



केंद्रीय भूमि जल बोर्ड

जल संसाधन, नदी विकास और गंगा संरक्षण

विभाग, जल शक्ति मंत्रालय

भारत सरकार

Central Ground Water Board

Department of Water Resources, River
Development and Ganga Rejuvenation,
Ministry of Jal Shakti
Government of India

AQUIFER MAPPING AND MANAGEMENT OF GROUND WATER RESOURCES

**BOMMIDI FIRKA, DHARMAPURI DISTRICT,
TAMIL NADU**

दक्षिण पूर्वी तटीय क्षेत्र, चेन्नई

South Eastern Coastal Region, Chennai

**REPORT ON
AQUIFER MAPS & MANAGEMENT PLANS
BOMMIDI FIRKA, DHARMAPURI DISTRICT, TAMILNADU STATE**

SALIENT FEATURES			
1	Name of the Firka/Area Revenue Division Location (Fig-1)	:	BOMMIDI / 148.79 sq.km Pappireddipatti N 78° 11' 07" to 78°23' 57" E 11°52' 34 "to 12° 02'41"
2	No. of Revenue villages	:	24
3	District/State	:	Dharmapuri / Tamilnadu
4	Population (2011 Census)	:	56315
5	Normal Rainfall (mm) (2013-2014)	:	903.62 Monsoon: 752.66 Non-Monsoon: 150.96
6	Agriculture (2013-14)(Ha)	:	1. Paddy: 745.02 2. Sugarcane: 1050.26 3. Banana: 44.62 4. Other crops: 2142.32 5. Ground water: 4825 6. Surface water (Tanks): 95.91
7	Existing and future water demands (HaM)		Domestic & Industrial <ul style="list-style-type: none"> • Existing: 93.95 • Future (year 2025): 106.75 Irrigation (Existing): 2004.04
8	Water level behaviour (m bgl)	:	Pre-monsoon: 6.55 – 16.75 Post-monsoon: 6.40 – 17.25
AQUIFER DISPOSITION		:	
9	No of Aquifers	:	2
10	3-D aquifer disposition and basic characteristics of each aquifer Fig.2: 3 D map and 2D - Sections	:	Geology – Charockites/Gneisses Aquifer-1 (Weathered Zone): varies from 7- 28 m Transmissivity(T): 4 - 68 m ² /day Specific Yield (Sy): 0.10 to 0.15 % Aquifer-2 (Fractured Zone): Depth of fracturing varies from 28-88 m. Transmissivity (T): 10-101 m ² /day Specific storage (S): 0.00001- 0.02 Cumulative yield (Aquifer 1 and Aquifer 2) (0.2 to 3 lps.

11	Ground water Issues	:	<ul style="list-style-type: none"> • Geogenic contamination by Fluoride. • Sustainability of wells (1-2 hrs).
12	Ground water resource availability and extraction (MCM)	:	<ul style="list-style-type: none"> • Net GW availability : 21.12 • Gross Ground Water draft for Irrigation: 33.82 • Gross Ground water draft for domestic and industrial supply: 0.937 • Gross GW draft: 34.76 • Stage of ground water development: 165 % • Category: Over Exploited
13	Ground water extraction	:	<p>Ground water extraction structures: 5525 no's</p> <ul style="list-style-type: none"> • Bore wells: 495 no's • Dug wells: 5030 no's
14	Chemical quality of ground water, contamination and its suitability	:	<p>EC ($\mu\text{S/cm}$) min: 700 and max: 1500 NO₃ (mg/L): Min:30 and max 224 F (mg/L): Min 0.25 and Max:1.7</p> <p>All chemical constituents are within the permissible limit of BIS drinking water standards (IS: 10500:2012) except Nitrate. High values Nitrate (224 ppm) observed near Bommidi area.</p>
15	Ground Water Recharge Scenario	:	MCM
15.1	Recharge from Rainfall (Monsoon)	:	9.95
15.2	Recharge from Other sources (Tanks and applied irrigation) (Monsoon)	:	9.90
15.3	Recharge from rainfall (Non-Monsoon)	:	1.66
15.4	Recharge from Other sources (Tanks and applied irrigation) (Non-Monsoon)	:	1.95
15.5	Total annual GW Recharge	:	23.47
15.6	Natural Discharge	:	2.35
15.7	Existing Minor Irrigation Tanks (Area in ha)	:	4.25
15.8	Storage from existing tanks	:	0.1806
16	Storage from existing AR Structures (MCM)	:	1.640

Fig-1: Location Map of Bommidi Firka.

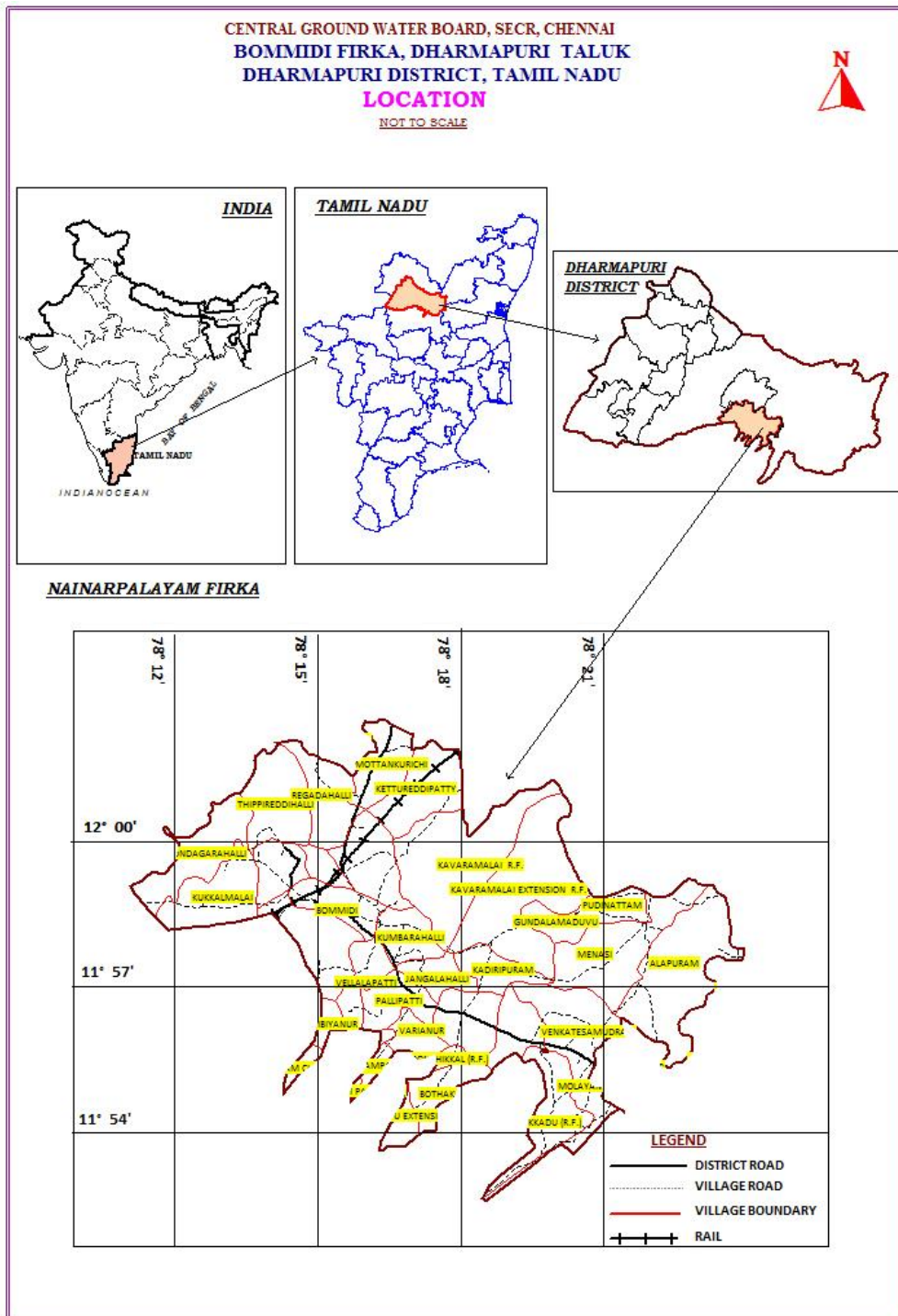
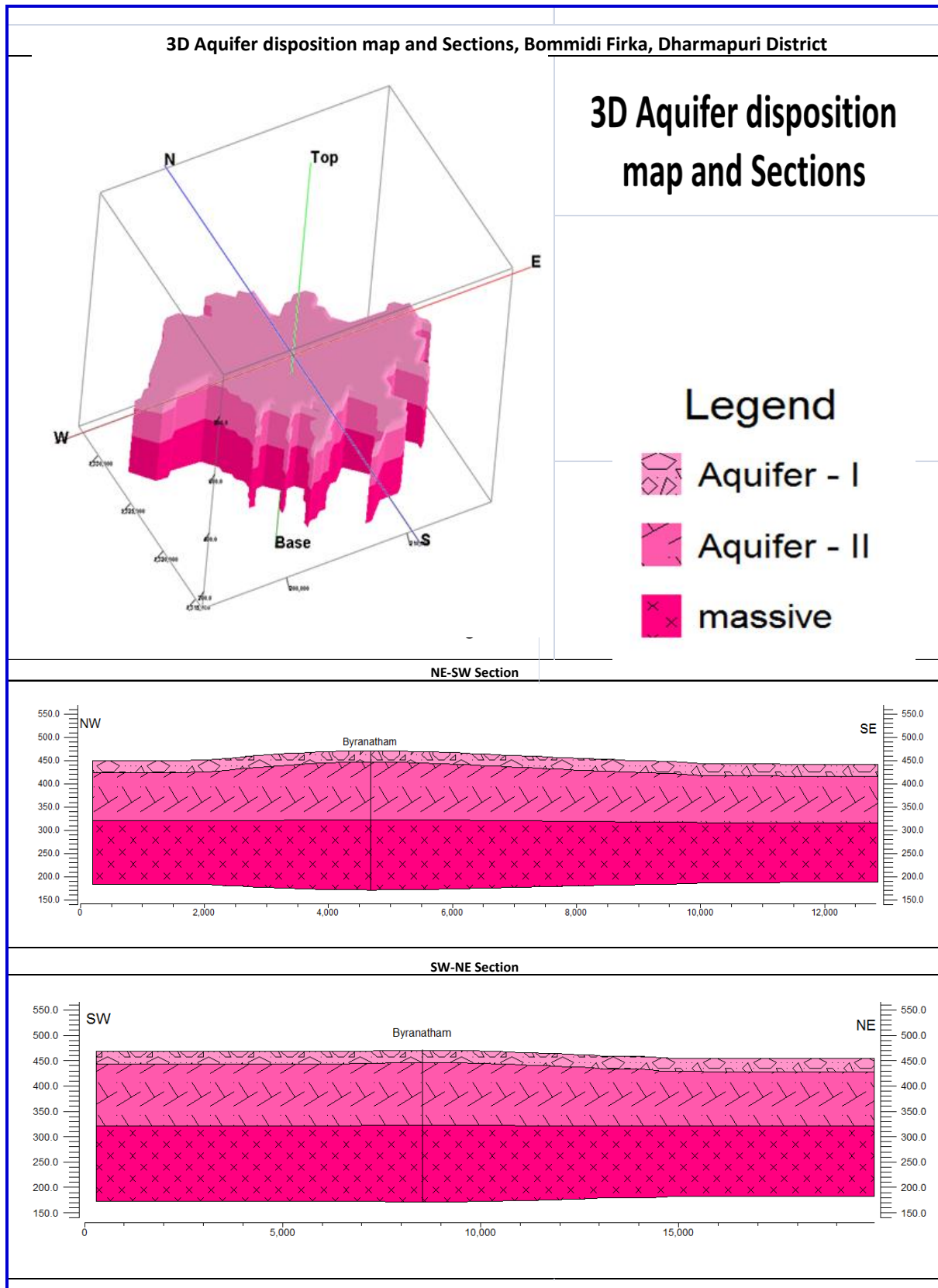


Fig-2: 3 D map and 2D - Sections.



**GW MANAGEMENT STRATEGIES BOMMIDI FIRKA, DHARMAPURI
DISTRICT, TAMILNADU STATE**

A	WATER RESOURCE AVAILABILITY		
	• Ground water (as per GEC 2011)	:	23.47 MCM
	• Surface Water (as per 2013-14 irrigation data)	:	2.50 MCM
	• Total water availability	:	25.97 MCM
(a)	Ground Water Resource Enhancement		
	Supply side Interventions		
1	Uncommitted surface runoff available for the Firka	:	16.80 MCM
2	Total volume of weathered zone	:	1190 MCM
3	Total volume of aquifer available for recharge, considering 5m depths.		744 MCM
ARTIFICAIL RECHARGE/CONSERVATION MEASURES			
6	No. of Structures Proposed	:	
	Masonry Check dam	:	60 (Table -1)
	Revival, repair of pond, tanks with recharge shaft	:	05 (Table -2)
	Percolation Pond with recharge shaft	:	04 (Table -3)
7	Improving Water Efficiency /Saving (Micro irrigation system for 50 ha)	:	0.7 MCM
8	Exepected groundwater recharge	:	1.542 MCM
9	Exepected total groundwater recharge/saving	:	2.242 MCM
	Tentative total cost of the project		Rs. 9.24 Cr
	Exepected raise in water level by recharging/saving		0.39 m
(b)	DEMAND SIDE INTERVENTION		
16	Existing total Groundwater Draft	:	34.76
17	Proposed Micro Irrigation	:	100 ha
18	Cost for micro-irrigation	:	60 lakhs @ 0.60 lakhs per ha.
19	Exepected ground water saving from micro-irrigation	:	0.7 MCM of water is expected to be conserved.
(c)	REGULATION & COMMUNITY INTERVENTIONS		
20	Regulation and control	:	Periodical reassessments of groundwater potential on a scientific basis, considering quality of water available Regulation of extraction of groundwater sources so that it does not exceed recharge.

Table 1: Locations of proposed 60 Check dams in the firka

S. No.	Longitude	Latitude	Structures
1	78.24	12.03	Check Dam
2	78.23	12.02	Check Dam
3	78.23	12.02	Check Dam
4	78.24	12.02	Check Dam
5	78.24	12.01	Check Dam
6	78.24	12.01	Check Dam
7	78.22	12.01	Check Dam
8	78.23	12.01	Check Dam
9	78.22	12.00	Check Dam
10	78.21	12.00	Check Dam
11	78.22	12.00	Check Dam
12	78.21	11.99	Check Dam
13	78.21	11.99	Check Dam
14	78.20	11.99	Check Dam
15	78.25	12.03	Check Dam
16	78.25	12.02	Check Dam
17	78.26	12.01	Check Dam
18	78.26	12.00	Check Dam
19	78.25	11.99	Check Dam
20	78.25	12.00	Check Dam
21	78.27	12.00	Check Dam
22	78.26	11.99	Check Dam
23	78.26	12.02	Check Dam
24	78.26	12.02	Check Dam
25	78.24	11.98	Check Dam
26	78.33	11.95	Check Dam
27	78.27	12.00	Check Dam
28	78.28	12.01	Check Dam
29	78.28	12.02	Check Dam
30	78.30	12.01	Check Dam
31	78.29	12.03	Check Dam
32	78.28	12.04	Check Dam
33	78.28	12.04	Check Dam
34	78.32	12.01	Check Dam
35	78.31	12.01	Check Dam
36	78.32	12.02	Check Dam
37	78.34	12.01	Check Dam
38	78.33	12.00	Check Dam
39	78.34	11.98	Check Dam
40	78.33	11.98	Check Dam
41	78.33	11.96	Check Dam

S. No.	Longitude	Latitude	Structures
42	78.32	11.96	Check Dam
43	78.30	11.95	Check Dam
44	78.31	11.94	Check Dam
45	78.28	11.90	Check Dam
46	78.28	11.91	Check Dam
47	78.29	11.92	Check Dam
48	78.27	11.92	Check Dam
49	78.27	11.93	Check Dam
50	78.33	11.90	Check Dam
51	78.33	11.90	Check Dam
52	78.33	11.94	Check Dam
53	78.32	11.93	Check Dam
54	78.31	11.93	Check Dam
55	78.33	11.93	Check Dam
56	78.35	11.93	Check Dam
57	78.34	11.93	Check Dam
58	78.29	11.97	Check Dam
59	78.28	11.96	Check Dam
60	78.26	11.97	Check Dam

Table 2: Locations of proposed de-siltation of ponds/tanks with recharge shaft

S. No.	Longitude	Latitude	Structure	Action
1	78.27	11.98	Tank / Reservoir	De-siltation And Recharge Shaft
2	78.31	11.95	Tank / Reservoir	De-siltation And Recharge Shaft
3	78.36	11.94	Tank / Reservoir	De-siltation And Recharge Shaft
4	78.26	12.00	Tank / Reservoir	De-siltation And Recharge Shaft
5	78.28	12.00	Tank / Reservoir	De-siltation And Recharge Shaft

Table 3: location of proposed Percolation pond/tanks with recharge shaft

S. No.	Longitude	Latitude	Structure	Action
1	78.24	12.01	Tank / Reservoir	Percolation Tank With Shaft
2	78.37	11.97	Tank / Reservoir	Percolation Tank With Shaft
3	78.29	11.98	Tank / Reservoir	Percolation Tank With Shaft
4	78.34	11.94	Tank / Reservoir	Percolation Tank With Shaft

