Recent Action-Research in Water Sector.

CTARA, IIT-Bombay

People in Water Sector

- Subodh Wagle : Water regulation, policy, irrigation and sector studies.
  - Jal-Swarajya, and recently the Nira-Deoghar project
- N. C. Narayan : Policy, Watershed management.
  - Udaipur case study, Integrated watershed management, interdisciplinary training.
- Bakul Rao : Water and Environment, consultancy.
  - Design of rural water quality programs for Karnataka state.
- Numerous other student projects in Karjat, Manchar and other areas.

- Milind Sohoni : Rural drinking water-Today's focus

2005-The Gudwanwadi Project

- A teaching and research initiative
- Objective : to investigate the interface between technology and development.
- Methodology concrete problem and direct participation.

- 380 Thakar people.
- 200 animals.
- 40 households.

And an acute shortage of water for 5 months.

Technology Choice

Build a check-dam.

Multi-agency

Faculty, students of IIT, ADS (a local NGO), Gangotree-an implementer.

People

Intensive village level work.

Our Director

On July 1st, 2006

Full!

Success...mixed

- Water in check-dam till about Jan 15-30.
- Running water (for washing etc.) till about Feb 20th.
- Drinking water in borewells till about March 15.
- Acuteness of problem reduced by 2-3 months

Ongoing research

- Hydrogeological surveys and testing
- Protocols for construction-2008-grouting
- Simulation
- cost-effectiveness

Wider Goals

Rural Water Solutions-Jal Swarajya

- 2000 villages in Maharashtra alone
- No technical solutions seem available other than
  - lifting from existing reservoirs and
  - ground-water

2007-Thane district survey.

- Poor performance of ground-water based solutions.
- Poor quality groundwater data.
- Capacity building is essential.

The Karjat Project

- Disha Kendra: A popular NGO in Karjat-Khalapur area, led by Nancy Gaikwad.
- January 2010: approached CTARA with problem of widespread drinking water collapse in North Karjat taluka.
- Ashok Jangle (DK): various RTIs and collation of some information.
- Preliminary interviews with taluka officials.

Our plan:

- Question 1: Is there adequate groundwater at all?
  - GSDA, our own tests. (Sanjiv, Vishal)
- Question 2: Are there administrative problems?
  - lack of information, improper yield tests, etc.
- Question 3: What is to be done?
  - Groundwater recharge structures?
  - Surface water supply? (Abhishek, Vikram and Janhvi)

The Karjat Pipeline feasibility study

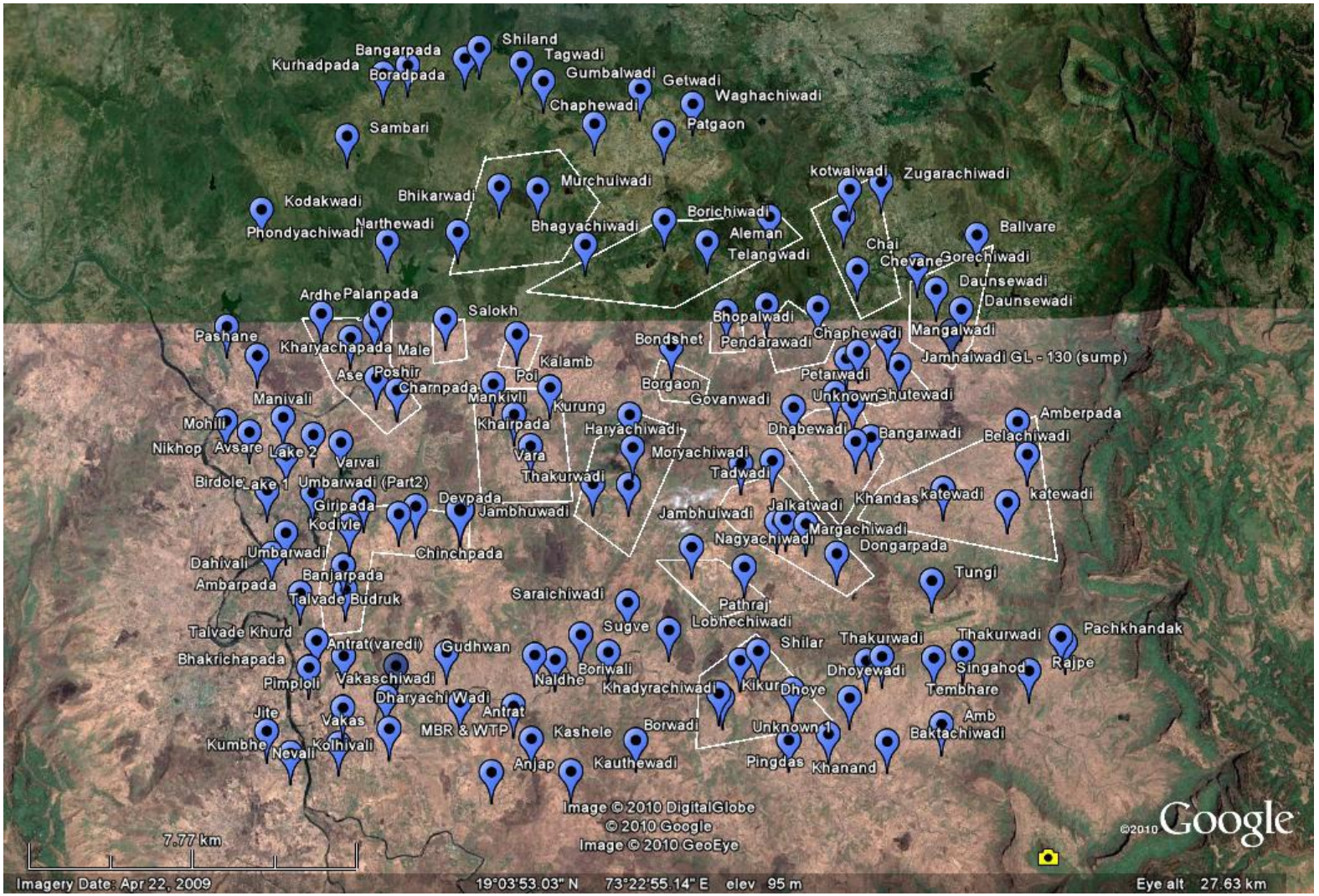
Study Objective

Is it possible to have a wide-area rural pipeline scheme for the area?-a basic techno-economic feasibility study.

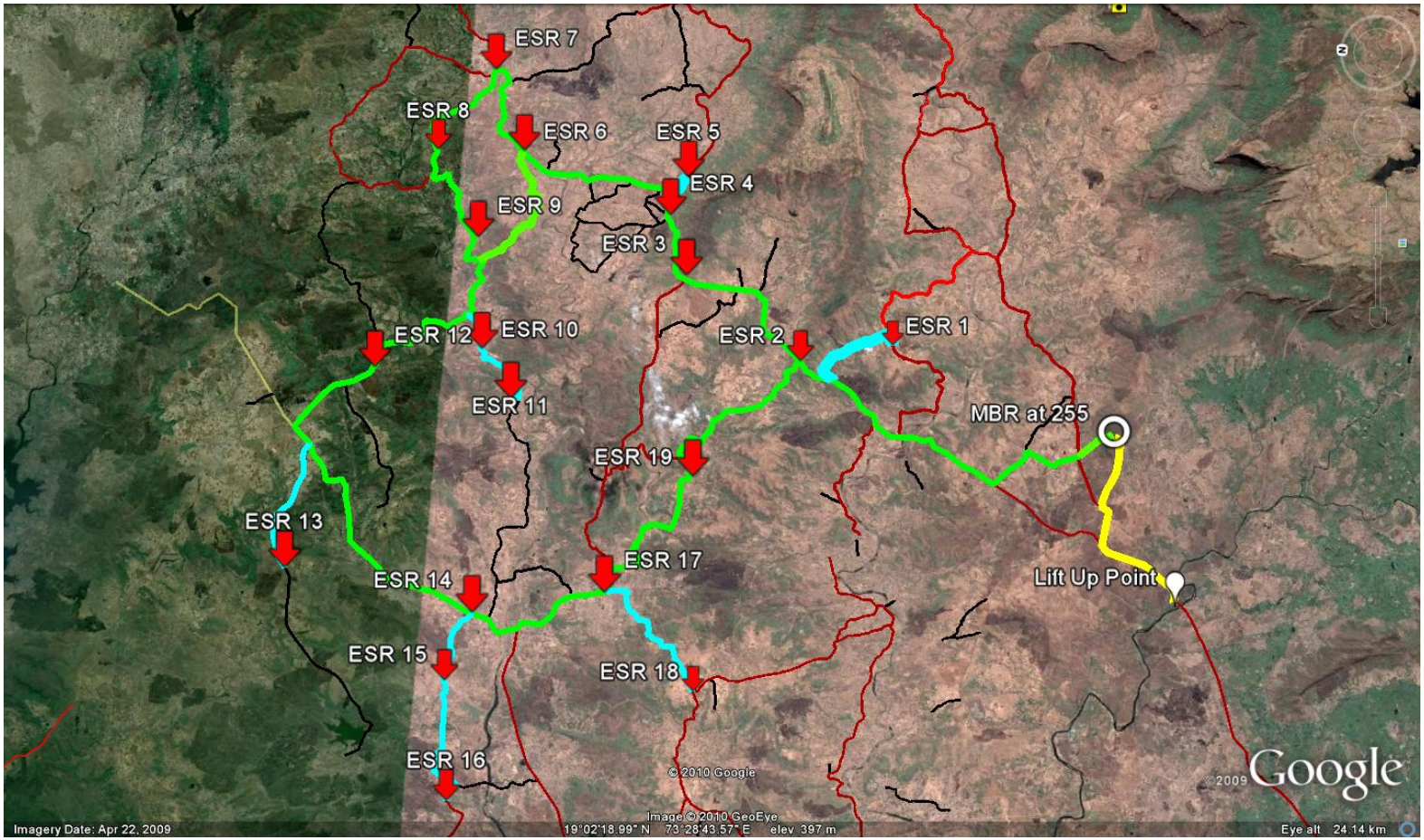
- primary and secondary, i.e., source to standpost. no tertiary.
- use MJP norms *exactly* as far a possible.
- See if capital costs and energy costs fit within norms.
- ownership, tariffs, cost recovery, metering etc., later.

- Abhishek Sinha, Vikram Vijay: two dual-degree Civil. Engg. students, Janhvi Doshi, 4th year B.S., summer intern from Rice University.
- 3 months of field work: May-July 2010. Report-writing 1-2 months.
- Rs. 1 lakh budget.

Hamlets and clusters



Overall map


ESR 7
ESR 8
ESR 6
ESR 5
ESR 4
ESR 9
ESR 3
ESR 12
ESR 10
ESR 2
ESR 1
ESR 11
MBR at 255
ESR 19
ESR 13
ESR 17
ESR 14
Lift Up Point
ESR 15
ESR 18
ESR 16
© 2010 Google
Image © 2010 GeoEye
19°02'18.99" N 73°28'43.57" E elev 397 m
Imagery Date: Apr 22, 2009
©2009 Google
Eye alt 24.14 km

Key Findings[1]

	200 LPCD	40 LPCD
Daily Demand	19.47 MLD	3.90 MLD
Net Investment	Rs. 57.21 crores	Rs. 17.19 crores
Cost per person	Rs. 7051	Rs. 2119

- Energy costs of Rs. 4.51 per cubic meter, at Rs. 5 per unit and 75% pump efficiency.
  - This may reduce further from better choice of lift-up point, agreement between MJP, Irrigation and Tata Power.
- O&M costs and establisment costs to be added.

Pipeline water supply for North Karjat (pop. 51,000 in 70 hamlets) is techno-economically feasible.

[1] www.cse.iitb.ac.in/∼sohoni/karjatfinal.doc

Post-report

- Report submitted to Disha Kendra for dissemination.
  - Key knowledge input to serve as rallying point.
- Report submitted to Karjat MLA, Shri. Suresh Lad.
- And to MJP office and Minor Irrigation office in Karjat.

Towards adoption:

- Key resolution by GPs of expression of demand (scarcity). *done earlier*
- Submission to ZP and MJP.

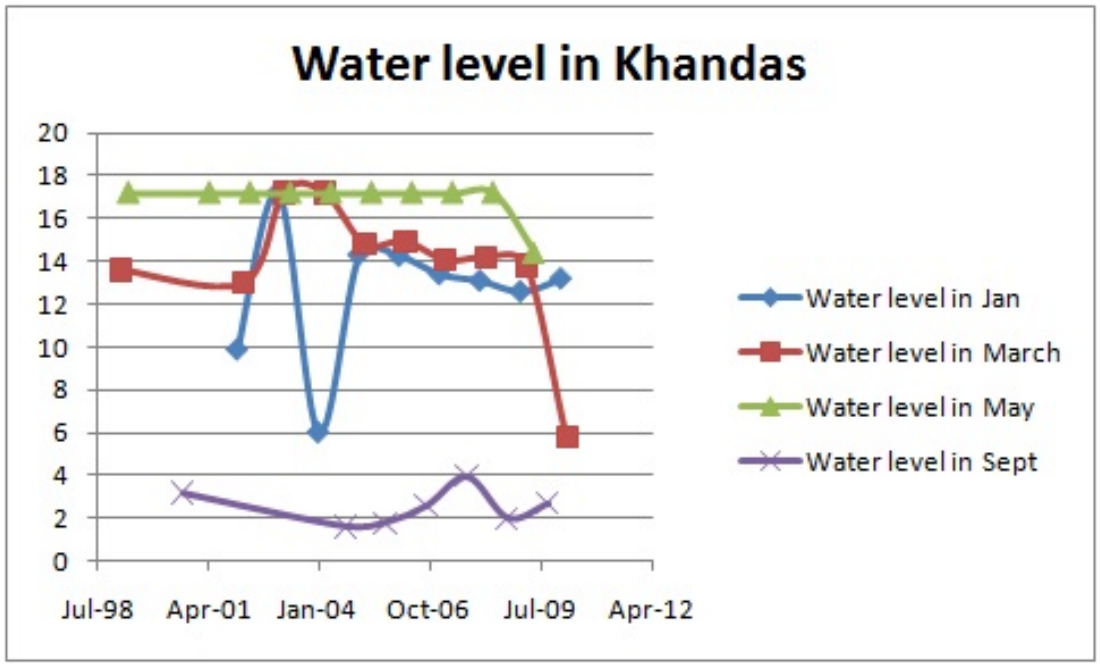
New Research

- Single vs. Multi village schemes and institutional issues
- IIT as consultant to rural bodies

Groundwater

Basic question: Groundwater sufficiency and distribution.

- conflicting narratives of taluka administration and inhabitants
  - Karjat again...
- very poor quality and sparse groundwater data.
  - 9 observation wells for the whole taluka



The GP Water Document

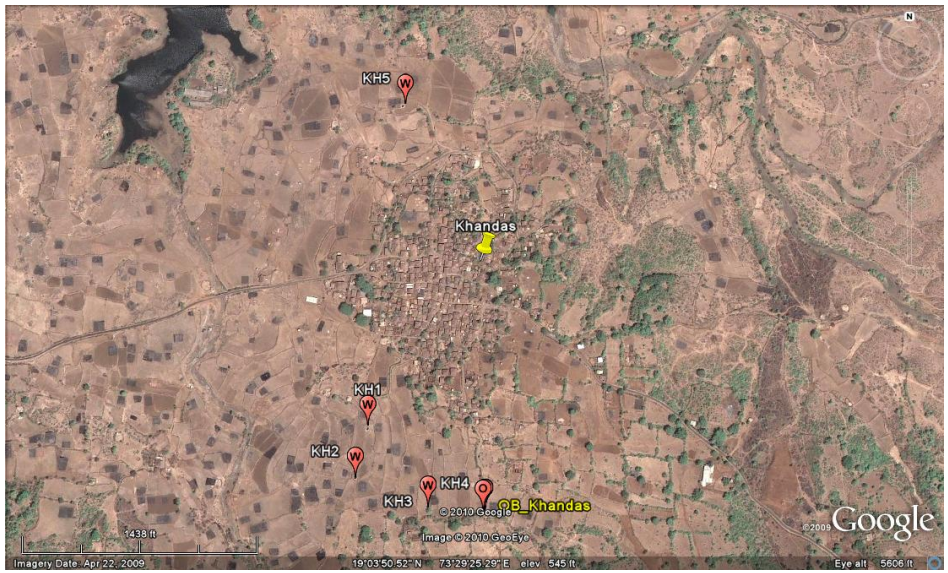
- To maintain reliable data and assess need.
- To prepare a framework for policy implementation.

Data:

- The demand: household and commercial. Seasonality.
- Ponds and tanks: storage and seasonal levels.
- Sources: open wells, handpumps and energized borewells.

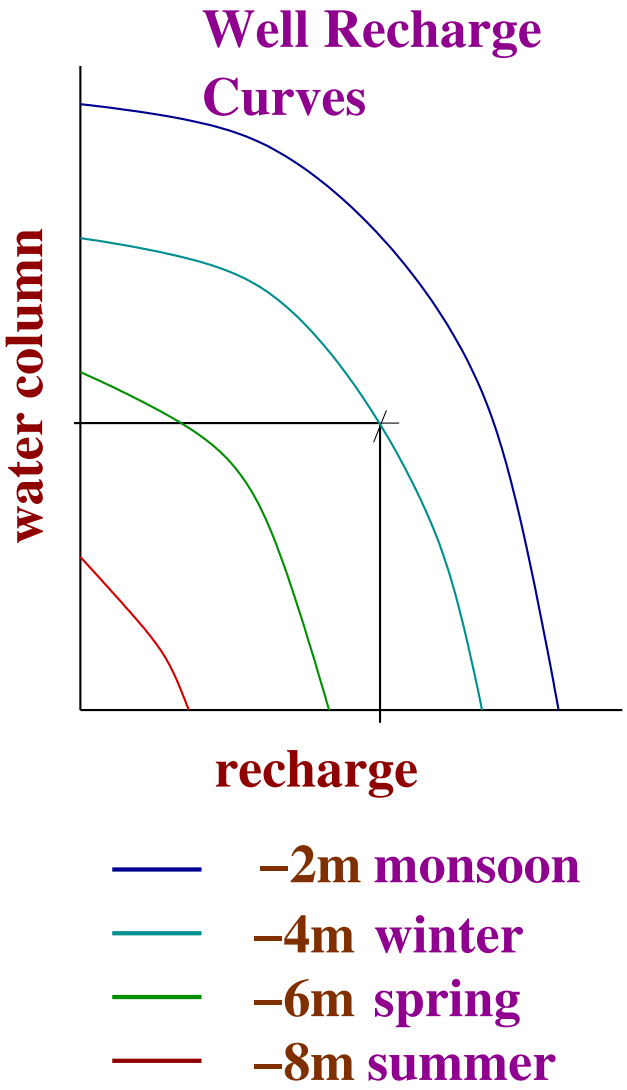
Some key ideas:

- Yields-*a new test?*
- Maintability-Capacity building at GP level to maintain plan.



Seasonality and well yields

- Need:to assess supply and to predict
- Example: column=7m, WT=-4 implies recharge 7 cu.m. /day.
- Generated in initial years

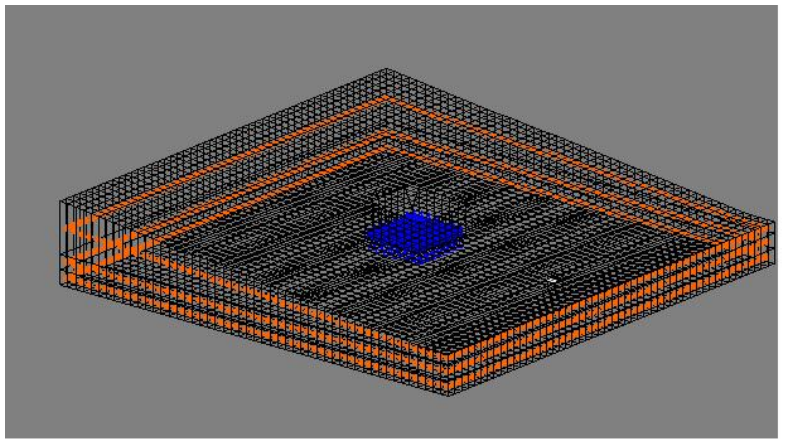


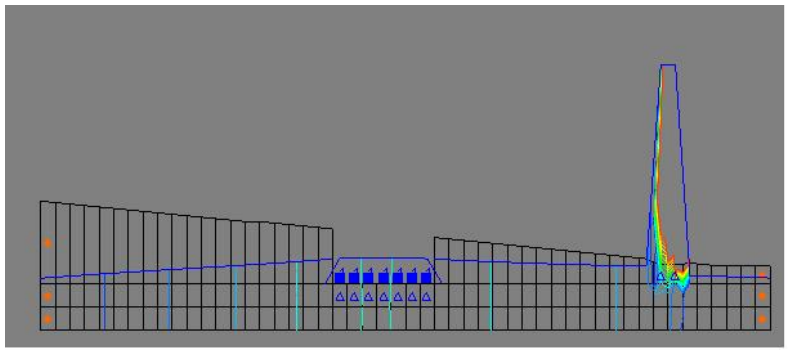
Reliable and Accurate

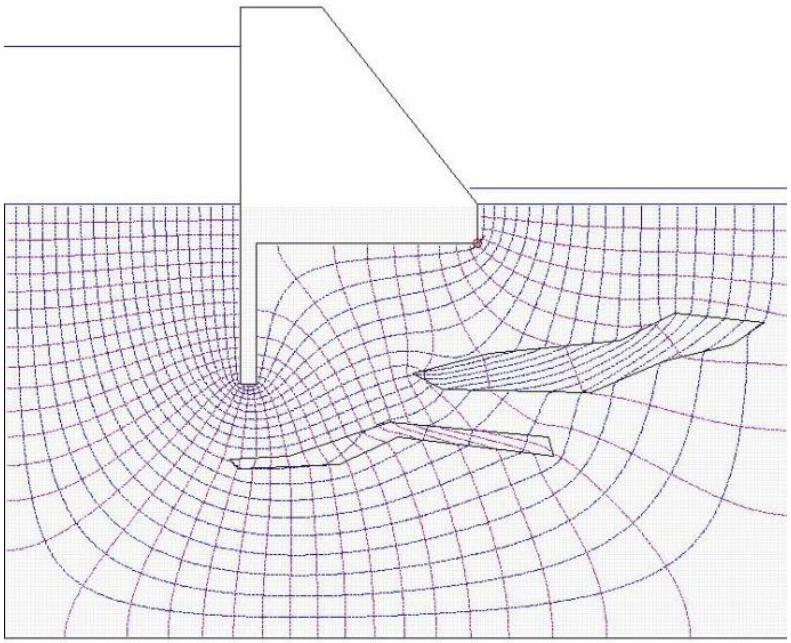
A more refined understanding of supply and demand.

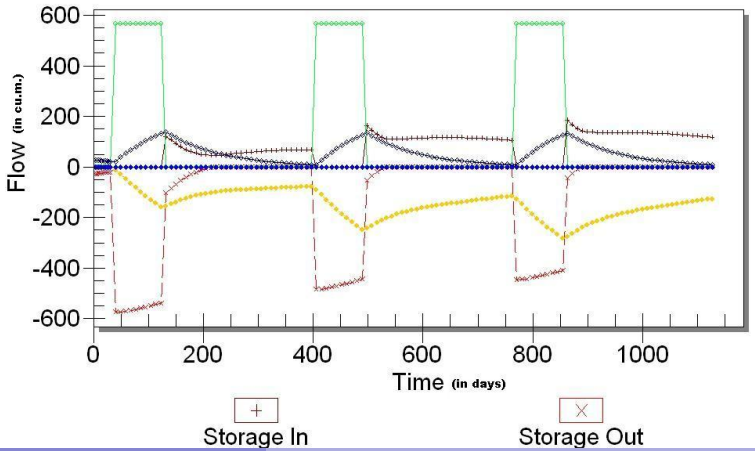
Simulator Project- since 2008

- Role in watershed development.
- Planning of small structures for drinking water.









Thanks