

Block –IX

Location and Accessibility

- Serial Number 40L/6 (Toposheet)
- Name/Block Block-IX, Katan
- Area 100 sqkm
- Latitude $24^{\circ}30'25''\text{N}$ and $24^{\circ}35'55''\text{N}$
- Longitude $70^{\circ}26'20''\text{E}$ and $70^{\circ}30'30''\text{E}$

The approach to this Block is through Mithi, a town situated at a distance of 380 km from Karachi via Thatta-Badin metalled road. The town of Mithi can also be reached via an alternate route, that is, Hyderabad-Mirpurkhas - Naukot-Nagarparkar road. Then, from Mithi onwards to Block-IX, a distance of about 74 km is covered towards east on the main metalled road that leads to Nagarparkar, an important town lying in the southeast near border with India.

Relief & Topography

Since Block-IX is a part of Thar Desert, the topography of the terrain covering this Block is generally similar to the topography of the whole Tharparkar district. This is characterized by typical aeolian deposits. The whole area is covered by numerous longitudinal sand dunes stabilized by growing herbs and shrubs, with intervening narrow and broad valleys, both trending NE-SW. Besides inter-dune valleys, there are flat tracts of land present in Block-IX, just as at several locations in rest of Thar Desert. Full-grown trees are found scattered over these tracts of flat and slightly undulating surfaces. The dunes are longitudinal, ranging in relief from tens of meters to hundreds of meters.

Water Resources

Surface water

Owing to very little rainfall and dry hot climate coupled with sandy desert land, virtually no traditional resources of surface water, such as rivers, lakes, dams, reservoirs exist in Tharparkar District.

People have dug large pits in the impervious clays at certain localities that are filled during the occasional rains, particularly in the monsoon season, which can cater to the needs of the population and livestock for potable water for a few months.

However, according to Records of Geological Survey of Pakistan, vol.115, 2002, the possible sources of surface water for use in the proposed power plants could be: (i) Left Bank Out Drain (ii) Jamrao Canal and (iii) the marshy land area in the Rann of Kutch. Left Bank out Drain is a channel which has been constructed to drain about 4000 cusecs of saline water to the sea from the waterlogged lands in Sindh. This drain passes by the Thar coalfield at a distance of 120 km. This saline water could be channelized to the proposed power plants where it can be used for various purposes except drinking. Besides, there is another source of water, again about 120 km away, the Jamrao Canal, which is an irrigation canal originating from Sukkur barrage that can supply fresh drinking water to the area. The marshy lands of Rann of Kutch towards the south, only 35 km away, can also become a substantial source of water, though very saline.

Groundwater

According to the hydro-geological investigations carried out by GSP (Records of Geological Survey of Pakistan, 2002, vol.115) a number of water wells that produce brackish water are present in the flat low-lying inter-dune playas. Some tube wells are also present. According to them drilling of boreholes has revealed the presence of three aquifers at variable depths: first above the coal zone, second within the coal zone and third beneath the coal zone.

Aquifers above coal zone

A vertical zone about 80 m thick above the coal zone contains a number of aquifers; one at the contact of Dune sand and Sub-recent is almost persistent throughout the Thar coalfield at a depth of 50 to 90 m from the surface. The water bearing horizons are medium to coarse sand ranging in thickness from 3.35 to 41.27 meters. The data showed that water bearing horizon consists mostly of dune sand and Sub-recent deposits. The water quality is mostly brackish but in some wells it is slightly saline. Also, it was sweet in three wells. The depth to water table varied from 50 to 90 meters from the surface. Water column varies between 0.61 to 7.62 meters.

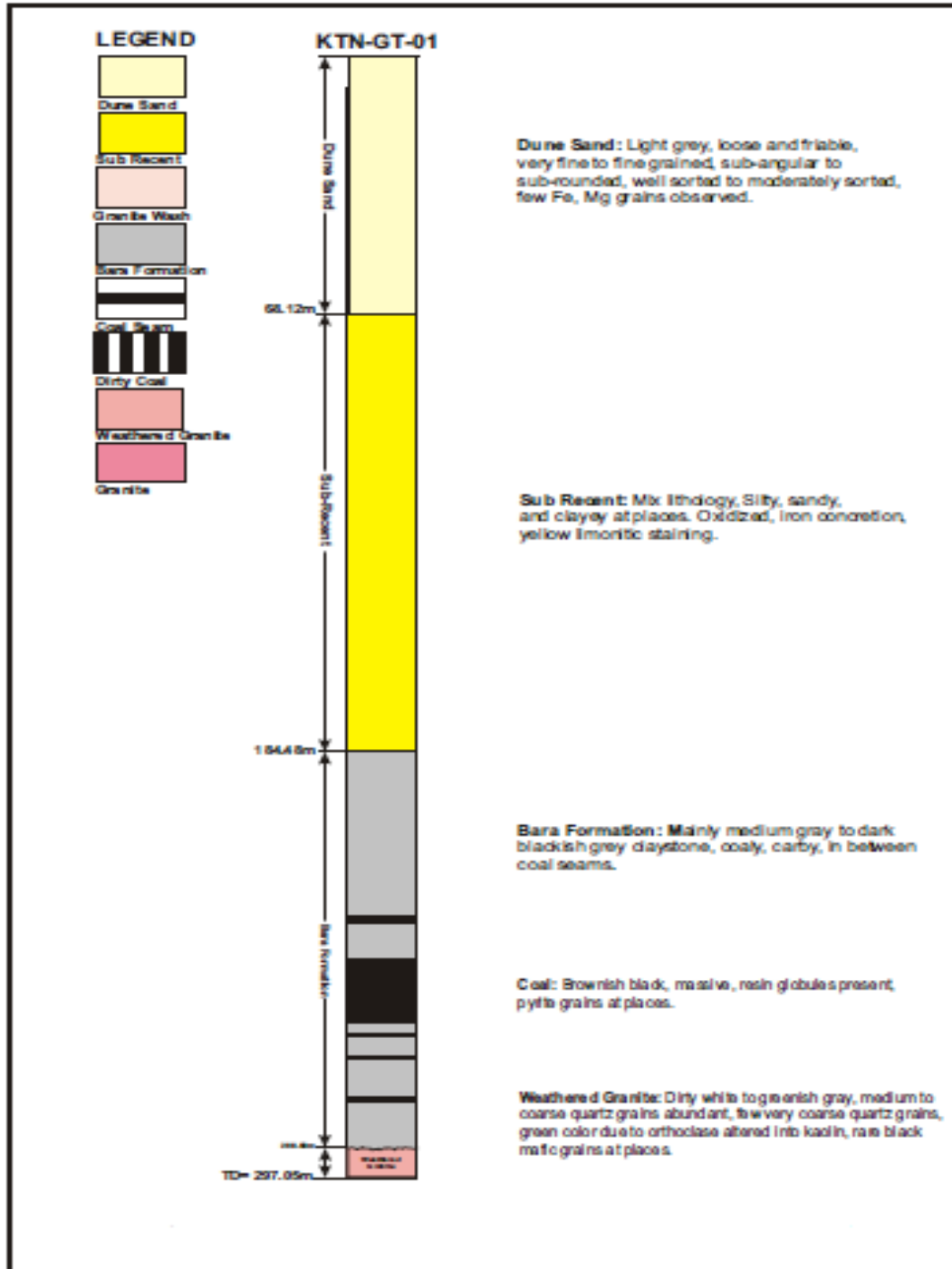
Aquifers within coal zone

Two to three aquifers composed of sand, varying in thickness from 2.24 to 68.74 meters, occur within the coal zone. The sand is medium to coarse grained and gritty.

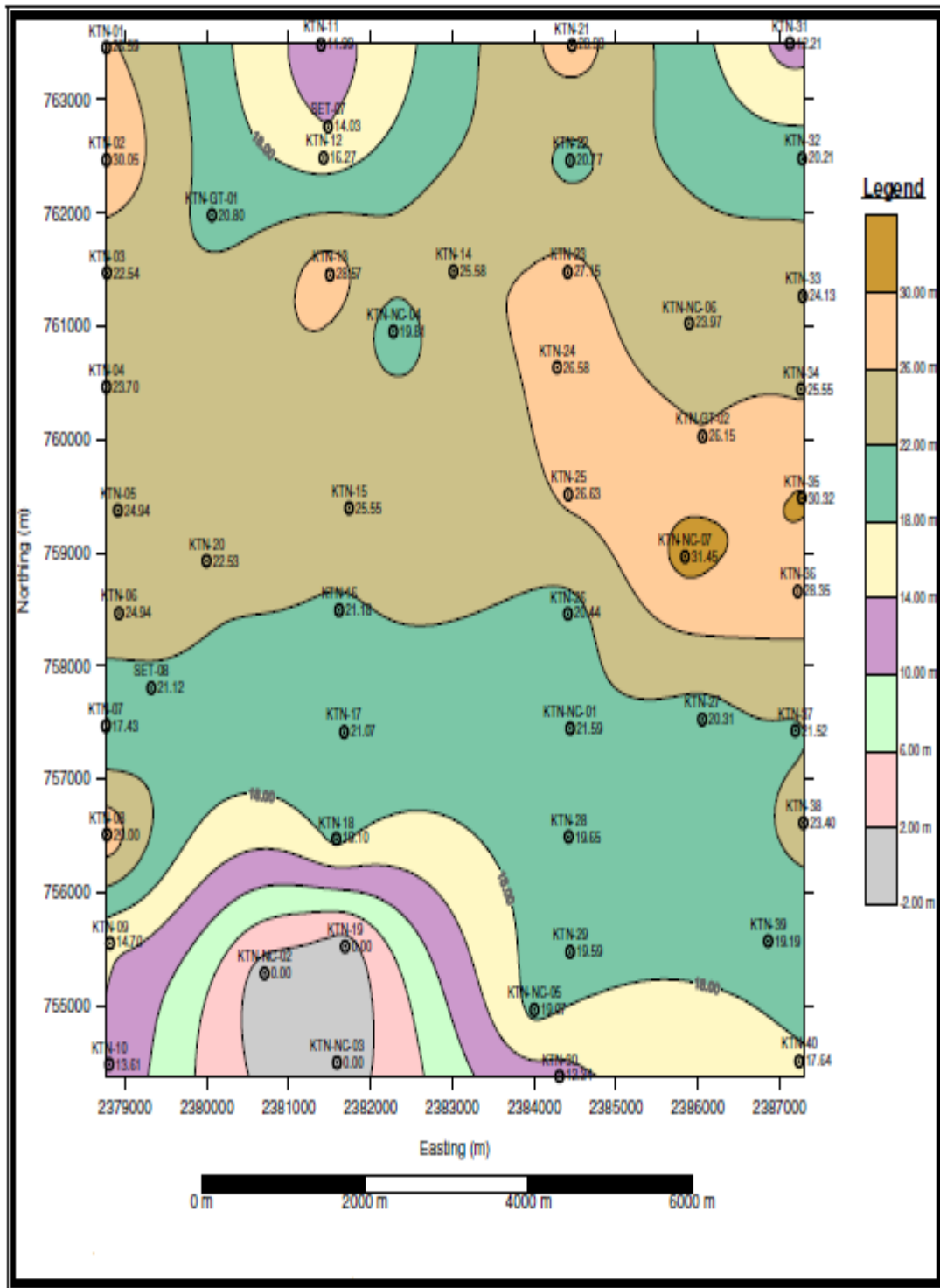
Aquifer occurring below coal zone

An aquifer ranging in thickness from 5.50 m to 47 meters was found to occur ubiquitously at a depth of about 200 meters. It is mainly composed of coarse, gritty, quartzite sandstone. A compressor test was also conducted to determine the quality as well as quantity of water. This showed that the water was saline with a production rate of 8,000 to 9,000 gallons per hour. Most of the tube wells installed in this area were fed by this aquifer.

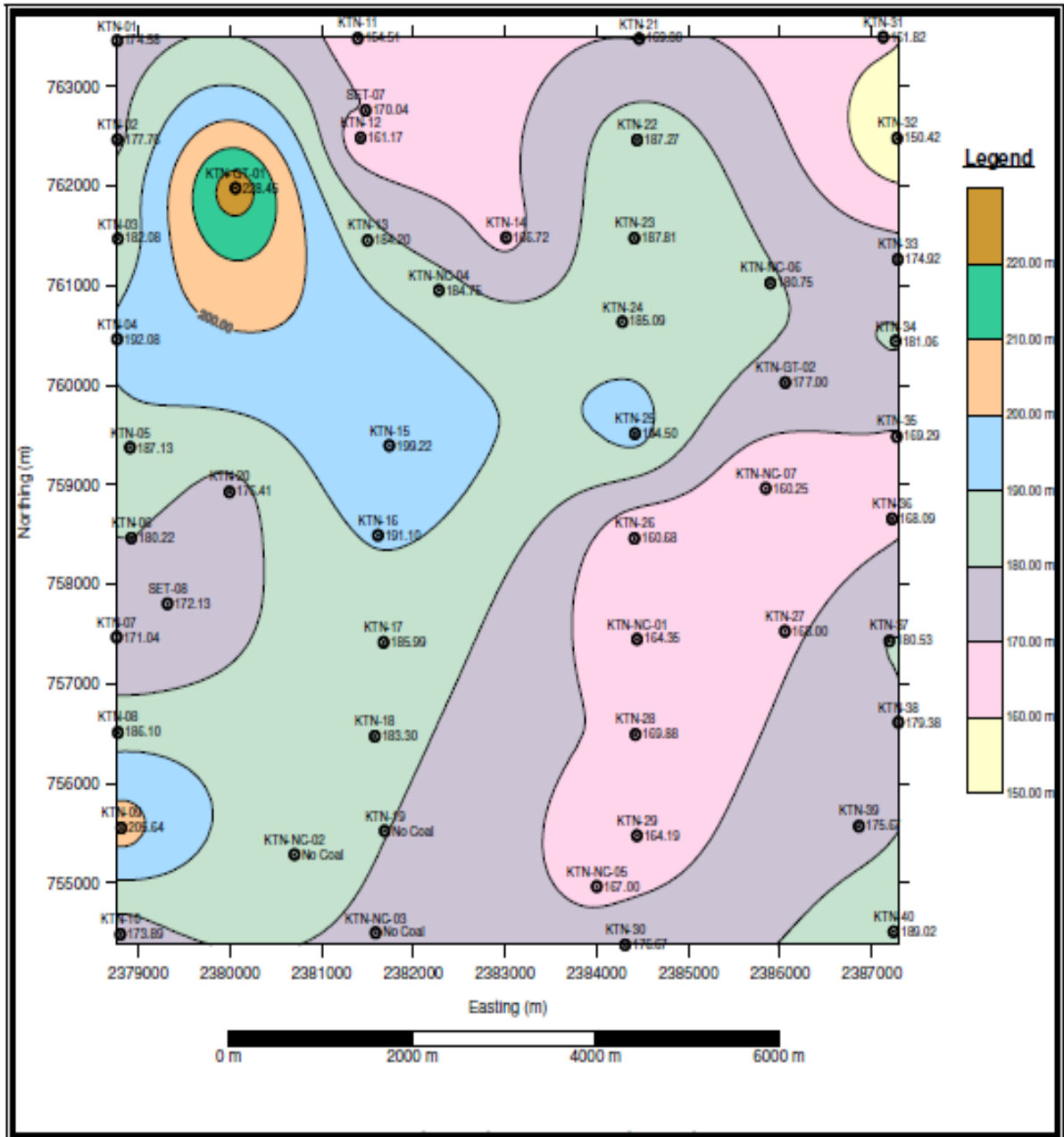
**Columnar Section of Drilled Borehole KTN-GT-01, Block -IX Katan,
Thar Coalfield, Sindh, Pakistan**



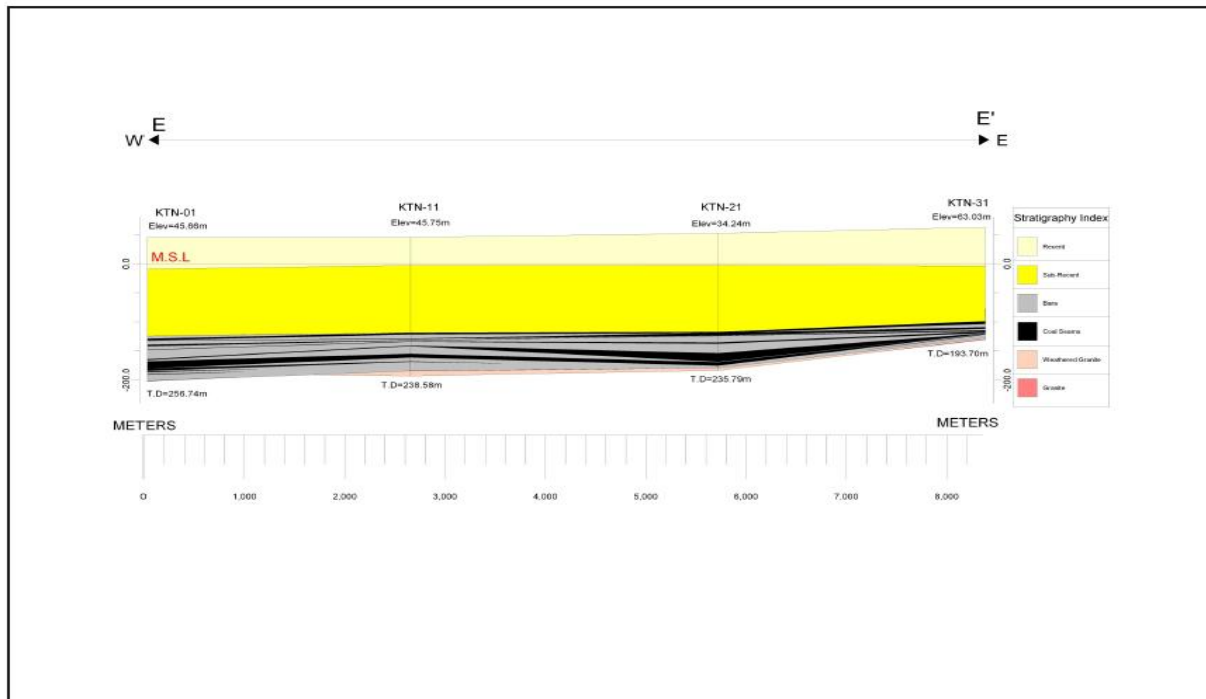
Isopach Map Showing Cumulative Coal Thicknesses of Drilled & Previously Drilled Boreholes, Block-IX, Katan, Thar Coalfield, Sindh, Pakistan



Isopach Map Showing Overburden Thicknesses of Drilled & Previously Drilled Boreholes, Block-IX, Katan, Thar Coalfield, Sindh, Pakistan



Cross Section along line N-N' of Drilled Borehole of Block –IX, Katan Thar Coalfield, Sindh, Pakistan



Chemical composition (as received)

- Moisture: 48.60%
- Ash: 5.92%
- Sulphur 0.96%
- Fixed Carbon 15.73%
- Volatile Matter 29.03%
- Heating Value 5561.35 Btu/lb

Cumulative Reserves

- The total coal resources of Block-IX (100 sq.km area) according to USGS are as follows:
 - Measured Resources 661.84 million tons
 - Indicated Resources 2048.00 million tons
 - Inferred Resources 152.41 million tons
 - Total Resources all categories 2862.25 million tons
- The total coal resources of Block-IX (100 sq.km area) according to JORC are as follows
 - Measured Resources 852.90 million tons
 - Indicated Resources 1411.47 million tons
 - Inferred Resources 400.28 million tons
 - Total Resources all categories 2664.65 million tons