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Qualityof Ground Water Assessment in Salem Districtusing GIS Techniques

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ABSTRACT: Salem is known for the basic refractory industry in Tamil Nadu. It generally contributes to the economic development but at the same time destroys the natural environment.Magnesite is mined from three large mines in Salem. The mine site of Magnesite covers considerable area and the low grade Magnesite ores are dumped around the mines. The overdumping of magnesite could result in environmental pollutionand cause lowering of water level and deterioration in surface and ground water quality.The study is conducted in and around the magnesite mines to identify the concentration of the different contaminants in the groundwater. Analyses were conducted to determine the hydrochemical characteristics of 50 ground water samples around magnesite mines featuring the deposits of sodium, calcium, magnesium, fluoride, chloride and nitrate. The spatial distribution of groundwater is also presented.

KEYWORDS: Ground water, Magnesite, Spatial distribution Diagram

I. INTRODUCTION

Ground water is a critical component of the water resources in earth. Approximately 25 percent of the earth's total fresh water supply is stored as ground water. The evaluation of our ground water quality is complex.The contamination of the groundwater occurs due to many activities. It can be sudden release due to accidents and gradual release from the adverse industrial and agricultural practices. When contamination is suspected in a particular area, a qualitative or quantitative risk assessment has to be performed to evaluate the significance of the contamination and its risks.

According to P.L.Younger, the surface mining removes the part of the aquifer when the mines are excavated into aquifer materials. This also leads to the increase in vulnerability for the surrounding aquifer resources. The leachate water and runoff water from waste dumps also contaminate nearby water streams. From the study of Nebojsa et al, it is also found that during the course of exploration, extraction and processing of mineral ores, considerable amounts of solid and liquid waste are generated and accompanied by emissions of particulate matter and harmful gases into the atmosphere. Due to uncontrolled discharges of mine water, abandoned mines can act as pollution sources for a longer time.

R.K.Tiwary et al states that "In the process of development, mining is one of the core industry contributing towards the deterioration of the environment in terms of air, water and land pollution". In India, Magnesite mines becomes the major profit earing sector in short time. The refractory industries are the back bone of nation as the demand for the refractory bricks is increasing every year. The mine site of Magnesite covers considerable area and the low grade Magnesite ores are dumped around the mines. This may cause chemical reaction of ores with rain water which in turn contaminates the ground water. The impact of surface mining on natural hydrogeology is severe. Hence it is essential for the evaluation of ground water quality around the mines.

This paper aims at the evaluation of the different physical and chemical contaminants and their concentration in the groundwater in the sites choosen in and around the magnesite mines in salem. The spatial distribution for the groundwater quality in the study area is also prepared to estimate the effect of contamination in groundwater in the 50 samples.

II. STUDY AREA

Salem in Tamil Nadu, which was known for the basic refractory industry in the country is chosen as the study area. Magnesite is the chief raw material for basic refractories. It is being mined from three large mines located in Salem. In

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addition to magnesite, dunite, one of the host rocks of mineralization, is also being mined. The deposits occupy numerous N-S trending small and moderately high hillocks (ranging in height from 5m to 70m from the mean ground surface). The average temperatures range from 37ºC to – 43ºC and the average rainfall for the district is 972.3mm. Topography of the study area contains generally plain land and undulating terrain only. Occasionally there are some ridges and valleys. Predominantly soil groups in the study area belong to Blackcotton, Gravel and mixture of clay loamy soil.

III. SAMPLE STATIONS AND SAMPLE COLLECTION:

The sample stations are chosen around the magnesite mines in salem to assess the quality of ground water. The preliminary and reconnaissance survey has been carried out to make the samples observation points for ground water collection. Water samples has been collected from the study area and a hand held GPS with 5m accuracy was used to get the spatial data for fifty water samples. The location of 50 stations is shown in the figure 1.

Water samples are collected in polythene bottles from the sample stations in the study area . Before the sample collection, bottles were thoroughly cleaned followed by repeated washing with de-ionized water. Collected water samples were transferred to laboratories and stored in refrigerator at 4ºc till the sample analysis. The samples of ground water is analysed to determine the chemical parameters namely Ph, Electrical Conductivity, Total Dissolved Solids, Total Hardness, Calcium Hardness, Magnesium Hardness, Fluoride, Total Alkalinity, Chloride, Sodium and Sulphate to understand the effect of magnesite in the ground water.

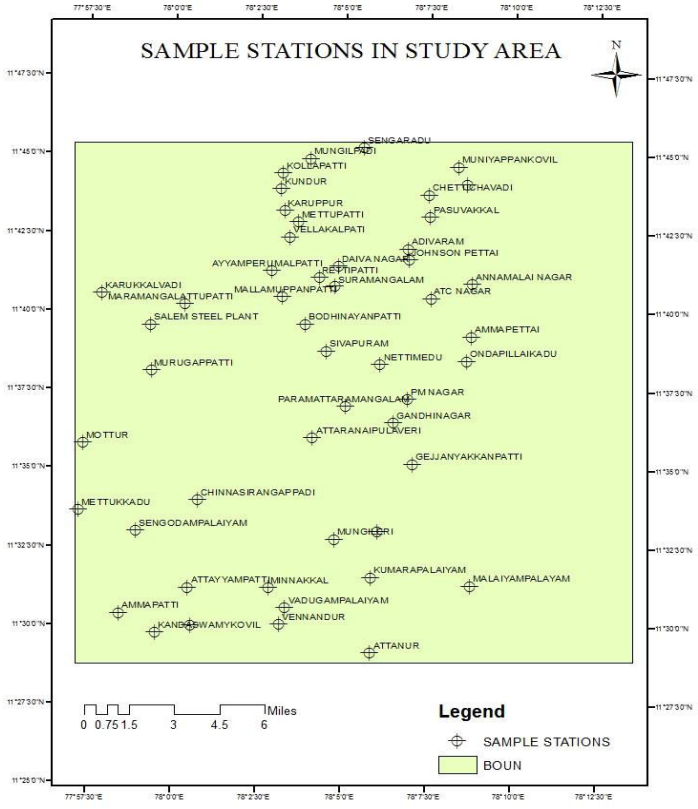

Figure 1: Location of Sample Stations in Salem

IV. SAMPLE ANALYSIS AND RESULTS:

Ground water quality assessment is carried out to determine the suitability of water samples in terms of drinking, domestic and agricultural purposes. The portability of drinking water from domestic well samples is mainly based on recommended permissible limits for certain parameters described in BIS, WHO and ICMR limits for drinking water. The results of the research are presented in table 1. The obtained results were compared with standard values prescribed

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by the Bureau of Indian Standard (BIS), World Health Organisation (WHO) and Indian Council of Medical Research (ICMR).

V. SPATIAL DISTRIBUTION OF GROUNDWATER

The results obtained from the parameter testing is integrated with the digitized map of the study area using Arc GIS 10.1 to produce the ArcGIS profile which shows the spatial distribution of individual parameters in Salem region, using IDW (Inverse Distance Weighted) technique. The spatial distribution diagram for different parameters is shown in figure 2 to figure 10.

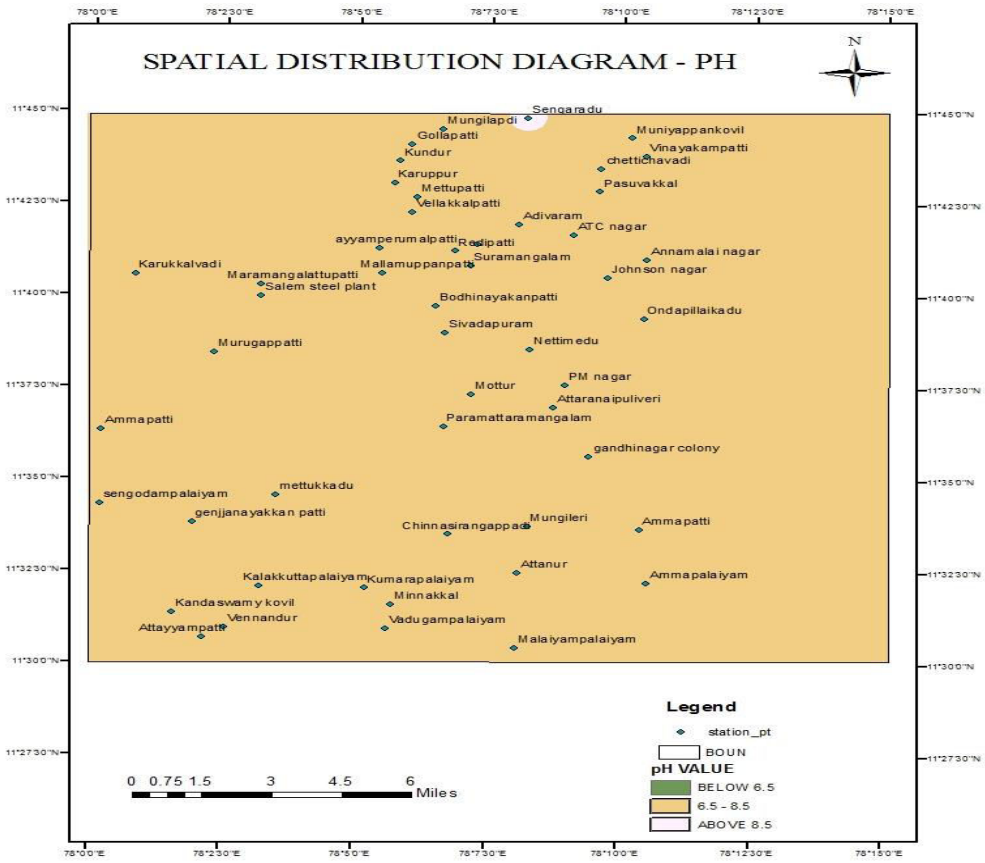

Figure 2: Spatial Distribution Diagram for pH in Study Area

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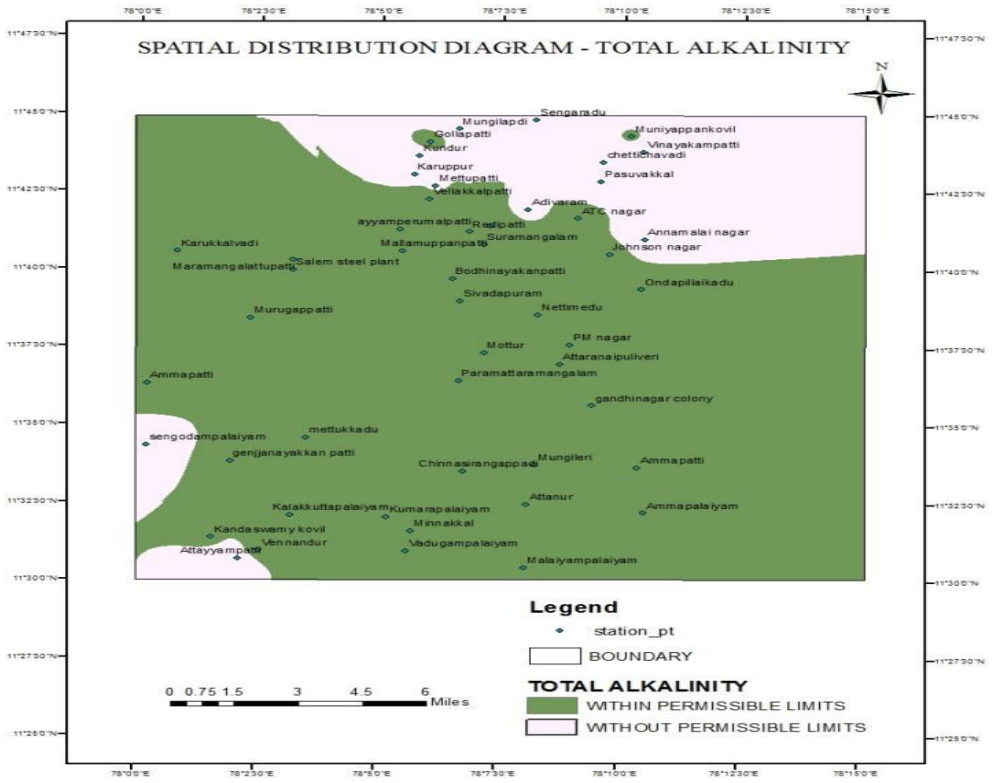

Figure 3: Spatial Distribution Diagram for Total Alkalinity in Study Area

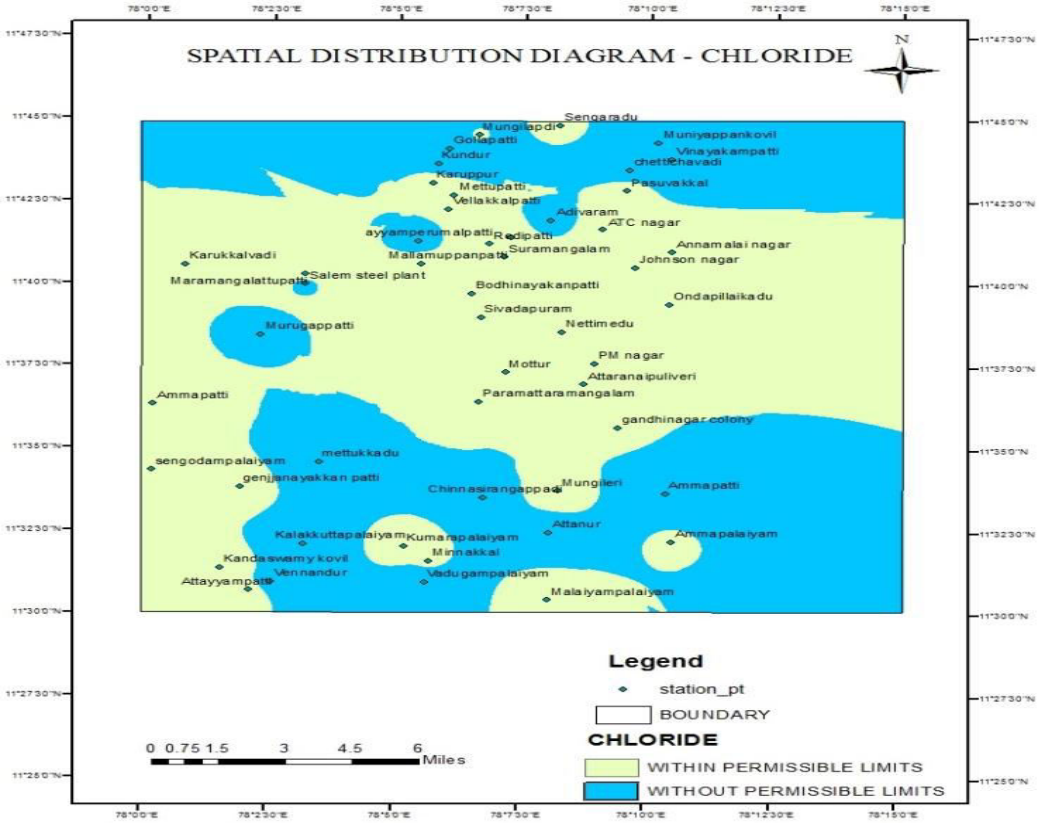

Figure 4: Spatial Distribution Diagram for Chloride in Study Area

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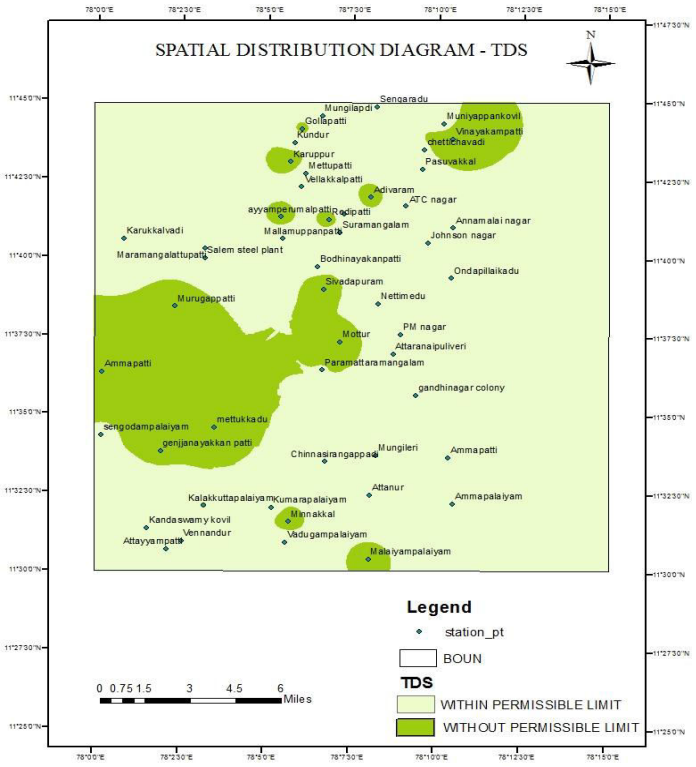

Figure 5: Spatial Distribution Diagram for Total Dissolved Solids in Study Area

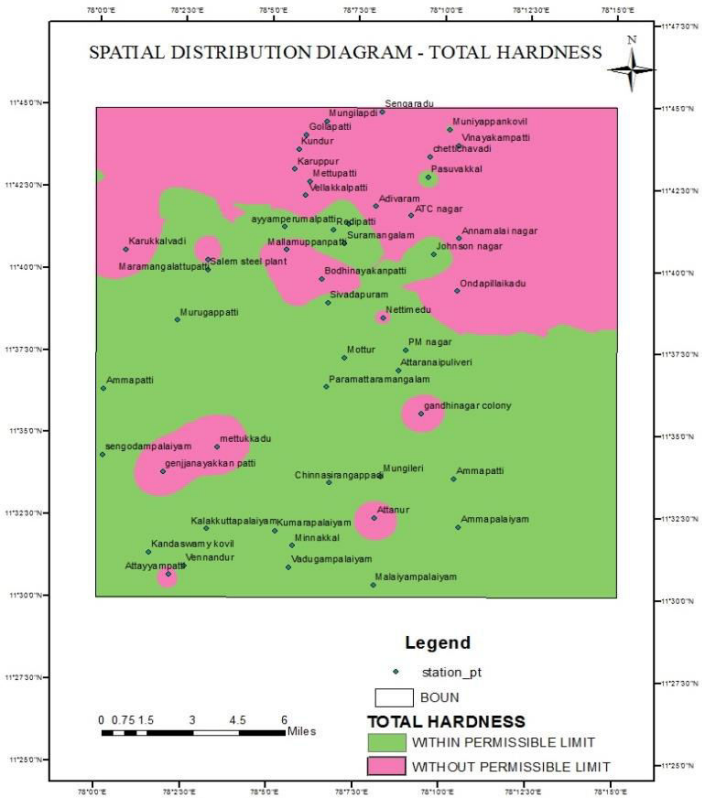

Figure 6: Spatial Distribution Diagram for Total Hardness in Study Area

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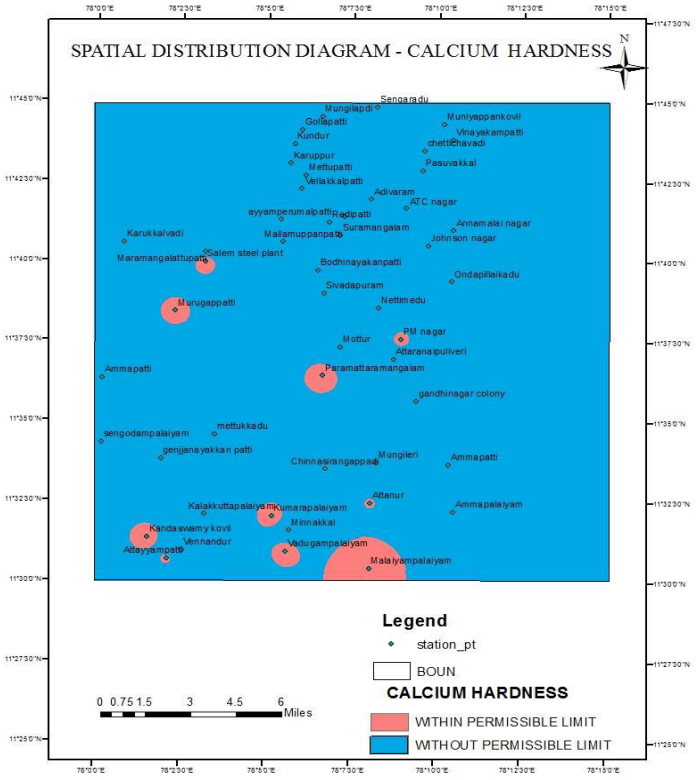

Figure 7: Spatial Distribution Diagram for Calcium Hardness in Study Area

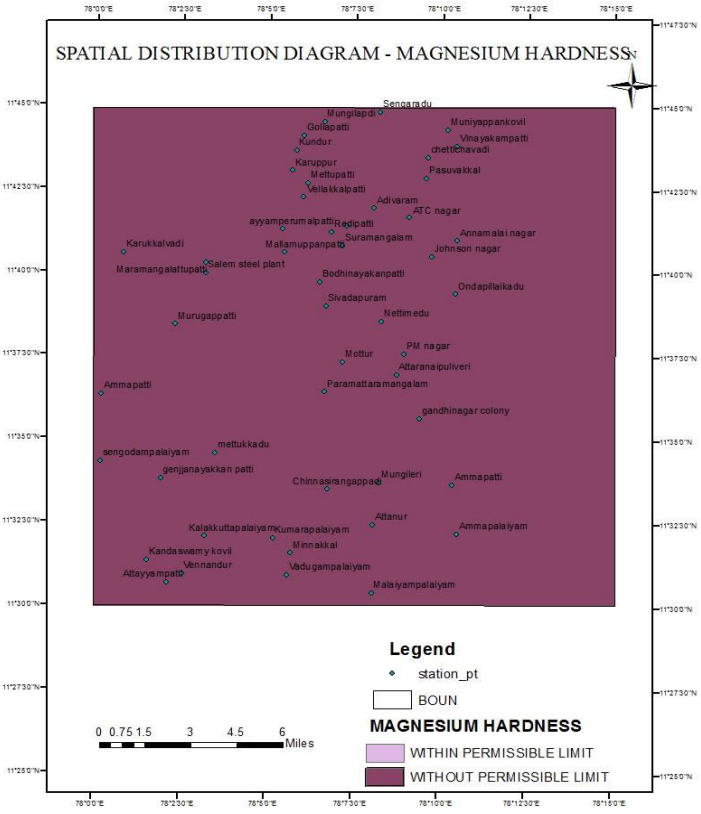

Figure 8: Spatial Distribution Diagram for Magnesium Hardness in Study Area

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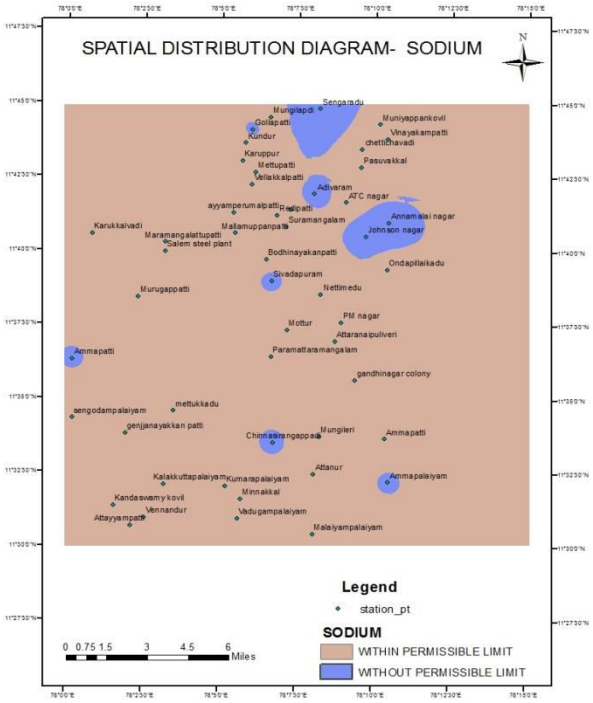

Figure 9: Spatial Distribution Diagram for Sodium in Study Area

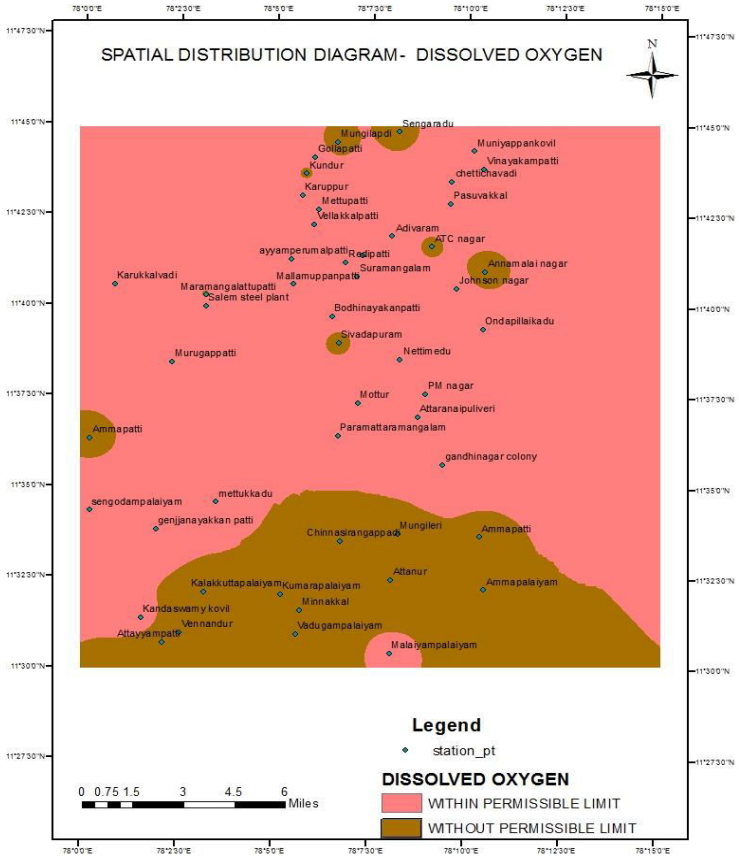

Figure 10: Spatial Distribution Diagram for Dissolved Oxygen in Study Area

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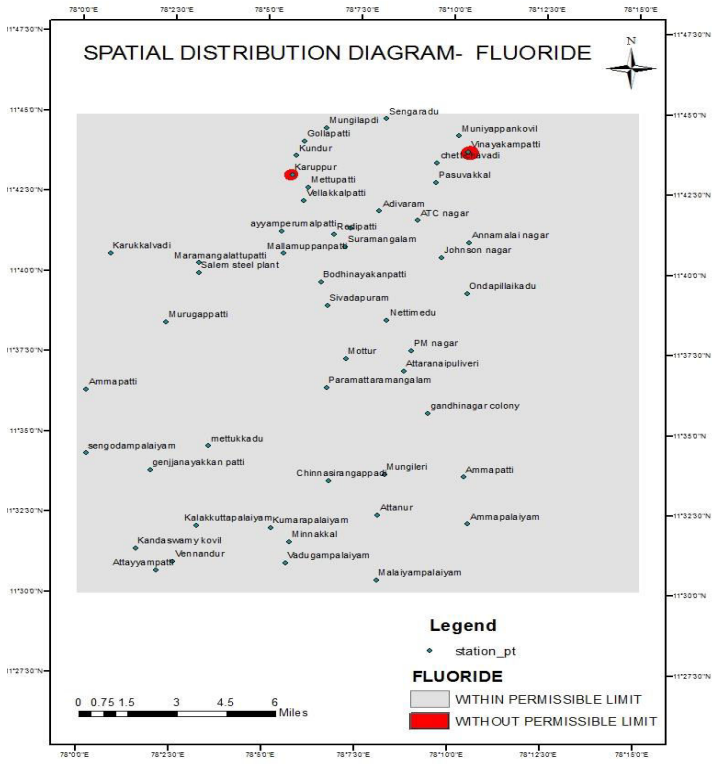

Figure 11: Spatial Distribution Diagram for Fluoride in Study Area

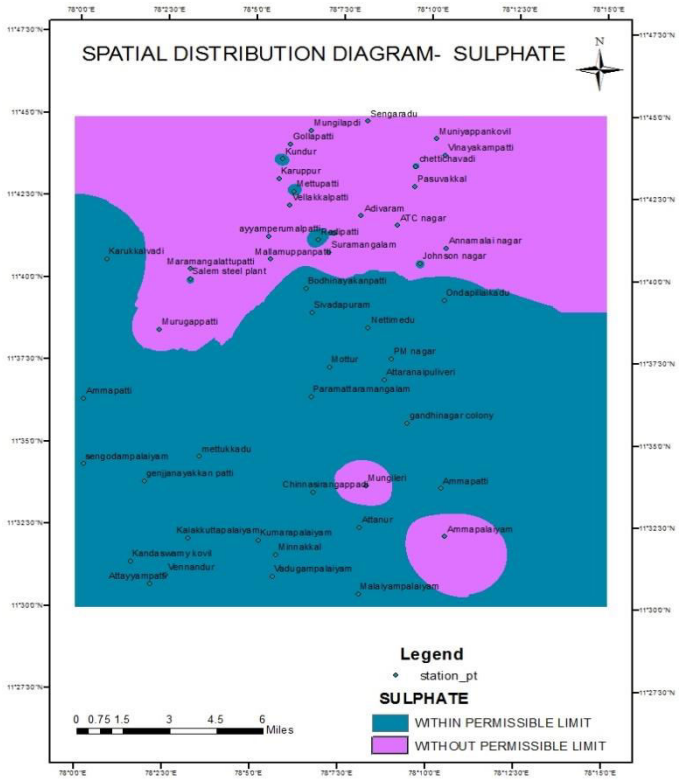

Figure 13: Spatial Distribution Diagram forSulphate in Study Area.

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VI. CONCLUSION

Mining of magnesite ore has been going on continuously for the past 50 years. Many Township, Villages and cultivable land are distributed aroundmagnesite mines. Some investigation carried out in the past reveals that the ground water quality is detracting in Salem. In the view of expansion of magnesite mines, modern agriculture practices and urbanization, the present investigation on ground water quality assessment around magnesite mines and salem township has been carried out for 50 ground water samples from the places around magnesite mines and some of the township in salem. Ground Water samples were analyzed using standard methods. The interpretation of chemical data of the ground water has been done using GIS technique. It reveals that more than 52% ground water samples areas falls under poor categories indicating the leaching of mines waste through ground water.

REFERENCES

1. S.Venkateswaran (2010), “Assessment of groundwater quality with a special emphasis on irrigational utility in chinnar watershed, Cauvery river, Tamil Nadu”, International Journal of Recent Scientific research, Vol. 1, Issue 3, pp. 01-09.
2. Ganeshkumar B, Jaideep.C (2011), “Groundwater quality assessment using Water Quality Index(WQI) approach – Case study in a coastal region of Tamil Nadu, India”, International Journal of Environmental Sciences and Research, Vol. 1, No. 2, pp.50-55.
3. Aladejana J.A, Talabi A.O. (2013), “Assessment of Groundwaater Quality in Abeokuta Southwestern, Nigeria”, International Journal of Engineering and Science”, Vol. 2, Issue 6, pp. 21-31.
4. Md.XafarEqubal, A.Ambica (2012), “Environmental Impact Assessment of salem Chalk Hills using Remote Sensing and GIS”, International Journal of Computer Trends and Technology, Vol. 3, Issue 6, No. 2, pp.1-11.
5. Andres Navarro, Diego Collado (2001), Montserrat Carbonell, Juan A. Sanchez, “Impact of mining activities on soils in a semi-arid environment: Sierra Almagrera district, SE Spain”, Environmental Geochemistry and Health, pp.383-393.
6. R.K.Tiwary, R.Dhakate, V.AnandaRao, V.S.Singh (2005), “Assessment and prediction of containment migration in ground water from chromite waste dump”, Environmental Geology, Vol. 48, pp.420-429.
7. Christian Wolkersdorfer and Rob Bowell (2005), “Contemporary Reviews of Mine Water Studies in Europe”, Mine water and the Environment, pp.2-37.
8. A.Navarro Flores, F.Martinez Sola (2010), “Evaluation of Metal Attenuation from Mine tailings in SE spain: A Soil-Leaching Colum Study”, Mine water Environment, Vol. 29, pp.53-67.
9. NebojsaAtanackovic, VeselinDragisic, Jana Stojkovic, PetarPapic, Vladimir Zivanovic (2013), “Hydrochemical characteristics of mine waters from abandoned minimg sites in Serbia and their impact on surface water quality, Environmental Science Pollution, Vol.20, pp.7615-7626.
10. T.M.Akabzaa, H.E.Jamieson, Niels Jorgenson, K.Nyame (2009), “The combined Impact of Mine Drainage in the Ankobra River Basin, SW Ghana”, Mine water Environment, Vol.28, pp.50-64.
11. Jin-Kyoo Kang, Yungoo song, Ji-Won Moon, Hi-Soo Moon (2001), “Water Quality impact of mining in the Wolmyoung Area of Korea and its short term changes”, water, Air and Soil Pollution, Vol.129, pp.349-367
12. Anand, L., Maurya, M., Seetha, J., Nagaraju, D., Ravuri, A., &Vidhya, R. G. (2023, July). An intelligent approach to segment the liver cancer using Machine Learning Method. In 2023 4th international conference on electronics and sustainable communication systems (ICESC) (pp. 1488-1493). IEEE.
13. Rajendran, S., Sundarapandi, A. M. S., Krishnamurthy, A., &Thanarajan, T. (2022). An intelligent face recognition technology for iot-based smart city application using condition-cnn with foraging learning pso model. International Journal of Pattern Recognition and Artificial Intelligence, 36(14), 2256018.
14. Murugeshwari, B., &Sujatha, R. (2014). Preservation of Privacy for Multiparty Computation System with Homomorphic Encryption. International Journal of Emerging Technology and Advanced Engineering, 4(3), 530-535.
15. Sugumar, R. (2025). Unified AI Framework for Predictive Data Engineering and Real Time Prescription and Billing Systems. International Journal of Advanced Engineering Science and Information Technology (IJAESIT), 8(5), 17261.
16. Samrat, B., Thomas, P. K., Kumar, S., Benila, A., Bhardwaj, R., &Vigenesh, M. (2024, December). Industrial informatics in optimizing software-defined vehicles for logistics. In 2024 IEEE 2nd International Conference on Innovations in High Speed Communication and Signal Processing (IHCSP) (pp. 1-9). IEEE.
17. Soundappan, S. J. (2024). AI-driven customer intelligence in enterprise lakehouse systems Sentiment Mining Governance-Aware Analytics and Real-Time Data Synchronization. International Journal of Advanced Engineering Science and Information Technology.
18. Rajasekar, M. (2024). AI-Powered Cyber-Secure Federated Learning on AWS for Next-Generation Digital Banking Analytics. International Journal of Advanced Research in Computer Science & Technology (IJARCST), 7(3).

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DOI:10.15662/IJEETR.2026.0802445

19. Deivendran, P., Babu, P. S., Malathi, G., Anbazhagan, K., & Kumar, R. S. (2023). Emotion Recognition for Challenged People Facial Appearance in Social using Neural Network. arXiv preprint arXiv:2305.06842.
20. Sugumar, R., &Murugeshwari, B. (2016). An Efficient MChord based Authentication for Vehicular Ad-Hoc Networks.
21. Pandey, V. K., Mishra, S., Rengarajan, A., Savita, &Roomi, M. M. (2024, March). Enhancing Weather Forecasting with Machine Learning Techniques. In International Conference on Renewable Power (pp. 147-156). Singapore: Springer Nature Singapore.
22. Mathew, A., & Alex, H. (2025). Federated Learning for Secure Genomic Research: Privacy-Preserving AI Solutions for Precision Medicine. Science and Technology: Developments and Applications Vol. 9, 36-43.
23. Selvi, G. V., Anbarasan, A. B., Murthy, B. A., &Prabavathy, S. (2023). An Application Oriented Integrated Unequal Clustering Algorithm for Wireless Sensor Network. In Underwater Vehicle Control and Communication Systems Based on Machine Learning Techniques (pp. 140-154). CRC Press.
24. Soundappan, S. J. (2025). Next Generation AI Enabled Holistic Cognitive Platform for Secure Cloud Network Intelligence Enterprise Systems and Digital Trust Optimization. International Journal of Computer Technology and Electronics Communication, 8(5), 11534-11542.
25. Rajasekar, M. (2024). Real-Time Predictive DevOps Intelligence for Risk-Aware Digital Business Processes in Cloud and SAP Ecosystems. International Journal of Advanced Research in Computer Science & Technology (IJARCST), 7(4), 10713-10718.
26. Jagadeesh, S., & Sugumar, R. (2017). A comparative study on artificial bee colony with modified ABC algorithm. European Journal of Applied Sciences, 9(5), 243–248.
27. Murugeshwari, B., Sarukesi, K., &Jayakumar, C. (2010, March). An efficient method for knowledge hiding through database extension. In 2010 International Conference on Recent Trends in Information, Telecommunication and Computing (pp. 342-344). IEEE.
28. Reddy, K. V. V. K., &Vimal, V. R. (2024, July). A novel approach on improved segmentation and classification of remote sensing images using AlexNet compared over linear discriminant analysis with improved accuracy. In 2024 Second International Conference on Advances in Information Technology (ICAIT) (Vol. 1, pp. 1-6). IEEE.
29. Gowthami, D., &Vigenesh, M. (2024). Distributed and Lightweight Intrusion Detection for IoT: A Lightweight Pyramidal U-Net With Tri-Level Dual Inception-Based Framework. In The Convergence of Self-Sustaining Systems With AI and IoT (pp. 154-173). IGI Global Scientific Publishing.
30. Anand, P. V., &Anand, L. (2023, December). An Enhanced Breast Cancer Diagnosis using RESNET50. In 2023 International Conference on Innovative Computing, Intelligent Communication and Smart Electrical Systems (ICSES) (pp. 1-5). IEEE.
31. Mathew, A. (2022). Leveraging Big Data Analytics to Power AI and ML (Machine Learning) Automation. Educational Research (IJMCER), 4(5), 131-134.
32. Dhinakaran, D. (2022). Joe Prathap P. M, Selvaraj D, Arul Kumar D and Murugeshwari B," Mining Privacy-Preserving Association Rules based on Parallel Processing in Cloud Computing,". International Journal of Engineering Trends and Technology, 70(3), 284-294.
33. Poornima, G., &Anand, L. (2024, April). Effective Machine Learning Methods for the Detection of Pulmonary Carcinoma. In 2024 Ninth International Conference on Science Technology Engineering and Mathematics (ICONSTEM) (pp. 1-7). IEEE.
34. Rengarajan, A., Jayakumar, C., & Sugumar, R. (2012). Optimization Of Recent Attacks Using Internet Protocol. National Journal of System and Information Technology, 5(1), 8.
35. Mathew, A., &Romasco, L. (2024). Forensic Investigation of Artificial Intelligence Systems. Research Updates in Mathematics and Computer Science Vol. 4, 154-164.
36. Vekariya, V., Kumar, S., &Rengarajan, A. (2024). A distinctive and smart agricultural knowledge-based framework using ontology. In Sustainability in Digital Transformation Era: Driving Innovative & Growth (pp. 207-213). CRC Press.
37. Soundappan, S. J. (2020). Big data analytics in healthcare: Applications for pandemic forecasting. International Journal of Advanced Research in Computer Science & Technology, 3.
38. Sugumar, R. (2024). AI-Augmented Quality Engineering for Performance Optimization and Test Orchestration in Distributed Systems. International Journal of Science, Research and Technology, 7(5), 12835-12846.
39. Soundappan, S. J., & Sugumar, R. (2016). Optimal knowledge extraction technique based on hybridisation of improved artificial bee colony algorithm and cuckoo search algorithm. International Journal of Business Intelligence and Data Mining, 11(4), 338–356.
40. Mathew, A. (2025). Ahead of the breach: Predictive threat intelligence in aviation inspired by Scattered Spider attacks. Multidisciplinary International Journal of Research and Development (MIJRD), 4(6), 54–58.

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DOI:10.15662/IJEETR.2026.0802445

41. Soundappan, S. J. (2021). DataOps: Orchestrating Reliable ML Data Pipelines. International Journal of Research and Applied Innovations, 4(4), 5533-5537.
42. Garg, V. K., Soundappan, S. J., &Kaur, E. M. (2020). Enhancement in intrusion detection system for WLAN using genetic algorithms. South Asian Research Journal of Engineering and Technology, 2(6), 62–64.
43. Anand, L., Tyagi, R., & Mehta, V. (2024, January). Food recognition using deep learning for recipe and restaurant recommendation. In Proceedings of Eighth International Conference on Information System Design and Intelligent Applications (pp. 269-279). Singapore: Springer Nature Singapore.
44. Kumar, A., &Anand, L. (2025). A Novel EEG-Based Deep Learning Framework for Enhancing Communication in Locked-In Syndrome Using P300 Speller and Attention Mechanisms. KSII Transactions on Internet and Information Systems (TIIS), 19(11), 3841-3855.
45. Soundappan, S. J. (2022). AI-Based Fault Detection and Isolation for Reliability in Modern Power Systems. International Journal of Research Publications in Engineering, Technology and Management (IJRPETM), 5(4), 7106-7110.
46. Chandra, S., Rengarajan, A., Sahoo, G. S., & Sharma[4], S. (2024, October). Identifying Neuronal Damage and Plasticity by Analyzing Changes in Diffusion Tensor. In Proceedings of the 5th International Conference on Data Science, Machine Learning and Applications; Volume 2: ICDSMLA 2023, 15–16 December, Hyderabad, India (Vol. 2, p. 433). Springer Nature.

Table 1: Physico-chemical characteristics of ground water sample in Study Area

SAMPLE NO.	SAMPLE STATION	pH	EC	TA	CL	TDS	T H	Ca	Mg	$SO4^-$	NA	F	DO
			µs	(ppm)									
S1	Adivaram	7.82	1206	228	326.61	598	383	172	211	276	248	1.09	5
S2	Ayyamperumalpatti	7.8	1268	184	337	621	244	102	142	375	143	1.36	4.5
S3	Chettichavadi	8.14	986	304	376	489	359	160	199	189	151	1	3.6
S4	Karuppur	7.23	1307	121	209	647	302	131	171	248	176	1.07	3.2
S5	Gollapatti(pudur)	7.09	1047	148	454	509	354	157	197	307	214	1.09	5
S6	Kundur	8.16	928	278	273.9	451	401	180	221	170	158	0.38	6.4
S7	Sengaradu	8.67	756	318	211	372	378	169	209	293	384	0.97	7
S8	Vinayakampatti	8.14	1967	278	377	972	332	146	186	301	175	1.14	2.7
S9	Muniyappankovil	7.1	723	187	329.8	343	298	129	169	407	152	0.75	3.8
S10	Mungilpadi	8.52	968	298	176	464	301	131	170	361	148	0.87	6.9
S11	Vellakkalpatti	6.9	987	159	240	472	382	171	211	379	104	0.84	3.5
S12	Pasuvakkal	8.1	674	286	246	321	282	122	160	482	163	0.48	4
S13	Mettupatti	7.9	564	208	159.8	261	310	135	175	159.	195	0.32	1.9
S14	Kilakkadu	7.54	1302	176	210	644	231	95	136	154	62	0.11	2.1
S15	Kavundappanur	7.12	305	140	129.8	140	342	151	191	285	139	0.29	3
S16	R.K Township	7.63	428	189	172	204	349	155	194	109	173	0.5	3.43
S17	Maramangalattupatti	7.83	406	192	174.39	196	395	185	210	295	135	0.98	6.2
S18	Daivanagar	7.21	576	122	208	261	236	98	138	198	177	1.01	3.7
S19	Suramangalam	7.49	487	152	178	206	248	104	144	287	125	1	4.1
S20	Johnson nagar	7.25	467	124	184	222	233	97	136	250	238	0.53	4.8
S21	ATC nagar	7.31	546	140	159	262	381	171	210	221	183	1.08	6.5
S22	Annamalainagar	8.2	306	318	284.9	148.8	348	154	194	189	225	0.72	7.4
S23	Murugappatti	7.44	1312	110	280	644	142	64	78	100	146	0.5	4.2
S24	Steel plant	7.51	1076	109	148.9	511.3	100	30	70	76	157	1.09	4

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	housings												
S25	Sivadapuram	7.38	1234	101	127	607	258	109	149	49	219	0.05	6.5
S26	Bodhinayakanpatti	6.79	986	113	248	482	438	199	239	106	183	0.83	4.9
S27	PM nagar	6.92	705	108	226	348	188	68	120	149	117	1.07	6
S28	Nettimedu	7.28	528	104	192	257.9	306	130	176	100	153	1	4.1
S29	Ondapillaikadu	7.17	1024	122	150	502	384	172	212	184	179	0.88	4.4
S30	Ammapettai	7.12	1943	98	191.3	925	395	178	217	138	210	0.63	6.5
S31	Mottur	7.06	1398	102	184.2	684	348	155	193	103	152	0.17	5.8
S32	Paramatarmangalam	7.97	1006	159	173.4	498	140	50	90	98.7	109	0.84	4.9
S33	Attaranaipuliveri	7.01	742	110	200	362	229	87	142	10.3	134	1.34	2.7
S34	Gandhinagar colony	7.39	702	134	140.3	342	233	95	138	59	41	1	3.1
S35	Gejjanayakkanpatti	7.79	1076	148	183.1	518.1	266	104	162	139	98	0.98	6.8
S36	Sengodampalaiyam	8.05	986	315	163.2	478.1	348	154	194	198	57	1.31	5.9
S37	Mettukkadu	7.24	1498	`167	237	737.8	382	171	211	269	84	0.38	4.2
S38	Chinnasirangappadi	7.45	524	185	132.3	252	246	103	143	307	238	0.85	2.8
S39	Mungileri	7.22	612	142	438.5	287	382	172	210	148	48	1.09	4
S40	Ammapalaiyam	7.54	687	154	384.3	334	374	167	207	135	214	0.89	3.93
S41	Malaiyampalaiyam	7.46	1178	180	125	560	108	34	74	165	84	0.6	2.4
S42	Attanur	7.94	689	110	220	319	185	73	112	144	71	0.88	4.1
S43	Kumarapalaiyam	7.8	989	197	137.4	472	170	65	105	139	87	1.39	7.8
S44	Minnakkal	7.6	1198	136	348.2	583.3	224	92	132	102	98	0.23	7
S45	Vadugampalaiyam	7.5	988	117	396	349.5	241	68	173	118	93	0.09	6.06
S46	Vennandur	7.89	546	196	289.6	257	394	177	217	110	172	0.21	5.3
S47	Kalakkuttapalaiyam	7.29	724	152	456.5	348.9	252	106	146	97	113	0.78	7.9
S48	Attayyampatti	7.96	324	180	214	149	197	68	129	105	196	0.64	7.2
S49	Kandaswamykovil	8.39	1023	273	109.8	503	156	58	98	69.2	149	0.07	7.68
S50	Ammapatti.	7.91	456	192	525.5	216	332	135	197	84	145	0.19	7.39