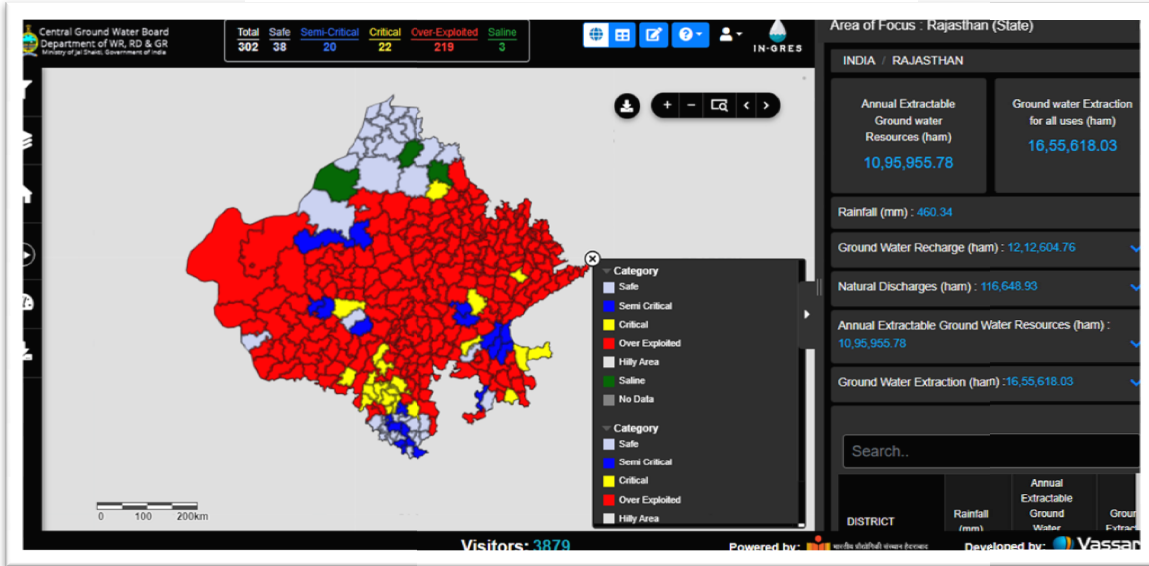




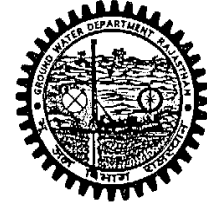
Report on Dynamic Ground Water Resources of Rajasthan (As on 31st March, 2022)



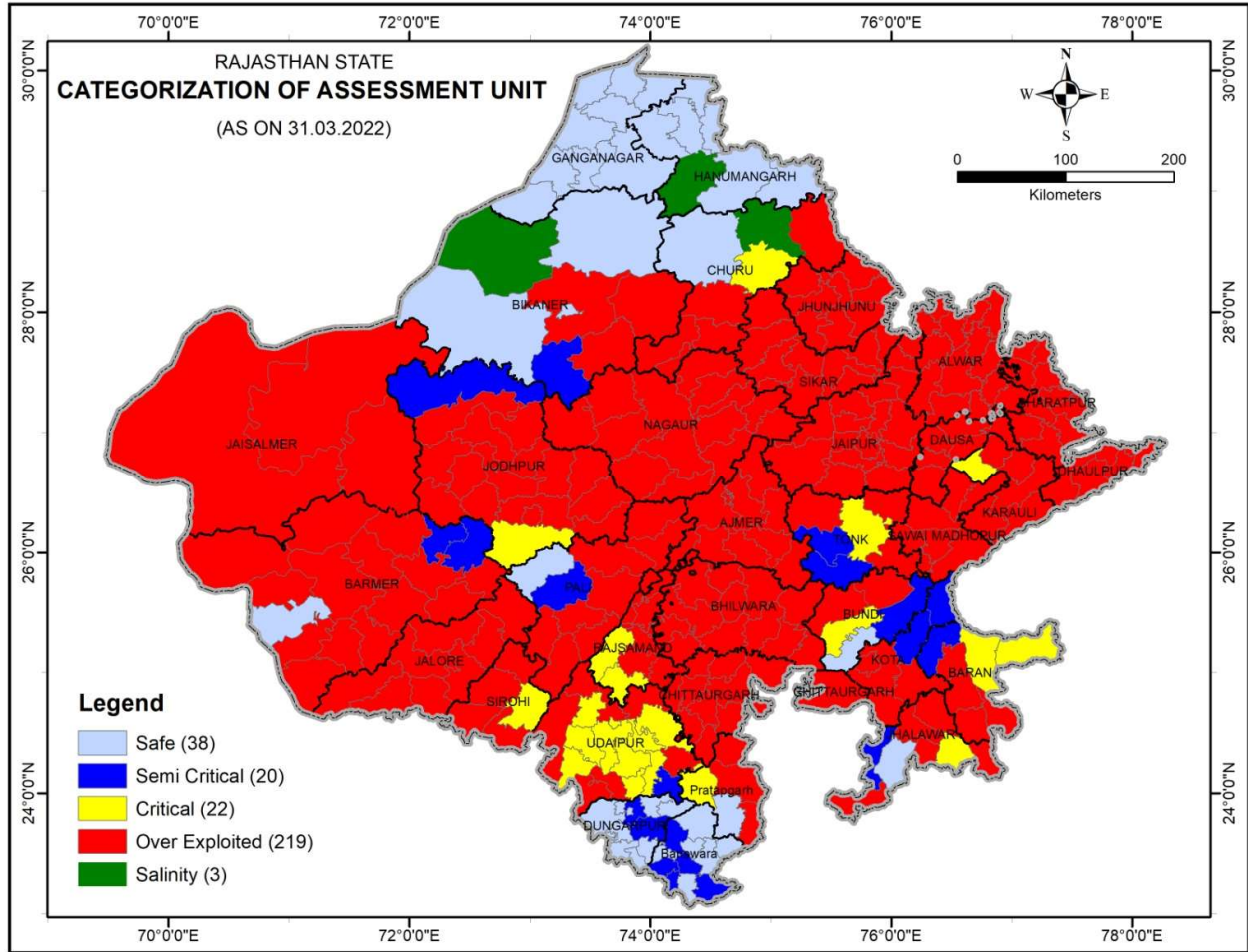
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Jodhpur

January, 2023



Report on “Dynamic Ground Water Resources of Rajasthan As on 31.03.2022”



Prepared by

**Central Ground Water Board
Government of India
Western Region, Jaipur**

**Ground Water Department
Government of Rajasthan
Jodhpur**

Jaipur

January, 2023

Dr. Subodh Agarwal, IAS
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FOREWORD

Water is crucial to life on Earth. It is vital for the growth of economy and a critical component of ecology. Owing to its universal availability, easy access and low capital cost for extraction, ground water has become the most preferred source of fresh water for various uses in India. The ever increasing water demands have led to extraction of ground water in excess of its annual replenishment in several parts of the state. This has, consequently, resulted in adverse environmental impacts including declining ground water levels and deterioration of its quality. Ground water acts as a buffer in times of drought and is a resilient resource for mitigating the effects of climate change. It needs to be managed judiciously to ensure its long term sustainability. A proper understanding of the status of availability and utilization of ground water resources is essential for its management. It is in this context that periodic assessment of ground water resources assumes significance. The report titled "Dynamic Groundwater Resources of Rajasthan, 2022" is a compilation of block-wise assessments, carried out jointly by Central Ground Water Board (CGWB) and Ground Water Department (GWD) under the supervision of State Level Committee (SLC) under overall guidance of Central Level Expert Group. The dynamic groundwater resources of Rajasthan are assessed following the Groundwater Estimation Methodology, 2015 (GEC-2015). The database thus generated will have a significant role in planning and scientific management of ground water. I genuinely appreciate the work done by the officers of Central Ground Water Board and State Ground Water Departments for their efforts in completing the assessment by providing various input parameters required by the system. I am hopeful that this report will be very useful for the administrators, planners and ground water professionals and will be helpful in ensuring optimal utilization and sustainability of ground water resource.

Subodh
20/01/2023
(Dr. Subodh Agarwal)

P.K Tripathi
Regional Director,
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Government of India
Ministry of Jal Shakti
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P R E F A C E

*Realistic assessment of the availability and utilization of a natural resource is vital for planning its sustainable development and judicious management. This is extremely important in the case of ground water in the state of Rajasthan, which is under increasing stress owing to its extraction for various uses. Assessment of Ground Water Resources of all the districts is being done jointly by State Ground Water Department and Central Ground Water Board periodically as per the GEC-2015 methodology recommended by the Ground Water Resource Estimation Committee constituted by the Govt. of India. This is a very important exercise, as it helps stakeholders to take effective measures for optimal utilization and management of ground water resources based on its criticality. Selection of areas for implementation of various schemes of State/Central Governments like. Atal Bhujal Yojana, MNREGS, Ground Water regulation etc. is also broadly based on the outcome of such assessments. The report titled '**Dynamic Ground Water Resources of Rajasthan, 2022**' summarizes the results of the assessment, primarily in terms of resource availability, utilization and categorization of assessment units, compiled from the block wise assessments, duly approved by the State level Committees (SLCs) and National Level committees (NLCs) constituted for the purpose. The report briefly describes salient features of ground water estimation methodology, rainfall distribution, hydrogeology and aquifer systems of Rajasthan and ground water level scenario of the state in the first five chapters before describing various components of the ground water resource assessment, 2022 in some detail. This is followed by details of block wise assessment of resources and conclusions drawn from the assessment. The report also has two Annexures having block-wise information related to various components of the assessment. I wish to place on record my appreciation of the untiring efforts Smt. Preeti Pandey, Scientist-C, Central Ground Water Board for liasoning with officials of State government, compilation of data, calculation and validation of resources . I am grateful to all the officers of Ground Water Department, Rajasthan for completing the challenging task of compiling this informative report. The team IIT Hyderabad and the software professionals of M/s Vassar Labs IT Solutions, Hyderabad, deserve praise for developing & customizing the IN-GRES web portal for the assessment as per requirements of Central Ground Water Board. We are thankful for the support extended by the district and circle level officers of State Ground Water Department by providing necessary inputs and approvals in time. The guidance of Dr. Sunil Kumar, the Chairman, CGWB to improve the quality of the report as well as fast-track the assessment is gratefully acknowledged. I truly believe that stakeholders at various levels will find this report informative and helpful for managing our precious ground water resources judiciously and for ensuring their sustainability for years to come. The efforts made by the officers/officials in bringing out this report are highly appreciated.*

(P.K. Tripathi)
27/01/2023

**Dynamic Ground Water Resources of Rajasthan
(As on 31st March, 2022)**

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Dr. K.B.V.N. Phanindra, Asst. Professor, Saneesh IIT Hyderabad and the software professionals of M/s Vassar Labs IT Solutions, Hyderabad & their team

**Dynamic Ground Water Resources of Rajasthan
As on 31st March 2022**

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ABBREVIATION			
AAP	Annual Action Plan	Ham/ham	Hectare meter
MCM	Million Cubic Metres	ham/yr	Hectare meter per year
BW	Bore well	IMD	Indian Meteorological Department
TW	Tube well	Km	Kilometer
DW	Dug Well	m	metre
DCB	Dug cum Borewell	m bgl	meters below ground level
DTWL	Depth to Water Level	mm	Milli meter
EW	Exploratory Well	MP	Measuring Point
GL	Ground Level	m amsl	Metre above mean sea level
GEC	Ground water Estimation Committee	NA	Not Available
CGWB	Central Ground Water Board	Fig.	Figure
Rif	Rainfall Infiltration Factor	No.	Number
lpd	Litres per day	AD	Anno Domini
Sp.yield	Specific Yield	mg/l	milligram/litre
OE	Over-exploited	SC	Semi-critical
C	Critical	GW	Ground Water

कार्यकारी सारांश

राज्य स्तर पर भूजल आंकलन राज्य स्तरीय समिति के मार्गदर्शन और केंद्रीय स्तर के विशेषज्ञ समूह के समग्र पर्यवेक्षण के तहत राज्य भूजल विभाग और केंद्रीय भूजल बोर्ड द्वारा संयुक्त रूप से समय-समय पर भूजल संसाधन मूल्यांकन किये जाते हैं। इस तरह के संयुक्त अभ्यास इससे पहले 1980, 1995, 2004, 2009, 2011, 2013, 2017 और 2020 में किए जा चुके हैं।

मूल्यांकन में गतिशील भूजल संसाधनों या वार्षिक निकालने योग्य भूजल संसाधनों की गणना, कुल वर्तमान वार्षिक भूजल निष्कर्षण (उपयोग) और वार्षिक निकालने योग्य संसाधनों (भूजल निकासी का स्तर) के संबंध में उपयोग का प्रतिशत शामिल है। मूल्यांकन इकाइयों को भूजल निष्कर्षण के चरण के आधार पर वर्गीकृत किया जाता है, जिन्हें बाद में दीर्घकालिक जल स्तर के रुझानों के साथ सत्यपित किया जाता है। वर्ष 2017 से पहले के आकलन “भूजल आकलन समिति” (जीईसी) (की 1997 पद्धति का पालन करते हुए किया गया था, जबकि 2020 के साथ-साथ वर्तमान मूल्यांकन जीईसी 2015 की कार्यप्रणाली के मापदंडों और दिशानिर्देशों पर आधारित है। पुनःपूर्ति योग्य भूजल संसाधनों का मुख्य स्रोत वर्षा से पुनर्भरण है, जो कुल वार्षिक भूजल पुनर्भरण में लगभग 72% योगदान देता है। राज्य के पूर्वी और पश्चिमी भागों में उच्च स्थानिक भिन्नता के साथ, राजस्थान में सालाना औसतन लगभग 58 सेमी बारिश होती है। राज्य के एक बड़े हिस्से में मुख्य रूप से जून से सितंबर के महीनों में फैले मानसून के मौसम के दौरान वर्षा होती है। वार्षिक वर्षा का 75% से अधिक केवल जून से सितंबर के चार बरसाती महीनों में प्राप्त होता है। वहाँ लौकिक पैमाने पर बड़े बदलाव के लिए अग्रणी। औसत वार्षिक वर्षा 580 मीमी है, लेकिन इसमें बड़ी स्थानिक विविधताएँ हैं। पश्चिमी राजस्थान में 400 मीमी से कम वर्षा होती है। सामान्य तौर पर, पश्चिम की ओर वर्षा कम हो जाती है। राँक संरचनाओं के प्रकार और उनके भंडारण और संचरण विशेषताओं का भूजल पुनर्भरण पर महत्वपूर्ण प्रभाव पड़ता है।

वर्तमान मूल्यांकन में कुल वार्षिक भूजल पुनर्भरण 12.12 बीसीएम आंका गया है। प्राकृतिक निर्वहन के लिए आवंटन रखते हुए वार्षिक निकालने योग्य भूजल संसाधन 10.95 बीसीएम उपलब्ध है। कुल वार्षिक भूजल निकासी (2022 तक) 16.55 बीसीएम आंकी गई है।

पूरे राज्य के लिए भूजल निकासी का औसत चरण लगभग 151.07% है। राज्य के अलग अलग भागों में विभिन्न उपयोगों के लिए भूजल की निकासी एक समान नहीं है। राज्य में कुल 302 मूल्यांकन इकाइयों में से (इस वर्ष 295 मूल्यांकन इकाइयों के अलावा सात नई शहरी मूल्यांकन इकाइयों को शामिल किया गया है) विभिन्न जिलों में 219 इकाइयों (72.51%) को 'अति-दोहित' के रूप में वर्गीकृत किया गया है जो अतधिक भूजल निकासी (>100%) को दर्शाता है। कुल 22 (7.3%) मूल्यांकन इकाइयों को 'संवेदशील' के रूप में वर्गीकृत किया गया है, जहां भूजल निकासी का स्तर 90-100% के बीच है। 20 “अर्ध संवेदशील” इकाइयां (12.58%) हैं, जहां भूजल निकासी का स्तर 70% और 90% के बीच है और 38 (12.58%) आकलन इकाइयों को 'सुरक्षित' के रूप में वर्गीकृत किया गया है, जहां भूजल निकासी का स्तर 70% से कम है। इसके अलावा, 3 मूल्यांकन इकाइयाँ (0.99%) हैं, जिन्हें 'खारा' के रूप में वर्गीकृत किया गया है, क्योंकि जलभृतों में भूजल का प्रमुख भाग खारा है। इसी प्रकार राज्य के 3.17 लाख वर्ग किमी रिचार्ज योग्य क्षेत्र में से 2.27 लाख वर्ग किमी (71.32%) 'अति-

दोहित" के अंतर्गत हैं, 0.166 लाख वर्ग किमी (5.25%) 'संवेदंशील' के अंतर्गत हैं, 0.187 लाख वर्ग किमी (5.89%) "अर्ध संवेदंशील" के तहत हैं, 0.46 लाख वर्ग किमी (14.72%) 'सुरक्षित' के तहत हैं और 0.089 लाख वर्ग किमी 2.82%) 'सलाइन' या "खारा" श्रेणी मूल्यांकन इकाइयों के तहत हैं। राज्य के कुल वार्षिक निकालने योग्य संसाधनों के 10.95 बीसीएम में से, 8.2 बीसीएम (74.85%) 'अति-दोहित' के तहत हैं, 0.72 बीसीएम (6.58%) "संवेदंशील" के तहत हैं, 0.85 बीसीएम (7.76%) "अर्ध संवेदंशील" के तहत हैं। क्रिटिकल', 1.184 बीसीएम (10.8%) 'सुरक्षित' श्रेणी के मूल्यांकन इकाइयों के अंतर्गत हैं।

2020 के अनुमान की तुलना में साल 2022 में वार्षिक निकालने योग्य भूजल संसाधन में 11.07 से 10.95 बीसीएम की कमी आई है। वार्षिक भूजल निकासी और भूजल निष्कर्षण का चरण 16.63 बीसीएम से 16.55 बीसीएम तक कम हो गया है। भूजल निकासी का स्तर 150.2% से बढ़कर 151.07% हो गया है। वार्षिक भूजल पुनर्भरण और सिंचाई के तहत क्षेत्र (सतह जल और भूजल दोनों द्वारा) के लिए वर्षा के आंकड़ों में परिवर्तन के कारण है। वार्षिक भू-जल निकासी में मामूली बदलाव कुओं की गणना के आंकड़ों में संशोधन और सिंचित भूमि क्षेत्र में बदलाव के कारण हुआ है। भूजल की अंधाधुंध निकासी से राज्य में अत्यधिक दोहन हो रहा है, जहां शुष्क जलवायु के कारण भूजल पुनर्भरण सीमित है, जिससे मौजूदा संसाधनों पर दबाव बढ़ रहा है। सरकार और निजी पहल के माध्यम से वर्षा जल संचयन, कृत्रिम पुनर्भरण योजनाओं और भूजल वृद्धि और संरक्षण उपायों जैसे प्रबंधन प्रथाओं के प्रयासों को लागू करने की आवश्यकता है जिसके परिणामस्वरूप भूजल की स्थिति में सुधार होगा। भूजल संसाधन मूल्यांकन, विज्ञान के अन्य क्षेत्रों की तरह, निरंतर शोध की आवश्यकता है।

Executive Summary

Ground Water Resources Assessment is carried out at periodical intervals jointly by State Ground Water Department and Central Ground Water Board under the guidance of the State Level Committee on Ground Water Assessment at State Levels and under the overall supervision of the Central Level Expert Group. Such joint exercises have been taken up earlier in 1980, 1995, 2004, 2009, 2011, 2013, 2017 and 2020.

The assessment involves computation of dynamic ground water resources or Annual Extractable Ground Water Resource, Total Current Annual Ground Water Extraction (utilization) and the Percentage of utilization with respect to annual extractable resources (stage of Ground Water extraction). The assessment units are categorized based on Stage of Ground Water Extraction, which are then validated with long-term water level trends. The assessment prior to that of year 2017 were carried out following Ground Water Estimation Committee (GEC) 97 Methodology, whereas 2020 as well as the present assessment are based on norms and guidelines of the GEC 2015 Methodology. The main source of replenishable ground water resources is recharge from rainfall, which contributes to nearly 72 % of the total annual ground water recharge. Rajasthan receives about 58 cm of rain annually on average, with high spatial variation in eastern and western parts of the state. A major part of the state receives rainfall mainly during SW Monsoon season spread over the months of June to September. Over 75 % of the annual rainfall is received in the four rainy months for June to September only. There by leading to large variations on temporal scale. The average annual rainfall is 58 cm, but it has great spatial variations. Western Rajasthan receives rainfall less than 40 cm. In general, rainfall decreases westwards. Type of rock formations and their storage and transmission characteristics have a significant influence on ground water recharge.

In the present assessment, the total annual ground water recharge has been assessed as 12.12 bcm. Keeping an allocation for natural discharge, the annual extractable ground water resource works out as 10.95 bcm. The total annual ground water extraction (as in 2022) has been assessed as 16.55 bcm.

The average stage of ground water extraction for the State as a whole works out to be about 151.07%. The extraction of ground water for various uses in different parts of the country is not uniform. Out of the total 302 assessment units (this year seven new urban assessment units besides 295 assessment units have been included) in the state, 219 units in various districts (72.51%) have been categorized as 'Over-Exploited' indicating ground water extraction exceeding the annually replenishable ground water recharge. A total of 22 (7.3 %) assessment units have been categorized as 'Critical', where the stage of ground water extraction is between 90-100 % of annual extractable resources available. There are 20 'Semi-Critical' units (12.58%), where the stage of ground water extraction is between 70 % and 90 % and 38 (12.58 %) Assessment units have been categorized as 'Safe', where the stage of Ground water extraction is less than 70 %. Apart from this, there are 3 assessment units (0.99%), which have been categorized as 'Saline' as major part of the ground water in phreatic aquifers is brackish or saline. Similarly out of 3.17 lakh sq km recharge worthy area of the country, 2.27 lakh sq km (71.32 %) are under 'Over-Exploited', 0.166 lakh sq km (5.25

%) are under 'Critical', 0.187 lakh sq km (5.89 %) are under 'Semi-Critical', 0.46 lakh sq km (14.72 %) are under 'Safe' and 0.089 lakh sq km 2.82%) are under 'Saline' category assessment units. Out of 10.95 bcm of Total Annual Extractable Resources of the country, 8.2 bcm (74.85 %) are under 'Over-Exploited', 0.72 bcm (6.58 %) are under 'Critical', 0.85 bcm (7.76 %) are under 'Semi-Critical', 1.184 bcm (10.8 %) are under 'Safe' category assessment units.

As compared to 2020 estimate, the Annual Extractable Ground Water Resource has decreased marginally from 11.07 to 10.95 bcm. Annual ground water extraction and stage of ground water extraction has decreased marginally from 16.63 bcm to 16.55 bcm .The stage of Ground Water Extraction has increased from 150.2% to 151.07% to. The change in Annual Ground Water recharge is because of change in rainfall data for recharge and area under irrigation (both by surface water and ground water). The marginal change in annual ground water extraction is due to revision of well census data and change in irrigated land area. The indiscriminate withdrawals of ground water leading to over-exploitation in the state where due to arid climate, groundwater recharge is limited, leading to stress on the resource. There is a need of applying efforts of rain water harvesting, artificial recharge plans and management practices like ground water augmentation and conservation measures through government and private initiatives that will result in improvement in ground water situation. Ground water resources assessment, like other fields of science, requires continuous refinement

Dynamic Ground Water Resources of Rajasthan As on 31st March 2022

Introduction

The Government of India vide Resolution No. T-13014/1/2019-GW Section dated 08/02/2022 from Director (GW Ministry of Jal Shakti, Department of Water Resources, River development & Ganga Rejuvenation) for constitution of Central Level Expert Group for overall re-assessment of ground water resources of the country (As on 31.03.2022) . With this view, the said Committee with respect to Rajasthan state was constituted vide letter No. 6 (31) AR/Gr.3/2020 dated 14.02.2022 (Annexure I) of Deputy Secretary to Government vide order of Rajasthan Government Administrative Reforms (Group-3) Department with the following members

1	The Principal Secretary to Government, Ground Water Department & PHED	Chairman
2	Principal Secretary to Government, Energy	Member
3	Commissioner, Industries	Member
4	Commissioner, Agriculture	Member
5	Chief Engineer, SWRPD	Member
6	The Chief Engineer, Water Resources	Member
7	Chief Engineer (HQ), PHED	Member
8	Chief Engineer (Rural). PHED	Member
9	Chief Engineer, GWD	Member
10	Director, Department of Mines & Geology	Member
11	General Manager, NABARD	Member
12	Regional Director, Central Ground Water Board, Western Region, Jaipur	Member-Secretary

The terms of reference of the Group were as follows:-

- I. To estimate annual Replenishable ground water resources of the state in accordance with the Ground Water Resources Estimation Methodology – 2015 of CGWB.
- II. To estimate the status of utilization of the Annual Replenishable ground water resources

Ground Water Resource Estimation for the State is carried out periodically. The Ground Water Resources of Rajasthan were last estimated as on 31.03.2020. In the present report, block-wise dynamic ground water resources as on 31.3.2022 have been assessed. Ground Water Resources have been estimated as per the Ground Water Estimation Committee-2015 guidelines.

Administrative map of Rajasthan depicting the assessment units (Blocks) in each district (33) is represented in **Fig.1**

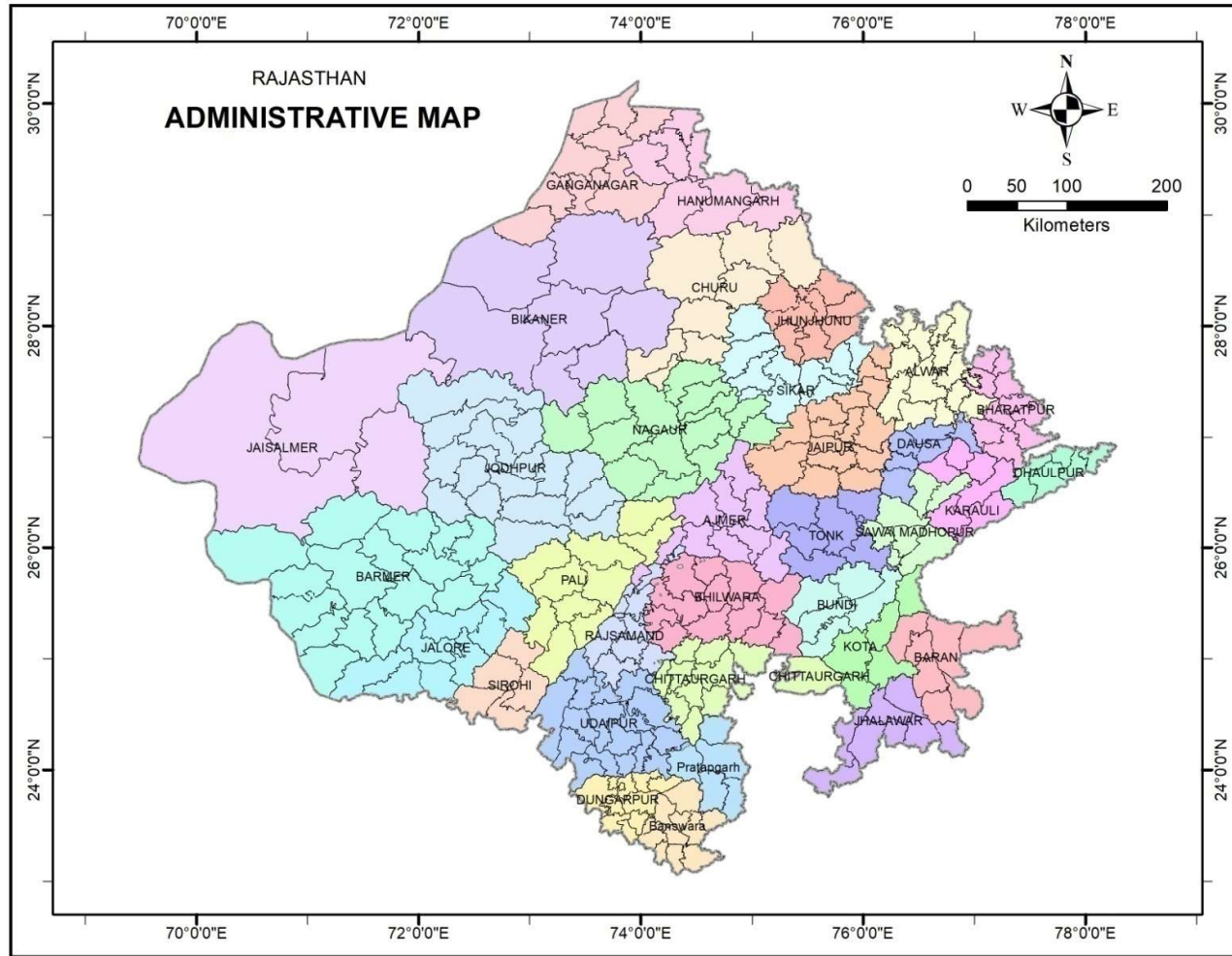


Fig.1. Administrative Map of Rajasthan showing Assessment Units

General Features of the State

2.1 Physiographic Features

2.1.1 Topography

The state has a fairly mature topography developed during the long period of denudation and erosion. The present Physiography and land forms are greatly determined by the underlying geological formations and structures and the product of the fluvial cycle of erosion in the past and the recent & continuing desert cycle of erosion. Physiography and Drainage are shown in **Fig.2**

Physiographically the state can be divided into four units:

- (a) Aravalli hill ranges
- (b) Eastern plains
- (c) Western Sandy Plain with Sand Dunes and
- (d) Vindhyan Scarp land and Deccan Lava Plateau

2.1.2 Aravalli Hill Ranges

The Aravalli ranges trending NE -SW are the oldest mountain chain in India. The elevation of these hill ranges varies from about 600 meters to over 900 meters above mean sea level m. amsl. They are composed of Bhilwara, Aravalli and Delhi Super Group of rocks ranging in age from Archaean {2500 million year (my)} to Proterozoic (740 my). These ranges form a series of rugged hills with rounded surfaces. The quartzite stands out as scarps. Near Ajmer, these separate out south-westwards into a number of parallel ridges. At Mount Abu, the clusters of granite peaks reach a maximum height of 1722 m amsl at Guru Sikhar.

2.1.3 The Eastern Plains

In the plains, east of the Aravalli ranges, the altitude varies from 150 m to 450m AMSL. The general trend of the slope varies from place to place. In Dungarpur and Banswara districts the trend is mainly from north to south, in Alwar district it is from south to north and in the remaining districts, forming the central and north eastern Rajasthan, it is from west to east. The south-eastern limit is marked by the Vindhyan plateau.

2.1.4. The Western Sandy Plains and Sand Dunes

The sandy plains in western Rajasthan, forming a part of Thar-Desert, are mainly occupied by alluvium and blown sands. These plains are further sub-divided into three units:

- Sandy Arid Plain (Marusthali)
- ii) Semi-arid Transitional Plain
- iii) Ghaggar Plain

The Sandy Arid Plain is a typical desert terrain. It includes the western most districts of Jaisalmer, Bikaner and parts of Barmer, Jodhpur, Nagaur, Churu and Ganganagar. The line dividing the Sandy Arid Plain and the Semi-arid Transitional Plain as well as Ghaggar Plain is based on climatic parameters and water resource availability.

The eastern boundary of the Semi-arid Transitional Plain is marked by the foot-hills and their extension on the western side of Aravalli ranges. Sand dunes are prominent and the terrain is punctuated with isolated hills of granites and rhyolites. The altitude varies from 30m to 300m amsl. The general slope is from northeast to southwest.

The Ghaggar Plain consists mainly of former flood plains of River Ghaggar and aeolian deposits. A network of canals covers the entire area. The southern and south-eastern part is occupied by medium to high dunes. Nineteen of these interdunal depressions are being utilised for storing the diverted Ghaggar flood waters. The central part of the Ghaggar Plain is drained by the regulated floodwaters of Ghaggar River.

2.1.5. Vindhyan Scarpland and Deccan Lava Plateau

The southeastern plains are locally characterized by plateau, scarp land and ravines. The Vindhyan scarp lands are seen all along the Great Boundary Fault from Chittorgarh to the trijunction of Bharatpur, Dholpur and Sawai Madhopur districts. They have an average elevation of 300 m to 580 m amsl.

The Deccan Lava Plateau is mainly confined to parts of Kota, Jhalawar, Banswara and Chittorgarh districts. The elevation ranges from 300m to over 500m amsl.

The ravines, locally impassable, are confined to the alluvium overlying the Vindhyans in Dholpur, Sawai Madhopur, Jhalawar and Kota districts along the Chambal River and its tributaries.

2.2 Drainage

The Aravalli Hill Ranges form the main water divide in Rajasthan. Luni is the only river west of Aravallis. In the remaining area of western Rajasthan comprising about 60% of the geographical area of the state, the drainage is internal, and the streams are lost in the desert sands after flowing for a short distance from the point of origin. Luni itself essentially is an ephemeral stream with flood cycle of 16 years. Drainage in western Rajasthan is towards west and south - west.

In the east of Aravalli ranges, the main drainage is towards north - east. The Chambal Catchment occupies 21% (72,032 sq km) of the total geographical area of the state.

The other important catchments include Yamuna-Ganga in the north east, and Mahi and Sabarmati in the south west with flow towards south. The former three catchments support perennial rivers. In the northern and north-eastern parts of eastern Rajasthan, the Banganga, Barah, Sota, Sahibi and Kantli rivers are of inland nature. The drainage in the whole of Rajasthan is generally dendritic.

In the desert area, a few salt lakes and depressions exist, prominent among them being the Sambhar Lake, Didwana Lake, Bap, Pachpadra and Rann of Jaisalmer and Pokran.

2.3. Climate

Climatically, the year in Rajasthan can be divided into three major conventional seasons as follows:

The Hot- Weather Season (March to end of June)

Monsoon Season (End of June to September)

The Cold- Weather Season (October to February)

The India Meteorological Department has further sub-divided the cold season into two divisions, i.e.

The Season of retreating monsoon (October to December)

The cold season (January to February)

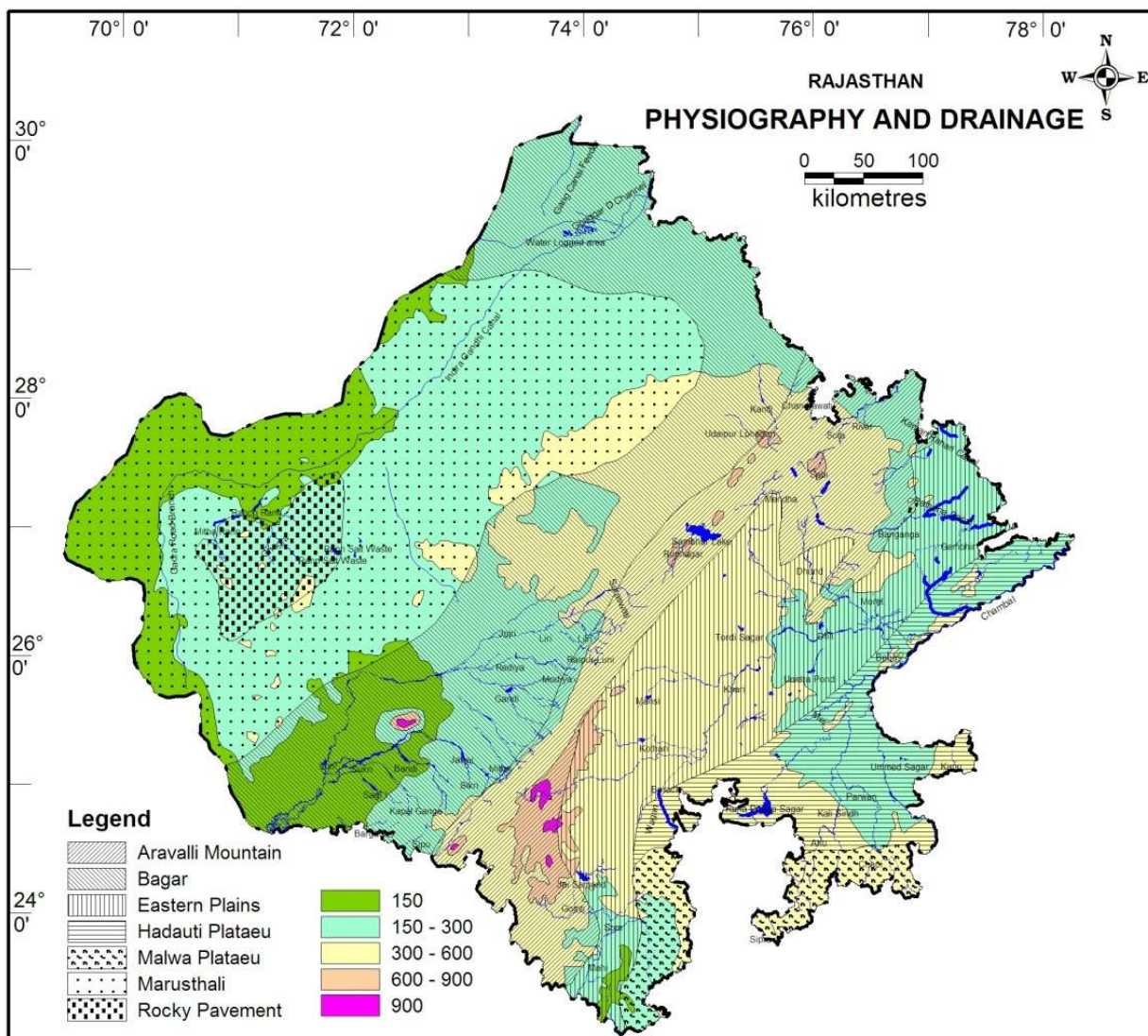
These seasonal variations have been broadly based on temperature and rainfall conditions in different months.

2.3.1. Rainfall

Rainfall is the major source of ground water recharge in the state. The long-term normal annual rainfall in the State ranges from 158.6 mm to 895.3 mm as shown in **Fig.3**. The state receives more than 90 % rainfall from southwest monsoon from June to September. The winter rainfall is meager. The average annual rainfall and departures from normal annual rainfall have been worked out shown as **Fig.4**. Rainfall is the major contributor of Ground water Recharge in Rajasthan. (Depth to water level maps before and after monsoon is given in **Fig. 5** and **Fig. 6** respectively).

The average annual rainfall of the state during the period 2020-21 was 641.83 mm. The percentage departures of average annual rainfall from normal annual rainfall (1901-2019) have been computed for the last five years and tabulated in **Table 1**. It is observed that the average annual rainfall in the state, during the year 2018-19 was almost excess to normal with departure of 29.5%, normal during the year 2015-16, 17-18 and 19-20. The average annual rainfall in the state during the 2016-17 was deficient with negative departure value of 23.6%.

A perusal of Table 1 reveals that 11 districts of the state received excess rainfall, 15 districts received normal rainfall, and 7 districts received deficient rainfall, than annual normal rainfall during the year 2019-20. It is observed that only one district (Jaisalmer) of Rajasthan have received good rainfall with positive departures being more than 50%. While 3 districts have *v.i.z.* Bundi, Dhoulpur



and Kota have received deficient rainfall with negative departure less than 40%. There are 343 Rain gauge stations in the state. The annual rainfall data (June to May) of five years 2015-16 to 2019-20 have been analyzed to calculate average rainfall of each district in the respective years.

Fig.2: Physiography and Drainage Map of Rajasthan

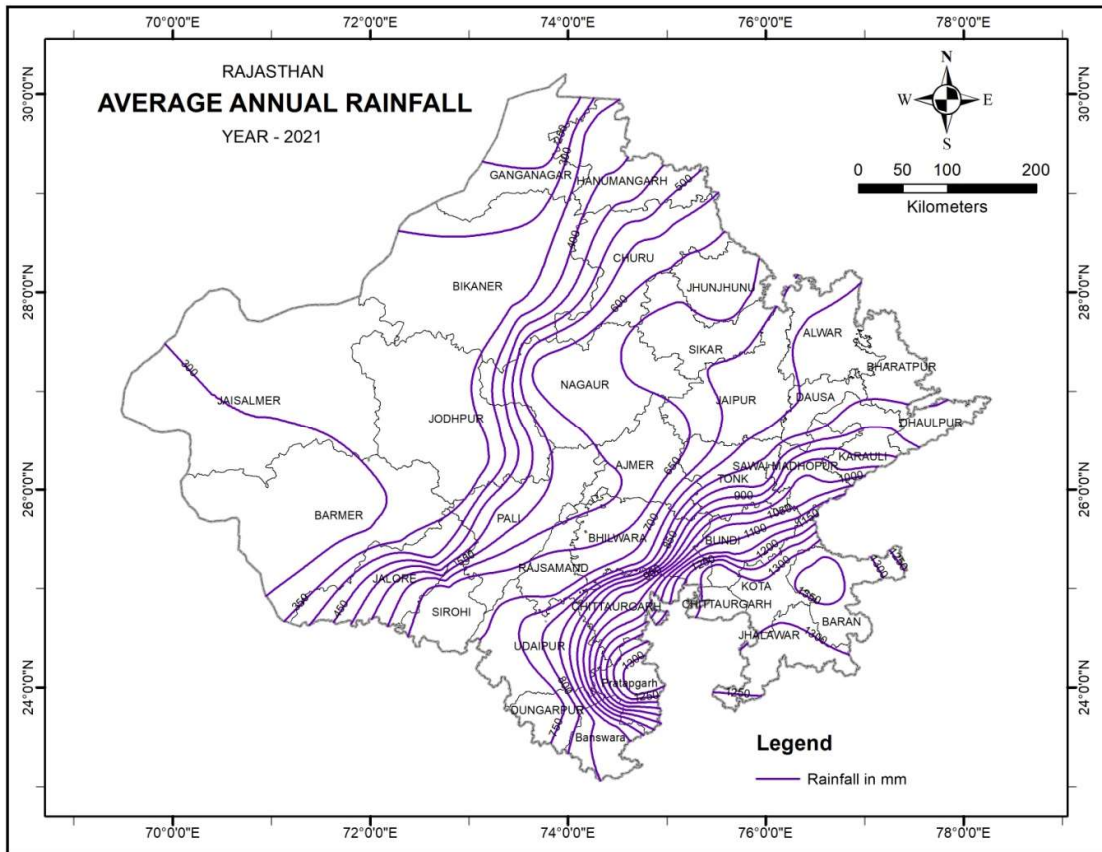


Fig.3: Average Annual Rainfall (mm) Map of Rajasthan for the year 2021

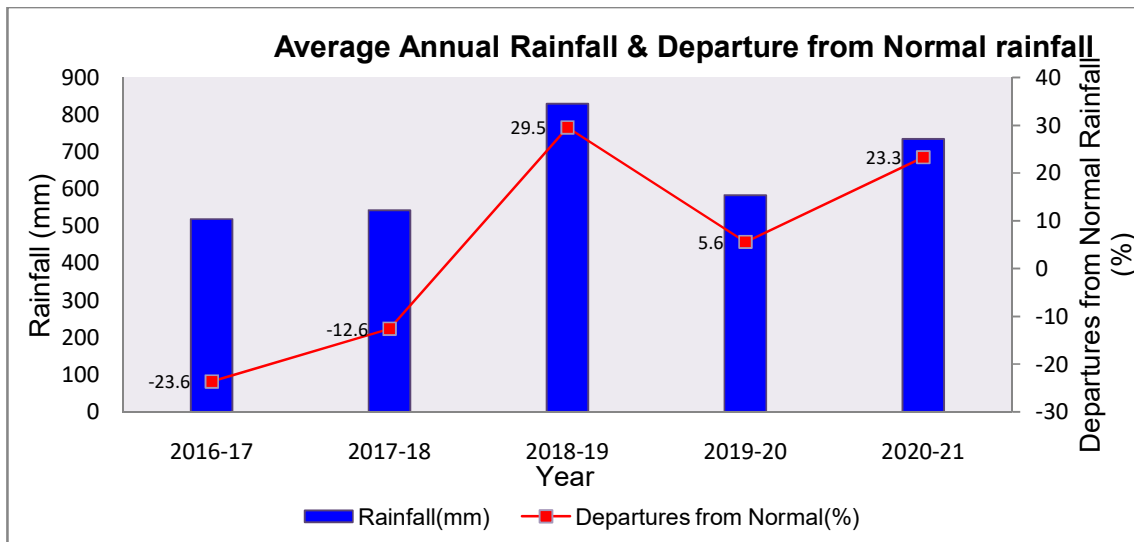


Fig.4: Average Annual Rainfall and Departure from Normal Annual Rainfall

2.3.2. Temperature

The hot weather season commences in the month of March and continues through April to June. In the month of May the diurnal range of temperature increases more and the days become hotter. During June, the mean maximum temperature reaches as high as 48°C.

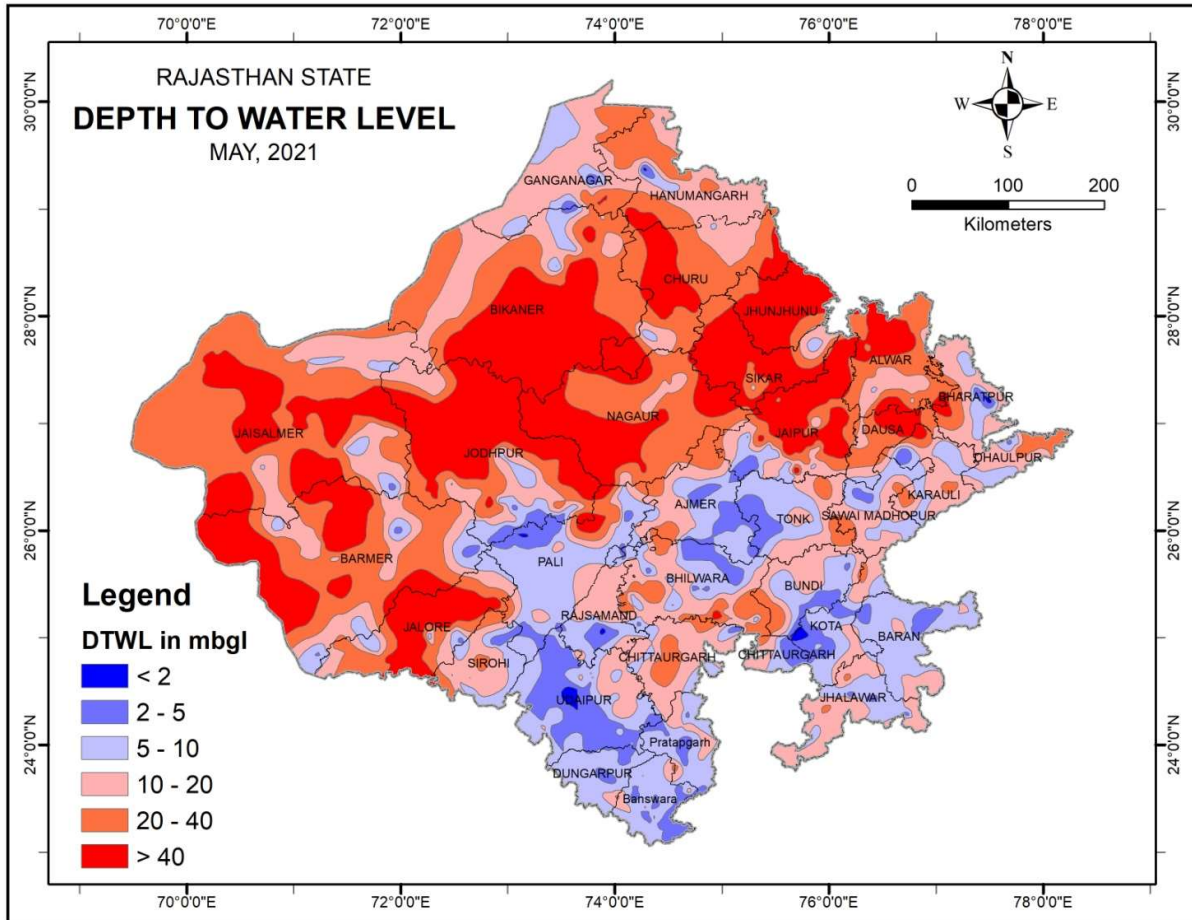


Fig.5: Pre-monsoon Depth to Water Level (m bgl) Map of Rajasthan-2021

January is the coldest month. The normal minimum temperature for the month of January range from 2°C in the north to 7.8°C in the south west in the western Rajasthan. At Mount Abu (1195 m AMSL), temperature dips to freezing point during the month of December /January. In eastern Rajasthan the range of normal minimum temperature (January) in and around the Aravalli hill ranges is 7°C to 8°C which increases towards the east and attains a high of more than 10°C in the districts of Kota and Bundi.

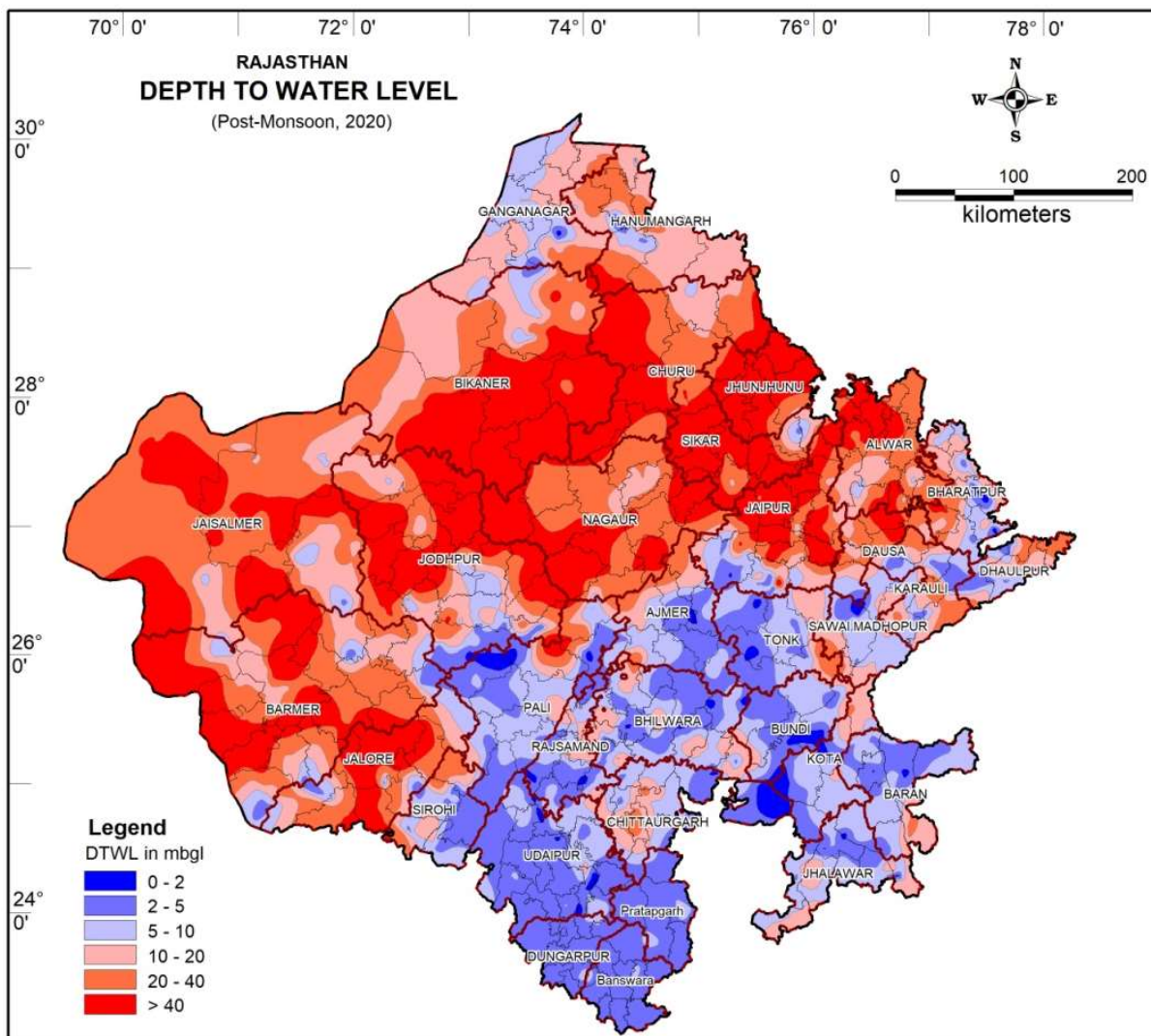


Fig.6: Post-monsoon Depth to Water Level (m bgl) Map of Rajasthan

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

Table-1: Average annual Rainfall (2021)and Departure from Normal Rainfall (Rajasthan)												
S. No.	District	Normal (1901-70)	Rainfall (mm)					Departures from Normal (%)				
			(2016-17)	(2017-18)	(2018-19)	(2019-20)	(2020-21)	(2016-17)	(2017-18)	(2018-19)	(2019-20)	(2020-21)
1	Ajmer	437	483	428	799	528	606	9.60	-2.09	45.31	17.17	27.92
2	Alwar	626	298	565	462	509	765	-110.40	-10.82	-35.45	-22.87	18.18
3	Banswara	870	899	813	1281	1055	878	3.24	-6.99	32.06	17.50	0.85
4	Baran	895.3	546	1004	1320	652	1363	-63.97	10.85	32.15	-37.24	34.31
5	Barmer	260	464	130	390	345	274	44.01	-99.59	33.32	24.54	5.16
6	Bharatpur	675.1	331	802	593	539	779	-104.01	15.78	-13.78	-25.15	13.38
7	Bhilwara	603.3	518	578	967	581	705	-16.53	-4.40	37.59	-3.86	14.37
8	Bikaner	249.8	213	254	307	298	320	-17.48	1.65	18.57	16.14	21.96
9	Bundi	715.8	459	636	1199	511	1106	-56.12	-12.64	40.28	-40.22	35.29
10	Chittorgarh	772.3	691	730	1243	711	1029	-11.75	-5.76	37.88	-8.65	24.91
11	Churu	337.9	278	341	476	485	593	-21.55	0.86	29.08	30.33	43.00
12	Dausa	625.7	321	595	740	545	750	-95.23	-5.16	15.42	-14.73	16.60
13	Dhaulpur	717.5	345	757	812	496	810	-108.17	5.18	11.66	-44.66	11.46
14	Dungarpur	610.4	825	788	1144	892	710	26.00	22.49	46.66	31.60	14.08
15	Ganganagar	171.6	136	182	231	240	201	-26.15	5.95	25.87	28.57	14.62
16	Hanumangarh	237.5	237	206	353	359	377	-0.39	-15.29	32.69	33.90	36.92
17	Jaipur	526.8	320	537	744	623	715	-64.68	1.83	29.21	15.39	26.30
18	Jaisalmer	158.6	222	121	252	351	302	28.66	-31.44	37.02	54.81	47.51
19	Jalore	400.6	920	148	544	597	391	56.45	-170.68	26.38	32.87	-2.54
20	Jhalawar	884.8	773	966	1783	789	1294	-14.47	8.41	50.38	-12.14	31.62
21	Jhunjhunu	459.5	270	471	684	410	613	-70.37	2.34	32.81	-12.04	25.04
22	Jodhpur	296.7	335	211	436	414	324	11.34	-40.62	31.90	28.41	8.40
23	Karauli	616.2	321	571	584	559	871	-91.87	-7.89	-5.59	-10.21	29.22
24	Kota	808.7	471	755	1282	577	1319	-71.57	-7.08	36.94	-40.06	38.70
25	Nagaur	363.1	371	351	652	504	616	2.21	-3.56	44.34	27.96	41.08
26	Pali	484.5	781	325	753	585	512	37.94	-49.30	35.64	17.14	5.33
27	Pratapgarh	806	830	1152	1978	1068	1346	2.86	30.06	59.26	24.50	40.14
28	Rajsamand	556.1	1097	544	918	693	679	49.29	-2.22	39.39	19.74	18.15
29	Sawai Madhopur	655.8	728	919	898	623	1014	9.97	28.61	26.93	-5.29	35.33
30	Sikar	459.8	377	581	712	524	680	-21.96	20.83	35.41	12.31	32.42
31	Sirohi	606.3	297	359	903	922	692	-104.26	-69.01	32.87	34.21	12.38
32	Tonk	598.2	1567	527	863	480	818	61.82	-13.62	30.68	-24.53	26.89
33	Udaipur	632.7	416	565	1069	778	788	-51.95	-11.94	40.84	18.68	19.70
RAJASTHAN		549.1	519.3	542.7	829	583	735	-23.6	-12.6	29.5	5.6	23.3

2.4 Geology

Diverse rock types ranging from the oldest Archaean rocks to sub- Recent alluvium and wind-blown sand are exposed in Rajasthan. In a major portion of the State, particularly in western Rajasthan, the oldest rocks are concealed below a thick cover of alluvium and wind blown sands. A generalised stratigraphic succession of various formations and rock types is given in **Table-2**.

2.4.1. Archaeans

The Archaeans in Rajasthan are represented by Bhilwara Supergroup and comprise Banded Gneissic Complex representing the oldest meta-sedimentary sequence along-with Berach Granite.

2.4.2. Proterozoics

Aravallis: Aravalli Supergroup unconformably overlies the Archaeans and consists of phyllites, greywackes, quartzites and dolomites intruded by granites and mafic rocks.

Delhis: These are exposed over a large part of central and north eastern Rajasthan and consist dominantly of quartzites, biotite-schist, calc-schist and marble.

Vindhyan: Vindhyan unconformably overlie Delhis and have been deposited in two separate basins on either side of the Aravallis. In the eastern part these comprise unmetamorphosed, relatively undisturbed, sandstones, limestones and shales. Great Boundary Fault separates them from Aravallis and Archeans.

Intrusives and Extrusives: Nepheline syenites are exposed around Kishangarh and are post-Delhi in age. Erinpura Granite is the principal intrusive into the Delhis and is exposed around Ajmer and Mount Abu. Malani Suite of igneous rocks consisting of rhyolites and pyroclastic material are exposed around Jodhpur and are post-Delhi in age.

2.4.3. Palaeozoics

In the western part of the state, Marwar Super Group of Lower Palaeozoic age consists of three groups namely Jodhpur group (mainly sandstone & shale), Bilara Group (mainly limestone and dolomite) and Nagaur Group (sandstone, siltstone and gypsum). Overlying the Marwar Super Group is the Badhura Formation of Permo-Carboniferous age comprising sandstones and boulders.

Table 2: Geological Succession of Rajasthan

GEOLOGICAL TIME UNIT		LITHOSTRATIGRAPHIC TIME UNIT		LITHOLOGY
ERA	PERIOD	SUPER GROUP / GROUP		
RECENT				Alluvium and blown sand
CAINOZOIC (TERTIARY)	Eocene	Mandai/ Akli/ Kapurdih/ Jogira/ Banda/ Khuiala / Palana		Sandstone, bentonitic clay & fuller's earth
DECCAN TRAPS				Basalt
MESOZOIC	Cretaceous	Abur / Fatehgarh		Sandstone, limestone, clay and lignite
	Jurassic	Parihar/ Bhadesar/ Baisakhi/ Jaisalmer/ Lathi		Limetstone, sandstone & shale
PALAEOZOIC	Permo- Carboniferous	Badhura		Sandstone & boulders
		Marwar	Nagaur/ Bilara/ Jodhpur	Sandstone, gypsum, siltstone, limestone, dolomite & shale
UPPER PROTEROZOIC		Vindhyan	Bhander/ Rewa/ Kaimur/ Semri	Sandstone, shale, limestone, conglomerate & basic flows
		Acid,Basic and Ultrabasic Intrusives and Extrusives MalaniVolcanics / Plutonics KishangarhSyenite		
LOWER PROTEROZOIC		Delhi	Ajabgarh/ Alwar/ Sirohi/ Punagarh/ Raialo	Quartzite, schist, gneiss, marble, shale, slate, phyllite& basic flows
		Granite, Basic & Ultrabasic Intrusives		
		Aravalli	Jharol/ Bari/ Udaipur/ Debari	Quartzite, schist, phyllite, conglomerate, greywacke, metavolcanics& marble
		Granite & Basic Intrusives		
ARCHAEAN		Bhilwara	Ranthambore/ Rajpura-Dariba /Hindoli	Phyllite, slates, schist, gneiss, granite gneiss &migmatites

2.4.4. Mesozoics

Mesozoics are exposed mainly in Jaisalmer and Barmer districts. These comprise of sandstones and limestone.

2.4.5. Deccan Traps

Deccan Traps occupy a part of southeastern segment of the state covering parts of Banswara, Baran, Jhalawar and Chittorgarh districts. These overlie pre- Aravallis, Aravallis and Vindhyan. These are basaltic to doleritic in composition and are uniform over a large area.

2.4.6. Tertiaries

Sandstones, bentonitic clay and Fuller's earth are the main litho-units and are exposed in Barmer, Bikaner and Jaisalmer districts.

2.4.7. Recent

This group of formations consists of alluvium, blown sands, kankar and evaporites, which are widely spread in the state.

2.5. Hydrogeology

The principal source of recharge to ground water in Rajasthan is rainfall. In canal irrigated areas, a part of canal water through seepage from conveyance system and part of water utilized for irrigation and returning to ground water contribute to storage. For broadly grouping geological formations from ground water occurrence & movement considerations, the various litho units have been classified into two groups on the basis of their degree of consolidation and related parameters. These are represented in Plate IV and described as below:

- I. Porous formations
 - (a) Unconsolidated formations
 - (b) Semi- consolidated formations
- II. Fissured formations
 - (a) Consolidated sedimentary rocks
 - (b) Igneous and metamorphic rocks
 - (c) Volcanic rocks
 - (d) Carbonate rocks

2.5.1. Porous Formations

The Quaternary sediments comprising younger as well as older alluvium are the most important unconsolidated formations due to their wide-spread occurrence. The sediments are composed of clay, silt, sand, gravel and mixture of concretions etc. Sand, gravel and admixture of these form the potential aquifers in northern, eastern, north-eastern, western and south-western parts of the state. The maximum-drilled thickness of alluvium is 543.51 metre below ground level (m.bgl) at Anupgarh in Ganganagar district.

The semi-consolidated formations belonging to Palaeozoic, Mesozoic and Cainozoic Groups are composed of siltstone, claystone, sandstone, shale, conglomerate and limestone. Sandstones and lime stones form the main aquifers in Jaisalmer, Jodhpur, Barmer and Bikaner districts. Sandstones of Lathi formation are the most potential aquifers in the districts of Jaisalmer, Jodhpur and Barmer.

2.5.2. Fissured Formations

Fissured formations, as hydrogeological unit, occupy 32% area of the state and can be broadly classified into four units.

Consolidated sedimentary rocks, excluding carbonate rocks, include sandstones and shales. In eastern and south-eastern part of the state these belong to Vindhyan Supergroup whereas in western Rajasthan these belong to the Marwar Supergroup.

Igneous and metamorphic rocks of lower Proterozoic age comprise slate, quartzite, phyllite, schist, gneiss and various crystallines of Bhilwara Supergroup. These are mostly found in the districts of Banswara, Dungarpur, Udaipur, Chittorgarh, Bhilwara, Tonk, Jaipur, Alwar and Jhunjhunu in eastern Rajasthan and Nagaur, Churu, Barmer, Jaisalmer, Pali, Jalore, Sirohi and Jodhpur districts in western Rajasthan.

Volcanic rocks include Deccan Trap Lava Flows and occur in parts of Barmer, Jhalawar, Chittorgarh and Banswara districts. These are basaltic to doleritic in composition. Occurrence and movement of ground water in these formations is controlled by the presence of vesicles, extent of weathering, jointing and fracture pattern.

Carbonate rocks include limestone, marble and dolomite of Proterozoic and Upper Palaeozoic to Mesozoic age and occupy parts of Kota, Bundi, Jaipur, SawaiMadhopur and Alwar districts on the eastern side of Aravallis and parts of Nagaur, Bikaner, Jaisalmer and Jodhpur districts in western Rajasthan.

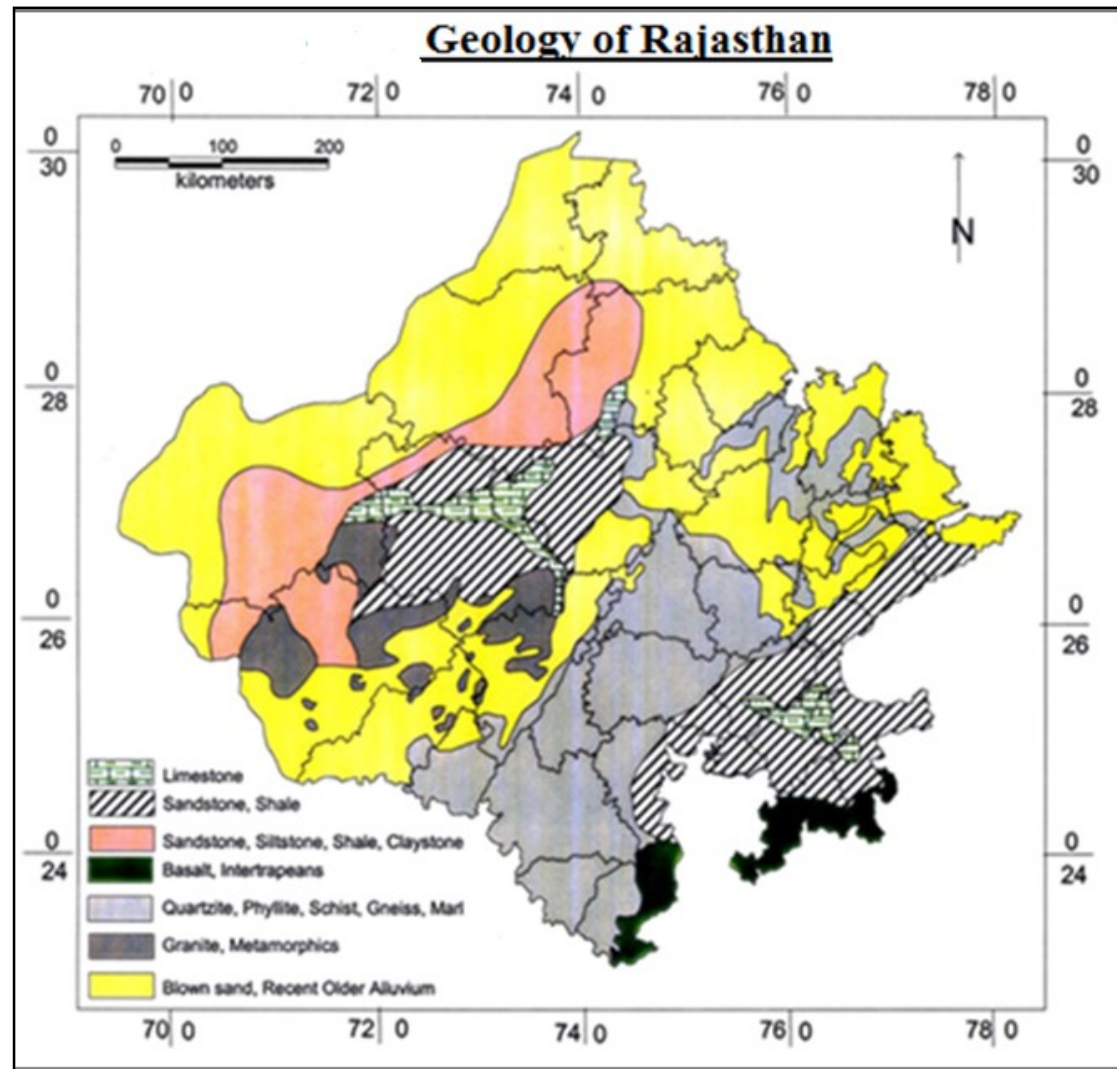


Fig. 7: Geology Map of Rajasthan

2.5.3. Ground Water Level

The depth to water varies widely throughout the State; shallow water levels have been noticed in canal command area of Ganganagar, Banswara, Kota and Bundi districts whereas deeper water levels have been observed in the western districts, particularly Jaisalmer, Bikaner, Barmer and Jodhpur.

To the east of Aravallis the depth to water is comparatively shallower than that in the west. It generally varies between less than 10 meters and 40 meters in the eastern part, whereas in the western part, it ranges between 30 meters and 80 meters. The water table slopes towards east and south-east on the eastern side, whereas it slopes towards west and north-west in west of Aravallis. However, local variations are common both in the direction and movement of ground water. Over-exploitation and excess use of ground water have led to substantial decline in water levels, which may ultimately result in drying up of aquifers in many areas of the State.

2.5. 4. Ground Water Quality

In general, the chemical quality of ground water is fresh in the eastern part except in a few pockets of Bharatpur district particularly in Sewar, Nagar, Kumher and Deeg blocks where the ground water is brackish to saline. The chemical quality in major part of western Rajasthan is generally saline. However, potable ground water is found in the areas covered by sandstone and limestone of Marwar Super group, Lathi formations in Jaisalmer and Barmer districts, the Tertiaries in parts of Bikaner, Nagaur, Churu, Barmer and Jaisalmer districts and localized pockets in Quaternaries. High fluoride hazard is found in pockets in almost all the districts with varying intensity. Problems of high nitrate and other constituents beyond permissible limits of drinking and irrigation also exist in some arid districts. Increased use of fertilizers, poor sewerage system in urban agglomerates and industrial pollution has further caused deterioration in the quality of ground water.

3. Ground Water Resources Estimation Methodology

The previous ground water resources assessment of the State used to be done on the basis of recommendations of Ground Water Resource Estimation Methodology—1997 (GEC'97). The present methodology used for resources assessment is known as Ground Water Resource Estimation Methodology—2015 (GEC'2015). The basic concept of Assessment of Annually Replenishable or Dynamic Ground Water Resources is $\text{Inflow} - \text{Outflow} = \text{Change in Storage (of any Aquifer)}$. Inflow refers to recharge from rainfall and other sources and subsurface inflow into the assessment unit. Outflow refers to ground water draft, ground water evapo-transpiration, base flow to streams and subsurface outflow from the unit. Since the data on subsurface inflow/ outflow are not readily available, it is advantageous to adopt the unit for ground water assessment as basin/ sub-basin/ watershed, as the inflow/ outflow across these boundaries may be taken as negligible.

Ground water resources assessment unit is in general watershed particularly in hard rock areas. In case of alluvial areas, administrative block can also be the assessment unit and for Rajasthan the administrative blocks are taken as assessment unit. In each assessment unit, hilly areas having slope more than 20% are deleted from the total area to get the area suitable for recharge. Further, areas where the quality of ground water is beyond the usable limits should be identified and handled separately. The remaining area, after deleting the hilly area and separating the area with poor ground water quality, is to be delineated into command and non-command areas. Ground water assessment in command and non-command areas is done separately in each hydro geological unit for monsoon and non-monsoon seasons.

3.1 Ground Water Recharge

Monsoon season

The resource during monsoon season is estimated as the sum total of the change in storage and gross draft. The change in storage is computed by multiplying water level fluctuation between pre and post monsoon periods with the area of assessment and specific yield. Monsoon recharge can be expressed as-

$$R = h \times Sy \times A + D_G$$

Where,

h = rise in water level in the monsoon season

A = area for computation of recharge

Sy = specific yield

D_G = gross ground water draft during monsoon

The monsoon ground water recharge has two components – rainfall recharge and recharge from other sources. Mathematically it can be represented as –

$$R \text{ (Normal)} = R_{rf}(\text{Normal}) + R_c + R_{SW} + R_t + R_{gw} + R_{wc}$$

Where,

R_{rf} is the normal monsoon rainfall recharge.

The other sources of ground water recharge during monsoon season include R_c , R_{SW} , R_t , R_{gw} , R_{wc} which are recharge from rainfall, seepage from canals, surface water irrigation, tanks and ponds, ground water irrigation, water conservation structures respectively.

The rainfall recharge during monsoon season computed by Water Level Fluctuation (WLF) method is compared with recharge figures from Rainfall Infiltration Factor (RIF) method. In case the difference between the sets of data is more than 20%, then RIF figure is considered, otherwise monsoon recharge from WLF is adopted. While adopting the rainfall recharge figures, weightage is to be given to WLF method over ad-hoc norms method of RIF. Hence, wherever the difference between RIF & WLF is more than 20%, data have to be scrutinized and corrected accordingly.

Non-Monsoon Season

During non-monsoon season, rainfall recharge is computed by using Rainfall Infiltration Factor (RIF) method. Recharge from other sources is then added to get total non-monsoon recharge. In case of areas receiving less than 10% of the annual rainfall during non-monsoon season, the rainfall recharge is ignored.

Total Annual Ground Water Recharge

The total annual ground water recharge of the area is the sum total of monsoon and non-monsoon recharge. An allowance is kept for natural discharge in the non-monsoon season by deducting 5% of total annual ground water recharge, if WLF method is employed to compute rainfall recharge during monsoon season and **10%** of total annual ground water recharge if RIF method is employed. The balance ground water available accounts for existing ground water withdrawal for various uses and potential for future development. This quantity is termed as Annual Extractable Ground Water Resources (EGR).

$$\text{Annual Extractable Ground Water Resources (EGR)} = \text{Total annual ground water recharge} - \text{Natural Discharge during non-monsoon season}$$

Norms for Estimation of Recharge

GEC-2015 methodology has recommended norms for various parameters being used in ground water recharge estimation. These norms vary depending upon water bearing formations and agro climatic conditions. While norms for specific yield and recharge from rainfall values are adopted of previous Assessment that is as on 31.03.2017. In case of other parameters like seepage from canals, return flow from irrigation, recharge from tanks and ponds, water conservation structures norms are adopted as per GEC-2015.

3.2. Ground Water Draft

Ground water extraction or draft is to be assessed as follow.

$$GE_{ALL} = GE_{IRR} + GE_{DOM} + GE_{IND}$$

Where,

GE_{ALL} = Ground water extraction for all uses

GE_{IRR} = Ground water extraction for irrigation use

GE_{DOM} = Ground water extraction for domestic uses

GE_{IND} = Ground water extraction for industrial uses

The Ground water extraction for irrigation use would include the ground water extraction from all existing ground water structures during monsoon as well as during non-monsoon period. While the number of ground water structures should preferably be based on latest well census, the average unit draft from different types of structures should be based on specific studies or adhoc norms recommended by GEC 2015. The Ground water extraction for irrigation use is also calculated by other method called crop water requirement in which for each crop, the season –wise net irrigation water requirement is determined. The domestic and industrial ground water extractions are calculated separately in highly industrialised area elsewhere industrial extraction were included in domestic one.

3.3. Stage of Ground Water Extraction & Categorization of Units

The Stage of Ground Water extraction is defined by:

$$\begin{aligned} \text{Stage of Ground Water Extraction (\%)} \\ = (\text{Existing Gross Ground Water Extraction for all uses}) \\ /(\text{Annual Extractable Ground Water Resources}) \times 100 \end{aligned}$$

Validation of Stage of Ground Water Extraction

Long term water level trends are to be prepared for minimum period of 10 years for both pre-monsoon and post monsoon period. The water level trend would be average water level trend as obtained from the different observation wells in the area.

If the ground water resources and the trend of long term water level contradict each other, this anomalous situation required a review of the ground water resources computation, as well as the reliability of water level data. The mismatch conditions are enumerated below:

SOGWE	Ground Water Level Trend	Remarks
≤70%	Significant decline in trend in both pre-monsoon and post-monsoon	Not acceptable and needs reassessment
>100%	No significant decline in both pre-monsoon and post-monsoon long term trend	Not acceptable and needs reassessment

In case, the category does not match with the water level trends given above, a reassessment should be attempted.

Categorization of Assessment Unit Based on Quantity:

The Categorization of Assessment Unit Based on Quantity is defined by Stage of Ground Water Extractions given below (Table-3):

Table 3: The Criteria for Categorization of Assessment Units

Stage of Ground Water Extraction	Category
$\leq 70\%$	Safe
$>70\% \text{ and } \leq 90\%$	Semi-Critical
$>90\% \text{ and } \leq 100\%$	Critical
$> 100\%$	Over Exploited

3.4. Allocation of Ground Water Resource for Utilization

The Annual Extractable Ground Water Resources are to be apportioned between domestic, industrial and irrigation uses. Among these, as per the National Water Policy, requirement for domestic water supply is to be accorded priority. This requirement has to be based on population as projected to the year 2025, per capita requirement of water for domestic use, and relative load on ground water for urban and rural water supply. The estimate of allocation for domestic water requirement may vary for one sub unit to the other in different states. In situations where adequate data is not available to make this estimate, the following empirical relation is recommended.

$$Alloc. = 22 \times N \times L_g \text{ mm/year}$$

Where,

Alloc. = Allocation for domestic water requirement
 N = population density in the unit in thousands per sq. km.
 L_g = fractional load on ground water for domestic water supply (≤ 1.0). In deriving above equation, it is assumed that the requirement of water for domestic use is 60 lpd per head. The equation can be suitably modified in case per capita requirement is different. If by chance, the estimation of projected allocation for future domestic needs is less than the current domestic extraction due to any reason, the allocation must be equal to the present day extraction. It can never be less than the present day extraction as it is unrealistic.

3.4.1 Net Annual Ground Water Availability for Future Use

The water available for future use is obtained by deducting the allocation for domestic use and current extraction for Irrigation and Industrial uses from the Annual Extractable Ground Water Recharge. The resulting ground water potential is termed as the net annual ground water availability for future use. The Net annual ground water availability for future use should be calculated separately for non-command areas and command areas. As per the recommendations of the R&D Advisory committee, the ground water available for future use can never be negative. If it becomes negative, the

future allocation of Domestic needs can be reduced to current extraction for domestic use. Even then if it is still negative, then the ground water available for future uses will be zero.

3.5. Poor Quality Ground Water

Computation of ground water recharge in poor quality ground water is to be done on the same lines as described above. However, in saline areas, there may be practical difficulty due to non-availability of data, as there will usually be no observation wells in such areas. Recharge assessment in such cases may be done based on rainfall infiltration factor method. This report however comprises data of the fresh ground water resources.

3.6. Additional Potential recharge

In shallow water table areas, particularly in discharge areas, rejected recharge would be considerable and water level fluctuations are subdued resulting in underestimation of recharge. In areas where ground water level is less than 5m below ground level or in waterlogged areas, ground water resources have to be estimated up to 5m bgl only based on the following equation—

$$\text{Potential Ground Water Recharge} = (5 - D) \times A \times \text{Sp. Yield}$$

Where,

D = Depth to water table below ground surface in pre-monsoon season in shallow aquifers

A = Area of shallow water table zone.

Computation of Ground Water Resources

4.1. Norms Adopted

i) Specific yield

Specific yield values for alluvial formation in the range of 0.06 - 0.15 have been considered depending on degree of compaction. Specific yield for semi-consolidated sedimentary formations, i.e., Lathi sandstone and Tertiary sandstone have been taken in the range of 0.06-0.07 and 0.04-0.06 respectively. Specific yield values for various consolidated and other formations considered for computations are given in Table- 4.

ii) Rainfall Infiltration Factor (RIF)

RIF for alluvial areas has been taken from 0.06 to 0.18 depending on rainfall distribution. Such values for Semi-consolidated Lathi basin area have been considered ranging from 0.03 to 0.07 % while for Tertiary formation, values ranging from it is 0.03 to 0.05% have been adopted.

iii) Seepage from Tanks and ponds

Seepage factor of **2% to 9%** of live storage in Hard rock areas and **15%** of live storage in alluvial formation areas have been taken for estimations. Alternatively, value of 1.4 mm/day of water spread has been taken.

iv) Seepage from canal

Seepage factor of **1.5 to 15 and 3 to 15** ham/day of wetted area have been considered for lined and un-lined canals respectively.

v) Return Flow from Surface Water Irrigation

Seepage factor of 10% to 30% of water applied have been taken depending on type of crops and depth to water table (Table-5).

vi) Return Flow from Ground Water Irrigation

Seepage factor of 5% to 25% of water applied have been taken depending on type of crops and depth to water table (Table-5).

vii) Natural discharge

Natural discharge of the magnitude of 5% and 10% of gross recharge were taken for Water Level Fluctuation and Rainfall Infiltration Factor Method respectively,

viii) Ground Water Draft

Groundwater draft has been estimated differently for groundwater abstraction structures mainly dug well, Dug well with pump, Dug cum bore well and tube well considering unit draft and average period of operation. Details of norms adopted for draft calculation in various formations have been furnished in table of Norms Adopted.

Table- 4: Norms Adopted For Yield and Rainfall Infiltration factor

Formation	Symbol	Sp. Yield	R.I.F.	Yield (lpd)			
				DW	DW with pump	DCB/Cavity well	TW
Alluvium	A	0.06 -- 0.15	0.06 --0.18	20000 - 70000	50000 -2,50000	1,00000 - 1,50000	60000 - 3,00000
Older Alluvium	Ao	0.05-- 0.12	0.06 --0.18	25000 - 45000	50000 - 1,20000	50000 - 1,50000	60000 - 1,60000
Baisakhi Shale	BSKH	0.04	0.05	-	-	-	-
Basalt	B	0.01 -- 0.0175	0.02 --0.08	30000 - 60000	40000 - 80000	-	45000 - 1,00000
Bhadesar Series	Bd	0.04	0.025	-	-	-	20000 - 30000
Granite	G/Gr	0.01 -- 0.02	0.03 --0.08	20000 - 45000	30000 - 90000	25000	40000 - 1,50000
Gneisses	Gn	0.01 --0.025	0.02 --0.07	20000 - 50000	25000 - 65000	-	50000 - 80000
Lathi	L	0.06 --0.07	0.03 --0.07	-	25000	260,000	1,00000 - 2,70000
Lime Stone	Lst	0.015 --0.07	0.03 --0.10	30000 - 70000	40000- 2,50000	70000 - 1,50000	70000 - 3,00000
Parewar Form.	P	0.04	0.05	-	-	-	1,73000 - 4,76000
Phyllite/ Schist	Ph/Sc	0.0115 --0.0225	0.02 --0.08	20000 - 60000	30000 - 1,20000	-	35000 - 1,25000
Quartzite	Q	0.01 --0.02	0.06 --0.08	25000 - 50000	45000 - 75000	-	1,00000 - 1,50000
Rhyolite	R	0.015 --0.02	0.05 --0.07	25000	50000	40000 - 65000	50000 - 65000
Schist	Sc	0.015 --0.02	0.03 --0.08	25000 - 50000	35000 - 70000	-	50000 - 70000
Quartzite/Slate	Q/Sl	0.02	0.07	25000	75000	-	90000
Shale	Sh	0.01 --0.015	0.03 --0.07	25000 - 30000	35000 - 50000	-	45000 - 90000
Sand Stone	Ss	0.01 --0.04	0.06 --0.15	20000 - 40000	50000 - 1,25000	55000 - 1,00000	60000 - 2,16000
Tertiary Sand Stone	T	0.04 --0.06	0.03 --0.05	-	-	-	1,20000 - 2,70000
Ultra basics	Ub	0.0125	0.03	35000	45000	-	50000

Table- 5: Norms for Surface Water and Ground Water Irrigation Return Flow Factor

DTWL m bgl	Ground Water		Surface Water	
	Paddy	Non Paddy	Paddy	Non Paddy
<=10	45	25	50	30
11	43.3	23.7	48.3	28.7
12	41.7	22.3	46.7	27.3
13	40	21	45	26
14	38.3	19.7	43.3	24.7
15	36.7	18.3	41.7	23.3
16	35	17	40	22
17	33.3	15.7	38.3	20.7
18	31.7	14.3	36.7	19.3
19	30	13	35	18
20	28.3	11.7	33.3	16.7
21	26.7	10.3	31.7	15.3
22	25	9	30	14
23	23.3	7.7	28.3	12.7
24	21.7	6.3	26.7	11.3
>=25	20	5	25	10

4.2. Ground Water Resources Assessment:

Ground Water Assessment in the State of Rajasthan has been carried out in association with Ground Water Department, Rajasthan as on 31st March 2022 based on guidelines of Ground Water Estimation Committee (GEC), 2015. Block (Panchayat Samiti) has been considered as assessment unit. The blocks have been further divided into formation potential zones. There are a total of **295** blocks and **877** formation potential zones in **33** districts of the State. This year attempt has also been made to do the additional assessment of dynamic ground water resources for the seven cities in the state. The Block wise/Assessment unit wise annual extractable ground water resources, Exiting gross ground water extraction for all uses, Stage of ground water extraction and categorization of 302 assessment units is given in Annexure II and the district wise summary is given in Table 7.

Water level fluctuations for the last 5 years (2016-2022) were considered for groundwater recharge estimation while groundwater draft was assessed as on **March 2022**. Groundwater requirement for domestic & industrial purposes were projected for the year **2025 AD**.

Earlier up to year 2017, Dynamic Ground Water Resources Assessment was done manually through computer using GEC, 2015 Methodology. But for the first time in year 2020, INDIA GEC Software has been introduced with the aim “Automation of Estimation of Dynamic Ground Water Resources using GEC-2015 methodology and Related Research work to improve GEC Assessment” and dynamic Ground water resources have been assessed through this software. In order to compute data for GEC, 11 excel templates are provided for the user to fill and submit the data in the system for

an Assessment Unit User can also submit the data using form inputs for a particular Assessment unit. User needs to upload a State shape file with Assessment unit, hierarchy and geometry. This information needs to be embedded into the shape file's attribute table. The GIS view of India GEC let the user visualize the Assessment Unit categorization geographically on top of other map layers. Each assessment unit is color coded based on the categorization (SAFE, SEMI-CRITICAL, CRITICAL and OVER-EXPLOITED). This view also shows data for each of the GEC component in the information panel at the right side. By default, the view starts at India level map with all the states showing the latest categorization of the assessment units. This year the resources have been calculated through INGRES software.

As per the estimates, Rajasthan has Annual Extractable Ground Water Resource of the tune of **10959.55 MCM**. Block wise range of Annual Extractable Ground Water Resource is depicted in **Fig.8**. The existing gross ground water extraction for all uses is of the magnitude of **16556.18 MCM**. Block wise range of existing gross ground water extraction for all uses is depicted in **Fig.9**. The overall stage of groundwater extraction in the State is **151.06%**.

Allocation of Annual ground water for domestic water supply as on 2025 is **2278.01 MCM** & Net ground water availability for Future use is **869.74 MCM**.

The assessment units (Blocks) have been categorized based on stage of ground water extraction. At block level majority of the blocks fall in Over Exploited category. Out of **302** assessment units for which computations have been done, **219** fall in Over Exploited Category, **22** in Critical, **20** in Semi Critical and **38** in Safe Category. Three block viz Taranagar of Churu, Khajuwala of Bikaner and Rawatsar of Hanumangarh districts have been assessed as saline. Number of assessment units in Rajasthan falling under different categories as on 31.03.2022 is given below in **table 6**.

List of assessment units falling in different category and their stage of ground water development is given in **Table 7** and depicted in **Fig.11** and **Fig.10** respectively

Table 6: Number of assessment units in Rajasthan falling as under different categories as on 31.03.2022

S. No.	Category	No. of Blocks	S. No.	Category	No. of Blocks
1	Safe	37	3	Critical	22
2	Semi-critical	20	4	Over Exploited	219
5	Saline	3		Total	302

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

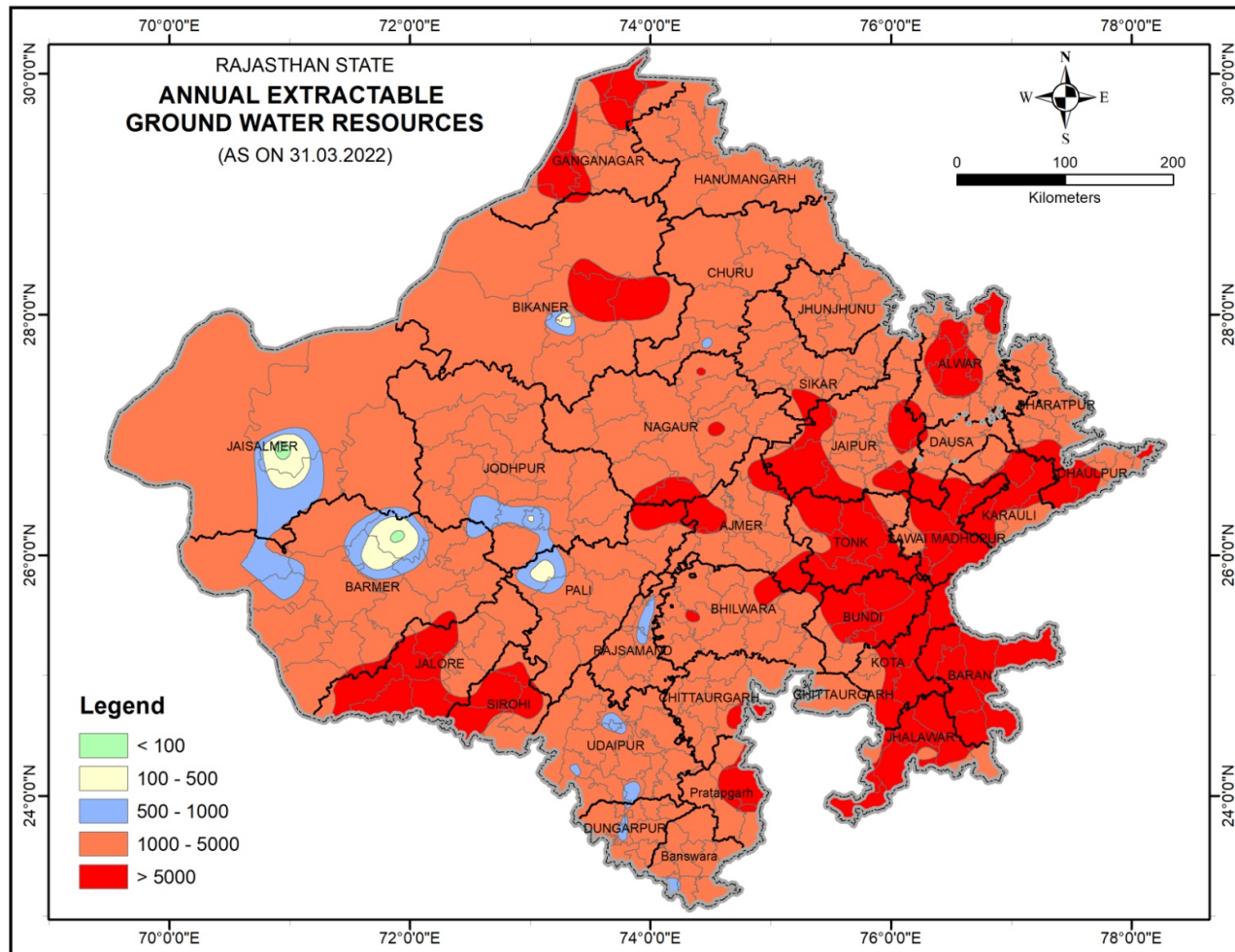


Fig.8: Range of Annual Extractable Ground Water Resources (ham) Map of Rajasthan as on 30.03.2022

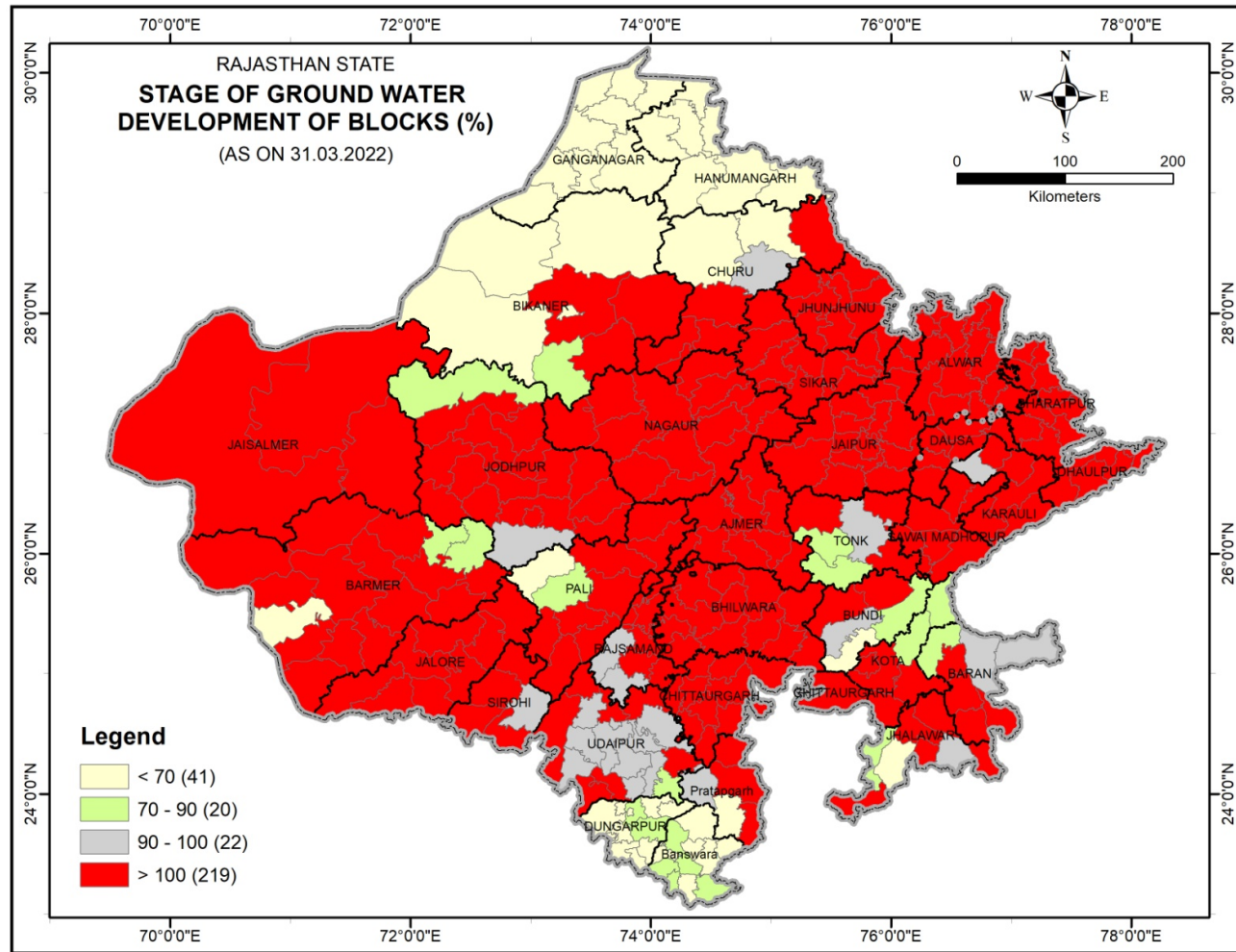


Fig.10: Block wise Stage of Ground Water Development of Rajasthan as on 30.03.2022

4.3. Areas having Ground Water Development Prospects

Estimates reveal the fact that scope for future groundwater resource development in the state of Rajasthan is very less. As per present groundwater resource estimates out of a total **302** assessment units in the state **219** units are categorized as **Over-exploited**, **22** units as **Critical**, **20** units as **Semi Critical**. Remaining **38** units, which have been, categorized as **Safe**, do have constraints for groundwater development due to deep water levels, its poor quality or falling in canal command. Taranagar block of Churu, Rawatsar block of Hanumangarh and Khajuwala of Bikaner districts have been assessed as saline due to poor quality in the entire blocks. Block wise category map is shown in Plate-IX.

However, in canal command areas, conjunctive use of groundwater & canal water is the need of the hour so as to avoid land degradation by water logging hazards and soil salinity/alkalinity.

Scope for development of saline/high fluoride ground water especially in the western Thar Desert exists with due care for desalination/ de-fluoridation technology however, such areas need to be further explored and investigated prior to formulation of any project in this regard.

Since a large number of assessment units have come under the over exploited category, there is an urgent need for enforcement of groundwater regulation, control and management strategies in Over-exploited areas. Action to impose and implement restrictions on installation of new wells in Notified areas need be initiated. Implementation of feasible schemes on rainwater harvesting and artificial recharge structures in Over-exploited areas need to be taken up at war footing.

4.4. Spatial Variation of Groundwater Resources

Rajasthan State witnesses wide spectrum of hydrogeological conditions and availability of groundwater resources as well. Groundwater recharge in Thar Desert area of Western Rajasthan is mostly less owing to arid climatic conditions (low rains & high evaporation) and ground water development is also relatively less due to constraints of deep groundwater levels & inferior quality of water as well as availability of canal water in parts. Due to availability of canal water & high rains in Banswara and Dungarpur, they fall under Safe category. Further, due to poor quality of groundwater and availability of canal water in Ganganagar and Hanumangarh districts, these have been categorized them under Safe category, Churu district, Bikaner & Jaisalmer districts are under Over-exploited category. Hard rock areas of Aravalli hills are vulnerable to water crisis during spell of drought due to their limited scope for dynamic recharge to groundwater. Groundwater development in alluvial plain areas especially on either side of Aravalli Hill Ranges is on higher side and most of the blocks fall under Over Exploited category.

4.5. Comparison with the earlier Groundwater Resource Estimates

Efforts have been made to compare groundwater estimates as on **31.03.2020** and as on **31.03.2022** (estimated as per GEC 2015 methodology) for knowing changes in groundwater resources and are given below in table 10

Table 7: Comparison of Ground water Resources 2020 and 2022

Particulars	2020	2022
Annual Extractable Ground Water Resources	1107363.46 ham	1095955.78 ham
Total Annual Ground Water Extraction	1663472.02 ham	1655618.03 ham
Stage of Ground Water Extraction (%)	150.22	151.06%
Category of assessment units		
Safe assessment units	37	38
Semi-Critical assessment units	29	20
Critical assessment units	23	22
Over-Exploited assessment units	203	219
Saline assessment units	3	3
Total of assessment units	295	302

The estimates reveal there was significant decrease in Annual Extractable Groundwater resource of the magnitude of 1107363 hams in 2020 and 1095955.78 hams in 2022 and respectively. Current annual Gross Groundwater extraction for all uses during these four years from **1663472.02** ham in **2020** to **1655618.03 ham** in 2022 which resulted in the increase of the stage of groundwater extraction from **150.22%** to **151.06%**.

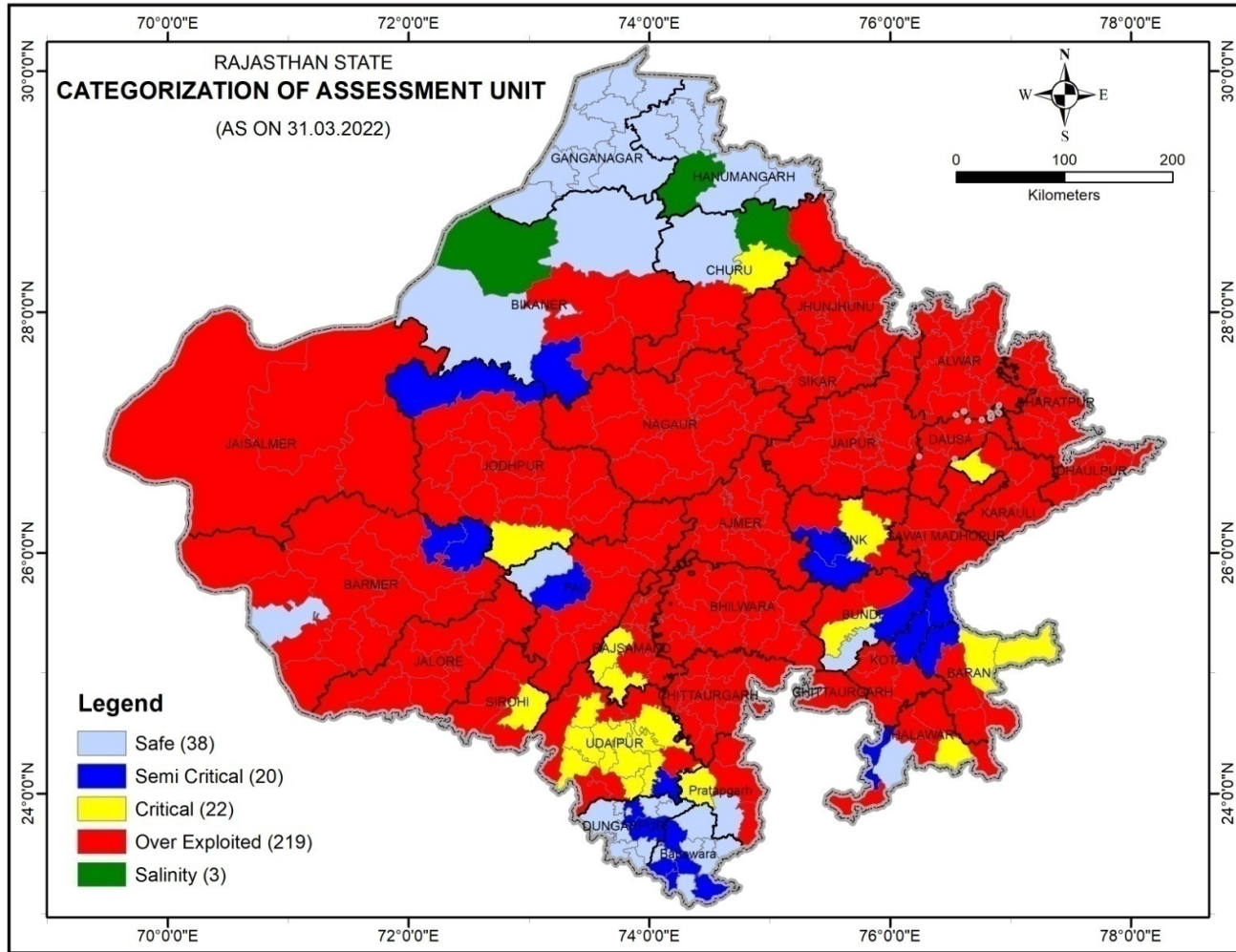


Fig.11: Blocks falling in different category Map for Rajasthan as on 30.03.21

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

Table-8: District wise Resources of Rajasthan (ham) as on 31.03.2022

S. No	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season	Non-monsoon Season		Irrigation				Industrial	Domestic	Total				
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall								Recharge from other sources			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	AJMER	27997.62	1524.7	84.52	13364.71	42971.55	3998.46	38973.09	61951.44	176	6323.08	68450.52	6323.08	0	175.64
2	ALWAR	58530.1	1102.43	3169.85	5993.01	68795.39	6879.54	61915.85	112405.59	3413.35	13728.5	129547.4	13728.5	0	209.23
3	BANSWARA	9985.2	276.91	0	12242.34	22504.45	2250.47	20253.98	11073.3	16.1	2044.77	13134.17	2044.77	7252.44	64.85
4	BARAN	38541.9	5060.38	0	19688.09	63290.37	5923.2	57367.17	65655.94	102.56	7085.14	72843.64	7085.14	3459.44	126.98
5	BARMER	34993.88	684.47	123.51	2095.79	37897.65	3789.77	34107.87	38211.42	438	6881.08	45530.52	8184.55	1407.92	133.49
6	BHARATPUR	24374.96	1441.47	898.71	5707.27	32422.41	2277.72	30144.69	36823.56	71.85	5947.39	42842.81	7173.83	0	142.12
7	BHILWARA	31680.88	99.77	0	16705	48485.65	4848.61	43637.04	60213.29	735.87	5443.26	66392.43	5443.27	679	152.15
8	BIKANER	23867.44	649.81	3159.38	1535.61	29212.24	2918.8	26293.43	27889.22	71	8493.28	36453.51	8493.28	5126.3	138.64
9	BUNDI	17463.29	1245.42	0	13251.23	31959.94	2652.24	29307.7	27292.16	66	3596.99	30955.17	3596.98	4701.03	105.62
10	CHITTAURGARH	23463.94	1680.77	0	9494.33	34639.04	3463.91	31175.13	47423.42	698	1610.82	49732.25	1610.81	34.43	159.53
11	CHURU	12567.71	20.16	1332.61	458.4	14378.88	1173.35	13205.53	13836.57	17	2980.63	16834.2	2980.64	1754.89	127.48
12	DAUSA	24245.91	253.24	129.13	2491.85	27120.13	2711.99	24408.14	40167.68	3.19	10666.03	50836.87	10666.02	0	208.28
13	DHAULPUR	19892.45	1376.15	604.23	4973.64	26846.47	2435.82	24410.64	29164.02	19.15	4129.41	33312.54	4129.41	325.72	136.47
14	DUNGARPUR	8808.45	1356.68	0	11638.21	21803.34	2180.34	19623	10653.1	53	843.84	11549.93	843.84	8073.07	58.86
15	GANGANAGAR	4755.37	16234.13	986.94	25813.85	47790.29	4649.53	43140.75	16989.18	39	38.57	17066.75	72.7	26074	39.56
16	HANUMANGARH	5398.42	7240.81	997.04	7738.35	21374.62	2137.47	19237.15	11247.76	200	914.9	12362.66	1168.65	6874.49	64.26
17	JAIPUR	65004.12	2226.68	834.46	7420.55	75485.81	7548.59	67937.22	109776.52	1662.05	38927.03	150365.6	38927.03	0	221.33
18	JAISALMER	7877.91	319.74	541.75	959.56	9698.96	969.9	8729.06	25586.02	7	2681.42	28274.45	3166.76	0	323.91
19	JALOR	37662.38	1172.06	0	8127.64	46962.08	4359.09	42602.99	74330.21	2.58	4276.8	78609.61	4388.52	0	184.52
20	JHALAWAR	39794.58	2653.84	0	12256.67	54705.09	5249.31	49455.78	52448.61	0.41	3725.42	56174.44	3725.41	5325.9	113.59
21	JHUNJHUNUN	21029.96	296.58	1564.72	1482.88	24374.14	2437.44	21936.7	35589.2	564.23	11028.71	47182.13	11088.51	0	215.08
22	JODHPUR	34757.47	955.03	861.86	2928.38	39502.74	3950.31	35552.43	76401.34	677.58	14668.6	91747.55	14887.52	492.49	258.06
23	KARALI	28685.65	490.83	177.78	4851.11	34205.37	3315.58	30889.79	43466.39	0.07	4836.85	48303.32	4836.86	1259.28	156.37
24	KOTA	28313.51	2803.52	0	18118.17	49235.2	4923.53	44311.67	36212.04	277.51	8551.94	45041.49	8551.94	6456.52	101.65
25	NAGPUR	52668.19	1049.52	1800.82	3273.27	58791.8	5208.4	53583.41	86455.94	1147.65	13604.42	101208.02	14270.02	0	188.88
26	PALI	29048.73	465.5	0	3852.53	33366.76	3336.7	30030.06	42179.22	472	3420.5	46071.73	3504.02	1493.2	153.42
27	PRATAPGARH	15289.7	169.69	0	6785.81	22245.2	2223.99	20021.21	24890.63	19	545.9	25455.51	545.89	1003.39	127.14
28	RAJSAMAND	7706.68	162.73	625.25	2881.42	11376.08	1137.62	10238.46	9916.66	391.64	2138.37	12446.7	2138.37	361.4	121.57
29	SAWAI MADHOPUR	32247.17	1942.6	0	8890.04	43079.81	4307.99	38771.82	56358.79	80.97	7836.38	64276.18	7836.38	0	165.78
30	SIKAR	28236.98	1744.66	1758.94	2014.83	33755.41	3156.23	30599.18	50681.33	217.69	10882.25	61781.26	10882.25	0	201.9
31	SIROHI	25988.64	794.84	0	2117.82	28901.3	2890.13	26011.17	29160.36	340.77	1687.04	31188.17	1687.04	454.47	119.9
32	TONK	28425.24	3828.73	0	10955.56	43209.53	4121.18	39088.33	29549.36	36	10549.65	40135.01	10549.65	2671.06	102.68
33	UDAIPUR	21248.48	548.71	0	10419.87	32217.06	3221.72	28995.34	24219.33	2021.85	3270.31	29511.49	3270.3	1694.18	101.78
	Total	870552.91	61872.56	19651.5	260527.79	1212604.76	116648.93	1095955.78	1418219.6	14039.07	223359.26	1655618.03	227801.94	86974.62	151.07

Table - 9: District wise distribution of assessment units in different categories as on 31.03.2022

S. No.	Name of District	Number of assessment units	Category of assessment units				
			Safe	Semi-Critical	Critical	Over-Exploited	Saline
1	Ajmer	10	-	-	-	10	-
2	Alwar	14	-	-	-	14	-
3	Banswara	11	6	5	-	-	-
4	Baran	7	-	1	2	4	-
5	Barmer	17	1	2	-	14	-
6	Bharatpur	10	-	-	-	10	-
7	Bhilwara	12	-	-	-	12	-
8	Bikaner	8	3	1	-	3	1
9	Bundi	5	1	1	1	2	-
10	Chittaurgarh	11	-	-	-	11	-
11	Churu	7	1	-	1	4	1
12	Dausa	6	-	-	-	6	-
13	Dhaulpur	5	-	-	-	5	-
14	Dungarpur	10	8	2	-	-	-
15	Ganganagar	9	9	-	-	-	-
16	Hanumangarh	7	6	-	-	-	1
17	Jaipur	16	-	-	-	16	-
18	Jaisalmer	4	-	-	-	4	-
19	Jalor	8	-	-	-	8	-
20	Jhalawar	8	1	1	1	5	-
21	Jhunjhunun	8	-	-	-	8	-
22	Jodhpur	17	-	1	1	15	-
23	Karauli	6	-	-	1	5	-
24	Kota	6	-	2	-	4	-
25	Nagaur	14	-	-	-	14	-
26	Pali	10	1	1	-	8	-
27	Pratapgarh	5	1	-	1	3	-
28	Rajsamand	7	-	-	2	5	-
29	Sawai Madhopur	6	-	-	-	6	-
30	Sikar	9	-	-	-	9	-
31	Sirohi	5	-	-	1	4	-
32	Tonk	6	-	2	1	3	-
33	Udaipur	18	-	1	10	7	-
	Total	302	38	20	22	219	3

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

Table - 10: District wise List of Blocks Falling In Different Categories as on 31.03.2022

S. No	Name of District	Total Number of blocks	Name of Safe blocks	Name of Semi-Critical blocks	Name of Critical blocks	Name of Over-Exploited blocks	Name of Saline blocks
1	AJMER					ARAIN	
						BHINAY	
						JAWAJA	
						KEKRI	
						KISHANGARH	
10						MASOODA	
						PEESANGAN	
						SARWAR	
						SHRINAGAR	
						AJMER URBAN	
2	ALWAR	14				BANSUR	
						BEHROR	
						KATHUMAR	
						KISHANGARH BAS	
						KOTKASIM	
						LAXMANGARH	
						MANDAWAR	
						NEEMRANA	
						RAJGARH	
						RAMGARH	
						RENI	
						THANAGAZI	
						TIJARA	
						UMREN	
3	BANSWARA	11	ARTHOONA	ANANDPURI			
			BANSWARA	BAGIDORA			
			CHHOTISARVAN	GANGAR TALAI			
			GHATOL	GARHI			
			SAJJANGARH	KUSHALGARH			
			TALWARA				
4	BARAN	7		ANTAH		ATRU	

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

S. No	Name of District	Total Number of blocks	Name of Safe blocks	Name of Semi-Critical blocks	Name of Critical blocks	Name of Over-Exploited blocks	Name of Saline blocks
				KISHANGANJ		BARAN	
				SHAHBAD		CHHABRA	
						CHHIPABAROD	
5	BARMER	17	CHOHTAN	PATODI	SIWANA	BALOTRA	
				KALYANPUR		BARMER	
						BAYTOO	
						DHANAOO	
						DHORIMANNA	
						GADRAROAD	
						GIRA	
						RAMSAR	
						SAMDARI	
						SERWA	
						SHEO	
						SINDHARI	
						GUDHAMALANI	
6	BHARATPUR	10				BAYANA	
						KAMAN	
						KUMHER	
						NADBAI	
						NAGAR	
						PAHARI	
						RUPBAS	
						SEWAR	
						WEIR	
						DEEG	
7	BHILWARA	12				ASIND	
						BANERA	
						BIJOLIYAN	
						HURDA	
						JHAZPUR	
						KOTRI	
						MANDAL	
						MANDALGARH	
						RAIPUR	
						SAHARA	

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

S. No	Name of District	Total Number of blocks	Name of Safe blocks	Name of Semi-Critical blocks	Name of Critical blocks	Name of Over-Exploited blocks	Name of Saline blocks
						SHAH PURA	
						SUWANA	
8	BIKANER	8	KOLAYAT	PANCHOO		BIKANER_RURAL	KHAJUWALA
			LUNKARANSAR			DUNGARGARH	
			BIKANER_URBAN			NOKHA	
9	BUNDI	5	TALERA	KESHORAI PATAN	BUNDI	HINDOLI	
						NAINWA	
10	CHITTAURGARH	11				BARI SADRI	
						BEGUN	
						BHADESAR	
						BHAINSRORGARH	
						BHOPALSAGAR	
						CHITTAURGARH	
						DUNGLA	
						GANGRAR	
						KAPASAN	
						NIMBAHERA	
						RASHMI	
11	CHURU	7	SARDARSHAHAR		CHURU	RAJGARH	TARANAGAR
						RATANGARH	
						SUJANGARH	
						BIDASAR	
12	DAUSA	6				BANDIKUI	
						DAUSA	
						LALSOT	
						LAWAN	
13.	DHOLPUR					MAHWA	
						RAJAKHERA	
						SAIPAU	
						BARI	
14	DUNGARPUR	10	ASPUR	DOVRA			
			BICHHIWARA	SAGWARA			
			CHEEKHLI				
			DUNGARPUR				
			GALIAKOT				
			JHONTHRI				

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

S. No	Name of District	Total Number of blocks	Name of Safe blocks	Name of Semi-Critical blocks	Name of Critical blocks	Name of Over-Exploited blocks	Name of Saline blocks
			SABLA				
			SIMALWARA				
15	GANGANAGAR	9	ANUPGARH				RAWATSAR
			GANGANAGAR				
			GHADSANA				
			KARANPUR				
			PADAMPUR				
			RAISINGHNAGAR				
			SADULSHAHAR				
			SRI VIJAYNAGAR				
16	HANUMANGARH	7	BHADRA				
			HANUMANGARH				
			NOHAR				
			PILIBANGA				
			RAWATSAR				
			SANGARIYA				
			TIBI				
17	JAIPUR	16				AMBER	
						BASSI	
						CHAKSU	
						DUDU	
						GOVINDGARH	
						JALSOO	
						JAMWA RAMGARH	
						JHOTWARA	
						KOTPUTLI	
						PAOTA	
						PHAGI	
						SAMBHAR	
						SANGANER	
						SHAHPURA	
						VIRATNAGAR	
						JAIPUR URBAN	
18	JAISALMER	4				JAISALMER	
						SAM	
						SANKRA	

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

S. No	Name of District	Total Number of blocks	Name of Safe blocks	Name of Semi-Critical blocks	Name of Critical blocks	Name of Over-Exploited blocks	Name of Saline blocks
						JAISALMER_URBAN	
19	JALOR	8				AHORE	
						BHINMAL	
						JALORE	
						JASWANTPURA	
						RANIWARA	
						SANCHORE	
						SAYLA	
						CHITALWANA	
20	JHALAWAR	8		AKLERA	MANOHAR THANA	BAKANI	
				BHAWANI MANDI		DAG	
				PIRAWA		JHALRAPATAN	
						KHANPUR	
21	JHUNJHUNUN	8				ALSISAR	
						BUHANA	
						CHIRAWA	
						JHUNJHUNU	
						KHETRI	
						NAWALGARH	
						SURAJGARH	
						UDAIPURWATI	
22	JODHPUR	17		BAP	LUNI	BALESAR	
						BAORI	
						BAPINI	
						BHOPALGARH	
						BILARA	
						DECHOO	
						LOHAWAT	
						MANDOR	
						OSIAN	
						PHALODI	
						PIPAR CITY	
						SHEKHALA	
						SHERGARH	
						TIWARI	
						JODHPUR_URBAN	

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

S. No	Name of District	Total Number of blocks	Name of Safe blocks	Name of Semi-Critical blocks	Name of Critical blocks	Name of Over-Exploited blocks	Name of Saline blocks
23	KARAULI	6		NADOTI		HINDAUN	
						KARAULI	
						MANDRAIL	
						SAPOTRA	
						TODABHIM	
24	KOTA	6		ITAWA		KHAIRABAD	
				SULTANPUR		SANGOD	
						KOTA URBAN	
						LADPURA	
25	NAGPUR	14				DEGANA	
					NAGPUR	DIDWANA	
						JAYAL	
						KHEENVASAR	
						KUCHAMAN CITY	
						LADNU	
						MAKRANA	
						MERTA	
						MOLASAR	
						MUNDWA	
						NAWA	
						PARBATSAR	
						RIYAN BARI	
26	PALI	10				BALI	
			ROHAT	PALI		DESURI	
						JAITARAN	
						KHARCHI (MARWAR JUNC	
						RAIPUR	
						RANI STATION	
						SOJAT	
						SUMERPUR	
27	PRATAPGARH	5	PEEPALKHOONTH		DHARIAWAD	ARNOD	
						CHHOTI SADRI	
						PRATAPGARH	
28	RAJSAMAND	7			KHAMNOR	AMET	
					KUMBHALGARH	BHIM	
						DEOGARH	

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022



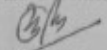

S. No	Name of District	Total Number of blocks	Name of Safe blocks	Name of Semi-Critical blocks	Name of Critical blocks	Name of Over-Exploited blocks	Name of Saline blocks
						RAILMAGRA	
						RAJSAMAND	
29	SAWAI MADHOPUR	6				BAMANWAS	
						BONLI	
						CHAUTH KA BARWARA	
						GANGAPUR	
						KHANDAR	
						SAWAI MADHOPUR	
30	SIKAR	9			FATEHPUR	DANTA RAMGARH	
						DHOND	
						KHANDELA	
						LACHHMANGARH	
						NEEM KA THANA	
						PATAN	
						PIPRALI	
						SRIMADHOPUR	
31	SIROHI	5		PINDWARA		ABU ROAD	
						REODAR	
						SHEOGANJ	
						SIROHI	
32	TONK	6		DEOLI	TONK	MALPURA	
				TODARAISINGH		NIWAI	
						UNIARA	
33	UDAIPUR	17		JHALARA	BHINDAR	BARGAON	
					GIRWA	KOTRA	
					GOGUNDA	LASADIYA	
					JHADOL	MAVLI	
					SALUMBAR	RISHABHDEV	
					KURAWAR	KHERWARA	
					PHALASIYA	SAYRA	
					SARADA		
					SEMARI		

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

Table 11: Comparison of Categories of Assessment Units as Computed on 31.03.2020 and 31.03.2022

S. No.	District	Number of unis		Number of safe units		Number of semi-critical units		Number of critical units		Number of Over-exploited units		Number of saline units	
		31.3.22	31.3.20	30.3.22	31.3.20	30.3.22	31.3.20	30.3.22	31.3.20	30.3.22	31.3.20	31.3.22	
1	AJMER	10	0	0	0	0	0	0	0	9	10	0	0
2	ALWAR	14	0	0	0	0	0	0	0	14	14	0	0
3	BANSWARA	11	6	6	5	5	0	0	0	0	0	0	0
4	BARAN	7	0	0	3	1	0	2	4	4	4	0	0
5	BARMER	17	2	1	1	2	2	0	12	14	0	0	
6	BHARATPUR	10	0	0	0	0	1	0	9	10	0	0	
7	BHILWARA	12	0	0	0	0	0	0	12	12	0	0	
8	BIKANER	8	2	3	1	1	0	0	3	3	1	1	
9	BUNDI	5	1	1	1	1	1	1	2	2	0	0	
10	CHITTORGARH	11	0	0	0	0	0	0	11	11	0	0	
11	CHURU	7	1	1	0	0	1	1	4	4	1	1	
12	DAUSA	6	0	0	0	0	0	0	6	6	0	0	
13	DHOLPUR	5	0	0	0	0	1	0	4	5	0	0	
14	DUNGARPUR	10	8	8	2	2	0	0	0	0	0	0	
15	GANGANAGAR	9	9	9	0	0	0	0	0	0	0	0	
16	HANUMANGARH	7	6	6	0	0	0	0	0	0	1	1	
17	JAIPUR	16	0	0	0	0	0	0	15	16	0	0	
18	JAISALMER	4	0	0	0	0	0	0	3	4	0	0	
19	JALORE	8	0	0	1	0	0	0	7	8	0	0	
20	JHALAWAR	8	0	1	3	1	1	1	4	5	0	0	
21	JHUNJHUNU	8	0	0	0	0	0	0	8	8	0	0	
22	JODHPUR	17	0	0	1	1	1	1	14	15	0	0	
23	KARAULI	6	0	0	1	0	0	1	5	5	0	0	
24	KOTA	7	0	0	3	2	0	0	2	4	0	0	
25	NAGAUR	14	0	0	0	0	1	0	13	14	0	0	
26	PALI	10	1	1	1	1	0	0	8	8	0	0	
27	PRATAPGARH	5	1	1	0	0	1	1	3	3	0	0	
28	RAJSAMAND	7	0	0	0	0	2	2	5	5	0	0	
29	SAWAI MADHOPUR	6	0	0	0	0	0	0	6	6	0	0	
30	SIKAR	9	0	0	0	0	1	0	8	9	0	0	
31	SIROHI	5	0	0	1	0	0	1	4	4	0	0	
32	TONK	6	0	0	2	2	1	1	3	3	0	0	
33	UDAIPUR	18		0	3	1	9	10	5	7	0	0	
	TOTAL	302	37	38	29	20	23	22	203	219	3	3	

Annexure-I

 <p>Govt of Rajasthan Administrative Reforms (Group-3) Department</p>	
No.6(31)AR/Gr.3/2020	Date: 14.02.2022
Order	
<p>Sub:- Estimation of annual replenishable ground water resources-Constitution of State Level Committee for re-estimation of ground water resources-reg.</p>	
<p>The last assessment of State-wise annual replenishable ground water resources for the entire country was made as on 31.03.2020 based on the Methodology by the Ground Water Resources Estimation Committee- 2015. Since then there have been changes in ground water scenario in many places in the country. The National Ground Water Policy 2002 has also recommended that the ground water resources of the country should be re-assessed periodically.</p>	
<p>H.E. the Governor of Rajasthan is pleased to accord sanction for constitution of a State Level Committee on Ground Water Resources Assessment as on 31-03-2022 for the State as follows.</p>	
<ol style="list-style-type: none"> 1. Additional Chief Secretary to Govt, PHED&GWD 2. Additional Chief Secretary to Govt, Energy Department or representative not below the rank of Joint Secretary 3. Commissioner, Industries Department 4. Commissioner, Agriculture Department 5. Chief Engineer, State Water Resources Planning Department 6. Chief Engineer, Water Resources Department 7. Chief Engineer, (HQ), PHED 8. Chief Engineer, (Rural), PHED 9. Chief Engineer, GWD 10. Director Department of Mines & Geology 11. General Manager, NABARD 12. Regional Director, CGWB, Western Region, Jaipur 	<ol style="list-style-type: none"> Chairman Member Member Member Member Member Member Member Member Member Member Member Secretary
<p>Terms of Reference: The broad terms of reference of the Committee would be as follows:</p> <ol style="list-style-type: none"> I. To estimate annual replenishable ground water resources of the State in accordance with the Ground Water Resources Estimation Methodology – 2015 of CGWB. II. To estimate the status of utilization of the annual replenishable Ground Water Resources. 	
<p>Time Frame: The Tenure of the Committee shall be up to the approval of Ground Water Assessment Report 2022.</p> <p>The Administrative Department of this committee shall be the Ground Water Department.</p>	
<p>By order of the Governor,  (Munnai Meena) Dy. Sec. to Govt.</p>	
<p>Copy to the following through Administrative Department for information and necessary action.</p> <ol style="list-style-type: none"> 1. Principal Secretary to the Hon'ble Governor of Rajasthan, Jaipur 2. Principal Secretary to Hon'ble Chief Minister, Rajasthan, Jaipur 3. P.S. to Minister, PHED and G.W.D. Jaipur 4. P.S to Chief Secretary, Rajasthan, Jaipur 5. P.S to Additional Chief Secretary to Govt. PHED & GWD Jaipur 6. P.S to Principal Secretary to Govt. Energy Department Jaipur 7. P.S to Commissioner Industries Department Jaipur 8. P.S to Commissioner Agriculture Department Jaipur 9. Chief Engineer, SWRPD , JLN Marg Jaipur 10. Chief Engineer, Water Resources, Jaipur 11. Chief Engineer, (HQ), PHED, Jaipur 12. Chief Engineer, (Rural), PHED, Jaipur 13. Chief Engineer, GWD, Jodhpur 14. Director Department of Mines & Geology, Jaipur 15. General Manager, NABARD, Nehru Palace, Tonk Road Jaipur 16. Regional Director, CGWB, Western Region, Jaipur 17. Deputy Secretary to Govt. GWD, Govt. Secretariat, Jaipur along with spare copies of order for delivery to all concerned. Ref No. 12(11) GWD/2017 18. Guard File 	
<p> Dy. Sec. to Govt.</p>	

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

Annexure –II:
Assessment unit wise Dynamic Ground Water Resources of Rajasthan (as on 31.03.2022)

District	Block	Total Area Assessment Unit (Ha)	Recharge Worthy Area (Ha)	Recharge from Rainfall- Monsoon Season	Recharge from Other Source- Monso on Season	Recharge from Rainfall- Non Monsoon Season	Recharge from Other Sources- Non Monsoon Season	Total Annual Ground Water Recharge	Total Natura l Discha rges	Annual Extracta ble Ground Water Resource	Ground Water Extraction for Irrigation Use	Ground Water Extraction for Industria l Use	Ground Water Extraction for Domestic Use	Total Extraction	Annual GW Allocatio n for for Domestic Use as on 2025	Net Gro und Wa ter Ava ilability for futu re use	Stage of Grou nd Water Extraction	Categ ory
		(a)			(ham)												%	
AJMER	BHINAY	121619	95354	3793.06	2.41	0	282.26	4077.73	203.88	3873.85	5535.3	1.0	378.0	5914.2	378.0	0.0	152.7	OE
AJMER	JAWAJA	67451	48433	1659.47	332.55	0	1005.21	2997.23	299.72	2697.51	5310.6	1.0	544.3	5855.9	544.3	0.0	217.1	OE
AJMER	KEKRI	98592	88967	3660.02	2.29	0	2726.52	6388.83	638.88	5749.95	10234.8	3.0	425.0	10662.8	425.0	0.0	185.4	OE
AJMER	KISHANGARH	124509	101288	3781.36	588.2	82.33	1765.19	6217.08	621.71	5595.37	9384.0	26.0	545.1	9955.1	545.1	0.0	177.9	OE
AJMER	MASOODA	89199	81700	3107.36	2.22	0	1049.96	4159.54	415.96	3743.58	4130.1	127.0	321.5	4578.6	321.5	0.0	122.3	OE
AJMER	PEESANGAN_RURAL	123991	110805	5064.1	1.76	0	2578.03	7643.89	764.39	6879.5	10272.6	5.0	2175.1	12452.7	2175.1	0.0	181.0	OE
AJMER	SARWAR	39568	36403	1252.41	1.73	0	642.04	1896.18	94.81	1801.37	2258.5	0.0	114.9	2373.4	114.9	0.0	131.8	OE
AJMER	SHRINAGAR_RURAL	96481	87393	2495.42	329.25	0	991.94	3816.61	381.66	3434.95	5249.6	13.0	899.1	6161.7	899.1	0.0	179.4	OE
ALWAR	BANSUR	66443	60412	5146.62	125.67	482.81	377.12	6132.22	613.22	5519	10050.1	4.4	834.8	10889.2	834.8	0.0	197.3	OE
ALWAR	BEHROR	35169	33460	2563.02	28.92	240.44	347.09	3179.47	317.94	2861.53	7520.2	121.7	912.9	8554.7	912.9	0.0	299.0	OE
ALWAR	KATHUMAR	56999	56324	3902.6	114.16	176.54	342.51	4535.81	453.59	4082.22	9133.2	0.0	548.4	9681.6	548.4	0.0	237.2	OE
ALWAR	KISHANGARH BAS	52646	41322	4206.43	72.47	193.59	217.53	4690.02	469	4221.02	5795.6	15.1	1069.6	6880.3	1069.6	0.0	163.0	OE
ALWAR	KOTKASIM	34443	30659	3536.27	78.55	260.05	235.73	4110.6	411.06	3699.54	6281.4	0.3	813.8	7095.5	813.8	0.0	191.8	OE
ALWAR	LAXMANGARH	62395	59052	2552.5	37.6	80.49	375.89	3046.48	304.65	2741.83	8263.4	0.4	807.9	9071.8	807.9	0.0	330.9	OE
ALWAR	MANDAWAR	57726	54578	6481.51	151.18	363.34	453.6	7449.63	744.96	6704.67	12093.8	182.7	944.4	13220.9	944.5	0.0	197.2	OE
ALWAR	NEEMRANA	37882	32743	3319.43	62.95	161.82	188.84	3733.04	373.31	3359.73	5035.9	730.5	738.2	6504.6	738.2	0.0	193.6	OE
ALWAR	RAJGARH	103421	45595	2145.63	11.73	33.37	324.27	2515	251.5	2263.5	2988.4	19.6	738.5	3746.4	738.5	0.0	165.5	OE
ALWAR	RAMGARH	61697	56846	4069.12	127.31	214.11	381.96	4792.5	479.25	4313.25	10183.7	505.2	865.2	11554.2	865.2	0.0	267.9	OE
ALWAR	RENI	39205	33104	1522.69	16.7	28.41	200.03	1767.83	176.78	1591.05	4326.6	0.0	357.5	4684.1	357.5	0.0	294.4	OE
ALWAR	THANAGAZI	106033	75233	3851.88	31.78	171.2	494.21	4549.07	454.91	4094.16	4565.9	19.0	834.5	5419.5	834.6	0.0	132.4	OE
ALWAR	TIJARA	67348	61152	6235.45	137.73	277.14	413.5	7063.82	706.38	6357.44	11011.5	1659.0	1333.0	14003.4	1333.0	0.0	220.3	OE

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

District	Block	Total Area Assessment (Ha)	Recharge Worthy Area (Ha)	Recharge from Rainfall- Monsoon Season	Recharge from Other Source- Monsoon Season	Recharge from Rainfall- Non Monsoon Season	Recharge from Other Sources- Non Monsoon Season	Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Ground Water Extraction for Irrigation Use	Ground Water Extraction for Industrial Use	Ground Water Extraction for Domestic Use	Total Extraction	Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction	Category
		a)			(ham)												%	
ALWAR	UMREN	90639	79681	8996.95	105.68	486.54	1640.73	11229.9	1122.9	10106.9	15156.1	155.5	2929.7	18241.3	2929.7	0.0	180.5	OE
BANSWARA	ANANDPURI	33740	32938	921.82	0	0	702.37	1624.19	162.42	1461.77	1054.2	0.0	191.4	1245.6	191.4	216.2	85.2	SC
BANSWARA	ARTHOONA	24870	24515	655.43	1.15	0	993.64	1650.22	165.02	1485.2	587.5	0.0	151.4	738.9	151.4	746.3	49.8	safe
BANSWARA	BAGIDORA	30819	29529	826.18	22.5	0	913.29	1761.97	176.2	1585.77	1152.3	0.0	140.8	1293.1	140.8	425.3	81.5	SC
BANSWARA	BANSWARA	51675	44883	1262	65.8	0	2484.37	3812.17	381.22	3430.95	1573.8	4.4	213.1	1791.3	213.1	1639.6	52.2	safe
BANSWARA	CHHOTISARVAN	38337	29495	554.55	150.8	0	812.5	1517.85	151.79	1366.06	749.5	0.0	127.8	877.3	127.8	488.8	64.2	safe
BANSWARA	GANGAR TALAI	21415	20520	574.05	0	0	232.07	806.12	80.62	725.5	541.2	0.0	31.2	572.4	31.2	153.1	78.9	SC
BANSWARA	GARHI	46185	45529	1238.8	1.8	0	1596.56	2837.16	283.72	2553.44	1574.1	8.9	275.5	1858.5	275.5	695.0	72.8	SC
BANSWARA	GHATOL	77840	68091	1702.95	11.67	0	2111.52	3826.14	382.61	3443.53	1466.3	1.4	272.8	1740.5	272.8	1703.1	50.5	safe
BANSWARA	KUSHALGARH	65180	50789	1044.02	10.13	0	595.67	1649.82	164.99	1484.83	1132.0	0.0	173.9	1305.9	173.9	178.9	87.9	SC
BANSWARA	SAJJANGARH	39229	34997	643.3	8.82	0	789.3	1441.42	144.14	1297.28	593.4	0.0	190.7	784.1	190.7	513.2	60.4	safe
BANSWARA	TALWARA	24318	16710	562.1	4.24	0	1011.05	1577.39	157.74	1419.65	649.0	1.4	276.3	926.7	276.3	493.0	65.3	safe
BARAN	ANTAH	94901	94900	6061.58	500.9	0	6675.86	13238.34	1323.84	11914.5	8516.6	0.0	1437.6	9954.2	1437.6	2325.6	83.5	SC
BARAN	ATRU	86030	84647	4699.94	1608.24	0	2720.71	9028.89	902.89	8126	13026.5	0.0	1144.5	14171.0	1144.5	23.4	174.4	OE
BARAN	BARAN	62621	62621	4457.08	779.66	0	2810.93	8047.67	804.77	7242.9	12989.5	51.4	1512.8	14553.7	1512.8	0.0	200.9	OE
BARAN	CHHABRA	79079	77337	4798.4	270.87	0	1415.22	6484.49	648.45	5836.04	7555.1	0.0	939.8	8494.9	939.8	0.0	145.6	OE
BARAN	CHHIPABAROD	82876	80450	4572.52	479.69	0	1520.26	6572.47	657.25	5915.22	8105.1	0.0	342.8	8447.8	342.8	0.0	142.8	OE
BARAN	KISHANGANJ	143098	142972	7561.55	947.57	0	3292.41	11801.53	1180.15	10621.38	9378.2	0.0	625.9	10004.1	625.9	617.3	94.2	C

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

District	Block	Total Area Assessment it (Ha)	Recharge Worthy Area (Ha)	Recharge from Rainfall- Monsoon Season	Recharge from Other Source - Monso on Season	Recharge from Rainfall- Non Monsoon Season	Recharge from Other Sources- Non Monsoon Season	Total Annual Ground Water Recharge	Total Natura l Discha rges	Annual Extracta ble Ground Water Resource	Ground Water Extraction for Irrigation Use	Ground Water Extraction for Industria Use	Ground Water Extraction for Domestic Use	Total Extraction	Annua GW Allocatio n for for Domestic Use as on 2025	Net Gro und Wa ter Ava ilability for futu re use	Stage of Grou nd Water Extraction	Categ ory
		a)			(ham)												%	
BARAN	SHAHBAD	146926	146294	6390.83	473.45	0	1252.7	8116.98	405.85	7711.13	6085.0	51.1	1081.9	7217.9	1081.9	493.2	93.6	C
BARMER	BALOTRA	156883	156883	1151.1	29.37	0	88.11	1268.58	126.86	1141.72	2349.6	426.0	284.5	3060.1	312.2	0.0	268.0	OE
BARMER	BARMER	241209	241209	2244.46	28	40.11	84	2396.57	239.66	2156.91	2239.9	12.0	660.1	2912.0	747.3	0.0	135.0	OE
BARMER	BAYTOO	140758	140758	351.63	7.25	0	21.76	380.64	38.07	342.57	580.3	0.0	254.9	835.2	318.4	0.0	243.8	OE
BARMER	CHOHTAN	180275	180275	2984.95	19.22	0	57.66	3061.83	306.19	2755.64	1537.7	0.0	253.9	1791.5	335.5	964.1	65.0	safe
BARMER	DHANA00	124474	124474	3408.01	34.46	0	105.4	3547.87	354.79	3193.08	2797.2	0.0	411.8	3208.9	411.8	0.0	100.5	OE
BARMER	DHORIMANNA	165986	165986	3005	78.17	0	259.95	3343.12	334.32	3008.8	6762.3	0.0	610.0	7372.2	688.6	0.0	245.0	OE
BARMER	GADRAROAD	392564	392564	1055.54	8.6	34.73	25.79	1124.66	112.46	1012.2	687.8	0.0	625.6	1313.4	821.8	0.0	129.8	OE
BARMER	GIRA	155036	155036	72.42	2.37	0	7.31	82.1	8.21	73.89	193.6	0.0	25.8	219.4	62.2	0.0	296.9	OE
BARMER	GUDHAMALANI	128265	128265	3754.23	226.95	0	680.85	4662.03	466.21	4195.82	3631.2	0.0	709.1	4340.3	762.9	0.0	103.4	OE
BARMER	KALYANPUR	126304	126304	1145.23	12.56	0	42.71	1200.5	120.05	1080.45	717.8	0.0	63.5	781.3	91.1	299.2	72.3	SC
BARMER	PATODI	83162	83162	1220.85	39.39	0	136.37	1396.61	139.66	1256.95	1033.9	0.0	78.4	1112.3	143.1	144.6	88.5	SC
BARMER	RAMSAR	158707	158707	658.1	7.14	11.76	18.53	695.53	69.55	625.98	513.4	0.0	143.5	656.9	189.5	0.0	104.9	OE
BARMER	SAMDARI	83687	83687	1351.22	14.11	0	42.34	1407.67	140.76	1266.91	1129.0	0.0	396.2	1525.2	414.2	0.0	120.4	OE
BARMER	SERWA	170357	170357	3042.89	40.19	0	120.57	3203.65	320.37	2883.28	3215.3	0.0	387.4	3602.7	503.5	0.0	124.9	OE
BARMER	SHEO	266379	266379	1121.6	40.28	36.91	120.83	1319.62	131.96	1187.66	3222.2	0.0	864.2	4086.4	1044.4	0.0	344.1	OE
BARMER	SINDHARI	162984	162984	3153.04	40.81	0	116.8	3310.65	331.06	2979.59	3152.1	0.0	508.2	3660.4	730.4	0.0	122.8	OE
BARMER	SIWANA	120828	120828	5273.61	55.6	0	166.81	5496.02	549.59	4946.42	4448.2	0.0	604.3	5052.4	607.9	0.0	102.1	OE
BHARATPUR	BAYANA	80869	67631	4347.32	208.41	195.56	908.76	5660.05	283.01	5377.04	6509.9	58.4	1096.4	7664.7	1096.4	0.0	142.5	OE
BHARATPUR	DEEG	49285	47082	2587.68	195.59	81.05	709.6	3573.92	357.39	3216.53	3321.6	0.0	332.5	3654.1	524.0	0.0	113.6	OE
BHARATPUR	KAMAN	35029	35029	2343.47	159.54	102.68	545.03	3150.72	157.54	2993.18	2583.8	0.0	427.9	3011.7	427.9	0.0	100.6	OE
BHARATPUR	KUMHER	45451	45420	1008.31	93.65	29.78	308.1	1439.84	143.99	1295.85	1412.8	0.0	592.8	2005.6	824.7	0.0	154.8	OE

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

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		(a)			(ham)												%	
BHARATPUR	NADBAI	44670	44670	1720.41	42.08	61	131.94	1955.43	97.77	1857.66	3226.0	3.4	632.4	3861.7	789.3	0.0	207.9	OE
BHARATPUR	NAGAR	46937	42073	1717.42	22.82	82.42	69.83	1892.49	189.25	1703.24	1793.0	3.1	281.2	2077.3	478.0	0.0	122.0	OE
BHARATPUR	PAHARI	33295	33295	2187.04	195.41	95.38	662.57	3140.4	314.05	2826.35	3715.4	0.0	216.3	3931.7	216.3	0.0	139.1	OE
BHARATPUR	RUPBAS	53901	50110	3039.23	221.72	84.62	1292.71	4638.28	231.92	4406.36	5846.8	2.7	408.4	6257.9	408.4	0.0	142.0	OE
BHARATPUR	SEWAR	50952	50937	1952.82	236.4	60.03	835.41	3084.66	308.46	2776.2	4271.7	1.2	789.8	5062.7	1047.3	0.0	182.4	OE
BHARATPUR	WEIR	60653	58905	3471.26	65.85	106.19	243.32	3886.62	194.34	3692.28	4142.6	3.1	1169.7	5315.4	1361.5	0.0	144.0	OE
BHILWARA	ASIND	113610	99046	2400.89	0.45	0	1281.55	3682.89	368.3	3314.59	5119.0	0.0	384.9	5503.9	384.9	0.0	166.1	OE
BHILWARA	BANERA	68780	66258	2618.48	1.56	0	824.52	3444.56	344.46	3100.1	3256.1	34.2	276.5	3566.8	276.5	0.0	115.1	OE
BHILWARA	BIJOLIYAN	73734	54126	2325.28	16.94	0	992.49	3334.71	333.47	3001.24	3135.2	0.0	230.8	3366.0	230.8	124.4	112.2	OE
BHILWARA	HURDA	62180	61276	1729.01	4.63	0	775.97	2509.61	250.96	2258.65	2772.4	44.0	216.1	3032.5	216.1	166.3	134.3	OE
BHILWARA	JAHAZPUR	108970	86587	3117.59	4.27	0	1748.75	4870.61	487.07	4383.54	6926.7	0.0	297.1	7223.8	297.1	0.0	164.8	OE
BHILWARA	KOTRI	93400	89831	3445.58	19.18	0	1636.09	5100.85	510.09	4590.76	5616.0	4.5	340.1	5960.6	340.1	64.5	129.8	OE
BHILWARA	MANDAL	123420	115595	3892.73	1.9	0	1823.5	5718.13	571.82	5146.31	7001.8	26.7	461.4	7490.0	461.4	0.0	145.5	OE
BHILWARA	MANDALGARH	76176	49147	2006.55	26.68	0	2121.03	4154.26	415.42	3738.84	5977.6	0.0	684.0	6661.6	684.0	240.6	178.2	OE
BHILWARA	RAIPUR	52420	48636	1739.81	4.44	0	1019.73	2763.98	276.41	2487.57	3975.1	0.0	410.0	4385.1	410.0	25.4	176.3	OE
BHILWARA	SAHARA	65390	63469	1788.47	0.38	0	577.22	2366.07	236.6	2129.47	2832.2	0.7	678.9	3511.9	678.9	37.5	164.9	OE
BHILWARA	SHAHPURA	115930	112513	3346.04	17.57	0	2359.73	5723.34	572.33	5151.01	7564.6	0.1	273.4	7838.1	273.4	20.3	152.2	OE
BHILWARA	SUWANA	91490	89001	3270.45	1.77	0	1544.42	4816.64	481.68	4334.96	6036.6	625.6	1189.9	7852.1	1189.9	0.0	181.1	OE
BIKANER	BIKANER_RURAL	368363	368363	5128.84	347.75	891.55	646.48	7014.62	701.47	6313.15	7713.5	35.0	1550.6	9299.1	1550.6	1182	147.3	OE
BIKANER	BIKANER_URBAN	14113	14113	161.82	19.57	24.55	15.7	221.64	19.77	201.87	44.9	2.0	73.3	120.2	73.3	81.7	59.5	safe
BIKANER	DUNGARGARH	300390	300390	4652.12	124.86	659.25	433.39	5869.62	586.96	5282.66	11164.9	0.0	2037.2	13202.1	2037.2	0.0	249.9	OE
BIKANER	KHAJUWALA	545324	545324	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0		salinity

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

District	Block	Total Area Assessment it (Ha)	Recharge Worthy Area (Ha)	Recharge from Rainfall- Monsoon Season	Recharge from Other Source - Monso on Season	Recharge from Rainfall- Non Monsoon Season	Recharge from Other Sources- Non Monsoon Season	Total Annual Ground Water Recharge	Total Natura l Discha rges	Annual Extracta ble Ground Water Resource	Ground Water Extraction for Irrigation Use	Ground Water Extraction for Industria l Use	Ground Water Extraction for Domestic Use	Total Extraction	Annua l GW Allocatio n for Domestic Use as on 2025	Net Gro und Water Ava ilability for futu re use	Stage of Grou nd Water Extra ction	Categ ory
		a)			(ham)												%	
BIKANER	KOLAYAT	797086	797086	3809.01	13.53	603.32	40.6	4466.46	446.63	4019.82	1082.6	24.0	1184.6	2291.3	1184.6	1728.6	57.0	safe
BIKANER	LUNKARANSAR	632802	632802	3746.03	95.36	606.93	144.49	4592.81	459.27	4133.54	1809.5	0.0	539.3	2348.8	539.3	1784.8	56.8	safe
BIKANER	NOKHA	188810	188810	3238.18	48.74	168.81	180.84	3636.57	363.65	3272.92	4591.5	10.0	1870.0	6471.5	1870.0	0.0	197.7	OE
BIKANER	PANCHOO	191289	191289	3131.44	0	204.97	74.11	3410.52	341.05	3069.47	1482.3	0.0	1238.2	2720.5	1238.2	349.0	88.6	SC
BUNDI	BUNDI	117513	77311	2642.65	220.46	0	3411.48	6274.59	627.45	5647.14	5123.2	22.0	438.4	5583.6	438.4	358.9	98.9	C
BUNDI	HINDOLI	127530	88481	3414.71	73.83	0	2324.66	5813.2	354.46	5458.74	8219.1	0.0	954.3	9173.4	954.3	232.0	168.0	OE
BUNDI	KESHORAI	124351	115288	4200.33	279.11	0	4276.13	8755.57	875.55	7880.02	5324.2	11.0	658.3	5993.4	658.3	1886.6	76.1	SC
BUNDI	PATAN	124351	115288	4200.33	279.11	0	4276.13	8755.57	875.55	7880.02	5324.2	11.0	658.3	5993.4	658.3	1886.6	76.1	SC
BUNDI	NAINWA	109519	96685	4548.53	321.43	0	1519.25	6389.21	322.05	6067.16	6749.4	17.0	1360.7	8127.1	1360.7	46.5	134.0	OE
BUNDI	TALERA	71087	46253	2657.07	350.59	0	1719.71	4727.37	472.73	4254.64	1876.2	16.0	185.4	2077.7	185.4	2177.0	48.8	safe
CHITTAURGARH	BARI SADRI	50468	42838	1387.8	159.1	0	752.04	2298.94	229.9	2069.04	3988.0	0.0	194.8	4182.8	194.8	0.0	202.2	OE
CHITTAURGARH	BEGUN	97035	62685	2848.07	294.99	0	1512.92	4655.98	465.59	4190.39	6936.9	34.0	153.8	7124.7	153.8	0.0	170.0	OE
CHITTAURGARH	BHADESAR	53906	49253	1833.83	128.68	0	980.02	2942.53	294.25	2648.28	4754.9	0.0	67.4	4822.4	67.5	0.0	182.1	OE
CHITTAURGARH	BHAINSRORGARH	160546	77936	2725.57	176.39	0	723.07	3625.03	362.51	3262.52	3855.5	0.0	31.8	3887.4	31.8	0.0	119.2	OE
CHITTAURGARH	BHOPALSAGAR	39824	38212	1157.13	73.6	0	395.92	1626.65	162.67	1463.98	2466.2	2.0	65.4	2533.6	65.4	0.0	173.1	OE
CHITTAURGARH	CHITTAURGARH	95133	48021	2531.02	150.55	0	1345.61	4027.18	402.72	3624.46	6138.3	133.0	593.3	6864.6	593.3	0.0	189.4	OE
CHITTAURGARH	DUNGLA	49400	46543	1562.11	133.72	0	647.94	2343.77	234.38	2109.39	3208.8	1.0	53.2	3263.0	53.2	0.0	154.7	OE
CHITTAURGARH	GANGRAR	55564	53662	2215.13	43.9	0	447.51	2706.54	270.65	2435.89	3111.2	107.0	23.3	3241.5	23.3	0.0	133.1	OE
CHITTAURGARH	KAPASAN	51592	50201	1403.68	113	0	496.19	2012.87	201.29	1811.58	3016.4	8.0	126.9	3151.3	126.9	0.0	174.0	OE

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

District	Block	Total Area Assessment (Ha)	Recharge Worthy Area (Ha)	Recharge from Rainfall- Monsoon Season	Recharge from Other Source- Monso on Season	Recharge from Rainfall- Non Monsoon Season	Recharge from Other Sources- Non Monsoon Season	Total Annual Ground Water Recharge	Total Natura l Discha rges	Annual Extracta ble Ground Water Resource	Ground Water Extraction for Irrigation Use	Ground Water Extraction for Industria l Use	Ground Water Extraction for Domestic Use	Total Extraction	Annua l GW Alloca tion for Domestic Use as on 2025	Net Gro und Wa ter Ava ilab ility for futu re use	Stage of Grou nd Wa ter Ex tra ction	Categ ory
		(a)			(ham)												%	
CHITTAURGARH	NIMBAHERA	89535	70281	4335.29	284.22	0	1763.34	6382.85	638.28	5744.57	6984.7	413.0	246.1	7643.8	246.1	34.3	133.1	OE
CHITTAURGARH	RASHMI	44997	43757	1464.31	122.62	0	429.77	2016.7	201.67	1815.03	2962.4	0.0	54.8	3017.2	54.8	0.1	166.2	OE
CHURU	BIDASAR	113878	113878	2806.67	0	220.15	151.35	3178.17	158.9	3019.27	4035.9	0.0	373.6	4409.5	373.6	0.0	146.0	OE
CHURU	CHURU	160687	160687	950.01	1.65	146.37	14.86	1112.89	111.29	1001.6	528.2	1.0	462.0	991.2	462.0	10.4	99.0	C
CHURU	RAJGARH	222492	222492	1744.56	14.8	219.97	133.21	2112.54	105.63	2006.91	4736.4	0.0	584.9	5321.3	584.9	0.0	265.1	OE
CHURU	RATANGARH	162241	162241	1706.08	0	206.74	52.84	1965.66	196.57	1769.09	1409.1	2.0	551.7	1962.8	551.7	0.0	110.9	OE
CHURU	SARDARSHAHA R	386080	386080	4454.74	0	472.45	72.78	4999.97	499.99	4499.98	1940.7	14.0	800.8	2755.5	800.8	1744 .5	61.2	safe
CHURU	SUJANGARH	152883	152883	905.65	3.71	66.93	33.36	1009.65	100.97	908.68	1186.3	0.0	207.6	1393.9	207.7	0.0	153.4	OE
CHURU	TARANAGAR	181040	181040	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0		salinit y
DAUSA	BANDIKUI	63294	52890	4038.67	66.64	13.4	447.22	4565.93	456.59	4109.34	6281.5	0.3	3491.4	9773.2	3491.4	0.0	237.8	OE
DAUSA	DAUSA	78311	73409	4685.42	87.8	0	440.64	5213.86	521.38	4692.48	5348.5	0.0	2816.8	8165.4	2816.8	0.0	174.0	OE
DAUSA	LALSOT	87124	78036	6832.84	22.47	0	722.32	7577.63	757.76	6819.87	13916.8	1.1	1435.8	15353.7	1435.8	0.0	225.1	OE
DAUSA	LAWAN	16065	16065	1125.91	0.42	0	93.35	1219.68	121.96	1097.72	1875.2	0.0	533.0	2408.2	533.0	0.0	219.4	OE
DAUSA	MAHWA	47000	44200	3610.46	63.97	77.15	481.18	4232.76	423.27	3809.49	7066.1	1.2	1168.6	8235.9	1168.6	0.0	216.2	OE
DAUSA	SIKRAI	50223	43962	3952.61	11.94	38.58	307.14	4310.27	431.03	3879.24	5679.5	0.5	1220.5	6900.5	1220.5	0.0	177.9	OE
DHAULPUR	BARI	81624	69467	4704.39	322.5	196.96	1194.69	6418.54	393.03	6025.5	5541.9	4.3	903.9	6450.1	903.9	325. 7	107.0	OE
DHAULPUR	BASERI	100142	81390	5419.34	454.33	157.11	1722.29	7753.07	775.31	6977.76	6153.7	0.0	925.0	7078.7	925.0	0.0	101.4	OE
DHAULPUR	DHAULPUR	28493	23997	2511.9	259.13	54.07	862.61	3687.71	368.77	3318.94	5530.9	12.8	752.1	6295.7	752.1	0.0	189.7	OE
DHAULPUR	RAJAKHERA	58207	48872	4982.51	136.52	160.76	475.47	5755.26	575.52	5179.74	7056.0	2.1	897.2	7955.3	897.2	0.0	153.6	OE
DHAULPUR	SAIPU	32439	24800	2274.31	203.67	35.33	718.58	3231.89	323.19	2908.7	4881.5	0.0	651.2	5532.7	651.2	0.0	190.2	OE
DUNGARPUR	ASPUR	32807	26540	722.82	370.58	0	1531.71	2625.11	262.51	2362.6	627.8	2.0	73.3	703.1	73.3	1659 .5	29.8	safe

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

District	Block	Total Area Assessment (Ha)	Recharge Worthy Area (Ha)	Recharge from Rainfall- Monsoon Season	Recharge from Other Sources- Monso on Season	Recharge from Rainfall- Non Monsoon Season	Recharge from Other Sources- Non Monsoon Season	Total Annual Ground Water Recharge	Total Natura l Discha rges	Annual Extracta ble Ground Water Resource	Ground Water Extraction for Irrigatio n Use	Ground Water Extraction for Industria l Use	Ground Water Extraction for Domestic Use	Total Extraction	Annua l GW Allocatio n for Domestic Use as on 2025	Net Gro und Water Ava ilab ility for futu re use	Stage of Grou nd Water Extra ction	Categ ory
		a)			(ham)												%	
DUNGARPUR	BICHHIWARA	89812	62253	2327.32	30.04	0	982.27	3339.63	333.96	3005.67	1389.2	1.0	137.7	1527.9	137.7	1477.8	50.8	safe
DUNGARPUR	CHEEKHLI	26382	18430	458.8	167.74	0	1262.22	1888.76	188.87	1699.89	872.8	0.0	44.9	917.8	44.9	782.1	54.0	safe
DUNGARPUR	DOVRA	30706	20569	671.28	1.7	0	578.83	1251.81	125.18	1126.63	824.1	0.0	87.9	912.0	87.9	214.6	80.9	SC
DUNGARPUR	DUNGARPUR	13143	9181	299.63	159.32	0	664.12	1123.07	112.31	1010.76	532.2	49.0	85.1	666.3	85.1	344.5	65.9	safe
DUNGARPUR	GALIAKOT	25426	17762	609.95	112.55	0	1404.68	2127.18	212.72	1914.46	1127.1	0.0	35.7	1162.8	35.7	751.6	60.7	safe
DUNGARPUR	JHONTHRI	26971	18798	659.3	0.89	0	180.69	840.88	84.09	756.79	226.2	0.0	33.7	259.9	33.7	496.9	34.3	safe
DUNGARPUR	SABLA	35781	23384	564.92	308.93	0	610.7	1484.55	148.46	1336.09	489.9	0.0	73.2	563.0	73.2	773.1	42.1	safe
DUNGARPUR	SAGWARA	58397	40194	1633.42	127.26	0	3468.78	5229.46	522.95	4706.51	3579.4	1.0	194.9	3775.3	194.9	931.2	80.2	SC
DUNGARPUR	SIMALWARA	37652	26302	861.01	77.67	0	954.21	1892.89	189.29	1703.6	984.4	0.0	77.3	1061.8	77.3	641.8	62.3	safe
GANGANAGAR	ANUPGARH	114935	114935	695.83	6484.54	163.5	2963.07	10306.94	1030.7	9276.24	1014.1	0.0	1.5	1015.6	5.3	8260.7	10.9	safe
GANGANAGAR	GANGANAGAR	86670	86670	840.19	2213.83	199.41	7819.82	11073.25	1107.32	9965.93	6765.7	0.0	6.4	6772.1	8.3	3193.8	68.0	safe
GANGANAGAR	GHADSANA	138732	138732	340.71	819.32	80.13	1190.85	2431.01	243.1	2187.91	437.8	0.0	0.4	438.2	2.1	1749.7	20.0	safe
GANGANAGAR	KARANPUR	82680	82680	843.61	1040.72	134.31	3310.27	5328.91	532.89	4796.02	2529.5	0.0	5.4	2534.8	10.9	2261.2	52.9	safe
GANGANAGAR	PADAMPUR	84690	84690	567.92	1632.3	118.75	3781.78	6100.75	610.06	5490.68	2826.4	0.0	4.6	2831.0	7.1	2659.7	51.6	safe
GANGANAGAR	RAISINGHNAGAR	131668	131668	254.58	700.81	42.43	1592.11	2589.93	129.5	2460.43	1195.2	29.0	2.0	1226.2	13.3	1234.3	49.8	safe
GANGANAGAR	SADULSHAHAR	89270	89270	158.52	621.84	22.5	1311.83	2114.69	211.47	1903.22	481.0	6.0	0.0	487.0	2.8	1416.2	25.6	safe
GANGANAGAR	SRI VIJAYNAGAR	83786	83786	683.1	1702.33	142.03	2673.23	5200.69	520.07	4680.62	489.7	0.0	0.7	490.4	2.1	4190.2	10.5	safe

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

District	Block	Total Area Assessment (Ha)	Recharge Worthy Area (Ha)	Recharge from Rainfall- Monsoon Season	Recharge from Other Sources- Non- Monsoon Season	Recharge from Rainfall- Non- Monsoon Season	Recharge from Other Sources- Non- Monsoon Season	Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Ground Water Extraction for Irrigation Use	Ground Water Extraction for Industrial Use	Ground Water Extraction for Domestic Use	Total Extraction	Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction	Category
		a)			(ham)												%	
GANGANAGAR	SURATGARH	301728	301728	370.91	1018.44	83.88	1170.89	2644.12	264.42	2379.7	1249.8	4.0	17.6	1271.5	20.8	1108.2	53.4	safe
HANUMANGARH	BHADRA	177680	177680	1040.02	532.2	124.34	1195.09	2891.65	289.16	2602.49	1525.1	10.0	280.0	1815.1	498.8	787.4	69.7	safe
HANUMANGARH	HANUMANGARH	111238	111238	873.83	1650.61	183.56	1085.22	3793.22	379.32	3413.9	2093.2	10.0	157.5	2260.7	163.8	1153.2	66.2	safe
HANUMANGARH	NOHAR	243945	243945	320.65	483.73	48.17	459.88	1312.43	131.25	1181.18	762.6	0.0	16.1	778.7	25.9	402.4	65.9	safe
HANUMANGARH	PILIBANGA	112802	112802	1412.18	1664.81	292.02	1011.74	4380.75	438.08	3942.67	2426.0	0.0	236.3	2662.3	241.2	1280.4	67.5	safe
HANUMANGARH	RAWATSAR	167225	167225	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0		salinity
HANUMANGARH	SANGARIYA	69319	69319	697.09	1231.08	141.87	1673.81	3743.85	374.39	3369.46	1680.7	0.0	76.3	1757.0	82.6	1612.5	52.1	safe
HANUMANGARH	TIBI	75751	75751	1054.65	1678.38	207.08	2312.61	5252.72	525.27	4727.45	2760.1	180.0	148.8	3088.9	156.5	1638.6	65.3	safe
JAIPUR	AMBER_RURAL	43718	42288	3697.57	35.02	0	349.58	4082.17	408.22	3673.95	6895.8	287.5	1661.5	8844.7	1661.5	0.0	240.7	OE
JAIPUR	BASSI	65469	63123	4983.99	99.77	89.74	359.94	5533.44	553.35	4980.09	8693.6	60.5	3313.7	12067.7	3313.7	0.0	242.3	OE
JAIPUR	CHAKSU	81192	72936	4358.72	427.93	0	1329.54	6116.19	611.61	5504.58	11954.1	3.7	1238.6	13196.4	1238.6	0.0	239.7	OE
JAIPUR	DUDU	187064	179087	6819.79	443.13	0	1135.2	8398.12	839.81	7558.31	7407.7	86.7	2953.5	10447.9	2953.5	0.0	138.2	OE
JAIPUR	GOVINDGARH	68512	63808	4690.49	181.97	0	545.91	5418.37	541.84	4876.53	14557.7	53.1	1985.4	16596.2	1985.4	0.0	340.3	OE
JAIPUR	JAIPUR_URBAN	38141	35522	1234.76	0	24.95	0	1259.71	125.98	1133.73	0.0	244.8	3662.1	3906.9	3662.1	0.0	344.6	OE
JAIPUR	JALSOO	45121	41865	3952.88	10.16	0	331.94	4294.98	429.49	3865.49	6841.9	0.0	1633.4	8475.3	1633.4	0.0	219.3	OE
JAIPUR	JAMWARA_RAMGARH	103370	96188	7473.97	132.42	0	331.53	7937.92	793.79	7144.13	7303.5	10.3	3662.8	10976.6	3662.8	0.0	153.6	OE
JAIPUR	JHOTWARA_RURAL	30528	30158	2525.02	8.7	51.01	250.65	2835.38	283.54	2551.84	5187.1	1.0	615.3	5803.4	615.3	0.0	227.4	OE
JAIPUR	KOTPUTLI	41308	34210	2315.84	61.22	160.87	255.1	2793.03	279.31	2513.72	6326.4	430.0	669.3	7425.7	669.3	0.0	295.4	OE
JAIPUR	PAOTA	44780	39368	2820.67	67.95	168.9	283.12	3340.64	334.06	3006.58	7021.3	0.0	1033.2	8054.5	1033.2	0.0	267.9	OE
JAIPUR	PHAGI	111434	111357	3809.02	649.82	24.89	1157.24	5640.97	564.09	5076.88	4446.3	30.7	1358.2	5835.2	1358.2	0.0	114.9	OE

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

District	Block	Total Area Assessment (Ha)	Recharge Worthy Area (Ha)	Recharge from Rainfall- Monsoon Season	Recharge from Other Source- Monsoon Season	Recharge from Rainfall- Non Monsoon Season	Recharge from Other Sources- Non Monsoon Season	Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Ground Water Extraction for Irrigation Use	Ground Water Extraction for Industrial Use	Ground Water Extraction for Domestic Use	Total Extraction	Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction	Category	
		a)			(ham)												%		
JAIPUR	SAMBHAR	93840	83148	5512.8	24.63	110.71	459.67	6107.81	610.78	5497.03	9380.6	0.0	5119.6	14500.2	5119.6	0.0	263.8	OE	
JAIPUR	SANGANER_RURAL	54989	51904	3550.82	2.84	36.68	145.03	3735.37	373.54	3361.83	2957.3	417.0	4568.6	7942.9	4568.6	0.0	236.3	OE	
JAIPUR	SHAHUPURA	42985	38020	2846.89	1.75	42.84	215.71	3107.19	310.72	2796.47	4349.2	18.6	4222.9	8590.7	4222.9	0.0	307.2	OE	
JAIPUR	VIRATNAGAR	53693	50490	4410.89	79.37	123.87	270.39	4884.52	488.46	4396.06	6454.2	18.3	1229.0	7701.4	1229.0	0.0	175.2	OE	
JAISALMER	JAISALMER_RURAL	1144033	1144033	2785.98	141.65	160.39	425.04	3513.06	351.3	3161.76	11333.7	0.0	772.1	12105.8	887.8	0.0	382.9	OE	
JAISALMER	JAISALMER_URBAN	6467	6467	44.21	1.14	3.05	3.44	51.84	5.19	46.65	91.7	4.0	32.5	128.2	32.5	0.0	274.9	OE	
JAISALMER	SAM	2111100	2111100	2752.41	67.27	155.14	201.92	3176.74	317.68	2859.06	5383.7	0.0	1138.6	6522.3	1387.1	0.0	228.1	OE	
JAISALMER	SANKRA	552900	552900	2295.31	109.68	223.17	329.16	2957.32	295.73	2661.59	8776.9	3.0	738.2	9518.1	859.4	0.0	357.6	OE	
JALOR	AHORE	161377	154124	2831.57	45.12	0	135.37	3012.06	301.21	2710.85	2865.0	0.0	398.9	3263.9	432.5	0.0	120.4	OE	
JALOR	BHINMAL	136561	135837	6617.52	138.05	0	414.15	7169.72	716.97	6452.75	11043.9	0.1	768.2	11812.2	768.2	0.0	183.1	OE	
JALOR	CHITALWANA	181785	181785	3923.59	346.87	0	3545.54	7816	781.6	7034.4	7043.0	0.0	94.8	7137.8	123.6	0.0	101.5	OE	
JALOR	JALORE	104905	98193	3445.66	62.56	0	232.78	3741	374.1	3366.9	5906.7	0.0	602.5	6509.2	625.9	0.0	193.3	OE	
JALOR	JASWANTPURA	105842	93237	3496.69	67.81	0	232.19	3796.69	379.67	3417.02	6000.0	0.2	421.2	6421.4	421.2	0.0	187.9	OE	
JALOR	RANIWARA	100975	91862	6088.4	170.6	0	511.79	6770.79	677.08	6093.71	13647.6	2.1	734.8	14384.5	734.8	0.0	236.1	OE	
JALOR	SANCHORE	123712	123690	5982.92	129.07	0	2386.89	8498.88	512.77	7986.11	10205.8	0.0	289.8	10495.6	289.8	0.0	131.4	OE	
JALOR	SAYLA	148843	146425	5276.03	211.98	0	668.93	6156.94	615.69	5541.25	17618.2	0.2	966.6	18585.0	992.5	0.0	335.4	OE	
JHALAWAR	AKLERA	79165	70165	4846.17	300.42	0	901.25	6047.84	604.79	5443.05	4806.7	0.0	346.7	5153.3	346.7	289.7	94.7	C	
JHALAWAR	BAKANI	46412	46412	3606.38	37.03	0	1407.21	5050.62	489.43	4561.19	5452.8	0.3	772.7	6225.8	772.7	681.7	0.0	136.5	OE
JHALAWAR	BHAWANI MANDI	72780	70280	4440.51	246.71	0	733.79	5421.01	542.1	4878.91	3922.0	0.0	275.3	4197.3	275.3	7	86.0	SC	
JHALAWAR	DAG	91681	88781	6181.31	525.37	0	1657.73	8364.41	836.44	7527.97	8370.8	0.0	594.0	8964.9	594.0	0.0	119.1	OE	
JHALAWAR	JHALRAPATAN	81126	81126	5057.45	185.62	0	2445.7	7688.77	768.87	6919.9	9034.9	0.1	430.5	9465.5	430.5	0.1	136.8	OE	
JHALAWAR	KHANPUR	93967	90971	5755.78	912.63	0	3622.12	10290.53	1029.0	9261.47	13243.7	0.0	326.8	13570.5	326.8	0.0	146.5	OE	

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		a)			(ham)											%		
									6									
JHALAWAR	MANOHAR THANA	64087	64087	3499.5	244.75	0	730.33	4474.58	275.79	4198.79	3879.3	0.0	463.3	4342.6	463.3	1678.3	103.4	OE
JHALAWAR	PIRAWA	104504	97804	6407.48	201.31	0	758.54	7367.33	702.83	6664.5	3738.4	0.0	516.1	4254.5	516.1	2676.1	63.8	safe
JHUNJHUNUN	ALSISAR	82715	82715	2064.37	15.01	218.06	75.04	2372.48	237.25	2135.23	1801.0	1.6	900.6	2703.2	960.4	0.0	126.6	OE
JHUNJHUNUN	BUHANA	65114	62430	2217.56	22.93	164.23	114.66	2519.38	251.94	2267.44	2751.9	0.0	1431.9	4183.8	1431.9	0.0	184.5	OE
JHUNJHUNUN	CHIRAWA	49304	49304	1894.6	33.36	183.33	166.81	2278.1	227.81	2050.29	4003.4	0.0	1408.5	5411.9	1408.5	0.0	264.0	OE
JHUNJHUNUN	JHUNJHUNUN	75190	74496	2878.25	52.56	195.77	262.78	3389.36	338.94	3050.42	6306.7	23.7	1510.0	7840.3	1510.0	0.0	257.0	OE
JHUNJHUNUN	KHETRI	81944	57583	2746.48	22.58	140.76	112.92	3022.74	302.28	2720.46	2710.1	22.2	1462.4	4194.7	1462.4	0.0	154.2	OE
JHUNJHUNUN	NAWALGARH	69680	63200	2612.01	50.35	157.87	251.74	3071.97	307.2	2764.77	6041.9	206.1	1381.6	7629.5	1381.6	0.0	276.0	OE
JHUNJHUNUN	SURAJGARH	77909	77909	2698.14	44.42	313.58	222.08	3278.22	327.83	2950.39	5329.9	0.0	1294.3	6624.2	1294.3	0.0	224.5	OE
JHUNJHUNUN	UDAIPURWATI	86728	71710	3918.55	55.37	191.12	276.85	4441.89	444.19	3997.7	6644.4	310.7	1639.4	8594.5	1639.4	0.0	215.0	OE
JODHPUR	BALESAR	87095	87095	678.91	23.59	15.08	70.78	788.36	78.84	709.52	1887.6	0.0	496.0	2383.6	544.0	0.0	335.9	OE
JODHPUR	BAORI	114906	114906	2406.68	103.26	35.55	309.78	2855.27	285.52	2569.75	8260.9	0.5	1488.0	9749.4	1488.0	0.0	379.4	OE
JODHPUR	BAP	383390	383390	3539.21	29.09	267.04	81.84	3917.18	391.72	3525.46	2218.6	38.9	897.6	3155.1	906.6	370.4	89.5	SC
JODHPUR	BAPINI	126020	126020	2270.53	69.58	64.97	208.73	2613.81	261.38	2352.43	5566.1	0.0	2243.8	7809.9	2243.8	0.0	332.0	OE
JODHPUR	BHOPALGARH	120584	120584	3270.93	81.85	0	245.55	3598.33	359.84	3238.49	6548.0	62.9	623.4	7234.3	623.4	0.0	223.4	OE
JODHPUR	BILARA	101279	101279	2983.86	68.6	0	244.8	3297.26	329.73	2967.53	6268.1	0.0	475.4	6743.5	494.6	0.0	227.2	OE
JODHPUR	DECHOO	127348	127348	2112.21	59.59	63.25	178.74	2413.79	241.38	2172.41	4766.6	0.0	1291.2	6057.8	1291.2	0.0	278.9	OE
JODHPUR	JODHPUR_URBAN	24790	23523.77	403.85	21.68	4.46	47.9	477.89	47.79	430.1	124.6	16.7	378.0	519.2	378.0	0.0	120.7	OE
JODHPUR	LOHAWAT	122420	122420	1986.35	65.85	59.39	197.56	2309.15	230.92	2078.23	5268.2	0.0	1364.8	6633.0	1364.8	0.0	319.2	OE
JODHPUR	LUNI	197895	197895	1989.46	13.12	0	39.35	2041.93	204.2	1837.73	1049.3	555.0	111.4	1715.7	134.4	122.1	93.4	C
JODHPUR	MANDOR_RURAL	101306	101306	870.39	24.96	3.02	74.87	973.24	97.33	875.91	1996.5	0.0	70.1	2066.6	70.1	0.0	235.9	OE

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		a)			(ham)												%	
JODHPUR	OSIAN	106467	106467	1553.48	68.59	38	205.78	1865.85	186.59	1679.26	5487.5	0.0	1910.4	7397.9	1910.4	0.0	440.5	OE
JODHPUR	PHALODI	186601	186601	2436.02	90.31	170.69	270.92	2967.94	296.79	2671.15	7224.6	3.7	902.4	8130.7	902.4	0.0	304.4	OE
JODHPUR	PIPAR CITY	120970	120970	2488.8	64.25	0	239.94	2792.99	279.3	2513.69	6083.7	0.0	342.2	6426.0	342.2	0.0	255.6	OE
JODHPUR	SHEKHALA	95309	95309	1635.56	54.35	43.61	163.04	1896.56	189.66	1706.9	4347.8	0.0	1242.2	5590.1	1242.2	0.0	327.5	OE
JODHPUR	SHERGARH	120888	120888	2509.59	28.47	54.31	85.14	2677.51	267.76	2409.75	2272.2	0.0	543.7	2815.9	663.4	0.0	116.9	OE
JODHPUR	TIWARI	87732	87732	1621.64	87.89	42.49	263.66	2015.68	201.56	1814.12	7031.0	0.0	288.0	7319.0	288.0	0.0	403.4	OE
KARAULI	HINDAUN	63770	57520	4749.25	366.9	17.78	1644.62	6778.55	677.85	6100.7	12179.0	0.1	1006.0	13185.1	1006.0	0.0	216.1	OE
KARAULI	KARAULI	126209	108446	8480.08	1.39	69.03	1825.42	10375.92	1037.6	9338.32	8699.5	0.0	1164.6	9864.0	1164.6	0.0	105.6	OE
KARAULI	MANDRAIL	63430	49341	3715.1	22.55	0	199.86	3937.51	393.76	3543.75	3360.8	0.0	582.0	3942.8	582.0	0.0	111.3	OE
KARAULI	NADOTI	65050	57106	2288.19	53.15	20.22	237.36	2598.92	154.92	2444	1654.4	0.0	563.0	2217.3	563.0	1259.3	90.7	C
KARAULI	SAPOTRA	195881	72608	5656.88	46.75	0	486.48	6190.11	619.02	5571.09	8423.8	0.0	631.2	9055.0	631.2	0.0	162.5	OE
KARAULI	TODABHIM	52950	45221	3796.15	0.09	70.75	457.37	4324.36	432.43	3891.93	9149.0	0.0	890.1	10039.2	890.1	0.0	257.9	OE
KOTA	ITAWA	89851	89751	6117.44	442.31	0	6403.59	12963.34	1296.34	11667	8701.5	0.0	960.9	9662.4	960.9	2004.6	82.8	SC
KOTA	KHAIRABAD	79426	75060	4680.25	246.35	0	879.71	5806.31	580.63	5225.68	4688.9	0.3	1236.8	5926.0	1236.8	207.7	113.4	OE
KOTA	KOTA URBAN	62651	62628	1863.49	55.5	0	238.87	2157.86	215.79	1942.07	842.3	130.6	1255.6	2228.4	1255.6	565.0	114.7	OE
KOTA	LADPURA RURAL	91429	89507	4097.31	312.54	0	815.67	5225.52	522.55	4702.97	2528.0	94.2	2585.6	5207.8	2585.6	813.3	110.7	OE
KOTA	SANGOD	105780	104414	5012.22	1209.32	0	4300.66	10522.2	1052.22	9469.98	12221.8	0.0	1216.2	13438.1	1216.2	2866.0	141.9	OE
KOTA	SULTANPUR	91257	90957	6542.8	537.5	0	5479.67	12559.97	1256	11303.97	7229.5	52.4	1296.9	8578.8	1296.9	75.9	75.9	SC
NAGAUR	DEGANA	146334	146334	3886.45	82.46	86.62	290.44	4345.97	217.3	4128.67	7457.9	186.0	1632.0	9275.9	1836.8	0.0	224.7	OE
NAGAUR	DIDWANA	97718	97718	3033.64	23.88	130.11	89.27	3276.9	327.69	2949.21	2263.0	0.3	1103.2	3366.5	1103.2	0.0	114.1	OE
NAGAUR	JAYAL	167771	167771	3570.24	58.64	244.74	175.91	4049.53	404.95	3644.58	4690.8	336.0	1520.0	6546.8	1552.0	0.0	179.6	OE
NAGAUR	KHEENV SAR	191741	191741	4815.67	150.52	107.61	451.56	5525.36	552.54	4972.82	12041.7	0.0	2030.4	14072.1	2030.4	0.0	283.0	OE

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		a)			(ham)												%	
NAGAU	KUCHAMAN CITY	71031	71031	3113.53	59.55	145.74	178.65	3497.47	349.75	3147.72	4763.9	450.0	856.8	6070.7	856.8	0.0	192.9	OE
NAGAU	LADNU	153008	153008	4789.08	51.58	378.81	174.67	5394.14	269.7	5124.44	4525.1	0.0	935.0	5460.0	1011.8	0.0	106.5	OE
NAGAU	MAKRANA	114008	114008	5386.78	39.68	157.94	143.73	5728.13	572.82	5155.31	3668.2	0.0	1644.0	5312.2	1692.0	0.0	103.0	OE
NAGAU	MERTA	154192	154192	4456.73	170.62	0	511.85	5139.2	513.93	4625.27	13649.5	86.4	72.0	13807.9	168.0	0.0	298.5	OE
NAGAU	MOLASAR	66042	66042	2872.08	46.73	123.18	163.59	3205.58	320.56	2885.02	4206.3	0.0	993.6	5199.9	993.6	0.0	180.2	OE
NAGAU	MUNDWA	151537	151537	3365.12	142.15	131.9	441.66	4080.83	408.09	3672.74	11676.3	78.0	149.6	11903.9	149.6	0.0	324.1	OE
NAGAU	NAGAU	157778	157778	2595.64	28.46	55.62	85.38	2765.1	276.52	2488.59	2276.8	9.6	628.8	2915.3	680.0	0.0	117.1	OE
NAGAU	NAWA	79682	79682	1796.71	50.73	108.78	152.2	2108.42	210.84	1897.58	4058.7	0.0	684.8	4743.5	841.6	0.0	250.0	OE
NAGAU	PARBATSAR	107170	107170	3373.78	49.93	129.77	122.76	3676.24	183.82	3492.42	3453.9	1.4	847.4	4302.6	847.4	0.0	123.2	OE
NAGAU	RIYAN BARI	113814	113814	5612.74	94.59	0	291.6	5998.93	599.89	5399.04	7723.8	0.0	506.9	8230.7	506.9	0.0	152.4	OE
PALI	BALI	144980	94375	3811.84	184.24	0	406.96	4403.04	440.31	3962.73	5648.2	1.0	411.2	6060.4	411.2	0.0	152.9	OE
PALI	DESURI	81540	56531	2377.42	134.18	0	539.9	3051.5	305.15	2746.35	4280.2	0.0	370.7	4650.9	370.7	0.0	169.3	OE
PALI	JAITARAN	137741	124610	6265.78	0.02	0	432.66	6698.46	669.85	6028.61	8652.7	347.0	866.0	9865.7	912.6	0.0	163.6	OE
PALI	KHARCHI (MARWAR JUNCTION)	140407	125288	4196.63	34.89	0	366.88	4598.4	459.84	4138.56	6614.7	4.0	512.1	7130.8	544.3	0.0	172.3	OE
PALI	PALI	138703	127991	1150.22	36.56	0	102.61	1289.39	128.94	1160.45	760.5	101.0	56.8	918.3	61.5	242.2	79.1	SC
PALI	RAIPUR	109222	65625	2156.29	0	0	183.1	2339.39	233.94	2105.45	3550.1	14.0	136.4	3700.5	136.4	0.0	175.8	OE
PALI	RANI STATION	78204	73906	2555.18	0	0	219.4	2774.58	277.46	2497.12	3482.5	0.0	442.9	3925.4	442.9	0.0	157.2	OE
PALI	ROHAT	140775	137790	328.97	5.63	0	16.76	351.36	35.14	316.22	89.6	4.0	6.9	100.5	6.9	215.7	31.8	safe
PALI	SOJAT	168155	154535	3674.4	69.98	0	210.17	3954.55	395.46	3559.09	4446.9	0.0	331.8	4778.7	331.8	0.0	134.3	OE
PALI	SUMERPUR	95973	94488	2532	0	0	1374.09	3906.09	390.61	3515.48	4654.0	1.0	285.6	4940.5	285.6	1035.3	140.5	OE
PRATAPGARH	ARNOD	66307	56335	2682.04	0.95	0	890.52	3573.51	357.35	3216.16	4690.5	0.0	123.0	4813.6	123.0	0.0	149.7	OE
PRATAPGARH	CHHOTI SADRI	70304	54238	2215.31	0.69	0	737.38	2953.38	295.34	2658.04	3915.0	0.0	55.4	3970.4	55.4	0.5	149.4	OE

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PRATAPGARH	DHARIAWAD	88294	45856	1222.01	5.54	0	658.86	1886.41	188.65	1697.76	1533.2	19.0	127.4	1679.5	127.4	21.4	98.9	C
PRATAPGARH	PEEPALKHOONT	84086	48350	1867.18	46.54	0	1383.3	3297.02	329.7	2967.32	1907.4	0.0	88.8	1996.1	88.8	971.2	67.3	safe
PRATAPGARH	PRATAPGARH	126989	90260	7303.16	115.97	0	3115.75	10534.88	1052.95	9481.93	12844.6	0.0	151.4	12996.0	151.4	10.3	137.1	OE
RAJSAMAND	AMET	52356	46519	842.37	15.53	81.6	162.48	1101.98	110.2	991.78	1139.2	118.3	173.0	1430.5	173.0	0.0	144.2	OE
RAJSAMAND	BHIM	68739	33716	828.31	4.56	88.5	200.79	1122.16	112.22	1009.94	1203.3	0.0	150.0	1353.3	150.0	0.0	134.0	OE
RAJSAMAND	DEOGARH	61701	39076	689.89	9.32	63.86	190.33	953.4	95.34	858.06	829.1	0.5	197.8	1027.4	197.8	0.0	119.7	OE
RAJSAMAND	KHAMNOR	79168	67586	1707.55	25.92	124.07	539.13	2396.67	239.67	2157	1336.1	19.2	659.8	2015.2	659.8	145.1	93.4	C
RAJSAMAND	KUMBHALGARH	78835	53656	1659.74	0	117.19	214.57	1991.5	199.15	1792.35	1393.0	3.8	352.8	1749.6	352.8	42.8	97.6	C
RAJSAMAND	RAILMAGRA	60814	60018	1263.76	24.43	87.38	424.53	1800.1	180.01	1620.09	1954.2	123.4	245.9	2323.4	245.9	0.0	143.4	OE
RAJSAMAND	RAJSAMAND	61933	53438	715.06	82.97	62.65	1149.59	2010.27	201.03	1809.24	2061.8	126.5	359.1	2547.4	359.1	173.5	140.8	OE
SAWAI MADHOPUR	BAMANWAS	72110	65655	5860.51	23.35	0	2561.37	8445.23	844.52	7600.71	11655.2	0.0	874.1	12529.3	874.1	0.0	164.8	OE
SAWAI MADHOPUR	BONLI	100450	98338	5093.06	612.85	0	1597.96	7303.87	730.39	6573.48	8176.1	0.1	1610.4	9786.6	1610.4	0.0	148.9	OE
SAWAI MADHOPUR	CHAUTH KA BARWARA	43900	40666	2652.5	60.47	0	382.41	3095.38	309.54	2785.84	3329.9	0.0	649.6	3979.5	649.6	0.0	142.8	OE
SAWAI MADHOPUR	GANGAPUR	64550	49892	4852.31	685.43	0	1762.95	7300.69	730.08	6570.61	10061.0	14.6	2201.2	12276.8	2201.2	0.0	186.8	OE
SAWAI MADHOPUR	KHANDAR	145381	105075	7230.12	103.6	0	1357.42	8691.14	869.11	7822.03	10622.2	0.2	1471.7	12094.1	1471.7	0.0	154.6	OE
SAWAI MADHOPUR	SAWAI MADHOPUR	75674	73224	6558.67	456.9	0	1227.93	8243.5	824.35	7419.15	12514.4	66.1	1029.5	13610.0	1029.5	0.0	183.4	OE
SIKAR	DANTA RAMGARH	121051	114045	4803.08	280.79	180.95	399.58	5664.4	566.44	5097.96	10239.9	4.4	1343.0	11587.3	1343.0	0.0	227.3	OE
SIKAR	DHOND	91115	90400	4198.02	211.33	253.9	330.22	4993.47	499.35	4494.12	9250.8	111.5	1194.1	10556.4	1194.1	0.0	234.9	OE
SIKAR	FATEHPUR	129123	129123	3429.68	43.55	336.3	53.48	3863.01	386.3	3476.71	1387.2	0.0	2570.2	3957.4	2570.2	0.0	113.8	OE

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

District	Block	Total Area Assessment it (Ha)	Recharge Worthy Area (Ha)	Recharge from Rainfall- Monsoon Season	Recharge from Other Source s- Monso on Season	Recharge from Rainfall- Non Monsoon Season	Recharge from Other Sources- Non Monsoon Season	Total Annual Ground Water Recharge	Total Natura l Discha rges	Annual Extracta ble Ground Water Resource	Ground Water Extraction for Irrigation Use	Ground Water Extraction for Industria l Use	Ground Water Extraction for Domestic Use	Total Extraction	Annua l GW Allocatio n for Domestic Use as on 2025	Net Gro und Water Ava ilab ility for futu re use	Stage of Grou nd Water Extra ction	Categ ory
		a)			(ham)												%	
SIKAR	KHANDELA	74346	69399	2651.33	214.29	145.8	200.06	3211.48	321.15	2890.33	4043.2	0.0	850.3	4893.5	850.3	0.0	169.3	OE
SIKAR	LACHHMANGARH	105162	105162	3761.09	123.5	284.71	217.27	4386.57	219.33	4167.24	6374.1	0.0	2125.7	8499.8	2125.7	0.0	204.0	OE
SIKAR	NEEM KATHANA	71823	58562	2445.89	153.27	115.98	189.75	2904.89	290.49	2614.4	4939.0	16.0	728.6	5683.6	728.6	0.0	217.4	OE
SIKAR	PATAN	47889	28956	971.41	47.34	46.06	57.25	1122.06	112.21	1009.85	1303.8	0.0	348.5	1652.3	348.5	0.0	163.6	OE
SIKAR	PIPRALI	80766	74383	2185.8	491.75	198.3	290.58	3166.43	316.65	2849.78	5286.5	3.8	1118.1	6408.4	1118.1	0.0	224.9	OE
SIKAR	SRIMADHOPUR	66810	65662	3790.68	178.84	196.94	276.64	4443.1	444.31	3998.79	7856.9	81.9	603.7	8542.6	603.8	0.0	213.6	OE
SIROHI	ABU ROAD	83817	33106	2387.17	150.25	0	467.28	3004.7	300.47	2704.23	2609.3	48.1	343.7	3001.0	343.7	0.0	111.0	OE
SIROHI	PINDWARA	115690	88290	5483.04	183.65	0	413.35	6080.04	608.01	5472.03	4460.2	273.2	284.2	5017.6	284.2	45.5	91.7	C
SIROHI	REODAR	108676	98580	6451.37	234.7	0	650.43	7336.5	733.65	6602.85	10798.3	0.0	345.6	11144.0	345.6	0.0	168.8	OE
SIROHI	SHEOGANJ	88742	77289	5268.08	93.4	0	230.92	5592.4	559.24	5033.16	5500.4	0.4	258.6	5759.4	258.6	0.0	114.4	OE
SIROHI	SIROHI	116675	110305	6398.98	132.84	0	355.84	6887.66	688.76	6198.9	5792.2	19.0	455.0	6266.2	455.0	0.0	101.1	OE
TONK	DEOLI	124209	124209	5900.37	421.98	0	1483.91	7806.26	780.63	7025.63	4411.7	3.0	1439.6	5854.4	1439.6	117.3	83.3	SC
TONK	MALPURA	146447	79278	2976.2	1184.4	0	1909.32	6069.94	602.4	5467.54	6156.1	3.0	1340.6	7499.8	1340.6	87.3	137.2	OE
TONK	NIWAI	106187	59453	2609.73	460.73	0	835.58	3906.04	389.79	3516.25	3343.0	23.0	1129.9	4495.9	1129.9	15.7	127.9	OE
TONK	TODARASINGH	102702	91114	3650.69	267.12	0	1180.31	5098.12	315.45	4782.66	2574.1	1.0	964.0	3539.1	964.1	129.3	74.0	SC
TONK	TONK	141423	137890	7114.19	1021.0	0	3084.45	11219.73	1121.9	10097.7	7753.1	6.0	2234.8	9993.9	2234.8	103.8	99.0	C
TONK	UNIARA	99038	96230	6174.06	473.39	0	2461.99	9109.44	910.94	8198.5	5311.3	0.0	3440.7	8752.0	3440.7	0.0	106.8	OE
UDAIPUR	BARGAON	46644	26284	850.54	20.71	0	283.3	1154.55	115.45	1039.1	528.3	788.4	121.7	1438.5	121.7	25.9	138.4	OE
UDAIPUR	BHINDAR	108631	90615	2487.5	33.69	0	940.5	3461.69	346.17	3115.52	2534.5	94.7	337.0	2966.2	337.0	149.3	95.2	C
UDAIPUR	GIRWA RURAL	83519	58200	1941.07	40.18	0	606.66	2587.91	258.78	2329.13	1598.9	458.2	168.9	2226.0	168.9	103.1	95.6	C

Dynamic Ground Water Resources of Rajasthan-As on 31st March 2022

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		a)			(ham)												%	
UDAIPUR	GOGUNDA	51400	34022	1178.62	8.34	0	366.54	1553.5	155.36	1398.14	1233.7	3.1	117.6	1354.4	117.7	43.7	96.9	C
UDAIPUR	JHADOL	72752	37443	856.49	22.54	0	346.93	1225.96	122.6	1103.36	842.1	0.2	189.1	1031.4	189.1	72.0	93.5	C
UDAIPUR	JHALARA	53503	38944	1255.1	1.71	0	808.81	2065.62	206.56	1859.06	1466.1	1.0	107.9	1575.0	107.9	284.1	84.7	SC
UDAIPUR	KHERWARA	66729	48568	949.68	7.25	0	294.8	1251.73	125.18	1126.55	846.5	17.0	269.8	1133.3	269.8	14.5	100.6	OE
UDAIPUR	KOTRA	176112	62780	1693.66	30.93	0	752.31	2476.9	247.7	2229.2	2112.3	0.0	176.4	2288.7	176.4	76.9	102.7	OE
UDAIPUR	KURAWAR	50361	36180	999.49	20.79	0	645.25	1665.53	166.55	1498.98	937.2	387.1	141.6	1465.9	141.6	256.6	97.8	C
UDAIPUR	LASADIYA	49375	34814	877.7	0	0	280.67	1158.37	115.84	1042.53	1107.9	0.0	115.3	1223.2	115.3	0.0	117.3	OE
UDAIPUR	MAVLI	80858	78357	2365.77	6.86	0	1020.02	3392.65	339.26	3053.39	3665.8	152.4	115.9	3934.1	115.9	0.0	128.8	OE
UDAIPUR	PHALASIYA	74222	38200	873.82	0	0	211.12	1084.94	108.49	976.45	844.5	0.0	124.1	968.6	124.1	7.8	99.2	C
UDAIPUR	RISHABHDEV	42128	30662	639.75	56.19	0	674.28	1370.22	137.03	1233.19	1138.0	10.5	125.3	1273.8	125.3	103.8	103.3	OE
UDAIPUR	SALUMBAR	48797	35519	1144.72	67.54	0	1186.69	2398.95	239.89	2159.06	1765.8	10.0	192.4	1968.2	192.4	367.8	91.2	C
UDAIPUR	SARADA	72759	55684	1245.08	68.58	0	1077.5	2391.16	239.12	2152.04	1855.7	2.8	207.0	2065.4	207.0	86.6	96.0	C
UDAIPUR	SAYRA	56356	37241	1082.19	0	0	280.63	1362.82	136.28	1226.54	1110.4	1.2	120.2	1231.7	120.2	0.0	100.4	OE
UDAIPUR	SEMARI	35514	27179	646.25	2.33	0	279.23	927.81	92.79	835.02	631.7	0.0	125.4	757.1	125.4	94.1	90.7	C
UDAIPUR	UDAIPUR_URBAN	6400	6400	161.05	161.07	0	364.63	686.75	68.67	618.08	0.0	95.3	514.8	610.1	514.8	7.9	98.7	C



Meeting of the State Level Committee - Ground Water Resources Assessment 2022 of Rajasthan was held on 22.09.2022 at Secretariat, Jaipur under the chairmanship of Sh. Subodh Agarwal, IAS, Additional Chief Secretary, PHED and GWD, Govt. of Rajasthan for approval of the Dynamic Ground Water Resources of Rajasthan, as on 31-03-2022. SLC approved the GWRA Rajasthan as on 2022. Sh. Pramod Kumar Tripathi, Regional Director, WR, Dr. R.K.Kushwaha, Scientist-E, Smt. Preeti Pandey, Sc-C, Sh. R.K.Verma, Sc-C and Sh. S.K.Pareek, Sc-D attending the meeting. SLC approved the GWRA Rajasthan as on 2022.



Workshop to give training for working on INGRES software - Ground Water Resources Assessment 2022 of Rajasthan held on 30.04.2022 at Conference hall, CGWB, Jaipur. Member,CGWB, Chief Engineer, GWD, Regional Director, CGWB, Director Admin, CGWB, Officers from CGWB, GWD and experts from IIT-Hyderabad and Vassar labs attended the workshop