The Karjat Drinking Water Project
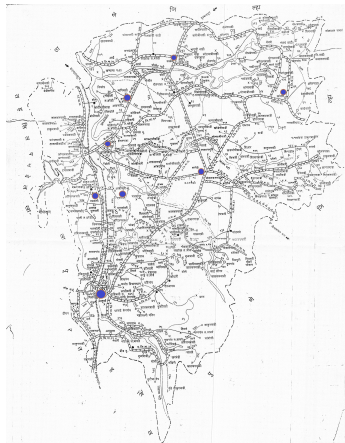## GISE (CSE)-CTARA

Milind Sohoni

`www.cse.iitb.ac.in/∼sohoni`

Karjat

- Raigad district, Panvel division.
- area of 238 sq. km. of which 70 sq. km. in Tribal block.
- 10,000 urban and 27,000 rural households.
- 50,000 urban and 14 lakhs rural, with about 70% literacy.
- 175 hamlets, 49 gram-panchayats, 3 towns.

Drinking water

- Though about 2000-3000mm rainfall, frequent and severe drinking water shortage in many *wadis*.
- This year, about 25 wadis are *dry* since april.
  - 40 liters per person per day within 1.5 km.
- About 40 wadis dry today, esp. in the north Karjat area.
- South Karjat served by the tail-water of Bhivpuri Hydel station through *Pej* river.

Objectives

- **To make Karjat taluka drinking water secure**
- To design a series of interventions: technical, administrative, policy.
  - Pilot studies and pilot implementations

The Gudwanwadi and the Khandas GP project

The Gudwanwadi Project:

- Hamlet of *gudwanwadi* in Borivali GP.
- Check-dam 85m in length with storage of 19,000 cu.m.
- Partial drinking and livelihood water security.
- www.cse.iitb.ac.in/~ctara

The Khandas GP Project:

- A historical narrative of past interventions.
- Evaluation of the current records held at GP and taluka level.
- Design of a new Water Plan Document at GP level
  - ▸ Belief : Better knowledge ⇒ better availability
  - ▸ Supply and Demand understanding
  - ▸ Seasonal data and its sustainable gathering

The GP Water Plan

- The demand: household and commercial. Seasonality.
- Sources: open wells, handpumps and energized borewells.

- Ponds and tanks: storage and seasonal levels.
- Location and yields.
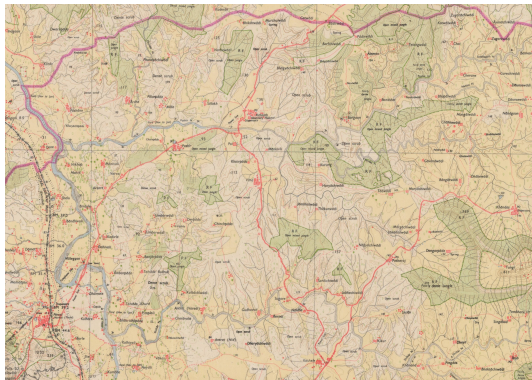- Capacity building at GP level
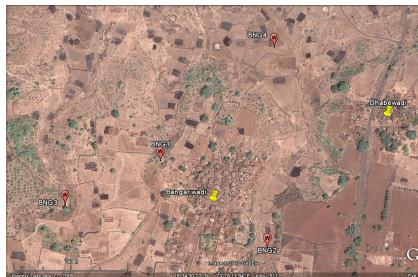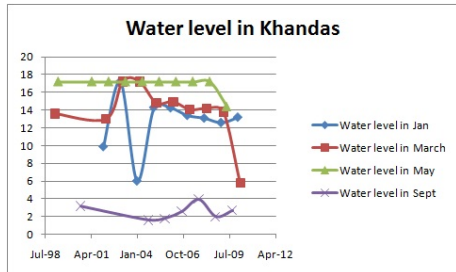
The Khandas valley

Another project: A feasibility study

A North Karjat rural drinking water grid

- Use of Bhivpuri discharge to develop a pipeline system.
- Demand distribution: lat-long, elevation, lpd
- Existing projects: design norms, best practices.
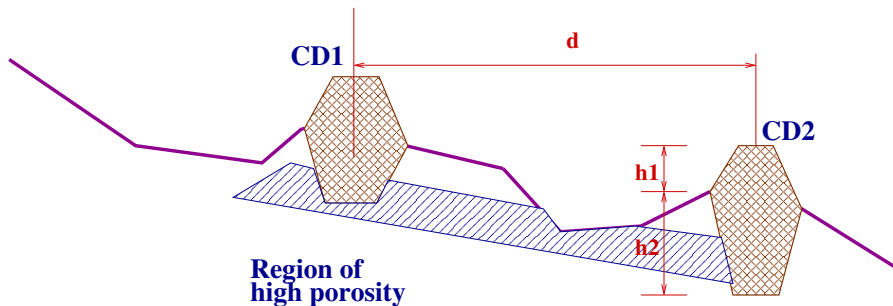
- Proposed design: techno-economic and social analysis.

Analysis Project- since 2008

Simulator

- Rs. 1500 crores in watershed development.
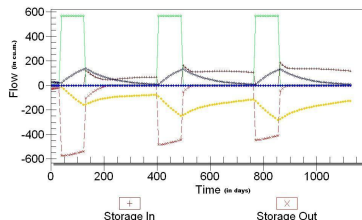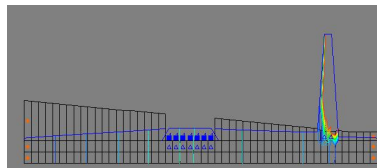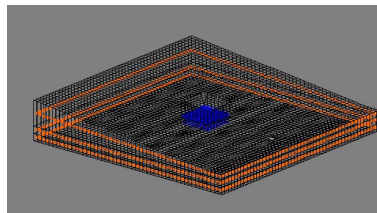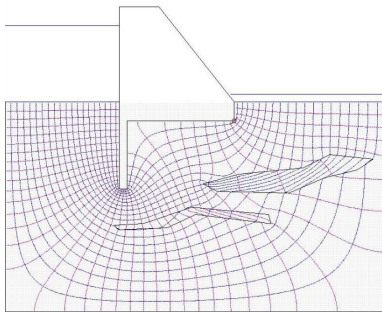- Planning of small hydro-geologic structures for drinking water.

- Enable design and dimensioning.
- Achieve better water balance.

CD1

d

CD2

h1

h2

Region of high porosity

The Simulator

Objective: Simulate the basic groundwater flow equation and its variants.

- Basic variables: head, flow and conductivity.

So far ... and then.

Dharmvir:Basic analysis of groundwater simulation. Case-studies.
`www.cse.iitb.ac.in/ sohoni/TD603/dharmvirMTP.pdf`

Ameya Chougule: TITWI: A basic interface to legacy code
MODFLOW.

Key objectives:

- Standardization of TITWI on key situations.
- Integration of TITWI with more advanced modules.
- Making TITWI GIS enabled.
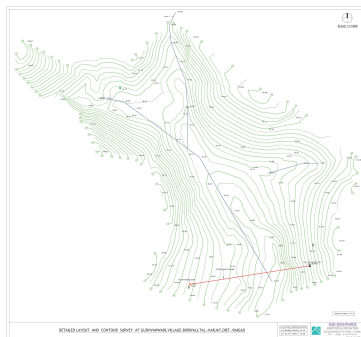
Research Assistant: Requirements

- Build a suitable GIS backbone for various tasks:
  - ▶ GP level atlas and layers
  - ▶ analysis layers for GP, taluka and district level.
- Design and pilot implementation for data sharing between GP and taluka.
  - ▶ GPS, hand-held or mobile applications. Server side support.
- Sustainability, usability analysis and capacity building.
- Extension of GIS support to other design functions, such as percolation tank or piped systems.

Qualities :

- Interest in water! www.cse.iitb.ac.in/~sohoni/TD603
- Excited about Fieldwork and Delivery.
- Good writing, speaking and reporting skills.
- Believes that engineering is also a social activity.