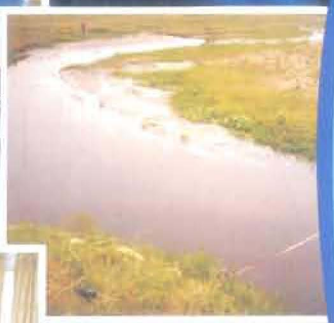
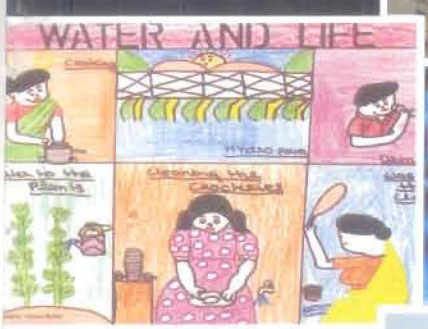
Issue 2 July 2011

Hydrology for People

Newsletter of National Institute of Hydrology, Roorkee (India)





From Director's Desk

It gives me immense pleasure to present to you the second issue of the NIH newsletter 'Hydrology for People'.

Water is the most important and perishable asset of our planet. On a global scale, we have only 0.75 percent accessible fresh water of the total water resources available on the earth. Our global economy, agricultural production, industrial growth, socio-economic structures, governance mechanisms and everyday life depends on this finite and vulnerable resource. In most parts of the world, including India, the water resources are under stress due to growing imbalance between the mounting demand for water and shrinking water reserve. In our country, the water table is falling due to intense ground water use, thus hampering our quest for the sustainable development. With increased prospects of feeding increased population in 2050, the industrial, individual and agricultural demand is expected to escalate dramatically. Also, the climate change is becoming a more and more important issue for growing water scarcity. This calls for awareness that water is very scare and valuable natural resource and that we need to initiate innovative technological and management changes. Thus, we have to go for a 'blue revolution' to achieve food security and prevent a serious water crisis in the future.

National Institute of Hydrology has been conducting the research in the field of hydrology and water resources, over the last three decades. Many purpose driven studies and strategic projects were carried out to solve the various need based problems touching almost every sphere of water resources development. With growing interest of managing water resources under the threat of climate change, the Institute is gearing-up to conquer the challenges and fulfill the needs of the country via demand driven strategic studies. The Institute is also pro-actively contributing to the knowledge dissemination, mass awareness and capacity building programmes.

R D Singh

Editorial

According to a famous quote, water is life's mater and matrix, mother and medium. There is no life without water. William Shakespeare once said "The people are like water and the ruler a boat. Water can support a boat or overturn it".

The country is now preparing for the 12th fiver-year Plan. Under the Prime Minister's National Action Plan on Climate Change, the National Water Mission is an important component of the 12th Plan. The National Water Policy (2002) is under revision, and deliberations with various stakeholders are going on. In all these deliberations, participation of the community has been emphatically stressed to make the Policy community-centric.

The Institute is playing an important role in revision of the National Water Policy as well as in the National Water Mission. Increasing reliance by the project implementing agencies, and the judiciary in many cases, on the Institute's capabilities in solving the real-life water-related problems in the country is a welcoming sign to the Institute's fraternity.

Publication of this newsletter is an attempt to rejuvenate the knowledge dissemination efforts of the Institute, with a flavour of 'connecting to the people'. The intent is to take the research findings to the community so that they are incited to develop interest in the scientific developments taking place in the country.

The first issue of the newsletter got overwhelming response from the readers. Inspired by the response, we decided to obtain a trademark for the newsletter's title "Hydrology for People". The trademark has been provisionally allotted by the Trademark registration authority in India.

Your suggestions and feedback are welcome, and will help us in improving future issues!

V C Goyal

About National Institute of Hydrology

The National Institute of Hydrology (NIH), established in 1978 as an autonomous organization under Ministry of Water Resources (Government of India), is a premier R&D institute in the country to undertake, aid, promote and coordinate basic, applied and strategic research on all aspects of hydrology and water resources development. The Institute has its headquarters at Roorkee (Uttarakhand). To carry out field related research covering different regions of the country, the Institute has four Regional Centers located at Belgaum, Jammu, Kakinada and Sagar, and two Centres for Flood Management Studies at Guwahati in Hydrology, Water Quality, Soil Water, Remote Sensing & GIS Applications, Groundwater Modelling and Hydrological Instrumentation.

The Institute act as a center of excellence for transfer of technology, human resources development and institutional development in specialized areas of hydrology, and conducts user defined, demand-driven research through collaboration with relevant national and international organizations. The Institute vigorously pursues capacity development activities by organizing training programmes for field engineers, scientists and researchers, NGOs. NIH has so far completed more than 150 sponsored research and consultancy projects- the sponsors included Indian Army, PSUs, Planning Commission, National Productivity Council, State Government Departments, and central ministries of Science & Technology, Environment & Forests, Agriculture, Rural Development, etc. The Institute has undertaken a number of internationally funded projects, including those from UNDP, USAID, UNESCO, The World Bank, The Netherlands, Sweden, European Union. The Institute is presently participating in the World Bank funded Hydrology Project Phase-II.

Some of the significant contributions of NIH include studies for solution of real-life problems related to augmentation of water supply and water management in cities, glacier contribution in streamflow of Himalayan rivers for hydro-electric power projects, watershed development, water quality management plan for lakes, watershed development, storm water drainage network in cities, flood inundation mapping and flood risk zoning, and water quality assessment in major cities. The Institute is actively pursuing the IEC activities and mass awareness programmes of the Ministry of Water Resources. NIH works as a nodal centre of the Ministry for effective implementation of the National Water Mission.

Vision

Providing leadership in hydrologic research through effective R&D solutions for achieving sustainable development and self-reliance of the water sector in India

Mission

Develop cost-effective techniques, procedures, software packages, field instrumentation, etc. for hydrological studies

- Study scenarios of water resource availability under varying hydrogeological, climatic, socio-cultural conditions through modelling techniques
- Assess impact of climate change on water resources and suggesting measures for mitigation, adaptation and resilience

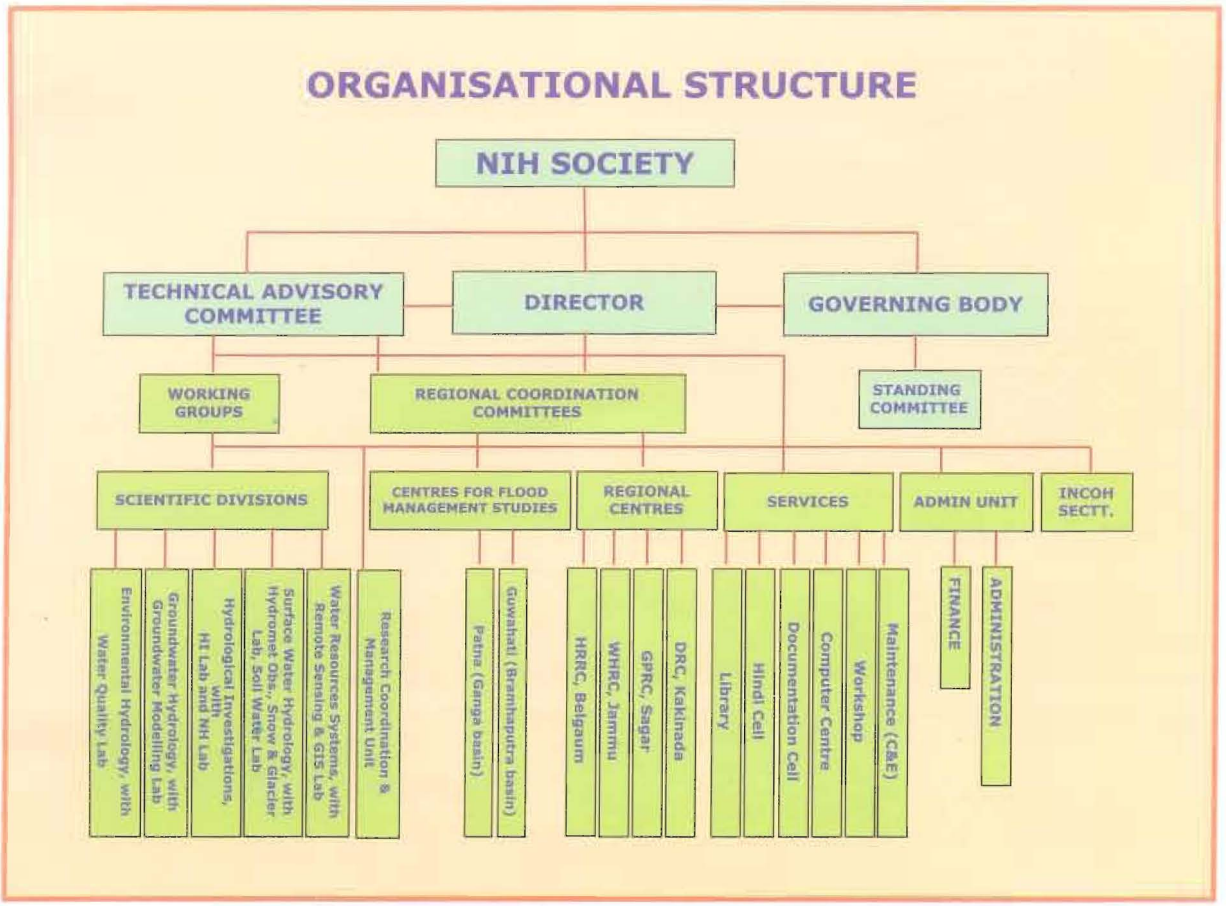
- Propagate application of emerging technologies for water resources development and management
- Provide cost-effective R&D solutions to need-based water-related problems
- Provide reliable advice to the various stakeholders
- Empower community through capacity building and awareness on water resources development and conservation

Thrust Areas

- Water Resources Planning and Management
- Ground Water Modeling and Management
- Flood and Drought Prediction and Management
- Snow and Glacier Melt Runoff Estimation
- Prediction of Discharge in Ungauged Basins
- Water Quality Assessment is specific areas
- Hydrology of Arid, Semi-arid, Coastal & Deltaic Zones
- Reservoir / Lake Sedimentation
- Impact of Climate Change on Water Resources
- Application of modern techniques to provide the solution to hydrological problems

Water Related Facts

- The hydrologic cycle is a continuous process that exists on the earth by which the water from over and beneath the earth's surface (including the ocean) is transported to the atmosphere through the process of evaporation and evapo-transpiration from the vegetative cover and to the land surface through the process of rainfall and snowfall, and reaches to the surface and groundwater storages, and the ocean by means of the various path.
- The various phases of the hydrologic cycle may be short, or it may take millions of years.
- Water may be captured for millions of years in polar ice caps, groundwater reservoirs (aquifers) and in the sea.
- The hydrological cycle moves enormous quantities of water about the globe. However, much of the world's water has little potential for human use because 97.5% of all water on earth is saline water. Out of remaining 2.5% fresh water, most of which lies deep and frozen in Antarctica and Greenland, only about 0.26% flows in rivers, lakes and in the soils and shallow aquifers which can be readily used.
- Water is diverted temporarily from one part of the hydrologic cycle by pumping it from the ground or



drawing it from a river or lake which is used for a variety of domestic and industrial activities; for irrigation of agricultural lands and recreation works; and for production of electric power.

- Used water is further circulated to another part of the hydrologic cycle: perhaps discharged downstream or allowed to soak into the ground. Since the quality of used water get deteriorated even after treatment and hence often poses a problem to the users in downstream reaches of the watershed.
- Planning and implementation of water resources involve a number of aspects and issues related to hydrology of surface and ground water as precipitation being the main source of water.
- Certain hydrological problems and weaknesses have affected a large number of water resources all over the world due to the effect of Climate Change due to Global Warming.
- In case of India, floods and droughts affect vast areas of the country, transcending state boundaries. One-sixth area of the country is drought-prone. Out of 40 million hectares of the flood prone area in the country, on an average, floods affect an area of around 7.5 million hectares per year.
- These conditions provoke the need for proper study to appropriately co-ordinate and guide the approach to manage the hydrological events like droughts and floods.

Role of Hydrologist

Hydrology is the science that treats the waters of the earth, their occurrence, circulation, movement and distribution, their chemical and biological properties and their reaction with the environment, including their relation to living things. The domain of hydrology embraces the full life history of water on the earth.

- The hydrologist play very important role in solving water-related problems in society such as quantity, quality and water availability or basin water budgeting through application of the proper scientific knowledge and mathematical principles.
- The hydrologist studies the fundamental transport processes to be able to describe the quantity and quality of water as it moves through the hydrologic cycle (evaporation, precipitation, streamflow, infiltration, groundwater flow, and other components).
- The engineering hydrologist, or water resources engineer, is involved in the planning, analysis, design, construction and operation of projects for the control, utilization, and management of water resources.
- He may also deal with the study concerning the municipal water supply, irrigation water supply and management, mitigation of floods and droughts, integrated watershed management, ground water recharge and solving reservoir sedimentation problems.
- Scientists and engineers in the field of hydrology may be involved both in the field investigation and office work.
- In the field investigation, they may collect basic hydrological, geological, meteorological and water quality data, sometimes from remote and rugged terrains with use of measuring instruments and equipments. While, in the office, they may do many jobs that includes the assessment of water quality in the laboratory, remote sensing data processing and analysis using GIS, interpretation and analysis of field data, modelling studies for flood hazards mitigation, groundwater replenishment, water-logging problems, sea water intrusion, reservoir operations in the command area and assessment of their impacts on environment.

International Decade for Action Water for Life 2005–2015

World Water Day, 22 March 2005, heralded the start of the International Decade for Action proclaimed by the United Nations General Assembly. 'Water for Life' calls for a coordinated response from the whole United Nations system. The timing is significant: the end of the action decade in 2015 is the target date for achievement of many of the Millennium Development Goals (MDGs). Those goals were amplified by the 2002 World Summit on Sustainable Development in the Johannesburg Plan of Implementation, which set the following target:

WATER FOR LIFE 2005-2015

HALVE, BY 2015, THE PROPORTION OF PEOPLE WITHOUT SUSTAINABLE ACCESS TO SAFE DRINKING WATER AND BASIC SANITATION.

Project Solving Real Life Problem

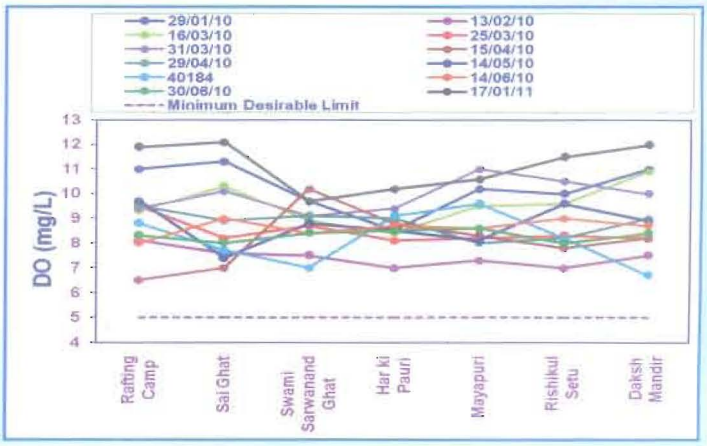
Assessment of Ground Water Quality in 25 Class I Cities of India

The Central Pollution Control Board (CPCB), Delhi has awarded the project study on 'Assessment of Ground Water Quality in Class I Cities of India'. In order to achieve the objectives of the study, thirty ground water samples from the Class I Cities of Guwahati, Raipur, Shimla, Jammu, Shillong, Aizawal, Kohima,

Bhubneshwar, Agartala, Dehradun, Itanagar, Gangtok, Chandigarh, Panjim, Gandhinagar, Ranchi, Thiruvananthapuram, Imphal, Pondicherry, Kavaratti, Daman, Silvassa, Ratlam, Bilaspur were collected during pre- and post-monsoon seasons during 2009-11 from various abstraction sources used for drinking purpose at various depths covering extensively populated area, commercial, industrial, agricultural and residential colonies so as to obtain a good areal and vertical representation and were analysed for various water quality parameters, viz., physico-chemical and bacteriological parameters, heavy metals, pesticides and polynuclear aromatic hydrocarbons. Water samples for pre- and post-monsoon seasons ware processed as per BIS and WHO standards to examine the suitability of ground water for drinking purpose, ionic relationships were developed and water types were identified. Spatial distribution maps were prepared in the form of contour diagrams to identify degraded water quality zones. Suitability of ground water for irrigation purpose was assessed on the basis of total soluble salts, SAR, RSC and boron content. Classification of water was made using Piper trilinear diagram, Durov plots, Chadha's diagram,U S Salinity Laboratory Classification and Gupta Classification.

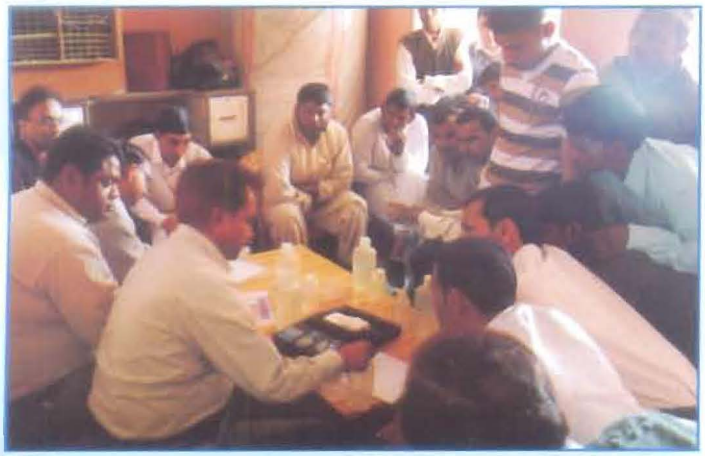
Modelling of Pesticide Transport in Ground Water – a case study of Metropolitan City – Vadodara

Metropolitan city Vadodara witnessed a sudden spurt in industrial activity with the establishment of Gujarat Refinery, Indian Oil Corporation. Metropolitan city of Vadodara is the industrial nucleus of the Gujarat State. During the recent study carried out by NIH, very high concentration of pesticide lindane was observed in ground water of metropolitan city Vadodara. In view of this fact, the study of the lindane migration pattern in the ground water of metropolitan city Vadodara from future projections was conceived in collaboration with Ground Water Resources Development Corporation (GWRDC), Gandhinagar, Gujarat. The objectives of the study were to develop a contaminant source identification model from point source and characterize the contaminant (pesticide) migration pattern in the ground water in space and time for prediction purposes. To fulfil the objectives of the study, column study (experimental) was carried out to see the flow and transport of organo-chloro pesticide (Lindane) in unsaturated zone and for ground water flow modelling in saturated zone, model MODFLOW was calibrated using the field data of vadodara city. For contaminant transport modelling, the test run of model MT3D was carried out for TDS and then for pesticide for future projections along space and time for a period up to 50 years. Contaminant sources using chemographs of point sources and ground water at different locations were identified. This study highlight that River Vishwamitri and river Jambua are the main contaminant sources of ground water of Vadodara city.



Impact of Kumbha Mela 2010 on water quality of surface water and ground water resources in and around Hardwar City

Kumbha Mela 2010 was held during January 2010 to June 2010 at Hardwar. This study was conceived to see the impact of Kumbh Mela on water quality of surface water and ground water resources in and around Hardwar City. To fulfil the objectives of the study, sampling of surface water (River Ganga) at 11 different locations and 7 ground water sources in and around Hardwar City being extensively used for drinking purpose was carried out at fortnight interval of time from January to June 2010 (In all 11 sampling) and collected samples were analysed for physico-chemical parameters: pH, EC, TDS, Alkalinity, Hardness, COD, BOD, Major Cations (Na, K, Ca, Mg), Major Anions (HCO3, Cl, SO4, NO3), Minor Ions (F, PO4) and bacteriological parameters (Total and Faecal Coliform). Data for different sets were processed as per BIS and WHO standards to examine the suitability of river water and ground water for drinking purpose. Suitability of river water for irrigation purpose was also assessed on the basis of total soluble salts, SAR, RSC. All the physico-chemical parameters analysed, were found within the limit prescribed for drinking water by Bureau of Indian Standards (BIS, 1991), however, very high bacteriological contamination (TC>2400) was observed in the river Ganga/canal water and in few ground water samples in the month of January, April, May and June 2010. All metal concentrations were observed within the maximum permissible limit prescribed for drinking purpose. Assessment of suitability of these river water and ground water for irrigation purpose on the basis of total soluble salts, SAR, RSC revealed that these waters are of excellent to good quality for irrigation purpose.



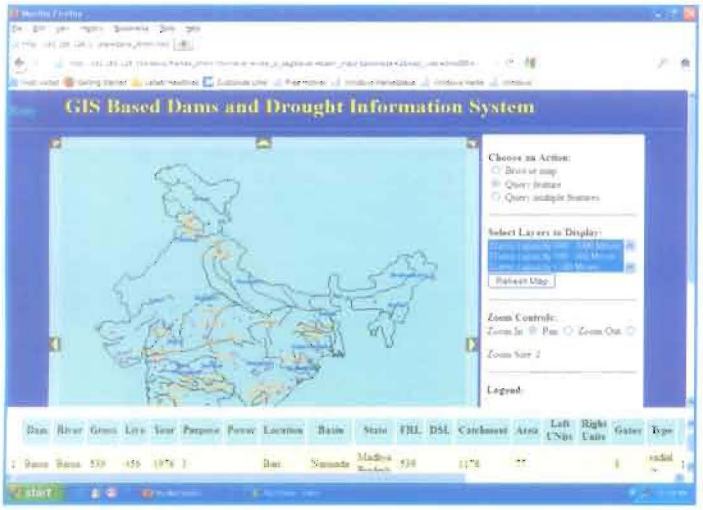
NIH_ReSyP (NIH_Reservoir-System-Package)

NIH_ReSyP is a WINDOWS based software package that has been developed at NIH for various kind of reservoir analysis. Different modules of the software include capacity computation, storage-yield analysis, statistical analysis of flow data, initial rule curves derivation, operation analysis of a multi-purpose multi-reservoir system for conservation and flood control purposes, hydropower analysis, reservoir routing, interpolation of elevation-area-capacity table, and inflow computation. The software is being named as NIH_ReSyP which signified NIH_Reservoir-System-Package. The software has been developed in Visual Basic and various computer programs developed in FORTRAN language at NIH have been linked. Various forms have been developed for easy preparation of data files. It will be easy for the users to select the data files and take the model runs. Results can be viewed in tabular as well as graphical form either through MS-EXCEL or through a built-in routine. It is assumed that the package will help the field engineers in carrying out various kind of reservoir analysis. The opening banner of the software is shown below.

GIS based dams and drought information system

In Web GIS, geographic data are disseminated over Internet/ Intranet. An open source Web GIS software Mapserver was chosen for Intranet application on thematic maps of dams, rivers and basin and salient features of majors and medium dams in India. Additionally, district wise rainfall for SPI values for drought classes are disseminated. The application was based on Itasca Tutorial. GIS point data had 1195 dam locations. The database contained salient features for 603 dams. For 237 dams, the database was linked with

the thematic map. For 196 dams, both the storage and geographic location and for 363 dams the storage data were available. For 77 stations, both the hydropower and geographic location and for 161 stations the hydropower data were available. District rainfall time based on Climate Research Unit (CRU) TS2.1 dataset, of the Tyndall Centre for Climate Change Research, UK was used (Source: India Water Portal). In all four applications, three for dams and one for drought were developed. The dam applications include 'All Dams', 'Storage Dams' and 'Hydropower Dams' cases. India geographic boundary layer was always displayed. In 'Storage Dams' application, the four classes of storage capacity, namely capacity >1000, 500- 1000, 100- 500 and <100 M cum were displayed. For 'Hydropower Dams' application four classes of hydropower capacity, namely hydropower >500, 100- 500, 30- 100 and <30 MW were displayed. The query of river provides its name. Query of dam provides name, state and basin in the 'All Dams' application. In 'Storage Dams' and 'Hydropower Dams' applications, salient features of the dams are displayed. Query of the district layer results in district, state and monthly SPI and corresponding rainfall.



HTML page for 'Storage Dams' application

Groundwater Modelling and Surface Water – Ground Water interactions in and around Puri City

Puri is a city of high religious importance and heritage value, details of the Puri Jagannadh Temple, rituals, fairs and festivals and related aspects are covered extensively. It is found that water levels in two wells (Ganga and Yamuna) are falling inside the Jaganatha Temple Puri, which is causing problem for temple activities. The probable causes need to be studied by undertaking modeling study of rainfall-recharge processes, surface water groundwater interactions and increasing demands due to urbanization at basin scale. Water Samples have been collected from 3 blocks [Satyabadi, Brahma Giri and Puri Sadar] on March 2010 and November 2010. Hydrochemical analysis indicates that pH value is varying from 7 to 8.4 and conductivity is found in between 238 to 2710mhos/cm. The EC values indicate that the shallow groundwater in Puri is not saline. Isotopes like O-18, Deuterium and water chemistry data have been used to identify the groundwater source/s. The stable isotopic signatures indicate two different sources active in the City area. Most of the handpumps carry water recharged by the surface sources as more evaporation effect is visible in isotopic signature. Few handpumps and most of the dug-wells carry groundwater whose isotopic signatures resembles with local precipitation. The groundwater recharge is taking place from North-southern direction.

Study of Rising Groundwater Table in Jodhpur city

The rise of groundwater table near to the ground surface in some parts of the Jodhpur city has resulted into living hazards to the people located in the affected areas. Control and management of the rising trend of groundwater level by finding the cause and an immediate scientific solution have emerged as a challenging task for the Government of Rajasthan. To find the exact source and causes of groundwater table rise and to develop an appropriate management plan to revert back the rising trend, a study was entrusted to the Institute with the following objectives:

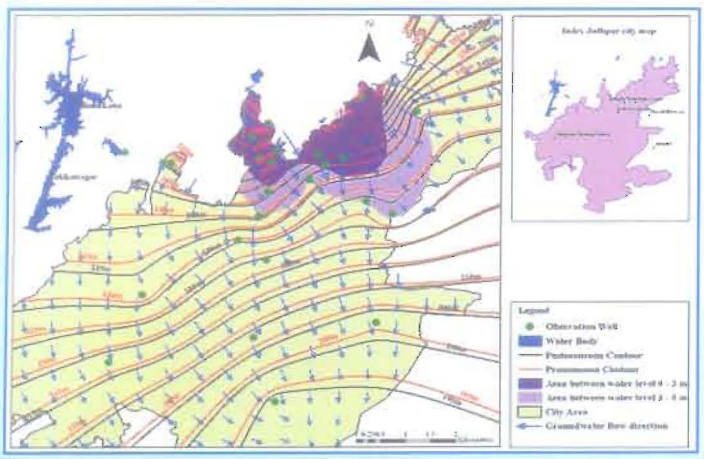
- Identification of cause(s) of rising ground water levels in Jodhpur city.
- Development of an effective and sustainable management plan for maintaining the water table of the area at a safe level to avoid any adverse impact on the civil structures and population of the area.

For addressing the issues, a systematic analysis of the topography, demography, geological formations, hydrometeorology-hydrology and hydrogeology, groundwater quantity and quality, sewage flows, inflows and outflows of waters to/from the Jodhpur city and from the Kailana-Takhatsagar Reservoir has been carried out. The major findings are:

(i) The waterlogged area and its extent are mainly located in the Quaternary alluvium formation below the Jodhpur city area. The Kailana-Takhatsagar and the Jodhpur city areas are located on two distinct geological units. These formations have different hydro-geological properties and hence, cannot be considered as a single system.

(ii) The possibility of seepage from the Kailana-Takhatsagar Reservoir entering the waterlogged area was investigated making use of the contour maps assuming that the Kailana-Takhatsagar Reservoir is not hydraulically connected with the aquifer underneath the Jodhpur city, and the Kailana-Takhatsagar Reservoir is hydraulically connected with the aquifer underneath the Jodhpur city. It is inferred that groundwater flow from the Kailana-Takhatsagar side is not causing water logging in the waterlogged area. For the latter case, it is noted that the direction of flow lines is not towards the waterlogged area. Thus, whether the Kailana-Takhatsagar Reservoir is hydraulically connected with the aquifer underneath the Jodhpur city or not, the seepage from the lake is not flowing towards the waterlogged area in either situation.

(iii) The measurements and analyses of the sewages data of the year 2009 indicated sewages disposal of about 37% of the supplied water through three major sewerage systems, i.e., Airport drain, Polytechnic Institute drain and Nandri sewage treatment plant drain.



(iv) The source of water logging and rise in groundwater level in some parts of the city area appears to be due to return flow of water from water supply system and from the source other than the sewage waters. In some pockets, the seepage from sewage system cannot be ruled out.

Suggested measures

1. As the first and foremost remedial measure, it was suggested to regulate the quantity of water being supplied to the city area at the source itself, i.e., regulation of water from the Kailana-Takhatsagar Reservoir. The regulation needs to be based on per capita per day water requirement basis. The Jodhpur city being located in the arid and water scarce region, about 110 liters per capita per day could be taken as the guideline. Industrial water requirements are to be included separately. For 110 lpcd supply, the quantity of water requirement for the estimated population of 11,08,950 in the Jodhpur city for the year 2010 is worked out to be 268.69 lac gallon per day, which will reduce the quantity by about 35% over the quantity supplied (521.7 lac gpd) in the year 2009,
2. In the affected area, the water supply lines need to be thoroughly checked to find the locations of leakages, and suitable remedial measures to stop the leakages need to be taken up. The sewages/drainage lines in the affected area need to be properly sealed to stop seepage, if any,
3. The terrain being undulating, the area being an urban area, the requirement of lowering the water table by 4m, minimum depth of alluvium being 2m, all these aspects do not promote provision of a usual horizontal sub surface drainage system. However random sub surface drainage trench of 4m depth, filled with coarse sand and gravel can be constructed to control the rising water which can be led to a collector caisson, from where water can be pumped out,

4. Provision of vertical drainage system i.e., by pumping the water from the aquifer in the problematic area looks feasible; as drainage wells can be constructed with least interference in the urbanized area. The pumping rate and schedule can be controlled, the number drainage wells can be increased in a locality as required, and already such practice has been initiated in the area, all these factors favor provision of vertical drainage. In region of low transmissivity area (<30m2/day) large diameter wells of 0.5m can be constructed, and

5. There are three large ponds, namely, Baiji Ka Talab, Fateh Sagar, and Gulab Sagar located near to the problematic area. The pond beds are more or less impervious, or if necessary, these can be made impervious by lining. The pumped water can be discharged to these ponds through conveyance pipe. From these ponds surface channel can be constructed to convey the water stored in the pond to the existing surface drainage system through gravity. These waters can be used for agricultural irrigation purposes. It should not be mixed with sewage waters.

Hydrology Project-II

NIH is the nodal agency for the development of Decision Support System (Planning) for Integrated Water Resources Development and Management, to be implemented in 6 Central and 9 States Agencies under HP-II. The consultants are working on development and implementation of the Generic DSS(P) software for the "Upper Bhima" pilot basin in Maharashtra. The fourth meeting of Review Committee for DSS (P) was organized on 28th March, 2011 and the DSS (P) report on Generic DDS (P) Model Development was discussed during the meeting.

The Institute is actively participating with various State and Central Agencies in carrying out eleven Purpose Driven Studies (PDS). The Institute has conducted 52 training programs/ workshops since inception of the project on the specialized topics of hydrology, data processing software SWDES & HYMOS and demand driven trainings for the State and Central implementing agencies.

Important information about water related websites / Portals

Ground Water Modelling

This group is a forum for the communication of all aspects of ground water modelling including technical discussions; announcement of new public domain and commercial softwares; summaries of research results, recent publications, and case studies.

To subscribe, send a blank e-mail to: gwmodel-subscribe@yahoogroups.com

Roorkee Hydrology Group

This group aims at interaction amongst professionals, academicians, research scholars and students working in the field of Hydrology and Water Resources.

To subscribe, send a blank email to: rhydrology-subscribe@yahoogroups.com

Decision Support Systems in Hydrology

A forum for exchange of ideas and experiences regarding development and use of decision support systems in surface water planning; integrated operation of reservoirs; conjunctive surface water and groundwater planning; drought monitoring, assessment and management; water quality; and other aspects of hydrology and water resources development and management.

To subscribe, send a blank email to: dsshydrology-suscribe@yahoogroups.co.in

Hydrology

This group aims to provide a forum for discussion of scientific research in all aspects of Hydrology and modelling of hydrologic processes.

To subscribe, visit the webpage: http://groups.google.com/group/hydrology/

Groundwater Assessment and Modelling

This group aims to provide a forum for discussion of scientific research in all aspects of ground water assessment and modelling.

To subscribe, visit the webpage: http://groups.google.com/group/groundwater/

A discussion group on water resources development and management.

To subscribe, visit the webpage:

http://groups.google.com/group/water-resources/

Indian Hydrology

A forum for discussion of hydrological problems in India.

To subscribe, visit the webpage: http://groups.google.com/ group/ indian-hydrology/

Modelling of Coastal Aquifers

A forum for discussion of hydrological problems in coastal regions and modelling of seawater intrusion.

To subscribe, visit the webpage: http://groups. google.com / group/coastal/

Mass Awareness Programme

NIH Centre for Flood Management Studies, Guwahati, organized a Mass Awareness Program on Water Conservation at D K College, Mirza, Dist. Kamrup, Assam, on 21.08.2010.

NIH Centre for Flood Management Studies, Guwahati, organized a Mass Awareness Program on Flood Management – Flood Prepardness at Kakaya H.S. School, Dist. Nalbari, Assam, on 19.08.2010. A stage

drama Upanayan, through a group of artist led by Mr. Lakshmi Barthakur was also staged to attract the audience and to educate them on the subject.

As mandated by Ministry of Water Resources, Govt. of India, NIH Deltaic Regional Centre, Kakinada, in collaboration with the Irrigation Circle, I & CAD Department, organized one-day mass awareness programme at Rajahmundry (AP) on 26.08.2010 with a

focal theme on "Conservation of water in irrigated areas" for the benefit of about 125 Office Bearers of Water User Associations in Godavari Delta.

Publications in Journals

Kumar C.P. and S. Mittal (2010), Determination of soil hydraulic properties in a part of Hindon River catchment using SOILPROP software, ISH J. Hydraulic Engineering, Vol. 16(2), 13-27.

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Workshop/Conference/Symposium attended by the Scientists/Staff

S. N.	Title	Duration	Place
1	Application of Geo-informatics in National Development	Nov. 29-30, 2010	Sagar
2	International Workshop on 'River Management (IWRM-2010)'	Dec.14-16, 2010	New Delhi
3	"HYDRO-1010" – National Conference on 'Hydraulics Water Resources, Coastal and Environmental Engineering'	Dec.16-17, 2010	Maharishi Markndeshwar University, Ambala
4	National Seminar on 'Global Warning and Its Impact on Water Resources (GWIWR)'	Jan. 14, 2011	Jadavpur University, Kolkata-700032
5	International Conference on 'Sustainable Water Resource Management and Treatment Technologies'	Jan.19-22, 2011	NEERI, Nagpur
6	International Conference on 'Community Based Water Resource Management in Northeast India: Lesson from a Global Context'	Jan. 28-30, 2011	Guwahati
7	Inception Workshop on Mathematical Modeling of River Brahmaputra with Emphasis on Climate change	Jan. 31- Feb 1, 2011	Guwahati
8	National Conference on 'Environment Management & Challenges for Sustainable Development'	Feb. 2 -3, 2011	Mumbai
9	State level Watershed Management Workshop	Feb. 3-4, 2011 & Feb. 24-25, 2011	Dehradun & Pantnagar
10	Training course on 'Introduction to GIS and Applications'	Feb.7 - 4 Mar., 2011	Hyderabad
11	Training Course on 'Coastal Erosion & Protection'	Feb. 8-11, 2011	Pune
12	Conference on 'Landslide Hazards-Consequences & Challenges'	Feb. 10-12, 2011	Roorkee
13	National Conference on 'Geosciences & Water Resources for Sustainable Development'	Feb.11-12, 2011	Andhra Univ., Visakhapatnam
14	International 'Conference on Sustainable Water Resources Management & Climate Change Adaptation'	Feb. 17-19, 2011	Durgapur
15	Training Program on 'Flood Forecasting Techniques'	Feb. 21-26, 2011	NWA Campus, Pune
16	National Conference on 'Landscape Restoration Processes-Challenges and Opportunities'	Feb.22-23, 2011	Dehradun

17	National Conference on 'Sustainable Development of Water Resources and Environmental Management'	Feb.25-26, 2011	Sri Balaji College of Engineering and Technology, Jaipur
18	Short term course on 'Climate Change and Water Management'	Feb. 28 - 4 Mar., 2011	IIT, Bombay
19	Training Workshop on Water Resourses Management in North East Region	April 4-5, 2011	Shillong

Organization of Workshops / Training Courses/Seminar/ Symposia

S.N.	Topic of Training/ Workshop/ Symposia	Date & Duration	Venue	Coordinator
1.	Hydrological Extremes – Prediction, Management & Mitigation	Dec. 6-10, 2010	Belgaum	Dr. T. Chandra Mohan Sc E1
2.	Water Availability and Management in Punjab	Dec. 13-14, 2010	Chandigarh	Dr. M.S. Rao, Sc-C & Dr. S.D. Khobragade, Sc-E1
3.	National Symposium on Hydrology	Dec. 21-22, 2010	Jaipur	Dr. Rakesh Kumar, Sc-F
4.	Generic DSS(P) model Development	Jan. 7, 2011	Delhi	Dr. A.K. Lohani, Sc.E1
5.	DSS Introduction & Case Study support	Jan.10-21, 2011	Roorkee	Dr. A.K. Lohani, Sc.E1
6.	Introduction and Case Study Support	Feb. 7-18, 2011	Roorkee	Dr.A.K.Lohani, Sc.E1
7.	Brain Storming Session on Emerging Water Related Issues for N-E Region and participation/Cooperation of NIH	Feb.16, 2011	Guwahati	Dr. B.C. Patwary, Sc.F
8.	Application of Remote Sensing and GIS in Water Resources Management	Feb. 21-25, 2011	Roorkee	Dr. S.K. Jain, Sc.E2
9.	Conjunctive use and management of surface and ground water including Water quality	Mar. 7-12, 2011	Kolkata	Dr. S.K. Jain, Sc.E2

Events Organized

S.NO.	Programme/Event	Date	Venue
1	32nd NIH Foundation Day	Dec 15 -16, 2010	Roorkee
2	World Water Day-2011	Mar 22, 2011	Roorkee

Foundation Day Celebrations (Dec 15-16, 2010)

Secretary (WR) visiting Nuclear Hydrology Lab

World Water Day Celebrations (March 22, 2011) at Roorkee and Jammu

Training Under Hydrology Project Phase II

1. Dr M. K. Sharma, Sc.C- Feb. 7-25, 2011 Netherland.

Institute's Important Meetings

1. Technical Advisory Committee (TAC) Meeting, held at New Delhi on 28.12.10
2. Annual General Meeting (AGM), held at New Delhi on 28.2.2011
3. Working Group meeting, held at Roorkee during April 7-8, 2011

NIH Society's Annual General Meeting (Feb 28, 2011)

Working Group meeting (April 7-8, 2011)

A Dialogue Initiation Meet was organized at New Delhi, on June 24, 2011 to Translate Vision into Mission for Mitigation and Remedy of Ground Water Arsenic Menace in India. The meet was jointly organized by Central Ground Water Board (CGWB) and National Institute of Hydrology (NIH), under the aegis of Ministry of Water Resources, Govt. of India.

Dialogue Initiation Meet to Translate Vision into Mission for Mitigation and Remedy of Ground Water Menace in India June 24, 2011

Arsenic Menace in India is one of the critical and key challenges for the groundwater quantity and quality management, particularly in the Ganga-Brahmaputra Holocene aquifers. The issue has resulted into adversity in the policy planning, socio-economic development, human-health related issues, and geo-environmental stability. The challenges posed by this natural calamity have to be dealt collectively sharing responsibilities by different stakeholders in accordance with the expertise and governing policy in a systematic scientific manner.

Hon'ble Union Minister of Water Resources, Shri Salman Khurshid, honoured the event as Chief Guest. Hon'ble State Minister (WR), Shri Vincet H Pala, and the Secretary (WR), Shri D V Singh were the Guests of Honour at the function. The document presented during the meet discussed the following issues:

(a) Making arsenic contaminated aquifers conducive to preserve groundwater quality and produce arsenic free groundwater to meet drinking and irrigation demands,

(b) Sustainable techniques and technologies for decontamination of aquifers from arsenic,

(c) Scoping for unveiling alternate sources of water to meet the demand of potable water in the arsenic affected and vulnerable areas,

(d) Eradication of health hazards, caused by ingestion of arsenic contaminated water, and

(e) Making the society responsive to unconscious usages of contaminated water.

The meet discussed ways to achieve the targeted goals as:

(i) R & D works to be undertaken to reach at logical solutions to the arsenic calamity,

(ii) Immediate measures to provide arsenic free potable water to the people in the arsenic vulnerable areas, and

(iii) Activities to be undertaken for capacity building and social empowerment, and

(iv) Revising the National Standard for Arsenic in drinking water.

Invited Lectures And Important Meetings

S.N.	Date	Meeting – Subject	Place
1	Jan. 7,2011	a) Attended workshop on 'Generic DSS (Planning) development' at New Delhi. . b) Attended meeting of the committee of experts for benchmarking of International Practices in Ground Water Management at CGWB.	New-Delhi Jam Nagar
2	Jan. 10-12, 2011	Attended the Consultation Meeting for review of National Water Policy with NGOs	New-Delhi
3	Jan 17, 2011	Attended m eeting of the Technical Expert Committee on "War for Water", DST.	New Delhi
4	Feb. 2, 2011	Attended Workshop on 'Water and Climate Change' organized by TERI at Taj Palace.	New-Delhi
5	Feb. 15 , 2011	Organized one day Meeting with Commissioner and other Engineers/Scientists.	Meghalaya
6	Feb. 16 , 2011	Organized one day Brain Storming Session on Emerging Water Related Issues for N-E Region	Guwahati
7	Mar.4 , 2011	Delivered lecture on "Integrated Water Resources Management: Emerging Issues for the North East".	Guwahati
8	Mar. 14-15, 2011	a) Attended the meeting taken by Additional Secretary (WR) reg. to discuss issue related to scope of initiating a pilot project for preparation of a GW informa tion system (GIS) on GW availability for its utilization at the grass root level b) Attended Interim workshop on 'Support to the National Water Mission under National Action Plan for Climate Change' at CSMRS	New-Delhi New Delhi
9	Mar. 17– 18, 2011	a) Chaired the reservoir & Lakes sectional committee, WRD-10 meeting at BIS b) Attended 1 st meeting of expert committee of DST on climate change at DST.	New-Delhi New Delhi
10	Mar. 25 , 2011	Delivered lecture on "Climate Change and Global Warming: Impact on Water Resource of North East"	Duliajan , Assam
11	Mar. 23-26, 2011	Attended 3rd National Ground Water Congress.	New-Delhi

News

Flower Show- Winner of the Bhatia Brothers Cup unit securing highest points in potted plants at BEG & C, Roorkee held on March 4-6, 2011.

Result Framework Document (RFD) Software

The Institute has developed a software package for collection of RFD information from different Divisions & RC's.

Other News

Distinguish Visitor's Lecture

1. Mr. K.R. Damodaram, Tech Dir., M/s Trend Electric Co. Pvt. Ltd., Chennai delivered a lecture on 'Intelligent Water Management by Telemetry through 'SCADA and GPRS Remote Monitoring', Jan 21, 2011.

Recruitment

1. Sri Sumant Kumar, Sc.B joined in GW Div. on 25.1.2011(FN).
2. Dr. Rajesh Singh, Sc.B joined in EH Div. on 31.1.2011 (FN).

Upcoming Events

- National conference on 'Water, Energy and Biodiversity' with special reference to North-East Region, Agartala (Tripura), August 20-22, 2011
- Brainstorming session on 'Glaciers and water resources in the cold arid systems of Ladakh region', NIH-WHRC, Leh, Sep 27, 2011
- National Symposium on Instrumentation (NSI-36) with focal theme on Hydro-meteorological Instrumentation, Instrument Society of India, Oct 20-22, 2011
- 5th World Aqua Congress, Aqua Foundation, New Delhi, Nov 16-18, 2011
- 4th National Hydrology Symposium (in Hindi) on 'Application of advanced techniques in water resources management', NIH, Roorkee, Dec 16-17, 2011
- National symposium on 'Water resources management in changing environment (WARmICE-2012)', Indian Association of Hydrologists, Roorkee, Feb 8-9, 2012

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We Will Appreciate Your Guest Articles!

You can share your knowledge with others on topics highlighting 'water resources for community benefits' by contributing an article to the Guest Article Column. For more information, please contact: Dr V C Goyal, vcg@nih.ernet.in or vcgoyal@yahoo.com

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