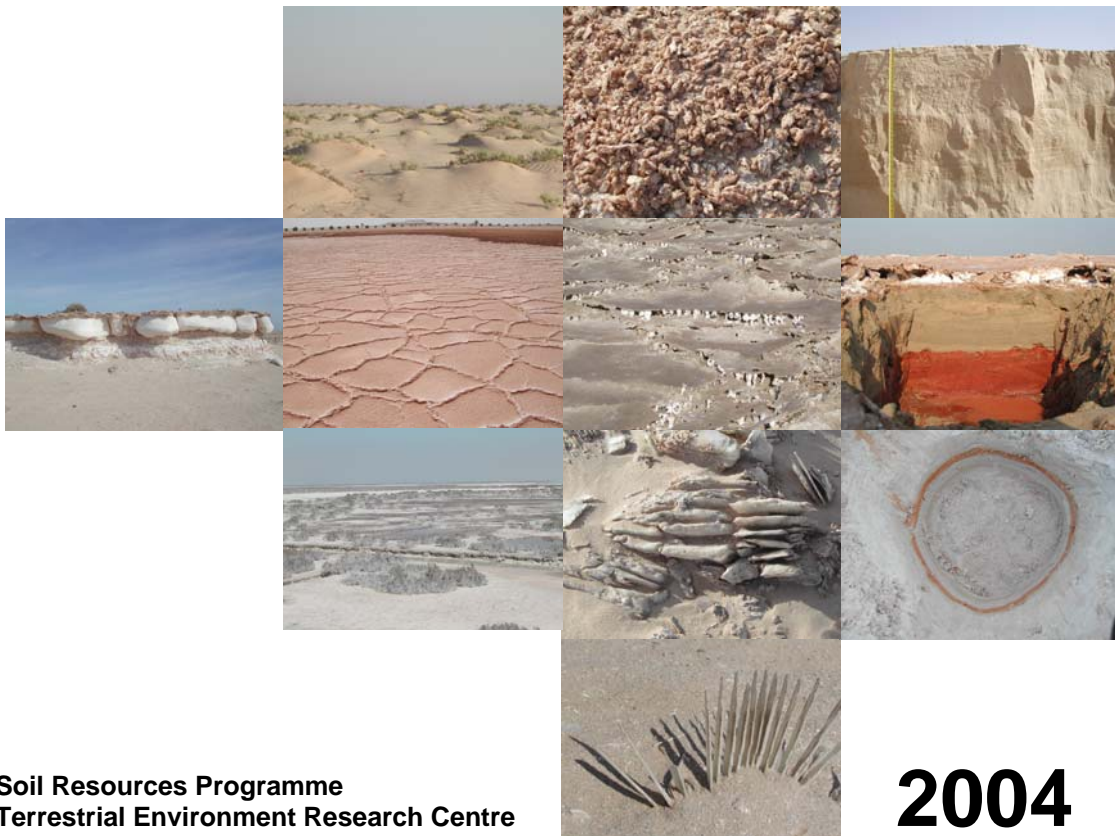




Environmental Research and Wildlife
Development Agency

Soil Survey for the Coastline of Abu Dhabi Emirate

Executive Summary



Soil Resources Programme
Terrestrial Environment Research Centre

2004

SOIL SURVEY FOR THE COASTLINE OF ABU DHABI EMIRATE

What is a Soil Survey?

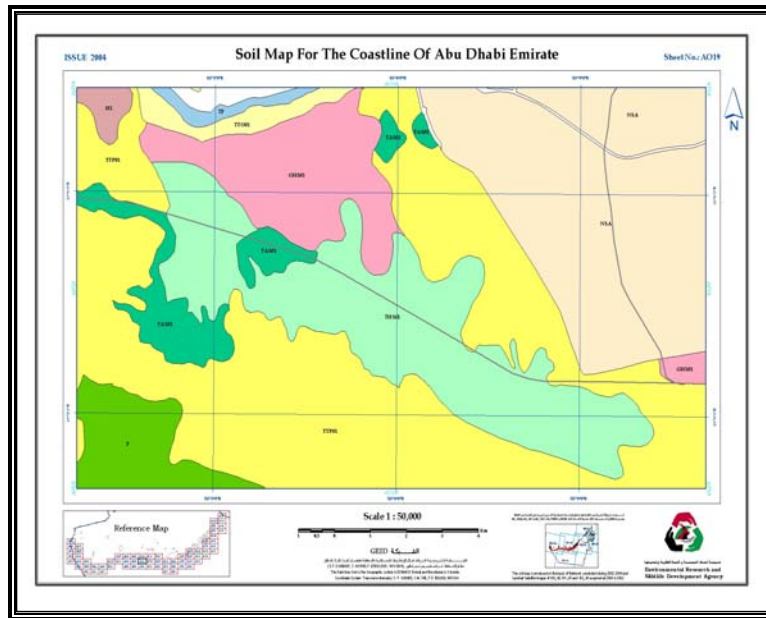
A soil survey is a multi-purpose, science-based inventory of soil resources. It generates important information about precious soil resources, a major prerequisite for land-use planning and sustainable development. Without this important tool, inappropriate or sub-optimal use of land and natural resources may occur, leading to wasted effort and money, and possibly the provocation of environmental destruction and degradation.



ERWDA's Soil Survey team during fieldwork

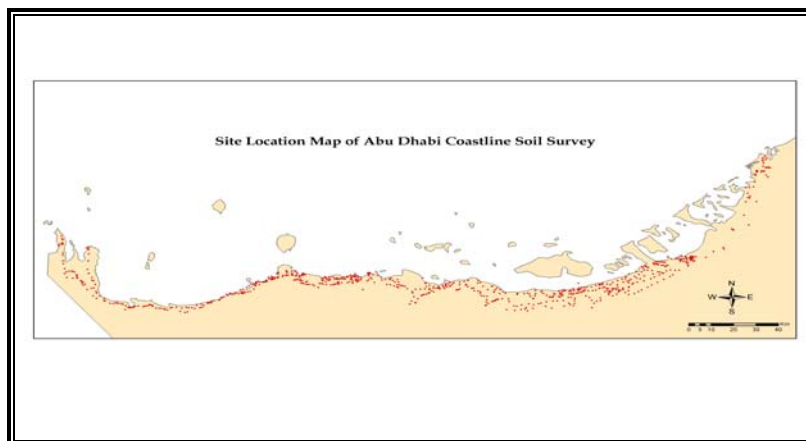
Soil Survey in the UAE and ERWDA's Vision

Unlike other GCC countries, such as Saudi Arabia, Kuwait and Oman, there has been no comprehensive and systematic soil survey of the UAE. Recognizing this gap, ERWDA has taken the lead and prepared a 5-year implementation plan for a soil survey of the entire Abu Dhabi Emirate. Given the scale of the undertaking, it will require strong government commitment and adequate resources. In order to demonstrate the benefits of soil survey, ERWDA has implemented a pilot scale survey of the entire coastline of Abu Dhabi Emirate, i.e. an area of roughly 5.4 % of the emirate.



Soil map for part of Abu Dhabi Coastline

The coastlines of any country are highly valuable but sensitive and vulnerable areas, from both developmental and environmental perspectives. It is for this reason that ERWDA has selected the coastline as a priority area, something also linked to past and previous efforts to define and map the sensitivity of the coastal areas to the impacts of development, pollution, erosion, etc.



Location of the observation points throughout Abu Dhabi coastline

How the Abu Dhabi Coastline Survey action plan was implemented

In 2002, ERWDA established a Soil Resources Department within its Terrestrial Environment Research Centre; scientists were recruited and basic field and laboratory facilities were set up. The soil survey team established an action plan sub-divided into six well structured tasks as below:

- Task 1: Mobilization and preparation
- Task 2: Soil mapping
- Task 3: Soil maps and GIS database
- Task 4: Laboratory soil investigation and analysis
- Task 5: Capacity building of UAE nationals
- Task 6: Documentation and reporting

The above tasks were completed in less than two years, and a state-of-the-art survey report completed in two volumes (Reconnaissance Survey, Volume 1 and Soil Maps, Volume 2). The coastline of the Emirate of Abu Dhabi was surveyed using the latest norms and standards of the United States Department of Agriculture (USDA) and by using satellite images acquired in 2002. The USDA system has been used in more than 75 countries of the world including the GCC countries mentioned above. The present survey is, however, unique because it uses the most recent USDA Soil Taxonomy (1999).



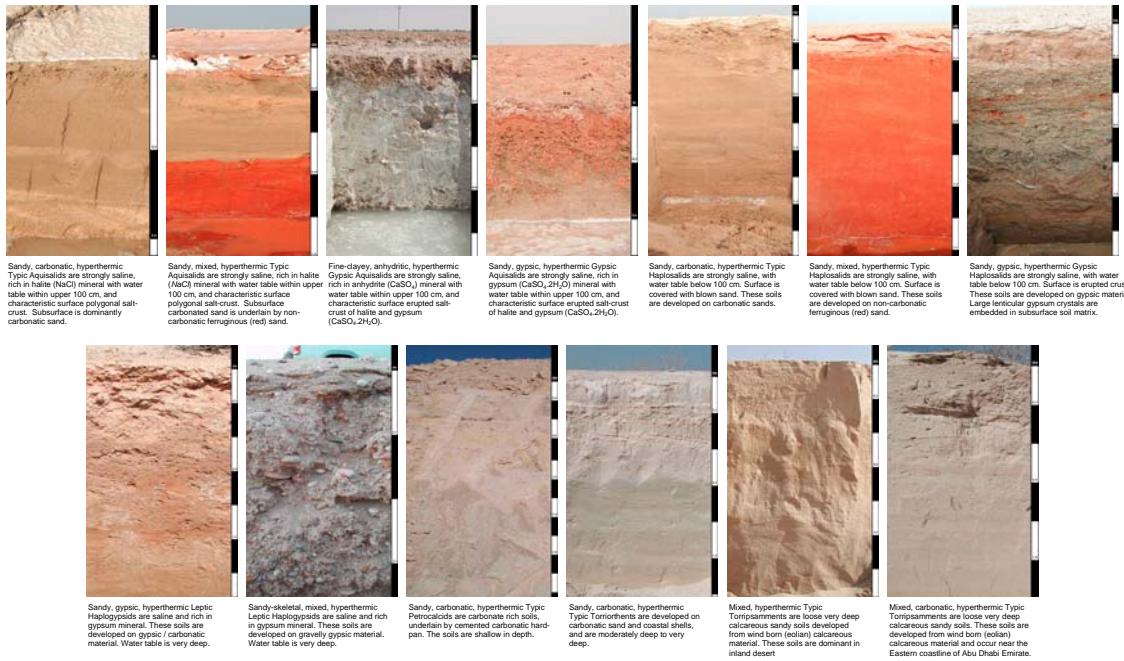
In depth soil description for typical profile

What the Coastline Survey contains

The soil survey for the coastline of Abu Dhabi Emirate reveals that a rather uniformly looking landscape in fact presents a diversity of sub-surface features that help to categorize the soils into thirteen different classes. Even more soil classes are expected in the interior, with corresponding potential for use. The coastline survey also highlights areas where minerals such as halite (NaCl), anhydrite (CaSO₄) and

Gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) occur. The survey report presents an introduction to the surveyed area, the methods used for field soil mapping and laboratory investigation of soils, description and classification of soils, map units and their description, and a soils database. The coastline of Abu Dhabi Emirate is divided into 220 soil polygons covering an area of 377,045 hectares. General soil maps have been prepared at a scale of 1:50,000.

Soil Types in the Coastline of Abu Dhabi Emirate



Benefits and Uses of the Coastline Soil Survey

Considerable amounts of information are presented in this state-of-the-art coastline survey of the Emirate of Abu Dhabi. Users can interpret geo-referenced information to predict soil behaviour under different land-use planning scenarios. Many institutions, including the Municipalities, Town Planning Departments, Ministry of Agriculture and Fisheries, academic and research institutions, etc., will benefit from this work and its reports. The successful implementation of the coastline survey enriches ERWDA's capabilities and provides a blue-print for undertaking an expanded soil survey of the entire emirate. The soil survey has facilitated the transfer of science-based facts and knowledge on a sector of major importance to decision-makers.

Conclusions

Abu Dhabi Emirate is presently going through a significant phase in its development, a process that not only requires but will benefit from detailed information on the soil and its characteristics. With this information in hand, decision-makers will be able to

plan with confidence, knowing that development is based on sound information and in doing so reduce the risk of wasted effort and unnecessary environmental degradation. As a pilot project, the coastline survey is an excellent example for a full scale soil survey of the entire emirate.