



Govt. Of Chhattisgarh



Water Resources Department

HYDROLOGY PROJECT PHASE-II

PROJECT COMPLETION REPORT



JULY 2014

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Mahanadi Godavari Basin
Water Resources Department
Raipur**

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Project Completion Report

Hydrology Project Phase-II

CHHATTISGARH STATE

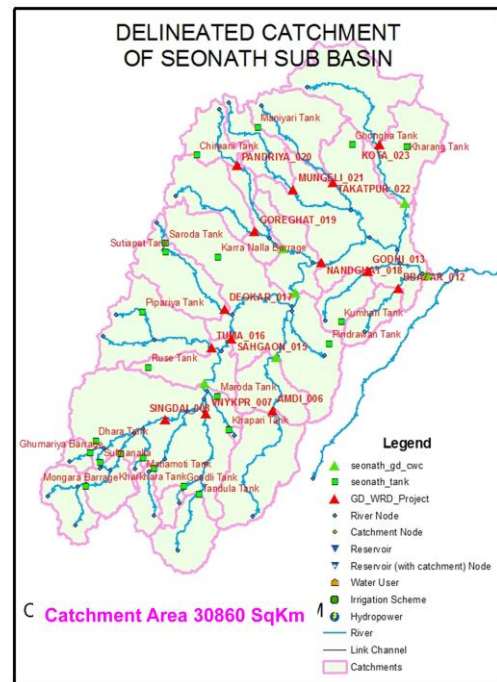
1. The Basin of Chhattisgarh

The State of Chhattisgarh has the geographical area as per GIS about 135,100 Sq km. The State is divided into five river basins. Mahanadi Basin drains out 75,858.45 Sq km, Godavari Basin drains out 38,694.02 Sq km, Ganga Basin drains out 18,406.65 Sq km, Bramhani Basin drains out 1,394.55 Sq km and Narmada Basin drains out 743.88 Sq km of catchment area in the state.

2. Introduction of Seonath Sub Basin

The Seonath Sub Basin in Chhattisgarh has been selected for DSS Planning for the component of conjunctive use. The river originates near village Markaskasa of Maharashtra State near Chhattisgarh Border. It flows initially from West to East the North-east, North and finally again South-east, and joins river Mahanadi near Seorinarayan a town in District Bilaspur. The catchment area of this sub-basin is 30,800 SqKm. thus its contribution is to the tune of about 40.60% i.e. maximum for the Mahanadi Basin. It joins Mahanadi River after running a length of about 383 kms. Its main tributaries are Tandula, Kharun, Amner, Surhi, Hamp, Arpa and Lilagar etc.

The mean annual rainfall in the basin varies from 1005 mm to 1200 mm.



3. Background: Prior to Hydrology Project-I

Before National Hydrology Project, State Government was preserving every year rainfall as well as Gauge-Discharge & Ground Water level data in discrete manner in a shape of hard copy.

Previous existing data deficiencies

- Data measured by Central/state agencies in different time schedule and lack of coordination

- Field practice adopted were not streamlined.
- Equipments used for measurement did not have high accuracy
- Data validation processed manually
- Difficulty in inferring in information out of the data collection due to private owned wells/missing of data
- Two Divisional office at Raipur and Bilaspur with Nine Sub Divisional Officer at Raipur, Durg, Rajnandgao ,Kanker , Jagdalpur, Bilaspur ,Katghora,Raigarh and Ambikapur and One Water Quality Lab at Bhopal (Now in m.p.) were fuctional.
- Data observed at stations were maintained at District unit &Divisional unit Office in Hard copie
- Data provided to various agency as per their requirement.
 - The observation net works have been maintaining to monitor from 1972. The objective was to know the behavior of ground water level in unconfined aquifer. To start with, 50 observation wells (dug well) was selected in each district. Later on in 1985, the observation net work increased to 100 wells in each district.
 - The concept of network monitoring was existing prior to implementing of HP in Chhattisgarh state. The observation network monitoring was being done separately by the Central and State Ground Water agencies in different time schedule as a consequence to that duplication of work was noticed at the time of integration between both the agencies and is rectified accordingly.
 - The monitoring net work stations was almost stabilized and we had 781 observation wells in the entire state.

Following activity has been done during 1986 – 1993 funded by World Bank under National Hydrology Project for Surface Water

- Hydrometeorology Network established
- 60 Nos Gauge and Discharge Stations established.
- One Divisional office at Raipur and three Sub Divisional Office at Raipur, Jagdalpur and Balaghat (Now in M.P.) established.
- Data observed at stations maintained at Divisional Office in Hard copies.
- Data provided to various data users as per their requirement in hard copy.

4. Hydrology Project Phase-I (1995-2003)

Objectives

During HP-I, Hydrological Information System (HIS) providing hydrological and metrological data was established with following objectives.

- To improve organizational arrangements for hydrological, hydro meteorological and water quality data measurement, validation, analysis and storage
- To strengthen institutional and technical capabilities
- To improve physical facilities and services for hydrological, hydro-meteorological and water quality data measurement, validation and analysis
- To improve the use of hydrological, hydro-meteorological and water quality data

The project was launched in December 1995 and continued till 31st December 2003.

Major Achievements of Hydrology Project, Phase – I

- The project installed 28 new river gauging sites and upgraded 14 G. D. sites.
- 38 new Rain gauge stations established and 59 stations upgraded
- 2 Full climatic station established at Sarangpal Kanker and Sakri Bilaspur.
- 781 observation wells of Ground Water have been selected for monitoring water level.
- 39 Piezometer have been established out of which 19 No. DWLR installed.
- 11 water quality labs have been established
- 11 GIS layer procured.
- 6 Silt and sediment labs have been established
- 50 computers have been set up to process hydrological data
- The dedicated hydrological data entry software (SWDES and GWDES) and processing software (HYMOS,GEMS) and Data Storage & Dissemination software (WISDOM) have been made operational
- Hydrological Data User Groups have been formed

- Data under one roof concept facilitate easier access to data user and facilitated in assessment of various parameters of hydrological and meteorological data.

5. Hydrology Project Phase-II

The Hydrology Project Phase-II in the Chhattisgarh State commencing from the effective date of 5.4.2006 to June 2012 i.e. for six years & extended up to May 2014. The legal agreements viz., loan agreement and project agreement have been signed on 19.01.2006.

The Hydrology Project Phase-II which is a vertical extension of the Hydrology Project Phase-I was envisaged for an amount of **Rs. 21.51 crores**. As per the guidelines of MoWR, New Delhi, the project cost is revised to Rs.9.941 crores (Surface water - 4.123crores, Ground water – 5.818 crores) in October 2013.
Annexure-S1 & G1

6. Institutional reform introduced during HP-I and during HP-II

Surface Water

One additional Divisional office at Jagdalpur and two sub divisional offices at Jagdalpur and Bilaspur established for HP-I work.

- 1 Nos. State Data Center established at Raipur
- 2 Nos. Divisional Data Center at Raipur & Jagdalpur established.
- 5 Nos. Sub Division Data Center established at Raipur, Bilaspur, Ambikapur, Jagdalpur (2Nos) .
- 1 Nos. State Data Center established at Raipur
- 2 Nos. Divisional Data Center at Raipur & Bilaspur established.
- 9 Nos. District Data Center established at. Raipur, Durg, Rajnandgao ,Kanker , Jagdalpur, Bilaspur ,Katghora,Raigarh and Ambikapur.
- Two water quality lab established at Raipur (leve II+) & Bilaspur(level-II)

7. Project Objective

The overall **Project Development Objective** is to extend and promote the sustained and effective use of Hydrologic Information System by all potential users concerned with water resources planning and management thereby contributing to improved productivity and cost-effectiveness of water related investments.

The prime components of the project:-

Component – I: Institutional Strengthening

- A. Consolidation of HP-I activities
- B. Awareness raising, dissemination and knowledge sharing
- C. Implémentation support

Component –II: Vertical Extension

- A. Development of hydrological design aids
- B. Development of DSS (Decision Support System)
- C. Implementation of PDS (Purpose Driven Studies)

8. Financial Target & Achievement:-

The financial target allocated for Chhattisgarh, as Revised Project Cost Rs. 994.09 Lakhs. The total expenditure incurred up to 31 May 2014 is Rs. 923.07 Lakhs.

Surface Water

The financial target allocated, as Revised Project Cost Rs. 412.26 Lakhs. The total expenditure incurred up to 31 May 2014 is Rs. 397.32 Lakhs. The sub head wise project cost & corresponding expenditure incurred given **Annexure-S2**

Ground Water

The financial target allocated, as Revised Project Cost Rs. 581.83 Lakhs. The total expenditure incurred up to 31 May 2014 is Rs. 525.75 Lakhs. The sub head wise project cost & corresponding expenditure incurred given **Annexure-G2**

9. Capacity Building and Training:-

Surface Water

27 Nos. In house training organized at Sate Data Centre Raipur. 35 Nos. domestic training attended at various places like NIH Roorkee, NWA Pune & ASCI Hyderabad etc. One International DSS training attended at DHI Denmark. The project physical and training achievement by end of May 31, 2014 is given in **Annexure – S3 & S4**

Ground Water

24 Nos. In house training & 96 workshop organized at village, block & district level. 73 Nos. domestic training attended at various places like NIH Roorkee, NWA Pune, ASCI Hyderabad, CGWB Faridabad etc. The project physical and training achievement by end of May 31, 2014 is given in **Annexure – G3 & G4**

10. Reimbursement-

The total reimbursement claim submitted to CAAA is Rs. 778.54 Lakhs. The Reimbursement claim received Rs. 659.28 Lakhs and reimbursement amount adujusted against loan of Rs. 121.26 Lakhs.

Surface Water

The total reimbursement claim submitted to CAAA is Rs. 340.31 Lakhs. The Reimbursement claim received Rs. 291.06 Lakhs and reimbursement amount adujusted against loan of Rs. 50.48 Lakhs. **Annexure – S5**

Ground Water

The total reimbursement claim submitted to CAAA is Rs. 438.23 Lakhs. The Reimbursement claim received Rs. 368.22 Lakhs and reimbursement amount adujusted against loan of Rs. 70.78 Lakhs. **Annexure – G5**

11. Audit Report-

All Audit report issued by Accounted General Chhattisgarh from inception of project to the period ending March 2013 is already submitted to World Bank. The audit work for FY 2013-14 & 2014-15 likely to be completed by A. G. Chhattisgarh in the month of July/August 2014.

12. Data Awareness and Dissemination -

Surface Water

Brochure, Water Year Book published & web Site Developed by department staff under HP-II, to facilitate awareness and dissemination of data in year 2009. This web site in further upgrade to hydrologyproject.cgwrd.in in year 2014

Historical and current data have been electronically recorded and primarily validated. Details of data disseminated to 154 users is given in **Annexure-S6**.

Ground Water

Historical and current data have been electronically recorded and primarily validated. Details of data disseminated to 41 users is given in **Annexure-G6**.

13. Project Outcomes in HP-II: –

Component – I: Institutional Strengthening

Surface Water

Under component “Institutional Strengthening” **Conference Room & Meeting Hall** of State Data Centre upgraded with roof mounted projector, improved light & sound system, wooden wall panel etc. Training centre is constructed on second floor of Ground Water Lab. at Bilaspur. Existing computers upgraded and new computers, printers, scanner, training equipments, software’s etc. procured. Workshop, Training, Water year book & Brochure published, Website upgraded (<http://hydrologyproject.cgwrdd.in>) for Awareness raising, dissemination and knowledge sharing. Procurement of Current meter, Auto Level, Water Quality Kit, SRG ARG tipping Bucket with data logger & Tipping Bucket Rain Gauge Sensor & with microcontroller based data logger & 10 watt Solar Panel.

Ground Water

Existing computers upgraded and new computers, printers, scanner, Arc GIS software's procured. Field equipment Water Level Recorder & GPS tracker procured. Laboratory equipment PH Meter, Conductivity Meters, Spectro Photometer, Multi Parameter Bench Meter, Multi Parameter Pocket Tester Procured for Water quality analysis. Ground water year book & Brochure published. Training equipment & Office equipment procured. Workshop organised at village, block & district level to aware people. Construction of Training hall & vehicle stand.

Component –II: Vertical Extension

II A Hydrological Design Aids

Surface Water

2 Nos officials nominated for HDA work. Officials attended training courses at NWA, Pune. They are practicing on MAP WINDOW, HDA & MWSWAT Software and having difficulties while running MWSWAT.

Training Courses-

1. Advanced Techniques/Models for Hydrological Design Aids (21-25 May 2012).
2. HDA 1 – Assessment of Water Resources Potential availability/Yield assessment (10-15 Sep. 2012).

3. HAD 2 – Estimation of Design Flood (07-12 Jan. 2013).

II B Decision Support System (Planning)

6 Nos dedicated staff working in State Data Centre for DSS work.

Surface Water

Following activities have been completed

- Seonath Sub Basin is selected for DSS development
- Conjunctive use of water is main component for Chhattisgarh
- Mike Basin Model developed for Seonath Basin, difference between observed & simulated discharge is only 1% at joining to Mahanadi River.
- Mike basin model developed for Intra basin Transfer of spill water from Ravishankar Sagar Reservoir to Tandula Reservoir. This link canal Project is under scrutiny at CWC, New Delhi for pre feasibility clearance.
- Conjunctive use model prepared for Tandula Command area
It is observed that non utilisation of ground water in Tandula command deficit in Sahagaon and Simga tail command and with the use of ground water used in upper command no deficit occurs.

Detailed outcome, Result has been enclosed in Annexure-S7

Ground Water

- Piezometer 58 No. construct as Data collection network.
- Digital Water Level Recorded (DWLR) 11 No. procured for Piezometer.
- Seasonal planning of 21 catchment of Seonath sub basin has been completed.

II C Purpose Driven Studies

Surface Water

Purpose Driven Studies (2 nos) jointly implemented by WRD Chhattisgarh and NIH Regional Center Bhopal.

1. **Study of Reservoir sedimentation, Impact Assessment and Development of Catchment Area Treatment Plan for Kodar Reservoir in Chhattisgarh State.**

Major findings/applications of PDS :

The RS and GIS based models found that the rate of siltation is 0.25 Mm³/100 km²/year while soil loss is 7.78 t/ha/year in Kodar reservoir. The CAT plan developed for Kodar catchment consists of gram panchayats wise soil conservation measures and their impact on sediment yield was analyzed using SWAT model. The developed CAT plan is being taken by district authority under MNREGA scheme.

2. Water availability study and supply-demand analysis in Kharun sub-basin of Seonath basin in Chhattisgarh State.

Major findings/applications of PDS

The MIKE 11 NAM model was applied for rainfall runoff modelling and results were used in MIKE BASIN model for water availability assessment, demand supply analysis to meet future water demands and generation of various scenarios for planning and management of water resources in Kharun river basin in Chhattisgarh state. To meet the growing domestic and industrial water demands, four possible sites were identified and proposed on Kharun river for construction of small dam.

Detailed Outcome, Result has been enclosed in Annexure-S8

14. Support for Central Agencies, Training, Data Validation

- Training on domain & Software Provided at NIH Roorkee, NWA Pune, CWPRS Pune etc.
- Gauge Discharge Data of sites submitted to CWC for inter agency validation.
- Rainfall Data Send to IMD for validation.
- TAMC Supported for finalized of training calendars & Bid document of Piezometer Constuction by Consultant, and finalization of annual work plan.
- 2 Nos. PDS studies implemented jointly with N.I.H. Regional Center Bhopal.
- Training on domain & Software Provided at CGWB Faridabad, NIH Roorkee, NWA Pune, & RGNGWTRI , CGWB Raipur etc.
- Ware level Data of observation well submitted to CGWB for inter agency validation.

15. Hydrological Data User Group

Hydrological Data User Group constituted by Govt. of Chhattisgarh as per protocal in HP-I. **Annexure –S9**

16. Lessons learnt

- Need of regular assessment of revised capacities of reservoir in the state. Development and implementation of CAT (Catchment Area Treatment) plan during project planning. Major rivers should be monitored for sediment.
- Proper and regular assessment of water demand and accounting of supplies through various sources to different user is important in water resources planning of the river basin to meet the various use water demand judiciously.
- The coordination among the central agency and implementing state is crucial to achieving a comprehensive HIS. There shall be better sharing of information and data.
- Expansion of hydrological Data User Group (HDUG) up to district level which is at present State level, will be more beneficial for application of HIS.
- Quality assurance on data collection, processing, analysis and reporting can be improved.

17. Future plans and needs

- Arpa Sub basin (New basin) is selected for Surface water planning & conjunctive use. Data collection work completed, Model setup) in Mike Hydro. further work is under progress jointly with NIH scientists.
- Establishment /up gradation of Network of Standard Rain gauge Station (165 No.) and Automatic Rain gauge Station (Tipping bucket type 165 No.) covering all basin of Chhattisgarh. (including 200 existing rain gauge stations)
- Establishment of Piezometer Station (500 No.) with Digital Water Level recorder in place of existing observation open well.
- Real Time Decision Support and Flood Forecasting System for Mahanadi Reservoir Project (MRP) Complex, Sikasar Reservoir & Mongara Barrage, Tandula, Hasdeo & Kelo reservoir with GPRS connectivity. MRP Complex having four Reservoir and catchment area about 3670 Sq km.
- 8 no PDS studies
- Upgradation of GD site with Real Time equipment
- Training/Support on DSS Software for existing and new staff, for sustainability & applications to all basins.
- Training/Support on Hydrological Design Aids (HAD) Software for existing and new staff for implementation of all components.
- Procurement of Computer Hardware, Software & Vehicle

ANNEXURE

Annexure –S2

The sub head wise project cost & corresponding expenditure incurred

Surface Water

S. No	Detailed Costs	Project Cost in Lakhs			Project expenditure in Lakhs up to May 31, 2014		
		Investment	Recurrent	Total	Investment	Recurrent	Total
A. COMPONENT I: Institutional Strengthening							
1	I.A. Consolidation of HP I	99.12	5.70	104.82	97.34	5.65	102.99
	I.B. Awareness, Dissemination and Knowledge Sharing	24.99	27.98	52.97	21.69	27.98	49.67
	I.C. Implementation Support	50.54	105.31	155.85	50.54	99.67	150.21
B. COMPONENT II: Vertical Extension							
2	II.A. Hydrological Design Aids	0.00	3.63	3.63	0	3.63	3.63
	II.B. Decision Support Systems	17.45	39.26	56.71	16.45	38.27	54.72
	II.C. Purpose-Driven Studies	19.53	18.75	38.28	17.79	18.31	36.10
Total		211.63	200.63	412.26	203.81	193.51	397.32

Annexure –G2

The sub head wise project cost & corresponding expenditure incurred

Ground Water

S. No	Detailed Costs	Project Cost in Lakhs			Project expenditure in Lakhs up to May 31, 2014		
		Investment	Recurrent	Total	Investment	Recurrent	Total
A. COMPONENT I: Institutional Strengthening							
1	I.A. Consolidation of HP I	64.88	8.50	73.38	61.70	8.51	70.21
	I.B. Awareness, Dissemination and Knowledge Sharing	62.02	17.66	79.68	59.27	17.65	76.92
	I.C. Implementation Support	35.08	250.91	285.99	28.07	231.50	259.67
B. COMPONENT II: Vertical Extension							
2	II.A. Hydrological Design Aids	0.00	0.00	0.00	0.00	0.00	0.00
	II.B. Decision Support Systems	97.55	40.66	139.21	73.80	41.68	115.48
	II.C. Purpose-Driven Studies	3.57	0.00	3.57	3.57	0.00	3.57
Total		263.10	318.73	581.83	226.41	299.34	525.75

Annexure –S3

Physical Achievement since Inception till May 31, 2014			
Surface Water			
Name of Component		Target	Achievement up to May 31, 2014
1A Consolidation of HP1	Supplementary trainings on domain and software	Training In House- 27 Nos Training at training Institute- 35 Nos	Training In House- 27 Nos Training at training Institute- 35 Nos (ANNEXURE-S4)
	Upgrading IT hardware, software and network capacities	Procurement of MS office 2007 Software 15 Nos., Arc info 9.3.1 Software 1 No., Desktop Computer 22 Nos., Laptop 2 Nos., Printer 5 Nos, Scanner 5 Nos, Upgradation of Arc info 9.3.1 Software.	MS office 2007 Software 15 Nos., Arc info 9.3.1 Software 1 No., Desktop Computer 22 Nos., Laptop 2 Nos., Printer 5 Nos, Scanner 5 Nos procured. Upgradation of Arc info 9.3.1 Software. Into 10.2
	Repair/Upgradation/Replacement of field equipment	Procurement of Current meter cup type 14 Nos. with electronic Counter, Auto Level - 4 Nos. with staff., Water Quality Kit 7 Nos. Current meter set pigmi type with counter 14 Nos., SRG Non Recording 15 Nos, ARG tipping Bucket with data logger 15 Nos. Tipping Bucket Rain Gauge Sensor & with microcontroller based data logger & 10 watt Solar Panel. 19 Nos	Current meter cup type 14 Nos. with electronic Counter, Auto Level - 4 Nos. with staff., Water Quality Kit 7 Nos. Current meter set pigmi type with counter 14 Nos., SRG Non Recording 15 Nos, ARG tipping Bucket with data logger 15 Nos procured. Tipping Bucket Rain Gauge Sensor & with microcontroller based data logger & 10 watt Solar Panel. 19 Nos procured.
2. I.B. Awareness, Dissemination and Knowledge Sharing	Publications - regular and specific	Water year book Publication	Water year book 2012 & 2013 published
	Website development and maintenance	Website development and maintenance	Website upgraded (http://hydrologyproject.cgwrdr.in)
	Awareness raising activities and support to data users		Brochure published for awareness raising activities

	Audio-visual equipment	Procurement of Interactive Whaite Board 1 No., Visual Presenter Desktop 1 No., Laptop 3 Nos., Television Sony 40 LED - 2 Nos., Still Camera - 1 No., Vidieo Camera - 1 No.	Interactive Whaite Board 1 No., Visual Presenter Desktop 1 No., Laptop 3 Nos., Television Sony 40 LED - 2 Nos., Still Camara - 1 No., Vidieo Camra - 1 No. procured.
	Workshops & study tours (local or national)	One Workshop, Three Study Tour to Tamilnadu (Gujrat & Himachal Pradesh) State.	One Workshop, Three Study Tour to Tamilnadu (Gujrat & Himachal Pradesh) State. conducted.
3. I.C. Implementati on Support	Office building	1. Acostical treatment and Upgradation of State Data Centre Conference Room & Meeting Hall, 2. Upgradation of SDDPC Raipur. 3. Upgradation of Data processing Hall of State Data Centre with UPS, Renovation of Nodal officer chamber.	1. Acostical treatment and Upgradation of State Data Centre Conference Room & Meeting Hall, 2. Upgradation of SDDPC Raipur. 3. Upgradation of Data processing Hall of State Data Centre with UPS Renovation of Nodal officer chamber. work completed.
	Office equipment	Scanner A0 Size 1 No., Photo Copier 3 Nos., Stablizer 1 No., Printer A4 size 10 Nos., 1 KVA UPS 10 Nos., Laptop 2 Nos., Refrizerator 1 No., Online UPS 15 KVA 1 No., 20 KVA 1 No., Air Conditioner 2 Nos., Office Furniture - Chair 59 No, Table 2 No, Almira 2 No , Rack 1 No, Sofa 4 No etc. Coffee Machine- 1 No., Vaccume Cleaner- 1 No., Banner Stand- 15+15 Nos., Fire Extiguisher- 8 Nos., Water Cooler 1 No., Water Dispenser 3 Nos., Mini Gym , Furniture - Steel almira big 6 Nos., Steel Almirah 50 " - 6 Nos., Steel rack 6 Nos., Computer Table 6 Nos.	Scanner A0 Size 1 No., Photo Copier 3 Nos., Stablizer 1 No., Printer A4 size 10 Nos., 1 KVA UPS 10 Nos., Laptop 2 Nos., Refrizerator 1 No., Online UPS 15 KVA 1 No., 20 KVA 1 No., Air Conditioner 2 Nos., Office Furniture - Chair 59 No, Table 2 No, Almira 2 No , Rack 1 No, Sofa 4 No etc. Coffee Machine- 1 No., Vaccume Cleaner- 1 No., Banner Stand- 15+15 Nos., Fire Extiguisher- 8 Nos., Water Cooler 1 No., Water Dispenser 3 Nos., Mini Gym , Furniture - Steel almira big 6 Nos., Steel Almirah 50 " - 6 Nos., Steel rack 6 Nos., Computer Table 6 Nos. procurement completed.
1. II.A. Hydrological Design Aids	Incremental staff	-	-
	Training and workshops on hydrological design aids	-	-
2. II.B. Decision Support System	Direct software procurement	Procurement of Arc info with Spaital Analysis Software 1 No.	Arc info with Spaital Analysis Software 1 No. procurement completed.
	Training related to DSS	Training -5 Nos.	5 Nos. Training completed.

	IT hardware	Procurement of Front end computer 4 No., Server with two processor 2 No., Model tool computer 1 No., Colour Lesser Printer 2 Nos., 24 port Switch 1 No. etc.	Front end computer 4 No., Server with two processor 2 No., Model tool computer 1 No., Colour Lesser Printer 2 Nos., 24 port Switch 1 No. etc. procurement completed.
3. II.C. Purpose- Driven Studies	Consultancy support	Consultancy services for Two PDS	Consultancy completed.
	Civil works	Fixing of gauge post & construction of observation & study quest at kharun gauge discharge site.	Fixing of gauge post & construction of observation & study quest at kharun gauge discharge site Work Completed
	Equipment	Procurement of Auto Level 2 Nos., Current Meter set cup type 2 Nos., Current Meter set pigmi 2 Nos., SRG Non Recording 2 Nos., ARG tipping Bucket 2 Nos., Silt Sampler Punjab type 1 No.	Auto Level 2 Nos., Current Meter set cup type 2 Nos., Current Meter set pigmi 2 Nos., SRG Non Recording 2 Nos., ARG tipping Bucket 2 Nos., Silt Sampler Punjab type 1 No. procurement completed.
	Training workshops and courses	Two Workshop	Two Workshops organized.

Physical Achievement since Inception till May 31, 2014			
Ground Water			
Name of Component		Target	Achievement up to May 31, 2014
1. I. A Consolidation of HP-I	Supplementary trainings on domain and software	Training In House- 24 Nos Training at training Institute- 73 Nos	Training In House- 24 Nos Completed Training at training Institute- 73 Nos. (ANNEXURE-G4)
	Upgrading IT hardware, software and network capacities	Ram-14, Hard Disk-14, DVD Writer-14, Pen Drive-7, Optical Mouse-14, External 4 way USB Hub-2, Desk Top Computer-6, Server Computer-2, Printer-14, 8Port Net Gear Switch-2, BW Scanner-11, UPS-7, MS Windows Software-2, MS Office Software-2, Antivirous-19, Photo Copier/Scanner-1, Lap Top-2, Desk Top Computers-7, Lap Top-4, UPS-7, Printer- 11 No., Scanner-1No.,Fax Machine-1No. , Water Level Indicators- 12 No. , GPS Trackers- 12 No., PH Meters - 1No., Conductivity Meters - 1No., Spectro Photometer - 1No. Desktop Computer 4 No., Multi Parameter Bench Meter 1 No., Multi Parameter Pocket Tester 6 No.	Ram-14, Hard Disk-14, DVD Writer-14, Pen Drive-7, Optical Mouse-14, External 4 way USB Hub-2, Desk Top Computer-6, Server Computer-2, Printer-14, 8Port Net Gear Switch-2, BW Scanner-11, UPS-7, MS Windows Software-2, MS Office Software-2, Antivirous-19, Photo Copier/Scanner-1, Lap Top-2, Desk Top Computers-7, Lap Top-4, UPS-7, Printer- 11 No., Scanner-1No.,Fax Machine-1No. , Water Level Indicators- 12 No. , GPS Trackers- 12 No., PH Meters - 1No., Conductivity Meters - 1No., Spectro Photometer - 1No. Desktop Computer 4 No., Multi Parameter Bench Meter 1 No., Multi Parameter Pocket Tester 6 No. Procured.
	Procurement of spatial datasets	Arc GIS Arc Info 9.3.1 with Spatial Analyst - 1 No.	Arc GIS Arc Info 9.3.1 with Spatial Analyst - 1 No. Procured.
2. I.B. Awareness, Dissemination and Knowledge Sharing	Publications - regular and specific	District GW Year Books- 9 No.	District GW Year Books- 9 No. Published.
	Awareness raising activities and support to data users	Work Shops at Block and Village Level - 96	Work Shops at Block and Village Level - 96 Completed

	Audio-visual / office equipment	Executive Table-11, Computer Table-15, Executive Chair-11, Visitors Chair-26, Computer Chairs-15, Almeerah-14, Boock Shelves-10, LCD Projector-1, Air Conditioner-2, Photocopier Machine-2, Water Cooler-2, LCD Monitor-TY-2, Projector-1, Handicam-4, Sound System -1set, Air Conditioner-8, Table-5, VIP Chair-5, Visitors Chairs-100, Almeerah-10, Aqua Guard Cooler cum purifier -1 No	Executive Table-11, Computer Table-15, Executive Chair-11, Visitors Chair-26, Computer Chairs-15, Almeerah-14, Boock Shelves-10, LCD Projector-1, Air Conditioner-2, Photocopier Machine-2, Water Cooler-2, LCD Monitor-TY-2, Projector-1, Handicam-4, Sound System -1set, Air Conditioner-8, Table-5, VIP Chair-5, Visitors Chairs-100, Almeerah-10, Aqua Guard Cooler cum purifier -1 No Procured.
	Workshops & study tours (local or national)	Workshop-5 No., study tour - 4 No.	Workshop-5 No., study tour - 4 No. Completed
3. I.C. Implementation Support	Office building	1.Training Hall at Divisional Unit Bilaspur 2.Construction of False Celling, Doors and Windows Fixing in Training Hall at Divisional Unit Bilaspur 3.Construction of vehicle stand at campus of circle office Raipur, Divisional Ground Water Survey Unit No.9 Bilaspur and District Ground Water Survey Unit Katghora at Sakri and W/C room at Raipur Circle office.	1.Training Hall at Divisional Unit Bilaspur 2.Construction of False Celling, Doors and Windows Fixing in Training Hall at Divisional Unit Bilaspur 3.Construction of vehicle stand at campus of circle office Raipur, Divisional Ground Water Survey Unit No.9 Bilaspur and District Ground Water Survey Unit Katghora at Sakri and W/C room at Raipur Circle office Completed
	Office equipment	-	-
	Vehicle	-	-
2. II.B. Decision Support System	Database development - goods	Digital Water level Recorder (DWLR) - 11 No., Data Retrieval System (Laptop) - 3 No.	Digital Water level Recorder (DWLR) - 11 No., Data Retrieval System - 3 No. Procured
	Training related to DSS	3 Nos. Training .	3 Nos. Training completed.
	IT hardware	Desk Top Computer-10, UPS-10,	Desk Top Computer-10, UPS-10 Procured
	Civil work for data collection network	Construction of Peizometers- 60 No., Construction of protection cover in existing old Piezometer	Construction of Peizometers - 58 No. completed.

Trainings & Workshops (Surface Water)

Inhouse trainings organized by Surface Water Chhattisgarh

S.No.	Name of course	Place and time of course	Number of participants	IAs represented by participants
1	Hydrometry for Sub Engineer	Raipur, 16/04/07 to 17/04/07, 2 Days	25	Chhattisgarh Surface Water
2	Hydrometry for Gauge Reader	Raipur, 29/05/07 to 31/05/07, 3 Days	30	Chhattisgarh Surface Water
3	Hydrometry for Gauge Reader	Raipur, 05/06/07 to 07/06/07, 3 Days	18	Chhattisgarh Surface Water
4	INHOUSE TRAINING ON FMR	Raipur, 17/08/2007, 1 Day.	25	Chhattisgarh Surface & Ground Water
5	SWDES Data Entry & Validation for Sub Engineer	Raipur, 13/10/08 to 17/10/08, 5 Days	35	Chhattisgarh Surface Water
6	Refresher- Hydrometry for Sub Engineer	Raipur, 15/12/08 to 19/12/08, 5 Days	35	Chhattisgarh Surface Water
7	Refresher -Hydrometry for Gauge Reader	Raipur, 20/01/09 to 24/01/09, 5 Days	30	Chhattisgarh Surface Water
8	Refresher -Hydrometry for Gauge Reader	Raipur, 10/02/09 to 14/02/09, 5 Days	20	Chhattisgarh Surface Water
9	Refresher - SWDES Data Entry & Validation for Sub Engineer	Raipur, 23/06/09 to 27/06/09, 5 Days	25	Chhattisgarh Surface Water
10	Refresher -Hydrometry for Gauge Reader	Raipur, 29/12/09 to 02/01/10, 5 Days	40	Chhattisgarh Surface Water

11	Refresher -Hydrometry for Gauge Reader	Raipur, 13/01/10 to 17/01/10, 5 Days	27	Chhattisgarh Surface Water
12	Refresher -Hydrometry for Sub Engineer	Raipur, 18/03/10 to 22/03/10, 5 Days	25	Chhattisgarh Surface Water
13	Work shop on - Ground & Surface Water consevation.	Raipur, 05/06/2010 1 Day	150	Chhattisgarh State
14	Study Tour - Tamilnadu State	Tamilnadu, 28/08/11 to 05/09/11, 9 Days	10	Chhattisgarh Surface Water
15	Workshop on Two PDS Study	Raipur, 09/12/2011 1 Day	150	Chhattisgarh State
16	Refresher -Hydrometry for Sub Engineer	Raipur, 18/01/12 to 22/01/12, 5 Days	30	Chhattisgarh Surface Water
17	Refresher -Hydrometry for Gauge Reader	Raipur, 16/02/12 to 20/02/12, 5 Days	30	Chhattisgarh Surface Water
18	Refresher -Hydrometry for Gauge Reader	Raipur, 22/02/12 to 26/02/12, 5 Days	15	Chhattisgarh Surface Water
19	Study Tour - Gujrat State	Gujrat, 26/09/12 to 05/10/12, 10 Days	10	Chhattisgarh Surface Water
20	Study Tour - Himachal State	Himachal, 22/11/12 to 02/12/12, 10 Days	10	Chhattisgarh Surface Water
21	Refresher -Hydrometry for Sub Engineer	Raipur, 05/12/12 to 09/12/12, 5 Days	30	Chhattisgarh Surface Water
22	Refresher -Hydrometry for Gauge Reader	Raipur, 12/12/12 to 16/12/12, 5 Days	45	Chhattisgarh Surface Water

23	Introduction to ArcGIS & Application - By ESRI India	Raipur, 25/02/13 to 01/03/13, 5 Days	5	Chhattisgarh Surface Water
24	Workshop on Two PDS Study	Raipur, 28/06/2013, 1 Day	200	Chhattisgarh State
25	Training on SWDES & HYMOS software	Raipur, 16/12/13 to 20/12/13, 5 Days	25	Jointly NIH Bhopal & Chhattisgarh State
26	Gauge Reader Basic Introduction	Bilaspur, 15/01/14 to 19/01/14, 5 Days	18	Chhattisgarh Surface Water
27	Gauge Reader Basic Introduction	Raipur, 28/01/14 to 01/02/14, 5 Days	30	Chhattisgarh Surface Water
Total			1093	

Details of persons deputed for domestic trainings (Surface Water)

S.No.	Name of course	IA conducting training	Place and time of training	Number of participants
1	TOT HYDROMETERY	NWA PUNE	Pune, 22/08/06 to 01/09/06, Two Week	2
2	APPLICATION OF MODERN TECHNIQUE IN HYDROLOGY	NIH ROORKEE	Roorkee, 09/10/06 to 12/10/06, 4 Days	1
3	SURFACE WATER DATA PROCESSING & ITS VALIDATION USING HYMOS	NWA PUNE	Pune, 07/11/06 to 17/11/06, Two Week	1
4	BASIC SWDES USING HYMOS	NWA PUNE	Pune, 24/01/07 to 25/01/07, 2 Days	1
5	F M AND PROCUREMENT RELATED KEY ISSUE	MOWR New Delhi	New Delhi, 24/01/07 to 25/01/07, 2 Days	1

6	WISDOM SOFTWARE	NWA PUNE & ROLTA INDIA	Pune, 28/02/07 to 02/03/07, 3 Days	1
7	HYDROLOGICAL MODELING	NWA PUNE	Pune, 07/03/07 to 09/03/07, 3 Days	3
8	WORKSHOP ON FMR & TRAINING ON WEB BASED FMR	NWA PUNE & MOWR	Pune, 24/05/07 to 25/05/07, 2 Days	1
9	DSS PLANING FOR IWRDM	NWA PUNE	Pune, 05/06/07 to 15/06/07, Two Week	1
10	BASIC SWDES USING HYMOS	NWA PUNE	Pune, 20/08/07 to 31/08/07, Two Week	1
11	PREDICTION OF HYDROLOGICAL VARIABLE FOR UNGAUGED BASIN	CWPRS PUNE	Pune, 05/09/07 to 07/09/07, 3 Days	2
12	APPLICATION OF REMOTE SENSING & GIS IN WRM	NIH ROORKEE	Roorkee, 8/10/07 to 12/10/07, one Week	2
13	DSS PLANNING & HYDROLOGICAL DESIGN AIDS	NWA PUNE	Pune, 10/12/07 to 14/12/07, one Week	2
14	TOTAL STATION & GPS FIELD SURVEY	ESCI HYDERABAD	Hyderabad, 16/06/08 to 22/06/08, one Week	1
15	INTEGRATED & CONJUNCTIVE USE OF SURFACE & GROUND WATER	ENGINEERING STAFF COLLEGE OF INDIA, HYDERABAD	Hyderabad, 05/08/08 to 07/08/08, 3 Days	2
16	HYDROLOGICAL STUDIES FOR WATER RESOURCES PROJECT	NWA PUNE	Pune, 18/08/08 to 22/08/08, One Week	3
17	DSS PLANING FOR IWRDM	NWA PUNE	Pune, 16/09/08 to 26/09/08, Two Week	2
18	FMR TRAINING & WORKSHOP	MOWR New	31/08/09, One Day	3

		Delhi		
19	WORKSHOP ON PROCUREMENT & PREPARATION OF MTR	MOWR New Delhi	New Delhi, 13/10/09, one Day	2
20	RAINFALL RUNOFF MODELLING & RIVER BASIN MODELLING (DSS)	DHI	Roorkee, 09/11/09 to 20/11/09, Two Week	3
21	TRAINING COURSE ON DATA PROCESSING AND VALIDATION USING SWDES & HYMOS SOFTWARE	NWA Pune	Pune, 30/11/09 to 04/12/09, One Week	2
22	TRAINING ON DSS PLANNING (RAINFALL RUNOFF MODELLING & RIVER BASIN MODELLING)	DHI	Roorkee, 08/02/10 to 19/02/10, Two week	4
23	TRAINING FOR DESK OFFICERS ON RECONCILIATION OF ACCOUNT FOR YEAR 2009_10	MoWR	New Delhi, 27/04/2010, One Day	1
24	WORKSHOP ON HIS Awareness Raising	WRD ODISA	Bhubneshwar, 04/05/10 to 05/05/10, 2 Days	2
25	TRAIN THE TRAINERS T3	TAMC HP II, MOWR & NWA	Pune, 27/09/10 to 01/10/10, One Week	1
26	COCEPTUALIZATION & IMPLEMENTATION OF DATA CENTRE, AT ESCI HYDERABAD	ESCI HYDERABAD	Hyderabad, 04/10/10 to 06/10/10, 3 Days	2
27	DSS TRAINING, AT ROORKEE	DHI	Roorkee, 10/01/11 to 21/01/11, Two week	4
28	ONLINE SUBMISSION OF E-CLAIM FOR IBRD	CAAA, NEW DELHI	New Delhi, 14/03/11, One Day	1
29	HYDROLOGICAL PROCESS IN AN UNGAUGED CATCHMENT	NIH ROORKEE	Roorkee, 25/07/11 to 29/07/11, One Week	3
30	MANAGEMENT OF STORM WATER IN URBAN AREAS	NIH KAKINADA	Kakinada, 21/09/11 to 23/09/11, 3 DAYS	4
31	TRANING ON DSS PLANNING	DHI	Roorkee, 09/01/12 to 13/01/12, One	4

			Week	
32	CLIMATE CHANGE & ITS IMPACT ON WATER RESOURCES	NIH BELGAM	Belgam, 06/02/12 to 10/02/12, One Week	3
33	ADVANCE TECHNIQUES FOR HDA	C.E.S.DELHI	Pune, 21/05/12 to 25/05/12, One Week	2
34	ADVANCE TECHNIQUES/MODELS FOR HDA	C. E. S. DELHI	Pune, 10/09/12 to 15/09/12, Two week	2
35	HAD - II, ESTIMATION OF DESIGN FLOOD	C. E. S. DELHI	Pune, 07/01/13 to 12/01/13, One Week	2

Details of persons deputed for International training

S.No.	Name of course	Names of the Agencies Conducting the course	Place and time of training	Number of participants from your Dept.
1	Decision Support Systems for Integrated Water Resources Planning and Management	DHI India	Denmark, 02/08/10 to 10/09/10, Six week	1

Annexure –G4

Trainings & Workshops (Ground Water)

In-house training organized by Ground Water Chhattisgarh

S.No.	Name of course	Names of the Implementing Agencies Conducting the course	Place where the training was conducted. Village/Block/ Disst	Period and Duration of Course	Number of participants
1	H.I.S. Training	SGH Raipur	IN House	13.12.07 to 14.12.07	27
2	F.M.R. HPII	SGH Raipur	IN House	29.01.08	37
3	Basic Computer Knowledge	SGH Raipur	IN House	11.08.08 to 12.08.08	20
4	Basic Computer Knowledge	SGH Raipur	IN House	02.01.09 to 03.01.09	20
5	Ground Water, Water Quality Data entry, validation, processing, Interpretation & GEMS	SGH Raipur	IN House	15.01.09 to 16.01.09	31
6	Operation of Surfer software, analysis & Interpretation	SGH Raipur	IN House	20.01.09 to 21.01.09	32
7	Decision support system (DSS)	SGH Raipur	IN House	04.02.09 to 06.02.09	20
8	GIS Remote Sensing	SGH Raipur	IN House	14.02.09 to 15.02..09	20
9	Decision support system (DSS)	SGH Raipur	IN House	19.05.09 to 20.05.09	20
10	Ground water assessment modelling & F.M.R Accounting	SGH Bilaspur	IN House	30/12/09	50
11	Monitoring development & management of Ground Water in Chhattisgarh	SGH Raipur	IN House	28.07.10 to 29.07.10	41
12	Training on Geophysical investigations and collection of field data interpretation	SGH Raipur	IN House	12.01.11	19
13	Ground Water Management, GWDES and Training concept	SGH Bilaspur	Bilaspur	25.02.11	50
14	In house Training on GWDES Data Entry	SGH Bilaspur	Ambikapur	13.07.11	25
15	In house Training of Basic Computer Course	SGH Bilaspur	Ambikapur	08.09.11	20
16	GWDES Software	State Data Centre, Raipur	IN House	13th Dec. 2012	35
17	GEMS Software	State Data Centre, Raipur	IN House	14th Dec. 2012	35
18	Introduction to ArcGIS Desktop	State Data Centre,	IN House	25 Feb-01 March 2013	5

		Raipur			
19	GWDES Software	SGH Bilaspur	IN House	24th Jan. 2013	30
20	Water Quality testing	SGH Bilaspur	IN House	16th Feb. 2013	30
21	FMR Accounting & Internet	SGH Bilaspur	IN House	23rd Feb. 2013	30
22	Basic Computer Training	SGH Bilaspur	IN House	04th Feb- 28th Feb. 2013	30
23	Domen soft-ware , Monitoring Piezometer DWLR	SGH Bilaspur	IN House	13th Dec. 2013	45
24	Domen soft-ware , Monitoring Piezometer DWLR & E- payment	SGH Bilaspur	IN House	20th Dec.2013	35

Workshop organized by Ground Water Chhattisgarh

S.No.	Name of course	Names of the Implementing Agencies Conducting the course	Place where the training was conducted. Village/Block/ Disst	Period and Duration of Course	Number of participants
1	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Dongariya/Lormi /Bilaspur	18/01/08	60
2	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Limtari/Belha/ Bilaspur	19/01/08	55
3	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Geneshpur/Prem nagar/ Ambikapur	18/01/08	40
4	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Kharsia/Raigarh	20/01/08	20
5	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Ambikapur (in house) Ambikapur	15/10/08	10
6	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Kharsia/Raigarh	3/10/08 to 23/10/08	20
7	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Pali/Pali/Korba	11/11/08	45
8	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Pendra/Pendra/ Bilaspur	17/11/08	65
9	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Bilaspur(in house) Bilaspur	6/11/08	25

10	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Ambikapur(in house) / Ambikapur	24/10/08 to 23/11/08	20
11	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Kartala/Korba	18/12/08	35
12	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	SitaPur / Ambikapur	15/12/08	30
13	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Tendua/Baikunthpur/ Ambikapur	22/12/08	25
14	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Raigarh/Pusour/ Raigarh	24/11/08 to 15/12/08	45
15	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Kalmitar/Kota/ Bilaspur	30/01/09	125
16	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Ghogra/Batoli / Ambikapur	15/01/09	30
17	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Lahpatra/Lakhanpur / Ambikapur	20/01/09	25
18	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Baramkela/Pusour/Raigarh	1/01/09 to 16/01/09	30
19	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Dhardehi/Pathariya/Bilaspur	07/02/09	75
20	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Chaitma/Pali /korba	20/02/09	40
21	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Kotmi/Pendra/Bilaspur	27/02/09	35
22	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Beltukri/Takhatpur/Bilaspur	18/02/09	20
23	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Hardi/Akaltar /Janjira-Champa	26/02/90	60
24	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Digma/Ambikapur/ Ambikapur	16/02/09	35
25	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Kalyanpur/Surajpur / Ambikapur	21/02/09	30
26	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Pusour/Raigarh/ Barmkela/Kharsia	24/01/09 to 20/02/09	40

27	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Bamhani/Akaltra Janjgir Champa	1/3/09	50
28	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Sasha	19.07.11	45
29	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Sewati	28.07.11	34
30	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Belpan	010.9.11	40
31	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Chilphi	13.06.11	45
32	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Sargoan	08.07.11	50
33	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Podi Uprora	06.08.11	30
34	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Lormi	15.09.11	41
35	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Lakhanpur	12.07.11	23
36	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Udgi	15 - 16.08.11	50
37	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Pratappur	7.09.11	25
38	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Kunkuri	13.05.11	40
39	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Pathalgoan	17.06.11	35
40	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Dharamjaigarh	29.07.11	32
41	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Lakha , raigarh	28.01.12	30
42	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Gedwani , raigarh	24.02.12	32
43	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Jamgaon, Raigarh	27.02.12	28

44	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Hardibazar, korba	04.03.12	36
45	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Bhoopdeopur, raigarh	06.03.12	25
46	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Akaltara, Janjgir	09.03.12	30
47	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Jharadih raigarh	19.03.12	30
48	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Umariya, Arang	25.08.08	41
49	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Mujgahan, Dhamtari	06.02.09	48
50	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Semara(B), Kurud	02.03.09	55
51	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Arjunda, Gunderdehi	19.08.08	87
52	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Salud, Patan	19.12.08	45
53	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Godi, Dhamdha	30.12.08	48
54	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Bhatgaon, Saja	12.02.09	78
55	Awareness raising & dissemination and knowledge sharing	SGH Raipur	kusumi, Berla	01.03.09	57
56	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Dengarapar, Balod	26.02.09	53
57	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Mirritola, Gurur	20.02.09	67
58	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Khapri, Durg	22.01.09	83
59	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Baghera, Rajnandgaon	25.08.08	65
60	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Gotpur, Kanker	27.08.08	

61	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Kesawahi, Charama	17.09.08	
62	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Malgaon, Narayanpur	16.10.08	
63	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Plana, Baderajpur	25.11.08	
64	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Pandey adhgaon, Farasgaon	18.12.08	
65	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Bhanbeda, Bhanupratappur	14.01.09	
66	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Barkai, Makadi	11.02.09	
67	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Panchwati, Keshkal	12.03.09	
68	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Bewarti, Kanker	10.09.09	
69	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Sargipal, Jagdalpur	20.08.08	148
70	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Kudalgaon, Baster	23.09.08	76
71	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Kachanar, Bakawand	13.10.08	59
72	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Bademarenga, Tokapal	23.12.08	88
73	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Neganar, Darbha	12.01.09	84
74	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Tirthum, Bastnar	11.02.09	75
75	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Takaraguda, Lohandiguda	02.03.09	51
76	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Takhatpur, Chicharda	31.12.12	85
77	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Mungeli, Chandrakhuri	28.12.12	90

78	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Mungeli, Dharmapura	08.01.13	100
79	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Belha, Kaya	12.01.13	110
80	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Lormi, Godkhami	27.01.13	90
81	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Masturi, Limtara	30.01.13	105
82	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Takhatpur, Muru	02.02.13	95
83	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Kota, Pipartarai	09.02.13	100
84	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Pendra road, Khodari	12.02.13	90
85	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Pali, Mungadih	25.02.13	85
86	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Jagdapur, Nangur	14.02.13	68
87	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Bhanupratappur, Hatkarra	24.01.13	90
88	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Charama, Golkumhda	19.02.13	95
89	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Tilda, Sarora	19.02.13	64
90	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Patan, Marra	04.02.13	93
91	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Gurur, Palari	20.02.13	95
92	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Saja, Parpodi	18.02.13	98
93	Awareness raising & dissemination and knowledge sharing	SGH Raipur	Durg, Hanoud	29.01.13	96
94	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Bilha, Murkuta Bilaspur	19.12.13	65

95	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Pamgarh , mulmula Janjgir- Champa	30.12.13	50
96	Awareness raising & dissemination and knowledge sharing	SGH Bilaspur	Kota , Khairjhti- Sajapali Bilaspur	07.01.14	45

Details of persons deputed for domestic training (Ground Water)

S.No.	Name of course	Names of the Implementing Agencies Conducting the course	Period and Duration of Course	Number of participants	Names of the Implementing Agencies represented by the participants
1	Procurement Procedure for world Bank added project	ASCI, Hyderabad	10-07-2006 to 21-07-2006	1	W R D Chhattisgarh
2	Trouble Shutting & Operationalisation of GEMS	CGWB New Delhi Faridabad	05-09-2006 to 07-09-2006	3	W R D Chhattisgarh
3	Under Financial management and Seminar	CWC New Delhi	11/09/06 to 13/09/06	1	W R D Chhattisgarh
4	Water Shade Management	NWA, Pune	11-9-2006 to 15-09-2006	2	W R D Chhattisgarh
5	DSS Planning (Workshop)	NIH, Roorke	21-08-2007 to 23-08-2007	1	W R D Chhattisgarh
6	DSS Planning (Training)	NWA, Pune	05-06-2007 to 15-06-2007	1	W R D Chhattisgarh
7	Procurement and Financial	MOWR Delhi	16-6-2008 to 18-06-2008	1	W R D Chhattisgarh
8	Water Quality data Interpretation Training	Bangalore	17-03-2008 to 19-03-2008	1	W R D Chhattisgarh
9	Conception of workshop on DSS (Planning) for IWRM	New Delhi	9-02-2009 to 10-02-2009	1	W R D Chhattisgarh
10	DSS Planning for IWRMM River Basin Management	NWA, Pune	16-09-2008 to 26-09-2008	1	W R D Chhattisgarh
11	Hydrology Design Aids Training	NWA, Pune	05-01-2009 to 09-01-2009	2	W R D Chhattisgarh
12	Procurement	New Delhi	06/05/2009	1	W R D Chhattisgarh

13	Orientation Training of GEMS Soft Ware	CGWB New Delhi Faridabad	27-06-2009 to 01-07-2009	2	W R D Chhattisgarh
14	His Training	ESIC Hyderabad	02-07-2009 to 04-07-2009	1	W R D Chhattisgarh
15	Conception of WorkShop on DSS (Planning)	IWRM CWC, New Delhi	09-02-2009 to 10-02-2009	1	W R D Chhattisgarh
16	Mid Term Review (MTR)	Delhi	31.8.2009 1Day	1	W R D Chhattisgarh
17	DSS (Planning Project)	NIH Roorkee	09-11-2009 to 20-11-2009	3	W R D Chhattisgarh
18	Ground water assessment modelling & management training	Belgaon	16-20-Now.2009	2	WRD Chhattisgarh
19	DSS Planning	NIH Roorkee	08-02-2010 to 19-02-2010	2	W R D Chhattisgarh
20	Development of E-GEMS under HP-II	New Dehli	18/03/2010 1Day	1	W R D Chhattisgarh
21	FMR	Dehli .	27-Aprail 2010	1	W R D Chhattisgarh
22	.Water Quality Analysis	Bhuvaneswar	4-5 May 2010	1	W R D Chhattisgarh
23	G.W. Explaration & Management Techniques	ESIC Hyderabad	May-10	1	W R D Chhattisgarh
24	Remote Sencing & GIS Application of W.R. Projects	ESIC Hyderabad	2-06-2010 to 4-06-2010	1	W R D Chhattisgarh
25	Geophysical Exploration	RGNGWTRI Raipur	02-08-2010 to 13-08-2010	2	W R D Chhattisgarh
26	Ground Water Modeling (MIKE SHE)	NIH Roorkee	20-09-2010 to 24-09-2010	3	W R D Chhattisgarh
27	Work Shop for trained the Trainers	NWA puna	27-09-10 to 1-10-10	1	W R D Chhattisgarh
28	Refresher Course on Ground Water Resource estimation	RGNGWTRI Raipur	25-10-2010 to 29-10-2010	1	W R D Chhattisgarh
29	GEMS Application	CGWB Faridabad	15-11-10 to 19-11-10	1	W R D Chhattisgarh
30	Refresher Course on Ground Water Resource estimation	RGNGWTRI Raipur	22-11-2010 to 26-11-2010	1	W R D Chhattisgarh

31	Analysis of Pumping Test Data	CGWB Nagpur	29-11-10 to 3-12-10	1	W R D Chhattisgarh
32	Ground Water Development and Management	RGNGWTRI Raipur	29-11-10 to 3-12-10	6	W R D Chhattisgarh
33	DSS Training	NIH, Roorkee	10th-21st Jan. 2011	2	WRD Chhattisgarh
34	Ground Water Quality	RGNGWTRI Raipur	4 th - 8th July 2011	1	WRD Chhattisgarh
35	Water Quality Analysis for the beginners	RGNGWTRI Raipur	8th -12th July 2011	2	WRD Chhattisgarh
36	Remot Sensing & GIS application for Ground Water Studies	RGNGWTRI Raipur	25th -29th July 2011	1	WRD Chhattisgarh
37	Workshop on Methodology for assessment of Ground Water availability	CSMRS New Delhi	26th-July 2011	1	WRD Chhattisgarh
38	Water Quality	RGNGWTRI Raipur	8th - 12th Aug.2011	2	WRD Chhattisgarh
39	Surface Geophysical techniques for Ground Water Studies	RGNGWTRI Raipur	12th -16th Sep. 11	1	WRD Chhattisgarh
40	Sub Surface Geophysical techniques for Ground Water Studies	RGNGWTRI Raipur	19th -23rd Sep. 11	1	WRD Chhattisgarh
41	Storm Water Management in urban area	NIH Kakinada	21st-23rd Sep.11	1	WRD Chhattisgarh
42	Water Shed Analysis useing Geo Spiatial tools	NWA Puna	3rd - 14th Oct.11	1	WRD Chhattisgarh
43	Warkshop on DSS Customization	New Delhi	25th Nov. 2011	1	WRD Chhattisgarh
44	DSS Planning	NIH, Roorkee	9th - 13 Jan.12	2	WRD Chhattisgarh
45	Ground Water Studies in soft rock terrain	RGNGWTRI Raipur	2nd - 27th Jan. 2012	1	WRD Chhattisgarh
46	Mathe matical and Statistical techniques for Ground water data analysis.	RGNGWTRI Raipur	06-02-2012 to 10-02-12	1	WRD Chhattisgarh
47	Intrgrated watershed development & Management	RGNGWTRI Raipur	13th - 17th Feb.12	1	WRD Chhattisgarh
48	DSS Customization	New Delhi	2nd March 2012	1	WRD Chhattisgarh

49	Water well construction Hard rock terrain	RGNGWTRI Raipur	04/06/12 to 15/06/12	1	WRD Chhattisgarh
50	Water well construction Hard rock terrain	RGNGWTRI Raipur	21/08/12 to 31/08/12	1	WRD Chhattisgarh
51	Aquifer development plan & AIMS	RGNGWTRI Raipur	03/09/12 to 07/09/12	1	WRD Chhattisgarh
52	Tot Aquifer management in pilot Aquifer mapping area	RGNGWTRI Raipur	10/09/12 to 14/09/12	1	WRD Chhattisgarh
53	Application of statistics in Ground Water Data analysis	RGNGWTRI Raipur	24/09/12 to 28/09/12	1	WRD Chhattisgarh
54	Analysis of pumping test data	RGNGWTRI Raipur	08/10/12 to 12/10/12	1	WRD Chhattisgarh
55	Application of Surface Geophysical Techniques for Aquifer Mapping	RGNGWTRI Raipur	19/11/12 to 23/11/12	1	WRD Chhattisgarh
56	Mathematical modeling of Ground Water System	RGNGWTRI Raipur	11/02/13 to 22/02/13	1	WRD Chhattisgarh
57	Application of Bore hole Geophysical techniques in Aquifer mapping	RGNGWTRI Raipur	25/02/13 to 01/03/13	1	WRD Chhattisgarh
58	Refresher Course on Ground Water resources estimation	RGNGWTRI Raipur	11/03/13 to 22/03/13	2	WRD Chhattisgarh
59	Aquifer mapping approach	RGNGWTRI Raipur	20th-24th May 2013	1	WRD Chhattisgarh
60	Participatory Ground Water Management	RGNGWTRI Raipur	20/05/13 to 24/05/13	1	WRD Chhattisgarh
61	Integrated watershed development for Aquifer Management	RGNGWTRI Raipur	10th-14th June 2013	1	WRD Chhattisgarh
62	Ground Water Regulation & Control for Aquifer Mapping	RGNGWTRI Raipur	17th-21st June 2013	1	WRD Chhattisgarh
63	Water well Construction hard rock terrain	RGNGWTRI Raipur	15/07/13 to 26/07/13	1	WRD Chhattisgarh
64	Rehabilitation of sick wells and ECO friendly abandonment	RGNGWTRI Raipur	26/08/13 to 30/08/13	1	WRD Chhattisgarh
65	Rain Water Harvesting & Artificial Recharge	RGNGWTRI Raipur	02/09/13 to 06/09/13	1	WRD Chhattisgarh
66	Remote Sensing & GIS Application for Ground Water	RGNGWTRI Raipur	09/09/13 to 13/09/13	1	WRD Chhattisgarh
67	Analysis of Pumping test Data	RGNGWTRI Raipur	21/10/13 to 25/10/13	1	WRD Chhattisgarh

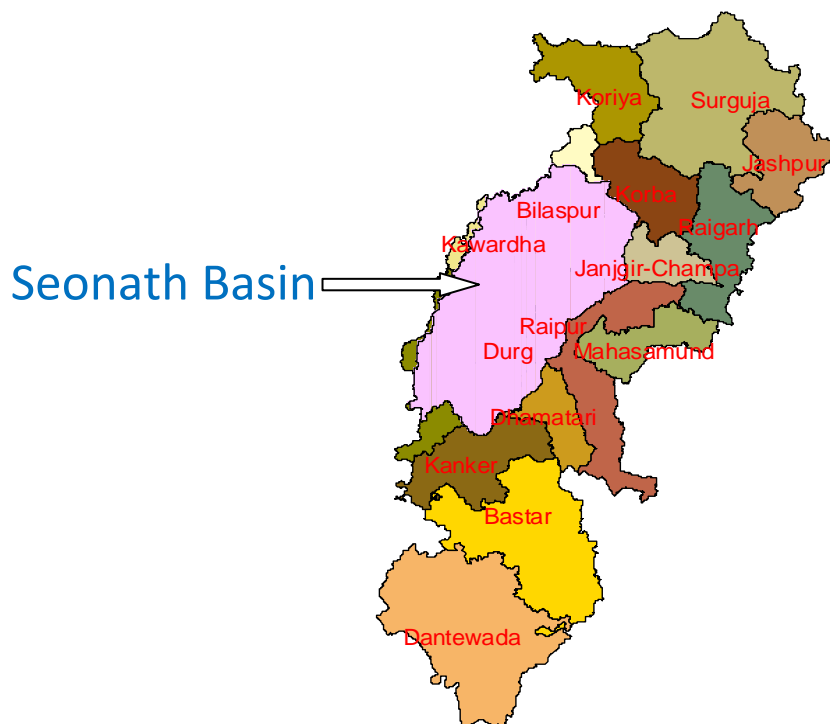
68	Conjunctive use of Surface & Ground Water	RGNGWTRI Raipur	11/11/13 to 15/11/13	1	WRD Chhattisgarh
69	Mathematical Modelling of Groundwater System	RGNGWTRI Raipur	18/11/2013 To 29/11/2013	1	WRD Chhattisgarh
70	Application of statistics in Ground Water Data analysis	RGNGWTRI Raipur	03/02/2013 To 07/02/2014	1	WRD Chhattisgarh
71	Intrgrated watershed development for Aquifer Management	RGNGWTRI Raipur	10/02/14 to 14/02/14	2	WRD Chhattisgarh
72	Participatory Ground Water Management	RGNGWTRI Raipur	24/02/14 to 28/02/14	1	WRD Chhattisgarh
73	Aquifer mapping approach	RGNGWTRI Raipur	03/03/14 to 07/03/14	1	WRD Chhattisgarh

Decision Support System (Surface Water)

The DSS software to be developed for integrated water resources development and management of water resource systems is to address the following five components of water resources planning and management:

- Surface water planning;
- Integrated operation of reservoirs;
- Conjunctive surface water and ground water planning;
- Drought monitoring, assessment and management; and
- Management of both surface and ground water quality

The Seonath Basin of Chhattisgarh has been selected for DSS planning for the component of Conjunctive surface water and ground water planning



Salient Feature of Seonath River:-

- Origin of the river – Village Panabaras of Dist. Rajnandgaon
- Catchment Area – 30860 sq.km.
- Length of river – 375.79 km.
- Main Tributaries – Kharun, Tandula, Arpa, Hamp, Agar, Maniyari.

- Location – Latitude 20° 16' to 22° 41'
Longitude 80° 25' to 82° 35'
- Districts – The Basin covers area of Rajnandgaon, Durg, Kabirdham, Dhamtari, Kanker, Bilaspur, Raipur, Janjgir-Champa, Korba
- Normal Annual Rainfall – Varies 900 mm to 1200 mm

Hydro-Meteorological & Reservoir Data used

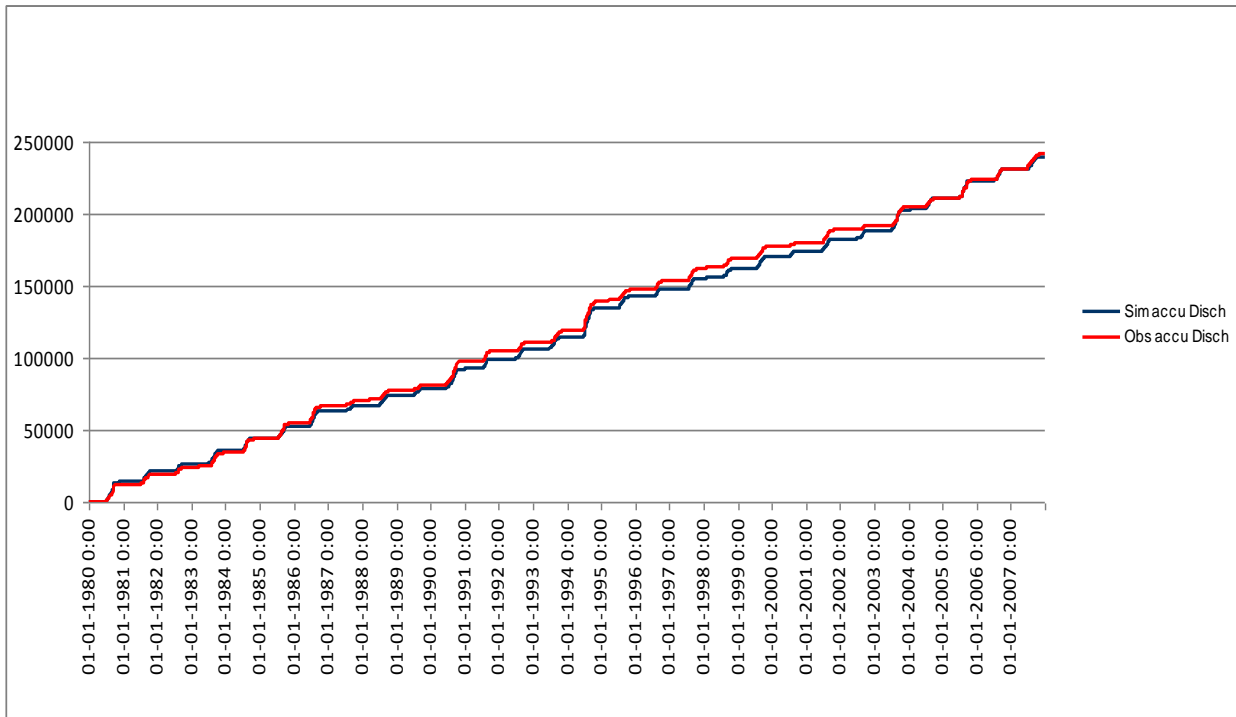
- 14 Nos HP GD Station of data period 2001 to 2009
- 06 Nos. CWC GD Station of data period 1980 to 2007
- 2 Nos Non HP GD Station of data period 1988 to 1994
- 56 Nos. Rainfall Station of data period 1975 to 2009
- 1 Nos. Met. Station of data period 1975 to 2009
- 18 Nos. Reservoir of data period about 1985 to 2009
- 1030 Nos. Minor Tank is in Seonath basin.
- Block wise GW Pumping data
- Block wise Crop area & Cropping pattern

22 GD Catch. & 20 reservoir catch. calibrated & extended runoff series (1978 to 2009)

NAM result of Runoff & GW recharge given as input for MIKE BASIN simulation



Seonath Basin DSS Model



Simulation Period 01/01/1980 to 31/12/2007

Accu. Observed Discharge = 241451.10 MCM

Accu. Simulated Discharge = 239624.44 MCM

Percentage diff.- = 1.0 %

Result of Model Seonath Basin

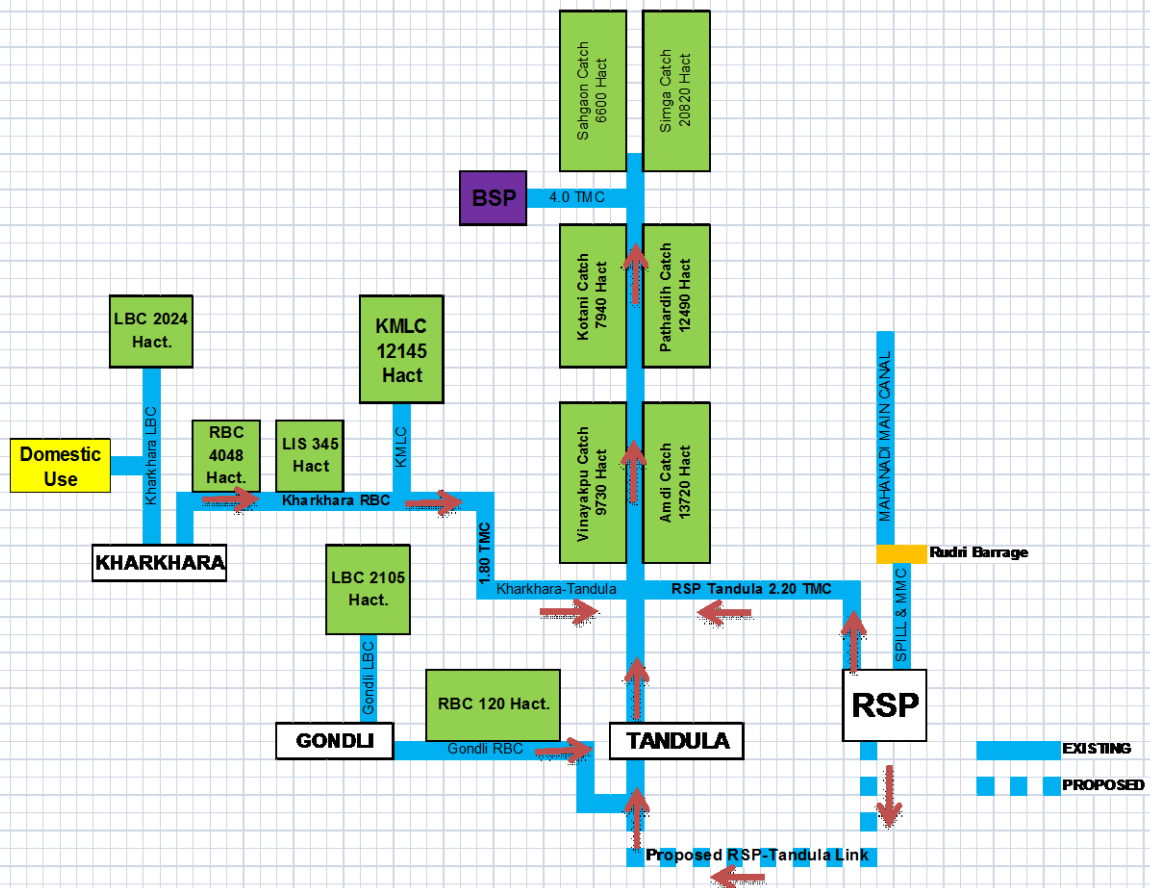
Intra basin Transfer of spill water from Ravishankar sagar Reservoir to Tandula Reservoir

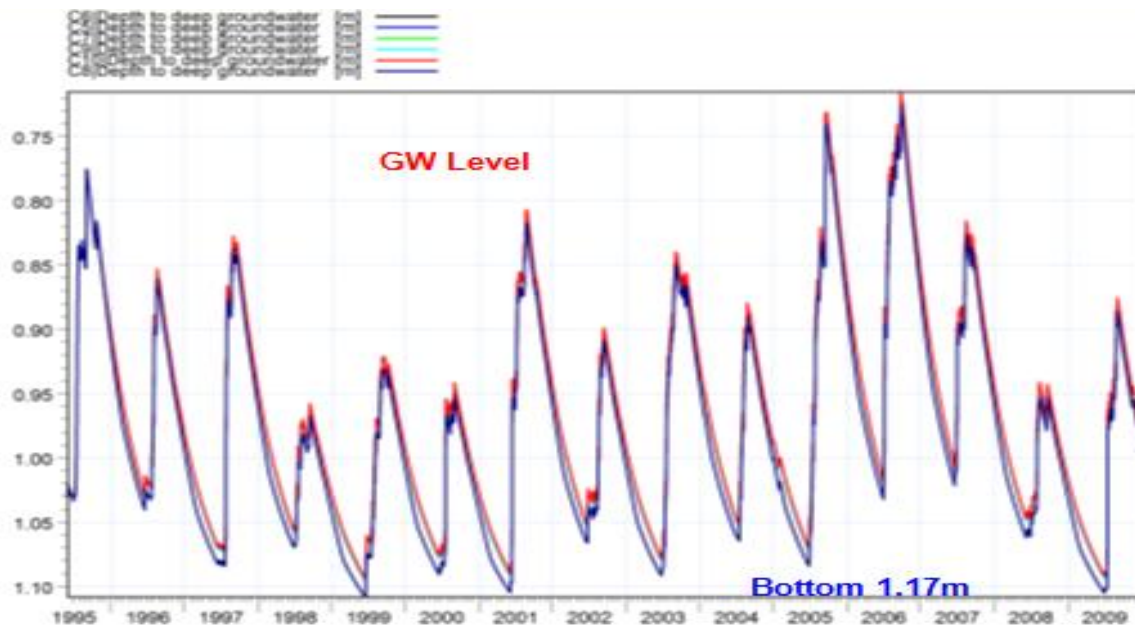


Salient features of Reservoir

S.No.	Particular's	Unit	Name of Reservoir	
			Ravishankar	Tandula
1	River Bed Level/Bottom Level	M	322.470	318.000
2	Top of Dead Storage	M	331.000	320.430
3	Full Reservoir Level/Flood Control level	M	348.700	332.260
4	Maximum Water LEVEL/ Dam Crest Level	M	350.700	333.480
5	Reduction Level			
A	Head Sluice MFC	M	336.200	320.43
B	Penstock for Hydropower	M	331.195	
C	Radial Gate	M	338.700	
D	Crest level of Tandula Link Canal	M	348.900	
6	Dead Storage	MCM	143.600	9.980
7	Live Storage	MCM	910.500	358.020
8	Gross Storage	MCM	1054.100	368.000

LINE DIAGRAM OF RSP-TANDULA-GONDLI-KHARKHARA COMMAND AREA





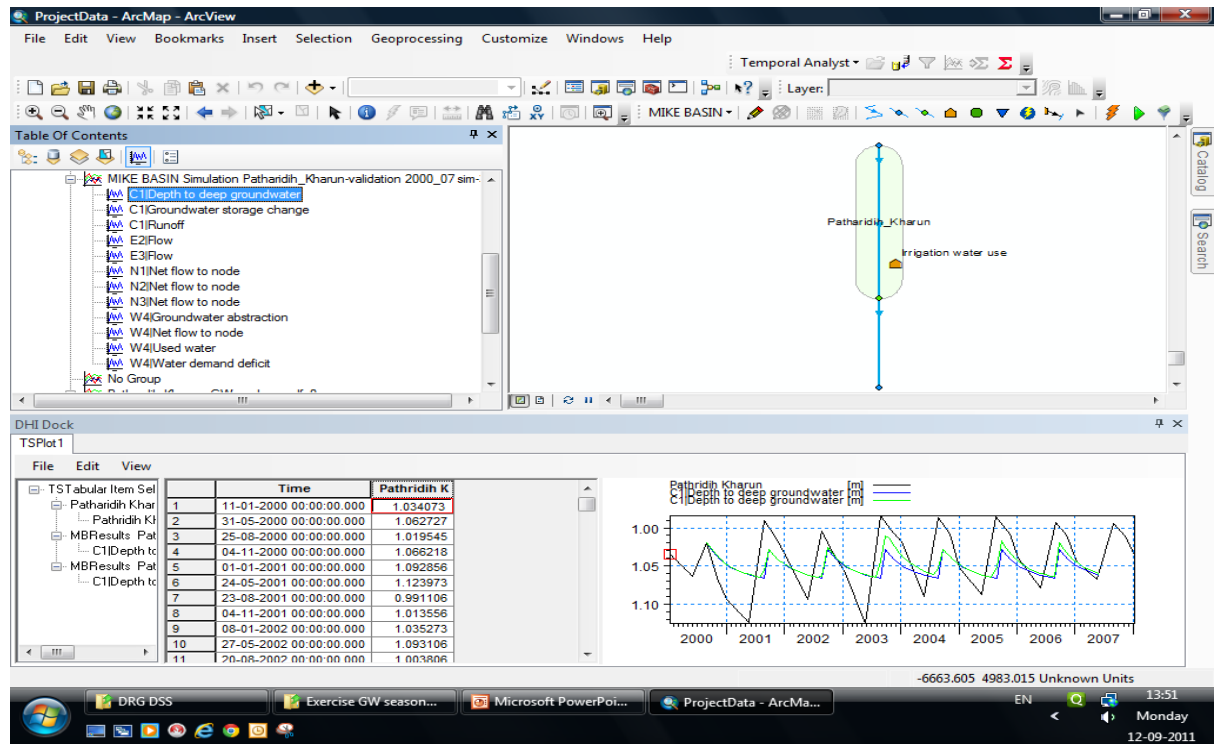
So it is observed that non utilisation of ground water in Tandula command deficit in Sahagaon and Simga tail command and with the use of ground water used in upper command no deficit occurs.

Ground Water

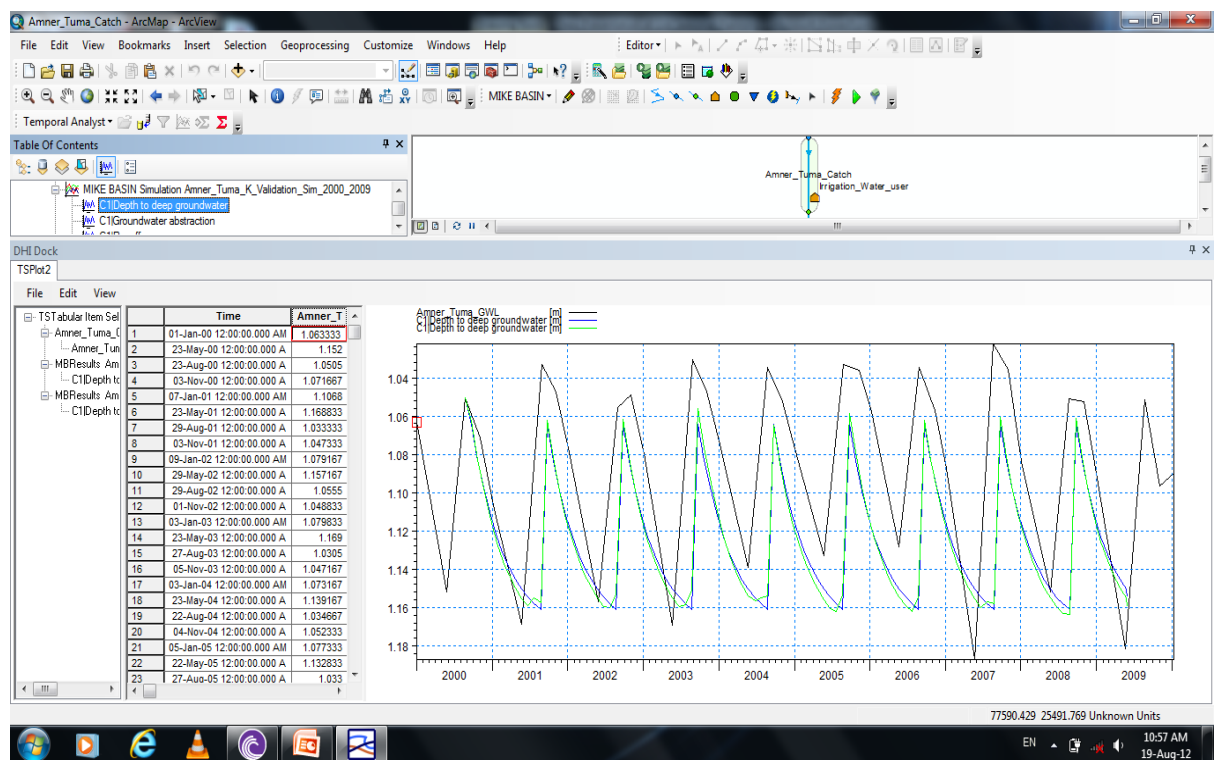
- GW department measures the post and pre-monsoon water levels in most of the states in India. The postmonsoon GW level in the watersheds indicate the amount of recharge taken place during the monsoon. For the given demand for various users, the prediction of GW level in that watershed for the remaining season (up to the end of summer) is crucial for GW planning. In this exercise, the post-monsoon level is given as initial level along with other aquifer parameters. A simple tool to allow for such a prediction has been designed for Chhattisgarh using the Seonath MIKE BASIN model based on readily available data from the GW department. This exercise demonstrates, on a single schematic catchment, how the ground water component in the MIKE BASIN model can be used to predict how much groundwater is available at the end of May based on the groundwater level at the end of October.
- The groundwater model used is the two layer groundwater model since the single layer will not allow for pumping of the ground water. The entire available water depth is represented by the difference between the initial level and the bottom of the aquifer. The initial level changes from year to year and is equal to the post monsoon water level (corrected from real groundwater depth to equivalent water column depth using the specific yield, see further below). The bottom level corresponds to the bottom of the wells/aquifer (again corrected to water column).

The time constant of the lower aquifer and the outlet depth are the two parameters of the aquifer which need to be calibrated.

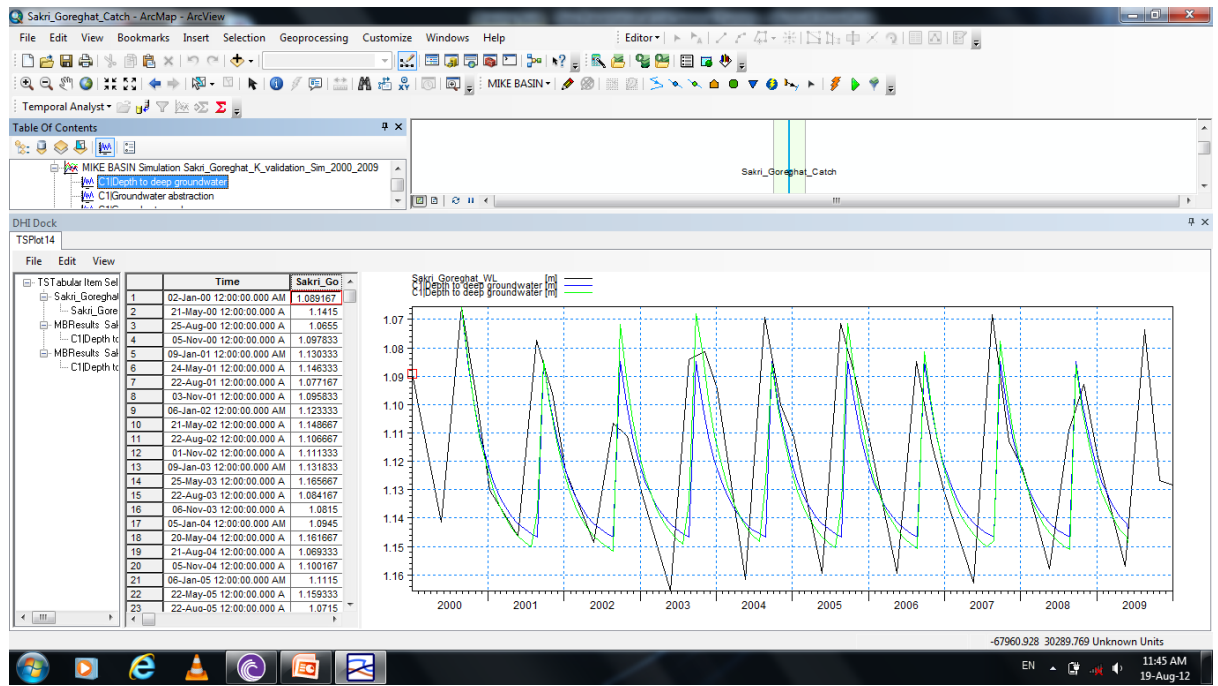
Compare the validate model of Patharidih_Kharun Catchment with observed GWLs



Compare the validate model of Amner Tuma Catchment with observed GWLs



Compare the validate model of Sakri Goreghat Catchment with observed GWLs



(Surface Water)

Name of PDS completed:- Water availability study and supply-demand analysis in Kharun sub-basin of Seonath basin in Chhattisgarh State

Name of Agency:- WRD, Raipur and NIH, Regional Centre, Bhopal



Pictorial view of Kharun river

Objective: -

- Assessment of drought situation in Kharun basin
- Development of rainfall-runoff model for Kharun river
- Water availability study
- Assessment of supply-demand scenario
- Evaluation infiltration characteristics of soil
- Optimal utilization of water resources by planning for storage sites (Through Consultancy)
- Dissemination of knowledge, findings

Specific study applications:

- Statistical analysis of rainfall and assessment of meteorological and hydrological drought situation in the study area.
- Development of MIKE BASIN Model of Kharun basin for water resources planning.
- Rainfall runoff modeling using MIKE 11 NAM Model.
- Water availability study for assessment of surface water resources.
- Estimation of various water use demands on Kharun river.

- Analysis of supply-demand scenario in the sub basin and estimation of future water requirement

Main outcomes/results:

- The drought study indicated that the Kharun basin experience two meteorological droughts during every 10 years period and 1-2 low flow condition every year in the river. Droughts are of moderate nature and seems to be of no threat in area.
- The Mike Basin model of Kharun river was developed and can be used for planning and development of different hydrological scenarios and assess water availability in the basin at desired locations.
- MIKE 11 NAM Rainfall runoff model developed and was found working efficiently for the Kharun River and can be used as tool to assess water resources and planning of water resources.
- Water availability study carried out to assess surface water resources of the basin.
- Present and future demands of the basin are estimated and Demand supply analysis carried out which will help to develop strategies to meet various future water demands of the basin.
- Identification of Storage sites/small dam on river will help to develop and use water resources optimally.
- Soil infiltration models were developed for different soil types in the basin.

Have results been disseminated?

Two PDS workshop have been organized at Raipur to disseminate results and develop awareness among different State and Central Govt. organizational and NGOs, universities, etc. Leaflet and brochure of PDS were distributed in Line departments.

Plans for future use/other basins:

The hydrological modeling's water availability studies, Demand Supply analysis and Optimum utilization studies will be done for other basin of the State.

(Surface Water)

Name of PDS completed:- Study of Reservoir sedimentation, Impact Assessment and Development of Catchment Area Treatment Plan for Kodar Reservoir in Chhattisgarh State

Name of Agency:- WRD, Raipur and NIH, Regional Centre, Bhopal



Pictorial view of Kodar Reservoir

Objective:

- Assessment of present status of reservoir storage by estimating revised capacity using remote sensing approach.
- Sediment modeling.
- Assessment of soil loss from catchment area.
- Prioritization of catchment area based on geomorphological characteristics, sediment yield and risk of erosion and soil loss from sub-catchments.
- Detection of change in land use and other environmental parameters responsible for sedimentation in reservoir.
- Development of management plan for catchment area with area specific soil conservation measures for minimizing sedimentation in reservoir

Specific study applications:

Rainfall data has been used for estimation of soil loss, sediment production rate, sediment yield and application of SWAT model. Sediment and runoff data have been used for sediment modeling and impact assessment analysis

Main outcomes/results:

- The sedimentation analysis of Kodar reservoir indicated that 24.94 Mm³ of gross storage (15.5%) and 4.89 Mm³ of dead storage (43%) have been lost in 32 years (1976-77 to 2008-09).
- Having conducted many soil testing techniques, it is concluded that the soils in the study area are mainly silt loamy and sandy loam which is prone to erosion and conservation measures are necessary to reduce displacement of soils.
- The Saaty's AHP based prioritization analysis suggested that more than 21 sub-watersheds out of 67 sub-watersheds covering 117 sq. km area of Kodar reservoir catchment can be kept under very high and high priority.
- The catchment area treatment (CAT) plan for Kodar reservoir catchment has been prepared using weighted image overlaying technique. The mechanical measure under CAT Plan consists of 37 gully plugs, 22 nala plugs, 21 boulder bunds and 6 check dams. Gram Panchayat wise areas suitable for agronomic and biological measures have also been suggested.
- Soil erosion could be reduced from 2.97 t/ha to 1.63 t/ha through a series of 37 gully plugs, 22 nala plugs, 21 boulder bunds and 6 check dams with terraces, bank stabilization with land use modifications (e.g. a forestation) providing further options to control sediment inflows to Kodar reservoir.

Have results been disseminated?

Workshop on Dated 28/06/2013 have been organized at State data Centre Raipur. 168 participants From WRD, Agriculture, Institution, IMD & CGWB were present, various aspect of study was discussed.

Plans for future use/other basins:

The study of sedimentation and its control will be done for other major & medium project of the State, Impact assessment analysis of soil , Development of rainfall-runoff-sediment models for other projects conservation measures on sediment regime,

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- 3.1.3 Advise about possible ways and methods of providing services using data center activities for incorporating the representative views and needs of the data users.
- 3.1.4 Advise service charges for supply of data by understanding of the ability and willingness of the user (Viz. students, private consultants, universities, research institutes, etc.)
- 3.1.5 Assist data supply format for reporting the data, so as, to make data users friendly for improvement from time to time.
- 3.1.6 Provide feed back on scientific Hydrological and quality data and suggest methods for enhancing the reach and utility of the data.
- 3.1.7 Assist in conducting Hydrological Information needs (HIN) through interview articulating user expectations and line them with out put capability of state.
- 3.1.8 Provide links to various data users whom they represent and assist the state and central agencies in communication with the public.
- 3.1.9 Participate in annual workshops, seminars etc. to be held under project to review gaps in data supply and demand.
- 3.2.0 The convener of the HDUG will organize annual workshop to obtain feed back from user regarding types of data demand and desired data dissemination arrangements.
- 3.2.1 The member ship of HDUG would be flexible and may change as the project needs and change of demand patterns.
- 3.2.2 Although, the Hydrology data management is regarded as services to the eligible data user. They do not acquire any right to ask for any data as a matter of right neither they can put up any claim nor enter in to any litigation with/against Govt. (WRD) on a/c of supply or not supply of any data.
- 3.2.3 Data should be used for legitimate purpose only.
- 3.2.4 Govt. can discontinue HDUG and this service at any time, without notice and without assigning any reason.

By order and in the name of the
Governor of Chhattisgarh

revised
18.10.01
(Dr. M. V. Subba Reddy)
Deputy Secretary
Water Resources Department
Govt. of Chhattisgarh
Raipur

Endt. No. 3748/150/TS/WRD/2001

Raipur Date : 15-10-2001

Copy forwarded to the,

1. Chief Secretary Govt. of Chhattisgarh, Raipur
2. Secretary, Water Resources Department, Raipur
3. Secretary Panchayat, Rural Development, Raipur
4. Secretary Agriculture Department, Raipur
5. Secretary Natural Resources (Geology & Mining) Raipur
6. Secretary Forest Department, Raipur
7. Secretary PHED, Raipur
8. Secretary, Industries Deptt, Raipur
9. Engineer-in-Chief, PWD, Raipur
10. Engineer in Chief, WRD, Raipur
11. Engineer in Chief, PHED, Raipur
12. Director, Agriculture Deptt, Raipur
13. Director, IMD, Bhopal
14. Regional Manager, State Bank of India, Raipur
15. Director, CWC, Bhubneshwar
16. Regional Director, CGWB, Raipur
17. Director, Industries Deptt. Raipur
18. Director, Panchayat, Rural Development, Raipur
19. C.E. CSEB, Raipur
20. Principal, Government College of Engg. & Tech., Raipur
21. Ravishankar Shukla University, (Geology Branch)
22. C.E. MG Basin, Raipur
23. Director, Geology & Mining, Raipur
24. Director, Fisheries Deptt., Raipur
25. Vice Chancellor Indira Gandhi Krishi Vishwavidyalaya., Raipur
26. Chairman, Audyogik Kendra Vikas Nigam, Raipur
27. Superintending Engineer, GWS circle, Raipur
28. Superintending Engineer, RES, Raipur

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H.D.Y.G.

TS

G.M. 01.

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7/11/2001

reestheth
16.10.01

Deputy Secretary
Water Resources Department
Govt. of Chhattisgarh
Raipur

ANNEXURE-1

LIST OF MEMBERS OF HYDROLOGY DATA USER GROUP CHHATTISGARH STATE.

I Core members

- | | |
|---|------------------------------|
| 1. Secretary, Water Resources Department, Raipur | Chairman |
| 2. Engineer in Chief Water Resources Department, Raipur | Member |
| 3. Engineer in Chief, PHED, Raipur | Member |
| 4. Engineer in Chief, PWD, Raipur | Member |
| 5. Director, Agriculture Department, Raipur | Member |
| 6. Director, Panchayat/Rural Department, Raipur | Member |
| 7. Director Geology / Mining, Raipur | Member |
| 8. Director fisheries department, Raipur | Member |
| 9. Chief Engineer, MG Basin, Raipur | Member/ Secretary / convener |
| 10. Superintending Engineer, GWS Circle, Raipur | Permanent Invitee |

II ASSOCIATE MEMBERS

11. Chief Engineer, CSEB, Raipur
12. Director IMD, Bhopal
13. Director CWC, Bhubneshwar
14. Regional Director CGWB, Raipur
15. Vice Chancellor Indira Gandhi krishi Vishwavidyalaya, Raipur
16. Superintending Engineer, RES, Raipur
17. Chairman, Audyogik Kendra Vikas Nigam, Raipur
18. Regional Manager State Bank of India, Raipur
19. Ravi Shankar University (Geology Branch)
20. Principal, Govt. College of Engineering and Technology, Raipur

sd/-
**Deputy Secretary
Water Resources Department
Govt. of Chhattisgarh
Raipur**

OBSERVATION NETWORK IN CHHATTISGARH (Surface Water & Ground Water)

