

## IAH network on “Coastal aquifer dynamics and coastal zone management” QUESTIONNAIRE

IAH national committees, IAH members and non members from all around the world involved in SWI and SGD research and management are kindly asked to fill in the questionnaire in this page with as many details as possible.

A world database will be set up and made available, with basic coastal aquifer main characteristics.

We expect to gather standard and comparable information on the knowledge level and hopefully the state of the art of the research on SWI and SGD, and coastal aquifer management methods adopted around the world

- |     |   |  |
|-----|---|--|
| 1)  | Location of aquifer (country, more specific location):  | coastal district Thatta, Sindh, Pakistan   |
| 2)  | Reported by:  | Saeed Ahmed Bablani and Saeed Ahmed Soomro   |
| 3)  | Type of medium (karst, porous, fracture)  | Porous   |
| 4)  | Type of aquifer (phreatic or confined)  | Shallow aquifer system   |
| 5)  | Main lithology - (e.g. gravel, sand and clay)   | Sand and clay  |
| 6)  | Hydrochemistry: fresh or saline   | Hyper saline   |
| 7)  | Saltwater intrusion: lateral from sea or lakes - upconing   | Lateral seawater intrusions into groundwater system  |
| 8)  | Aquifer geometry: hydraulic characteristics   | Quite variable thickness   |
| 9)  | Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually)  | Annual rainfall in a normal year is about 200 - 400 millimeters (mm)   |
| 10) | Depth of aquifer (water level and bottom) - water level 5-30 m - aquifer depth - 50-200 m   | Very shallow water level (1-5 m) and aquifer depth ranging from 2-10 m.  |
| 11) | Major chemistry (anions - ?; Cations - ?):  | Cl, HCO <sub>3</sub> TDS, EC   |
| 12) | Major salinity sources:   | Seawater   |
| 13) | Population:   | The population of Thatta District was projected in the year 2008 at 1.469 million  |
| 14) | Aquifer status: special features - e.g. thermal springs, major faults,...   | Confined and unconfined aquifer system.  |
| 15) | Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical),                                       | Isotopic, chemical analysis and geophysical survey were applied  |
| 16) | Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD) | Chemical and isotopic methods, Geophysical resistivity method  |
| 17) | Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal)                                    | The water sampling network based on installation of six piezometers, two each at Sujawal, Jati and Shah Bundar area was established. In addition to this drill log of all piezometers and surface geophysical resistivity method were also used to compare and correlate the results of seawater intrusions and their variations during Dry and Wet seasons of the years 2002 2003 & 2003 2004 |
| 18) | Management methods:   | No method has been applied to reduce seawater intrusion.   |
| 19) | Aquifer management actions:   | No action is suggested for aquifer management in the area.   |
| 20) | Identification of existing or potential problems:   | Due to large mixing of seawater into groundwater, the coastal aquifer system has been polluted at alarming level and environment & ecosystem have been damaged in the region   |
| 21) | Annexes:  |  |
| 22) | Observations:   | Coastal communities are suffering a lot and it has increased migration , poverty and health issues in local people. Coastal erosion has uprooted many villages in coastal areas and agriculture, livestock, wildlife, fishing, revenue sectors are declining day by day.   |