Draft Report

केंद्रीय भूमि जल बोर्ड

जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय

भारत सरकार

Central Ground Water Board

Ministry of Water Resources, River Development and Ganga Rejuvenation

Government of India

Report on

AQUIFER MAPPING AND MANAGEMENT PLAN

Bheemgal Mandal, Nizamabad District, Telangana

दक्षिणी क्षेत्र, हैदराबाद

Southern Region, Hyderabad

भारत सरकार
जल संसाधन नदी विकास एवम् गंगा संरक्षण मंत्रालय
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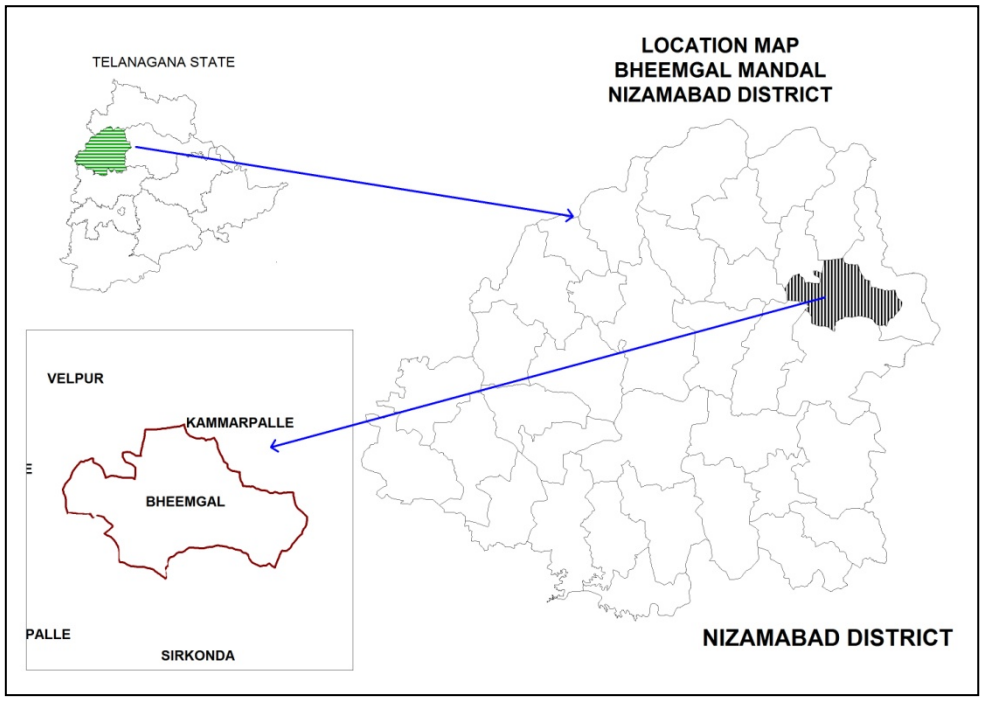
GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION

REPORT ON

AQUIFER MAPS & MANAGEMENT PLANS
BHEEMGAL MANDAL, NIZAMABAD DISTRICT, TELANGANA STATE



CENTRAL GROUND WATER BOARD
SOUTHERN REGION
HYDERABAD
AUGUST-2016

REPORT ON
AQUIFER MAPS & MANAGEMENT PLANS
BHEEMGAL MANDAL, NIZAMABAD DISTRICT, TELANGANA STATE

	SALIENT FEATURES		
1	Name of the Mandal/Area Revenue Division Location **(Fig-1)**	**:**	**BHEEMGAL/244 Km^2** **NIZAMABAD** EL78^{0}21'36.38"- 78^{0}35'31.17" NL18^{0}36'50.43"-18^{0}45'28.32"
2	No. of Revenue villages	:	**24**
3	District/State	:	**Nizamabad/Telangana**
4	Population /Density (2011 Census)	:	62666/257 per Km^2
5	Normal Rainfall (mm) Actual Rainfall (2014-2015)(mm)	:	1040.3 -Monsoon: 865.6 mm (83%) -Non-Monsoon:174.70 mm (17%) 742
6	Agriculture (2014-15)(ha):	:	Kharif season : 1. Net area sown: 9299 2. Paddy: 4754(51%) 3. Total oil seeds: 3560(38%) 4. Maize: 456(5%) 5. Total spices: 250(3%) 6. Total pulses: 59(1%) 7. Other crops: 155(2%) Rabi season : 1. Net area sown: 5105 2. Paddy: 2846(56%) 3. Total oil seeds: 577(11%) 4. Total pulses: 125(2%) 5. Maize: 81(2%) 6. Total spices: 60(1%) 7. Other crops: 1416(28%)
7	Irrigation (2014-15) (Ha)	:	Net area irrigated under 1. Gross irrigated area: 10676 1. Net irrigated area:5608 2. Area irrigated more than once: 5068 • Ground water: 10676
8	Existing and future water demands (MCM)		Domestic & Industrial • Existing:0.53 • Future (year 2025):2.19 Irrigation (Existing): 23.40
9	Depth to water level (m bgl)	:	4-28 m (Pre-monsoon) 4-32 m (Post-monsoon)
	AQUIFER DISPOSITION	:	
10	No of Aquifers	:	2
11	3-D aquifer disposition and basic characteristics of each aquifer **(3D: Fig-2a** **Section Layout:2b** **Sections: 2c & 2d)**	:	**Geology-Granites** **Aqufer-1 (Weathered Zone):** Weathering varies from 3-17 m Transmissivity(T): 6-181 m^2/day Specific Yield (Sy):0.2 to 2 % **Aquifer-2 (Fractured Zone):**

			Depth of fracturing varies from 15-55m. Transmissivity (T): 10-117 m^2/day Specific storage (S):0.00001-0.02 Cumulative yield (Aq1 and Aq 2) (lps): 0.5 to 2.5
12	Ground water Issues	:	• Anthropogenic contamination by nitrate. • Sustainability of wells (3-4 hrs).
13	Ground water resource availability and extraction (MCM)	:	• Net GW availability :35.79 • Gross Ground Water draft for Irrigation:26.67 • Gross Ground water draft for domestic and industrial supply:0.53 • Gross GW draft:27.20 • Stage of ground water development: 76% • Category: Semi Critical
14	Ground water extraction	:	No of ground water extraction structures :6159 No. of Dug wells :404 No. of Bore wells: 5755
15	Chemical quality of ground water and contamination	:	**Pre-monsoon** EC (µS/cm) min: 450 max:2150 NO_3 (mg/L): Min :15 and max 145 F (mg/L): Min 0.25 and Max:2.25 **Post-monsoon** EC (µS/cm) min:650 max:2400 NO_3 (mg/L): Min :10 and max :220 F (mg/L): Min 0.5 and Max :3.67
	Ground Water Recharge Scenario	:	**MCM**
16	Recharge from Rainfall (Monsoon)	:	23.85
17	Recharge from Other sources (Tanks and applied irrigation) (Monsoon)	:	4.25
18	Recharge from rainfall (Non-Monsoon)	:	4.01
19	Recharge from Other sources (Tanks and applied irrigation) (Non-Monsoon)	:	7.66
20	Total annual GW Recharge	:	39.77
21	Natural Discharge	:	3.98
22	Existing Minor Irrigation Tanks	:	68
23	Storage from existing tanks	:	2.07
24	Existing Artificial Recharge Structures (PT, CD and Farm ponds)	:	25/28/200
25	Storage from existing AR Structures	:	2.15

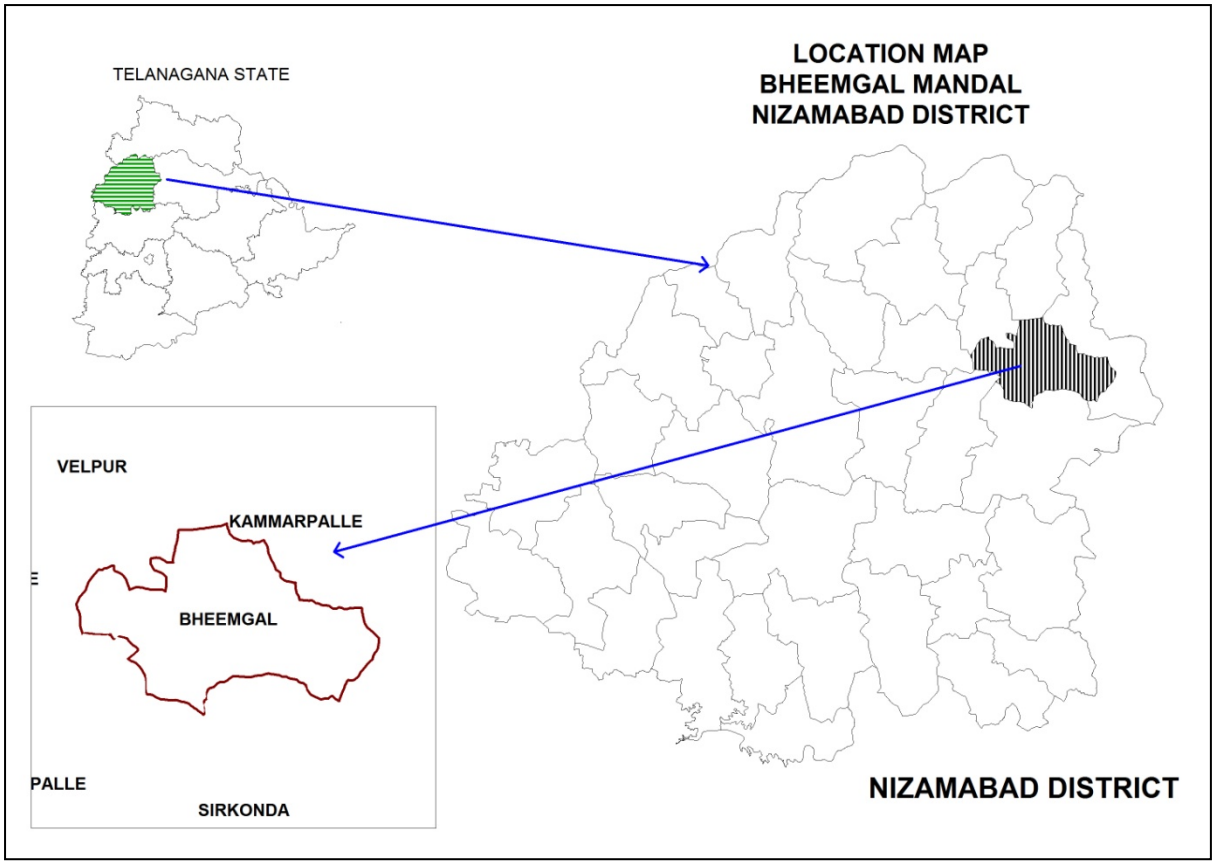


Fig-1: Location Map of Bheemgal Mandal.

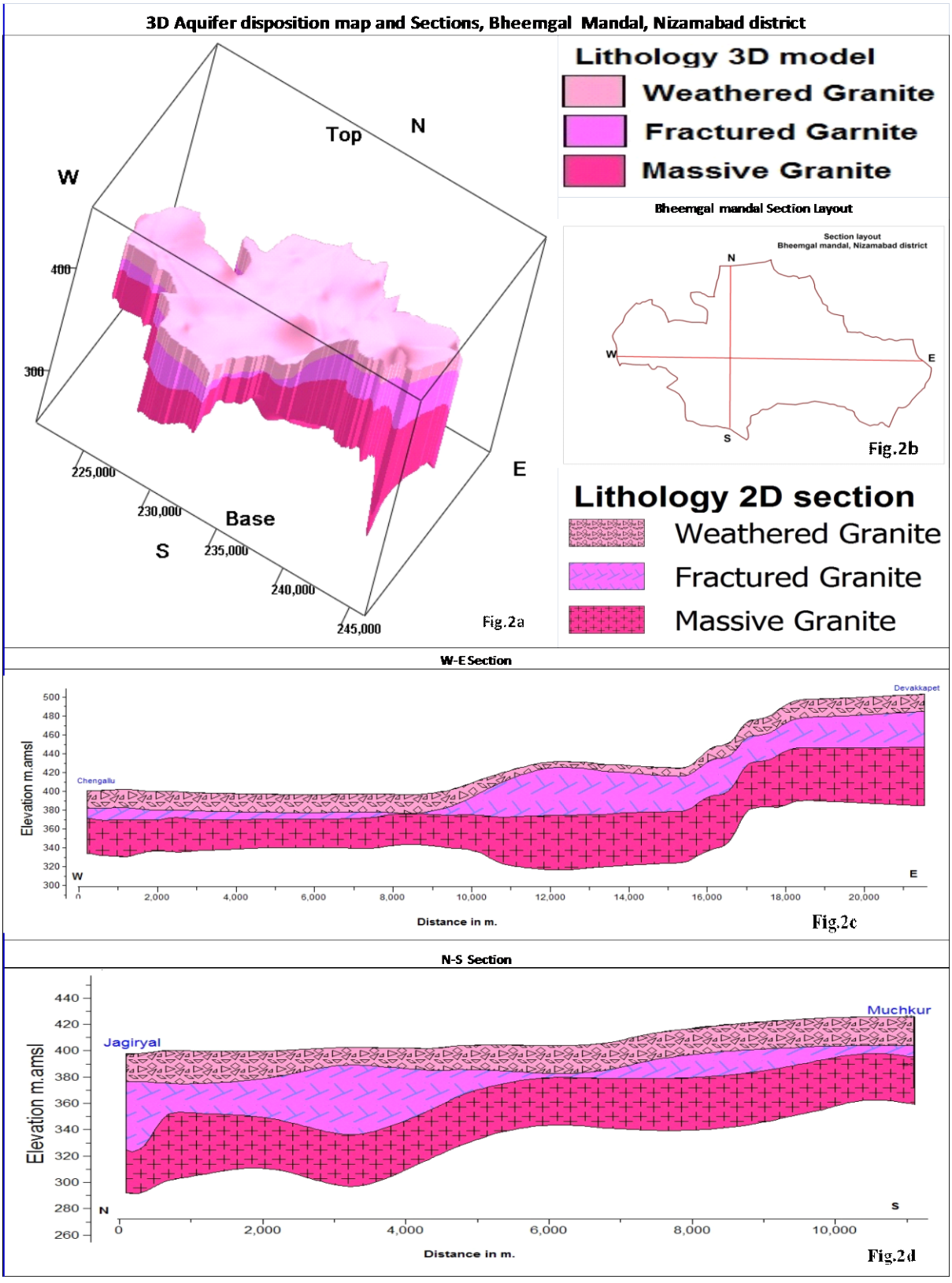


Fig-2(a-d): 3 D map and Sections.

GW MANAGEMENT STRATEGIES, BHEEMGAL MANDAL, NIZAMABAD DISTRICT

A	**WATER RESOURCE AVAILABILITY**		
	• Ground water (as per GEC 2012-13)	:	35.79 MCM
	• Surface Water (as per 2014-15 irrigation data)	:	-
	• Total water availability	:	35.79 MCM
(a)	**Ground Water Resource Enhancement (Table-1)**		
	Supply side Interventions		
1	Aquifer wise space available for recharge and proposed interventions	:	14-29m
2	Volume of Un-saturated zone (upto 3mbgl)	:	4016MCM
3	Recharge Potential (Sy 2%)		80 MCM
4	Utilizable Yield available for ARS	:	8.78 MCM
5	No. of Check dams (CD's) / Mini percolation tanks (MPT's) recommended	:	279(138CDs+141PTs)
6	Total Cost of ARS	:	21Cr
7	Expected Ground Water Recharge through ARS	:	4.4 MCM
8	Water Conservation Measures (WCM) (Farm Ponds)	:	460
9	Total Cost of WCM	:	1.15Cr
10	**Mission Kakatiya-** Repair & Renovation of existing Tanks	:	0.38 MCM (33 tanks)
11	Proposed tanks to be taken up in phased manner		35 tanks (@0.01 MCM)
12	Expected GW Recharge under **Mission Kakatiya**	:	0.11 MCM(30 % of capacity)
13	**Mission Bhagiratha** (Providing drinking water needs to the entire population) @ 100 lpcd/person (rural) and 135 (urban) from surface water source from outside the mandal area (**From River Krishna**)	:	2.29 MCM/year
14	Net Saving of Ground water from **Mission Bhagiratha**	:	1.37MCM/year
(b)	**DEMAND SIDE INTERVENTION**		
15	Existing Micro Irrigation Intervention & Gross area irrigated	:	29 Micro irrigation units/26 ha
14	Proposed Micro Irrigation	:	2400 ha in 24 Villages @ 100 ha in each NC village.
15	Cost for micro-irrigation	:	14.4 Cr@ 0.60 lakhs per ha.
16	Expected ground water saving from micro-irrigation	:	4.8 MCM of water is expected to be conserved.
(c)	**REGULATION & COMMUNITY INTERVENTIONS**		
17	Regulation and control	:	• WALTA-Act to be implemented in true spirit. • Regulation of power supply in 2

			spells @ 4 hours/spell to increase bore well/GW sustainability. • As mandatory measures power connection may be given to only those farmers who are adopting micro irrigation for all new bore well to be constructed.
(d)	**OTHER INTERVENTIONS SUGGESTED**	:	• Participatory Ground Water Management with community and women participation. • Paddy cultivation during rabi season should be reduced and to be shifted to ID Crops and drought resistant crops. If necessary some regulatory rules may be framed and implemented. • In the existing ground water areas sharing of ground water amongst the users to be encouraged to increase the sustainability of wells by reducing well interference. • The bore well owner should be suitably compensated for the cost of well by funding to farmers for adopting micro irrigation practices by the Govt.
(e)	**EXPECTED RESULTS AND OUTCOME**		
23	Total Cost of Interventions (Excluding Mission Kakatiya and Bhagiratha)	:	36.55 Cr
24	Likely benefit of Interventions	:	~10.68 MCM ground water can be saved from the above interventions. The stage of Ground water development may likely to be come down by 17 % (from 76 % to 59%).

Table-1: Village wise list of Artificial Recharge Structures Recommended.

S.No	Village	Unsaturated thickness upto 3 m. bgl (m.)	Village Recharge potential MCM (upto 3 m.bgl)	20% of Runoff for AR MCM	Proposed CD's	Proposed PT's	Total cost	Expected GW Recharge in MCM
	Priority-1	**m**	**MCM**	**MCM**	**NO.**	**NO.**	**Lakhs**	**MCM**
1	Babapur	26	0.3	0.0	0	0	0	0.0
2	Bachenpalle	18	1.0	0.1	1	2	25	0.1
3	Bheemgal	15	4.1	0.6	11	10	155	0.3
4	Gongoppul	15	3.1	0.4	6	6	90	0.2
5	Lingapurchouth	26	1.2	0.1	1	1	15	0.1
6	Rahat Nagar	14	0.9	0.1	1	1	15	0.1
7	Salampur	26	1.4	0.1	2	2	30	0.1
8	Sikandrapur	16	2.6	0.4	6	6	90	0.2
	Priority-1(Total)				**28**	**28**	**420**	**0.9**
	Priority-2							
1	Babanagar	26	2.8	0.2	2	3	40	0.1
2	Bejjora	21	3.1	0.3	5	5	75	0.2
3	Changal	18	5.8	0.6	12	11	170	0.3
4	Devakkapet	14	1.5	0.2	3	3	45	0.1
5	Devan Palle	19	4.3	0.5	7	7	105	0.2
6	Gangarai	14	0.9	0.1	1	1	15	0.1
7	Jagrial	29	4.0	0.3	3	4	55	0.1
8	Karepalle	15	4.5	0.6	10	9	140	0.3
9	Kupkal	27	6.3	0.5	7	8	115	0.2
10	Mendhora	20	4.0	0.4	6	7	100	0.2
11	Muchkur	27	5.9	0.5	8	9	130	0.2
12	Pallikonda	20	6.3	0.7	13	13	195	0.4
13	Pedda Bheemgal	22	7.8	0.7	13	13	195	0.4
14	Pipri	16	4.7	0.6	10	11	160	0.3
15	Thallapalle	14	4.0	0.6	10	9	140	0.3
	Priority-2				**110**	**113**	**1680**	**3.4**
	Total (P-1&P-2)				**138**	**141**	**2100**	**4.4**