



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

Birkoor Mandal, Nizamabad District, Telangana

दक्षिणी क्षेत्र, हैदराबाद

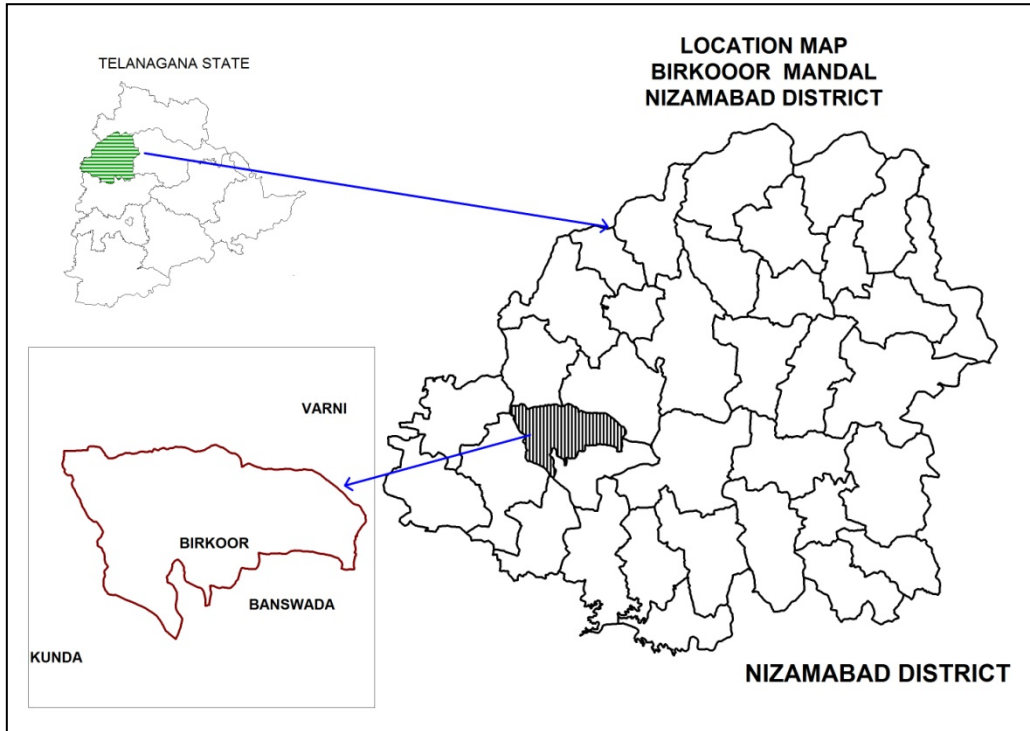
Southern Region, Hyderabad



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GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT AND
GANGA REJUVENATION

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



CENTRAL GROUND WATER BOARD
SOUTHERN REGION
HYDERABAD
AUGUST-2016

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

| SALIENT FEATURES | | |
|-------------------------|--|--|
| 1 | Name of the Mandal/Area Revenue Division Location (Fig-1) | : BIRKOOR/177 Km² NIZAMABAD NL77 ⁰ 45'27.56" - 77 ⁰ 58'26.10" EL18 ⁰ 22'21.84"-18 ⁰ 30'35.32" |
| 2 | No. of Revenue villages | : 31 |
| 3 | District/State | : Nizamabad/Telangana |
| 4 | Population /Density (2011 Census) | : 50391/285 per Km ² |
| 5 | Normal Rainfall (mm) Actual Rainfall (2014-2015) | : 1063.8 -Monsoon: 872.5 mm (82%) -Non-Monsoon:191.30 mm (18%) 574.4 |
| 6 | Agriculture (Ha) (2014-15): | : Kharif season : 1. Gross area sown: 6738 2. Paddy: 5759(85%) 3. Total oil seeds: 769(11%) 4. Maize: 143(2%) 5. Other crops: 42(1%) Rabi season: 1. Gross area sown: 4925 2. Paddy: 3377 (69%) 3. Total oil seeds: 314(6%) 4. Total pulses: 307(6%) 5. Maize: 501(10%) 6. Other crops:420(9%) |
| 7 | Irrigation (2014-15) (Ha) | : Net area irrigated under 1. Gross irrigated area: 10485 2. Net irrigated area: 5805 3. Area irrigated more than once: 4680 • Ground water: 8078 • Surface water (Tanks) : 2407 |
| 8 | Existing and future water demands (MCM) | Domestic & Industrial • Existing:0.54 • Future (year 2025): 2.09 Irrigation (Existing): 43.64 |
| | Water level behaviour | : 4-12 m (Pre-monsoon) 3-17 m (Post-monsoon) |
| 9 | AQUIFER DISPOSITION | : |
| 10 | No of Aquifers | : 2 |
| | 3-D aquifer disposition and basic characteristics of each aquifer (3D: Fig-2a Section Layout:2b Sections: 2c & 2d) | : Geology-Granites Aquifer-1 (Weathered Zone): Weathering varies from 13-15 m Transmissivity(T): 6-181 m ² /day Specific Yield (Sy):0.2 to 2 % Aquifer-2 (Fractured Zone): Depth of fracturing varies from 15-55 m. Transmissivity (T): 10-117 m ² /day |

| | | | |
|----|--|---|---|
| | | | Specific storage (S):0.00001-0.02 Cumulative yield (Aq1 and Aq 2) (lps): 2 to 3 |
| 11 | Ground water Issues | : | <ul style="list-style-type: none"> • Geogenic contamination by Fluoride. • Anthropogenic contamination by Nitrate. • Sustainability of wells (3-4 hrs). |
| 12 | Ground water resource availability and extraction (MCM) | : | <ul style="list-style-type: none"> • Net GW availability :69.57 • Gross Ground Water draft for Irrigation:38.46 • Gross Ground water draft for domestic and industrial supply:0.54 • Gross GW draft:39.00 • Stage of ground water development:56 % • Category: Safe |
| 13 | Ground water extraction | : | No of ground water extraction Structures :6855 No. of Dug wells :458 No . Of Bore Wells:6397 |
| 14 | Chemical quality of ground water and contamination | : | <p>Pre-monsoon EC ($\mu\text{S}/\text{cm}$) min: 550 max:1600 NO₃ (mg/L): Min 10 and max 70 F (mg/L): Min 0.25 and Max:1.75</p> <p>Post-monsoon EC ($\mu\text{S}/\text{cm}$) min: 1000 max:1700 NO₃ (mg/L): Min 10 and max 135 F (mg/L): Min 0.5 and Max 2 1 village are affected with high Fluoride(>1.5mg/l)</p> |
| | Ground Water Recharge Scenario | : | MCM |
| 16 | Recharge from Rainfall (Monsoon) | : | 16.82 |
| 17 | Recharge from Other sources (Tanks and applied irrigation) (Monsoon) | : | 17.61 |
| 18 | Recharge from rainfall (Non-Monsoon) | : | 12.70 |
| 19 | Recharge from Other sources (Tanks and applied irrigation) (Non-Monsoon) | : | 30.92 |
| 20 | Total annual GW Recharge | : | 78.04 |
| 21 | Natural Discharge | : | 7.80 |
| 22 | Existing Minor Irrigation Tanks | : | 29 |
| 23 | Storage from existing tanks | : | 3.87 |
| 24 | Existing Artificial Recharge Structures (PT, CD and Farm ponds) | : | 38/20/580 |
| 25 | Storage from existing AR Structures | : | 0.86 |

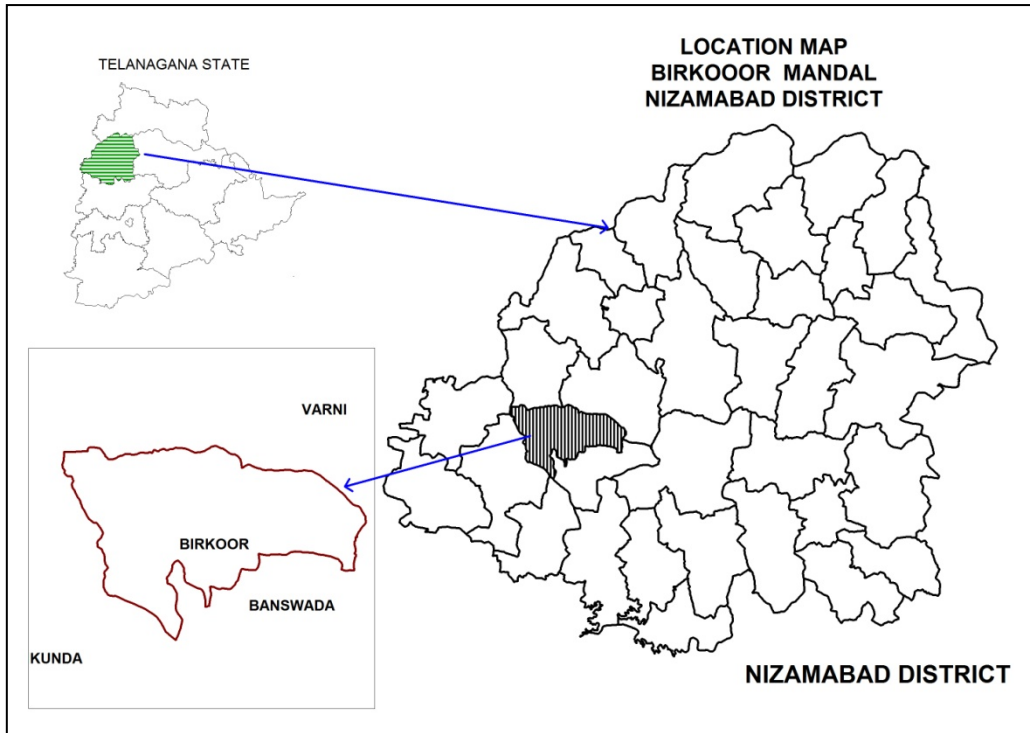


Fig-1: Location Map of Birkoor Mandal.

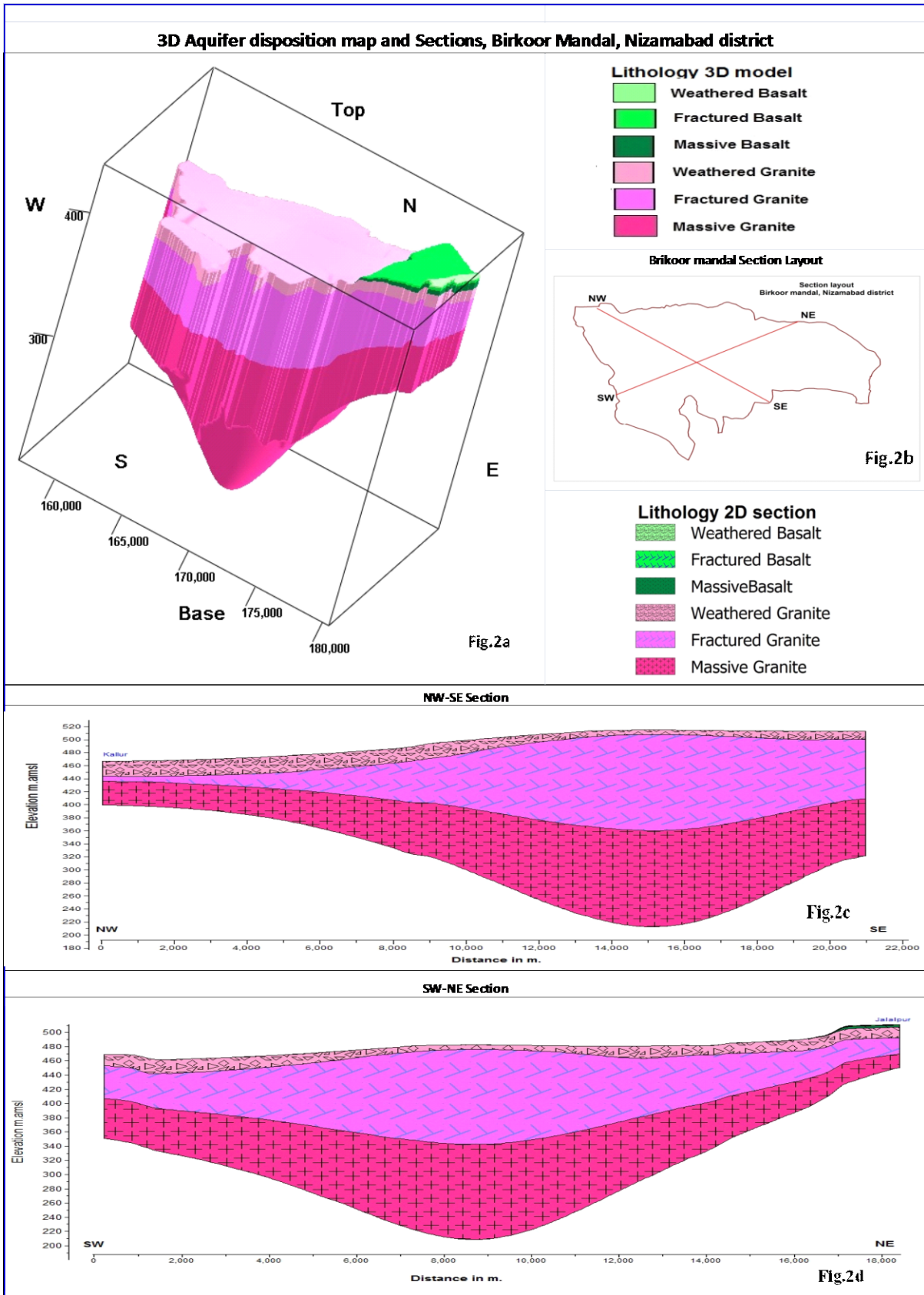


Fig-2(a-d): 3 D map and Sections.

GW MANAGEMENT STRATEGIES, BIRKOOR MANDAL, NIZAMABAD DISTRICT

| A | WATER RESOURCE AVAILABILITY | | |
|------------|--|---|---|
| | • Ground water | : | 70.24 MCM |
| | • Surface Water (Tanks) | : | 19.26 MCM |
| | • Total water availability | : | 89.5 MCM |
| (a) | Ground Water Resource Enhancement (Table-1) | | |
| | Supply side Interventions | | |
| 1 | Aquifer wise space available for recharge and proposed interventions | : | 0-14 m |
| 2 | Volume of Un-saturated zone (upto 3mbgl) | : | 1050 MCM |
| 4 | Recharge Potential (Sy 2%) | | 21 MCM |
| 5 | Utilizable Yield available for ARS | : | 6.69 MCM |
| 6 | No. of Check dams (CD's) / Mini percolation tanks (MPT's) recommended | : | 200 (CD:108+PT: 92) |
| 8 | Total Cost of ARS | : | 14.6 Cr |
| 9 | Expected Ground Water Recharge through ARS | : | 3.3 MCM |
| 10 | Water Conservation Measures (WCM) (Farm Ponds) | : | 0 |
| 12 | Total Cost of WCM | : | 0 Cr |
| 13 | Mission Kakatiya- Repair & Renovation of existing Tanks | : | 0.67 MCM (21 tanks) |
| 14 | Proposed tanks to be taken up in phased manner | | 8 tanks (@0.01 MCM) |
| 15 | Expected GW Recharge under Mission Kakatiya | : | 0.34 MCM(50 % of capacity) |
| 16 | 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) | : | 1.84MCM/year |
| 17 | Net Saving of Ground water from Mission Bhagiratha | : | 1.5 MCM/year |
| (b) | DEMAND SIDE INTERVENTION | | |
| 18 | Existing Micro Irrigation Intervention & Gross area irrigated | : | 9 Micro irrigation units/0.37 ha |
| 19 | Proposed Micro Irrigation | : | 0 ha in 0 Villages @ 100 ha in each non command village. |
| 20 | Cost for micro-irrigation | : | 0 Cr@ 0.60 lakhs per ha. |
| 21 | Expected ground water saving from micro-irrigation | : | 0 MCM of water is expected to be conserved. |
| (c) | REGULATION & COMMUNITY INTERVENTIONS | | |
| 22 | Regulation and control | : | <ul style="list-style-type: none"> • WALTA-Act to be implemented in true spirit. • Regulation of power supply in 2 spells @ 4 hours/spell to increase |

| | | | |
|-----|--|---|---|
| | | | <p>bore well/GW sustainability.</p> <ul style="list-style-type: none"> 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 | : | <ul style="list-style-type: none"> Participatory Ground Water Management with community and women participation. Paddy cultivation during rabbi 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 Kaktiya and Bhagiratha) | : | 14.6 Cr |
| 24 | Likely benefit of Interventions | : | ~5.14 MCM ground water can be saved from the above interventions. The stage of Ground water development may likely to be come down by 4 % (from 56% to 52%). |

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

| S.No | Village | Unsaturation 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 | Baswaipalle | 5 | 0.4 | 0.2 | 2 | 2 | 30 | 0.1 |
| 2 | Chincholi | 2 | 0.2 | 0.2 | 2 | 2 | 30 | 0.1 |
| 3 | Chinna Annaram | 1 | 0.1 | 0.1 | 2 | 2 | 30 | 0.1 |
| 4 | Pedda Damracha | 0 | 0 | 0.0 | 0 | 0 | 0 | 0.0 |
| 5 | Poshetpalle | 6 | 0.4 | 0.1 | 3 | 0 | 15 | 0.1 |
| 6 | Timmapur | 6 | 0.3 | 0.1 | 2 | 0 | 10 | 0.1 |
| | Priority-1(Total) | | | | 11 | 6 | 115 | 0.3 |
| | Priority-2 | | | | | | | |
| 1 | Ankole | 4 | 0.4 | 0.2 | 3 | 3 | 45 | 0.1 |
| 2 | Bairapur | 6 | 0.5 | 0.2 | 1 | 1 | 15 | 0.1 |
| 3 | Barangedgi | 14 | 1.8 | 0.3 | 4 | 4 | 60 | 0.1 |
| 4 | Birkoor | 12 | 5.8 | 1.0 | 19 | 18 | 275 | 0.5 |
| 5 | Bommandevpalle | 6 | 1.1 | 0.4 | 6 | 5 | 80 | 0.2 |
| 6 | Boppaspalle | 5 | 0.5 | 0.2 | 2 | 2 | 30 | 0.1 |
| 7 | Chinna Damranch | 1 | 0.1 | 0.1 | 1 | 0 | 5 | 0.0 |
| 8 | Dolathapur | 10 | 0.4 | 0.1 | 1 | 2 | 25 | 0.0 |
| 9 | Durgampalle | 3 | 0.1 | 0.0 | 1 | 1 | 15 | 0.0 |
| 10 | Durki | 3 | 0.4 | 0.3 | 4 | 4 | 60 | 0.1 |
| 11 | Hajipur | 9 | 2.6 | 0.6 | 10 | 10 | 150 | 0.3 |
| 12 | Kamshetpalle | 4 | 0.1 | 0.1 | 1 | 1 | 15 | 0.0 |
| 13 | Kishtapur | 6 | 0.8 | 0.3 | 4 | 3 | 50 | 0.1 |
| 14 | Mallapur | 8 | 0.5 | 0.1 | 1 | 1 | 15 | 0.1 |
| 15 | Mirzapur | 2 | 0.3 | 0.3 | 4 | 5 | 70 | 0.1 |
| 16 | Mylaram | 4 | 1.0 | 0.5 | 9 | 6 | 105 | 0.3 |
| 17 | Nachpalle | 3 | 0.3 | 0.2 | 3 | 4 | 55 | 0.1 |
| 18 | Nagapoor | 12 | 1.6 | 0.1 | 2 | 1 | 20 | 0.0 |
| 19 | Namli | 5 | 0.5 | 0.2 | 4 | 1 | 30 | 0.1 |
| 20 | Nasurullabad | 4 | 0.5 | 0.3 | 5 | 4 | 65 | 0.1 |
| 21 | Sangam | 8 | 0.7 | 0.2 | 4 | 3 | 50 | 0.1 |
| 22 | Shambapur | 12 | 0.4 | 0.1 | 0 | 0 | 0 | 0.0 |
| 23 | Sultanpur | 2 | 0.2 | 0.2 | 2 | 2 | 30 | 0.1 |
| 24 | Timmanagar | 7 | 0.4 | 0.1 | 2 | 1 | 20 | 0.1 |
| 25 | Veerapur | 2 | 0.2 | 0.2 | 4 | 4 | 60 | 0.1 |
| | Priority-2 | | | | 97 | 86 | 1345 | 3.0 |
| | Total (P-1&P-2) | | | | 108 | 92 | 1460 | 3.3 |

