CENTRAL GROUND WATER BOARD

DEPARTMENT OF WATER RESOURCES, RD & GR,

MINISTRY OF JAL SHAKTI

GOVERNMENT OF INDIA

INCEPTION REPORT ON NAQUIM-2.0 OF SRINAGAR URBAN AREA J & K

AAP: 2023-24

NORTH WESTERN HIMALAYAN REGION, JAMMU

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INCEPTION REPORT ON NAQUIM-2.0 OF SRINAGR URBAN AREA J & K

1	**STUDY AREA**	**Srinagar Urban Area covering parts of Srinagar, Budgam, Ganderbal, Pulwama, Baramulla and Bandipora districts J&K UT**
1.1	**Area**	875 km^2
1.2	**Latitude**	33.93 to 34.25 N latitudes
1.3	**Longitude**	74.56 and 75.05 E longitude
1.4	**Geomorphology**	Alluvial Plains
1.5	**Drainage**	Jehlum River and its tributaries
1.6	**Soil type**	Alluvial soils: Hapludalfs, medium to fine textural soils texture varies from clay loam to silty clay loam. The colour of the soils varies from Yellowish Brown to dark Brown. Ochraqualfs, These are dark brown to dark yellowish Brown in colour.
1.7	**Geology**	Karewas & Paleozoic Sedimentaries. These formations are overlain by a thin mantle of Recent alluvium. The Karewas are overlying the folded Zeewan formation & Panjal volcanics. Three formation overlie the area viz Karewa Nagum formation, Karewa dilpur formation and Alluvium
2	**PRIORITY TYPE**	Semi - Critical
3	**PREVIOUS STUDIES**	
3.1	**Reappraisal Survey**	Nil
3.2	**NAQUIM report of Gurur block 2016-17**	NAQUIM studies carried out in Kashmir Valley covering the Srinagar Urban Area, however separate studies has not been carried out in the area.
3.3	**Resource Assessment**	As per GEC-2022 the stage of groundwater development is 73.857% and is categorized as Semi-Critical. The annual extractable groundwater resource is 4.44 BCM, whereas the total draft is 1.07 BCM.
3.4	**District Brouchurs**	District Brouchurs of Srinagar, Baramulla, Bandipora, Budgam, Pulwama and Ganderbal districts 2021 prepared
3.4	**Published Paper**	Gh. Jeelani and Nadeem A. Bhat, (2010) Hydrogeochemical assessment of groundwater in Baramulla district, Kashmir valley, Journal of Applied Hydrology G H Jeelani et.al. (2014) Hydrogeochemical assessment of groundwater in Kashmir Valley, India, Journal of Earth System Science K. Brindha et.al. Trace metals contamination in groundwater and implications on human health: comprehensive assessment using hydrogeochemical and geostatistical methods, Environmental

		Geochemical Health
4	**OBJECTIVES OF THE PRESENT STUDY**	The objectives of the present study is to know: 1. Aquifer Dispositions. 2. Aquifer-wise ground water Water Levels. 3. Delineation of Recharge Areas. 4. Estimation/Refinement of parameters used for resource assessment. 5. Assessment of ground water resources. 6. Ground Water Quality. 7. Areas showing signs of subsidence. 8. Ground Water Quality Management Interventions, including demarcation of safer aquifers. 9. Artificial Recharge Plan. 10. Identification of potential aquifers for drinking water supply 11. A plan for drinking water source sustainability. 12. Finally, to evolve a block-level management plan which is implementable.
5	**EXISTING DATA**	
		Number
5.1	**Exploratory Well**	20
5.2	**Observation Well/ Peizometer**	3
5.3	**VES/TEM**	46
5.4	**NHS**	1
5.5	**Water Quality**	1
5.6	**Infiltration Test**	Nil
5.7	**Pumping Tests**	Nil
6	**AQUIFER WISE DATA GAP ANALYSIS**	
		No of Additional Structures Required
6.1	Alluvium Formation	EW/OW/PZ - 45 VES/TEM - 11 upto 300 m Water Level - 45 (Monitoring Wells DW/BW) Water Sample - 80 Infiltration Test - 18 Pumping Tests/Slug Test - 45
6.2	Dilpur Formation	EW/OW/PZ - 10 VES/TEM - 5 upto 300 m Water Level - 10 (Monitoring Wells DW/BW) Water Samples - 15 Infiltration Test - 8 Pumping Tests/Slug Test - 10
6.3	Nagum Formation	EW/OW/PZ - 5 VES/TEM - 4 upto 300 m

		Water Level - 5 (Monitoring Wells DW/BW) Water Quality - 5 Infiltration Test - 4 Pumping Tests/Slug Test - 5

7. NEW DATA GENERATION

7.1 Activity wise monthly targets for new data generation

S. No	Deliverables	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan		
1	Establishment of new wells and aquifer property											
2	Sample Collection											
3	Analysis of the Water Quality Data											
4	VES/TEM											
5	Demand Assessment											
6	Rainfall Infiltration Test											
7	Pumping test/Slug test											
8	Farmer Feedback											

7.2 Plan for integration with other ongoing activities

- Addition of refined parameters in the calculation of GWRA-2023
- Preparation of recharge plan according to abstraction structures proposed in Jal Jeevan Mission and Nal Jal Yojna.

8. MONTH-WISE ACTIVITY PLAN

S. No	Deliverables	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	Aquifer Dispositions											
2	Aquifer-wise ground water Water Levels											
3	Delineation of Recharge Areas											
4	Estimation/Refinement of parameters used for resource assessment											
5	Assessment of ground water resources											
6	Ground Water Quality											
7	Areas showing signs of subsidence											
8	Ground Water Quality Management Interventions including demarcation of safer aquifers											
9	Artificial Recharge Plan											
10	Other measures including meeting with state officials for additional data generation and presentation to the DM/DCs											
11	Identification of potential aquifers for drinking water supply											
12	A plan for drinking water source sustainability											

9. COMPOSITION OF TEAM

Team Lead	- Sujeet Kumar	Hydrogeologist (Sc-D)
Expert (Hydrogeology)	- Rayees Ahmad Pir - Abid Khan	Hydrogeologist (Sc-B) Asst. Hydrogeologist
Expert (Hydrochemistry)	- Partha Mondal	STA Chemist
Expert (Geophysics)	- Gulshan Kumar	STA (Geophysicist)

10. TEAM-MEMBER-WISE RESPONSIBILITIES AND MONTHLY TARGETS FOR ENTERING IN THE MIS

10.1 Role and Responsibility

Role	Responsibilities	Indicative Designation
Team Lead Sujeet Kumar (Sc-D)	- Planning, Supervision and Execution of the Project - Work distribution and monitoring of activities of other team members - Preparation of the inception report. - Timely Delivery of the envisaged Outputs - Finalisation of the management plan - Presentations at different forums, sharing of the outputs. - Preparation of the draft report as per the approved Quality Standards and its Final Submission. - Other members of the team will assist the team lead.	Hydrogeologist
Expert (Hydrogeology) 1 & 2	- Field Data Collection (Exploration, Pz construction, Water Level, Water Quality, Pumping Tests, Infiltration tests, demand/supply data, sample surveys and others) - Sample collection for quality studies - Secondary Data collection - Entering data in database (WIMS) - Integration of data, preparation of thematic maps, preparation cross sections etc. - Consultation with allied experts like agriculture, irrigation, agro-economics etc. - Preparation of Management Plan - Assisting the Team Lead in preparing maps and reports	Hydrogeologist

Expert (Hydrochemistry)	- Analysis of samples. - Integration with existing data - Validation and interpretation of data - Entering data in database (WIMS) - Preparation of Tables, graphs and maps for reports - Assisting the Team Lead in preparing the reports	Chemist
Expert (Geophysics)	- Field Geophysical Surveys - Interpretation of field data - Entering data in database (WIMS) - Integration with existing geophysical and lithology data - Preparation of inferred lithologs - Suggesting potential sites for construction of water wells/artificial recharge - Preparation of Tables, graphs and maps for reports - Assisting the Team Lead in preparing the Report	Geophysicist

10.2 Monthly Target for entering in the MIS

Team Lead Sujeet Kumar (Sc-D)	**April** – Planning, Supervision and Execution of the Project and Preparation of Inception Report
	May - Work distribution and monitoring of activities of other team members
	- **June** - Monitoring of activities of other team members, Timely Delivery of the envisaged Outputs.
	July - Monitoring of activities of other team members
	August - Data Analysis and Interpretation
	September - Data Analysis and Interpretation
	Octuber – Preparation for Midterm Work-Shop for NLEC
	November - Monitoring of activities of other team members and preparation of Management Plan. Timely Delivery of the envisaged Outputs
	December - Sample Surveys and User Feedback
	January – Supervision for preparation of Draft Report
	February –
	March -
Expert (Hydrogeology)- Rayees Ahmad Pir (Sc-B) Abid Khan (AHg)	- **May** - Field Data Collection and other ongoing field activities.
	- **June** - Field Data Collection
	- **July** – Data entry in WIMS
	- **August** - Data entry in WIMS and other ongoing field activities.
	- **September** - Data Analysis and Interpretation

	- **Octuber** – Preparation for Midterm Work-Shop for NLEC
	- **November** - Field Data Collection and preparation of Management Plan and other ongoing field activities.
	- **December** - Sample Surveys and User Feedback and Data entery in WIMS
	- **January** – Preparation of Draft Report and other ongoing field activities.
	- **February** – Field Truthning of Management Plan and other ongoing field activities.
	- **March -** Sharing of the reports with CHQ, SGWCC and DM/DC and other ongoing field activities.
Expert (Geophysics) Gulshan Kumar (STA.Gp)	- **May** - Field Geophysical Data Collection and other ongoing field activities.
	- **June** - Field Data Collection
	- **July** – Data Interpretaion and selection of sites suitable for drilling and Data entery in WIMS.
	- **August** - Data entry in WIMS and other ongoing field activities.
	- **September** - Data Analysis and Interpretation
	- **Octuber** – Preparation for Midterm Work-Shop for NLEC
	- **November** - Field Data Collection and preparation of Management Plan and other ongoing field activities.
	- **December** - Data entry in WIMS
	- **January** – Preparation of Draft Report and other ongoing field activities.
	- **February** – Field Truthning of Management Plan and other ongoing field activities.
	- **March -** Sharing of the reports with CHQ, SGWCC and DM/DC and other ongoing field activities.
Expert (Hydro chemistry) Partha Mondal (STA)	- **May** - Field Sample Data Collection and other ongoing field activities.
	- **June** - Field sample Collection and analysis.
	- **July** – Field sample Collection and analysis. and Data entery in WIMS.

	- **August -** Data entry in WIMS and other ongoing field activities.
	- **September -** Data Analysis and Interpretation
	- **Octuber** – Preparation for Midterm Work-Shop for NLEC
	- **November -** Field Data Collection and preparation of Management Plan and other ongoing field activities.
	- **December -** Data entery in WIMS
	- **January** – Preparation of Draft Report and other ongoing field activities.
	- **February** – Preparation of Draft Report and other ongoing field activities.
	- **March -** Sharing of the reports with CHQ, SGWCC and DM/DC and other ongoing field activities.