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Assessment of Ground Water Quality Using SPSS Method

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Abstract. *Tamil Nadu, Salem District, Domestic and Water quality for irrigation purposes to assess water quality survey has been carried out. PH, TDS, TH, Calcium, Magnesium, Chloride, Sulphate. This paper notes that Increasing levels of water pollution, the resulting billion-dollar utility and with control schemes, It provides a way to measure and evaluate the quality of a given water body Development of water quality codes is necessary. The data output of current water monitoring stations is huge and Dimensional reporting units are different and not integrated in a straightforward algebraic way, even by scientifically trained users have few means of integrating the data to provide "true" water quality. That quality is locally better than hook and line to be broadly defined, Because of the importance of downstream streams Less emphasized in that context. The stream is never fishable However, it is an integral part of the watershed; Protection is essential if downstream streams are to remain fishable and swimmable. The Clean Water Act's biological integrity mandate without considering local streams separately, It depends on the overview of the entire hydrological system at the water table level. Agricultural waste, applied fertilizers, soil leachate, urban waste, Cattle excreta and sewage Sources of poor water quality. Some models have hardness and Due to magnesium concentration are highly saline not suitable for irrigation purposes. In general, ground water farming activities of Salem district, anthropogenic activities, ion exchange and contaminated by weather.*

1. INTRODUCTION

Ground water becomes polluted and it is very difficult to restore its quality. in the villages of Salem district, the water had high hardness and fluoride content, softening its properties and can be replaced with difluoride, which makes water useful. In Salem district, apart from the fluoride content the ground water level was good. The groundwater level was well above the WHO permissible limit. Geographical Information System (GIS) for water quality mapping is a valuable tool and Useful for monitoring, it is the concentration values of various chemical elements based on, produce maps of water quality Used as a database system. Aim of the present study Using geography and geospatial tools Determining Understanding the level of health risks associated with it, Protection of drinking water quality and It is the basis for making wise decisions about management. Achieving reliable results and making informed decisions is feasible and using an effective drinking water quality assessment system is critical. Since the 1960s Quality Index (WQI) The first water was created by Horton, A number of water quality assessment methods have also been proposed. Rapid development assessment methods simple single number Improves understanding of water quality. Many regulatory agencies have provided more effective water quality criteria to protect beneficial uses. To develop Common Water Quality Index (WQI). These criteria can be analyzed, It is total water Used to indicate quality. It contains dissolved oxygen (DO), conductivity, turbulence, total phosphorus and Contains water quality variables Like faecal coliform, Each of these has beneficial uses have specific implications. In the States and Canada To assess water quality A lot of water Quality codes are developed. All these codes are eight or There are also water quality variables. However, for most water bodies Long-term and continuous data are not available. Fewer variables are used A new WQI There is a need to create and can be used to compare sites with water quality expectations. The course aims to provide a general review of existing codes and develop a new code that provides a simple method for describing water quality. Contaminants Contamination of the Lower St. Johns River (LSJR) comes from both point and nonpoint sources, this causes stormwater runoff, Occurs in ditches and creeks and groundwater. Effluent, aquatic weed control, naturally occurring Organic inputs and atmospheric deposition. As the quality of water deteriorates due to this pollution, the composition of organisms in the river basins is changed declines. The restoring LSJR's health over the past several decades Several efforts have also been made to prevent its further contamination. One such important initiative is Creation of Surface Water Monitoring Network.

2. GROUND WATER QUALITY

When different criteria are used for different applications. Also, the classification of water quality is different Depending on the contents of water parameters Following different definitions, Dozens of other variations have been developed. Thailand, Simple, simple to express the results of multiple parameters for water quality assessment, Aims to provide the correct method. School, community and Freshwater education at non-formal levels About drinking water problems Important to improve public understanding. Among other benefits, adequate learning strategies help create awareness, develop skills, and improve interactions with professionals. At the preschool level It is important to initiate water education because the foundation for understanding drinking water is formed at an early age. Education programs Organoleptics at this level - mostly For young children - short and on water problems may contribute to biased understanding. Specific topics to be addressed vary geographically and social context and Taking into account the requirements To be defined with strong input from academics and water experts. For example, in such topics Tap water sources may include, water utilities, and skills particularly relevant in certain regions. Personal information plays a significant Water quality and Share feedback on its progress. Address specific water quality concerns When additional variables need to be included in the code have erectile problems, But the integration function does not allow this. For example, a regulatory agency already It is common to have an overall index, But the company wants to add one or more additional parameters. When a particular site receives a good water quality index This situation may occur, And by elements not included in the index Water quality is declining. to a similar regulatory body in another region or area It is common to require a different number of water quality variables in its integrated index. Therefore, the water quality improvement method required by a region or regions, When applied to another area or region may give ambiguous results, Because a different number of water quality variables can be included. Spearman's Rank Correlation Analysis in Salem District land use and between water quality Used to analyze relationships. Analysis of variation in standard values of selected water quality variables in between land use types it was also checked whether there were any significant differences. Water quality variables significantly associated with land use were selected for further GIS spatial analyses.

PH: This work examines the physiology of tobacco and for low or high pH in growth the benefit of prolonged exposure or Aims to assess adverse effects. Hematological parameters, growth, plasma ions and tissue phosphates were evaluated for to bacco. Results of this ¢sh species are suitable for aquaculture and Contribute to the development. Apart from geography and climate these sites were selected to investigate how other factors may affect Surface Water PH. During quality review Data flagged as invalid by the Texas Environmental Quality Before analysis The commission was abolished. Daily and seasonal means Determined for a period of three years. Aggregate frequency plots were generated from daily in-stream pH measurements, Thus the probability of observing a given pH value at each site is cumulative and Scaled to seasonal data.

TDS: To estimate bromide concentrations a linear relationship was obtained that allowed successful use of the chloride data. Bromide showed slightly better correlation with TDS easily and commonly obtained TDS data. Bromide content relative Its ratio is to chloride and TDS contents Found in sea water Seventy percent of the relevant rates are, This has been reported in other published data. Since different ions and captions contribute to TDS in different tap water. TDS will increase in raw water and ultimately tap water Due to the recognized nationwide trend, more attention should be paid to TDS SMCL. United States is very saline and causing concern that it may become unfit for human consumption.

TH: Thyroid hormone (TH) growth in vertebrate species and Important in regulatory functions. Previously, TH synthesis, transport and A toxic potential for catabolism is suspected The main focus was on chemicals. Most efforts have focused specifically on androgen and estrogen homeostasis. Thyroid hormone (TH) can be activated by environmental pollutants. Industrial wastes, sediment extracts, in eastern China Water resources and completed in Beijing Anti-thyroid hormone effects have also been observed in drinking water. 8 TH activities is affected by synthetic chemicals such as organochlorine (OC). Insecticides, 4-aminophenol and from agriculture and industry such as Phthalate esters. 9, 10 These chemicals interact with the thyroid receptor (TR). either by preventing binding to its endogenous ligands or by providing additional ligands has also been reported.

Calcium: magnesium, calcium, sodium, creatinine and potassium to determine serum concentrations of Before and after the intervention Blood samples were taken. Results of qBEI in Dorper sheep and human samples (trabecular bone of the iliac crest) compared to their control groups for sheep and humans demonstrates that the weight percentage of calcium is significantly increased in fluoride-exposed samples. Diversity of bone tissue - calcium width - sheep and Human iliac crest biopsies differ in both. In addition, the calcium peak was significant.

Magnesium: Drinking magnesium-rich water has been previously reported Beneficial [4]. In a previous study developed countries Daily intake of magnesium has also been reported to be low [5]. Magnesium deficiency causes cardiac arrhythmias through various mechanisms [6]. Autopsy studies of sudden death from CHD have shown that the heart muscle [7] Magnesium levels were found to be significantly lower. Although levels of magnesium in drinking water are not morbidly associated with CHD [4]. Evidence suggests that it may affect mortality. To date, drinking water magnesium levels and Several CHD mortality risk. To our knowledge, there is no comprehensive meta-analysis to assess this association; Therefore, between drinking water magnesium levels and CHD mortality We conducted this study to see if there was any correlation. In the modern world, dietary magnesium intake is below Prescribed Food Allowance. For people bordering on magnesium deficiency, Water-borne magnesium can make an important contribution to the total daily intake. Also, cooking food in magnesium-rich water reduces magnesium loss from food. Another reason magnesium plays an important role in Water is its high bioavailability. High in magnesium Inhibition of magnesium in water consuming populations the contribution of water magnesium is important.

Chloride: Chloride is an essential element for plant growth. Tobacco contains significant amounts of chloride Known to accumulate very quickly, Also 100 g Cl kg1 leaf Values for dry matter are reported. Small amounts of Cl sterility affect tobacco yield and Beneficial in leaf market value, at the same time high concentrations in soil have some unusual growth features and Associated with undesirable properties of the cured leaf. Excess chloride in the cured leaf reduces the rate of burn and increased hygroscopicity, such as stinging it causes some adverse effects. Uneven colors and unpleasant odors in cured tobacco leaves. It shows that the general output is consistent with the water leakage results.

Sulphate: All in industrial processes Basic requirement of sulfate removal technologies. Reuse water in mining operations Sulfate removal may be necessary. Appropriate water treatment technology should be evaluated on a case-by-case basis, Because site-specific conditions will dictate the most appropriate option for a particular mining operation. In Alternative Treatment Methods for Sulfate Removal from Mine Wastes These include chemical treatment, membrane filtration, ion exchange, and biological sulfate removal by sulfate lime or chemical precipitation of gypsum with lime. Removal from mine water is a mixture of solution and Sulfate concentrations can generally be reduced to 1,500-2,000 mg/L and less than 1,200 mg/L, depending on ionic strength.

TABLE 1. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items[a]	N of Items
0.80	0.84	7

Table 1 shows the Cronbach's Alpha Reliability result. The overall Cronbach's Alpha value for the model is 0.80 which indicates 80% reliability. From the literature review, the above 80% Cronbach's Alpha value model can be considered for analysis.

TABLE 2. Descriptive Statistics

	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
PH	53	1.5200	6.5500	8.0700	3.9312E2	7.417358E0	.0654659	.4765991	.227	-.153	.327	-1.268	.644
TDS	53	1749	1001	2750	82736	1561.06	43.641	317.712	1.009E5	.815	.327	2.229	.644

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TH	53	862	124	986	27438	517.70	36.340	264.560	6.999E4	.198	.327	-1.364	.644
Calcium	53	567	123	690	21513	405.91	22.978	167.283	2.798E4	.244	.327	-1.150	.644
Magnesium	53	658	131	789	26731	504.36	25.776	187.649	3.521E4	-.187	.327	-.931	.644
Chloride	53	564	401	965	34930	659.06	22.619	164.669	2.712E4	-.099	.327	-1.192	.644
Sulphate	53	494	503	997	39895	752.74	18.674	135.950	1.848E4	.169	.327	-.887	.644

Table 2 shows the descriptive statistics values for analysis N, range, minimum, maximum, mean, standard deviation, Skewness, Kurtosis. Output evaluation parameters are PH, TDS, TH, Calcium, Magnesium, Chloride, Sulphate.

TABLE 3. Frequencies Statistics

		PH	TDS	TH	Calcium	Magnesium	Chloride	Sulphate
N	Valid	53	53	53	53	53	53	53
	Missing	28	28	28	28	28	28	28
Mean		7.417358E0	1561.06	517.70	405.91	504.36	659.06	752.74
Std. Error of Mean		.0654659	43.641	36.340	22.978	25.776	22.619	18.674
Median		7.450000E0	1589.00	457.00	386.00	532.00	663.00	747.00
Std. Deviation		.4765991	317.712	264.560	167.283	187.649	164.669	135.950
Variance		.227	1.009E5	6.999E4	2.798E4	35211.965	2.712E4	1.848E4
Skewness		-.153	.815	.198	.244	-.187	-.099	.169
Std. Error of Skewness		.327	.327	.327	.327	.327	.327	.327
Kurtosis		-1.268	2.229	-1.364	-1.150	-.931	-1.192	-.887
Std. Error of Kurtosis		.644	.644	.644	.644	.644	.644	.644
Range		1.5200	1749	862	567	658	564	494
Minimum		6.5500	1001	124	123	131	401	503
Maximum		8.0700	2750	986	690	789	965	997
Percentiles	25	6.965000E0	1323.00	265.00	263.00	370.00	532.00	644.50
	50	7.450000E0	1589.00	457.00	386.00	532.00	663.00	747.00
	75	7.830000E0	1775.50	767.00	548.50	652.00	776.50	865.00

TABLE 3. The frequency (f) of a particular value is is the number of values that occur in the data. The distribution of a variable is The pattern of frequencies, the set of all possible values and Corresponding to these values are the frequencies. Frequency distributions are frequency tables or depicted as illustrations. PH, TDS, TH, Calcium, Magnesium, Chloride, Sulphate this also using Variance curve values are given.

Histogram Plot

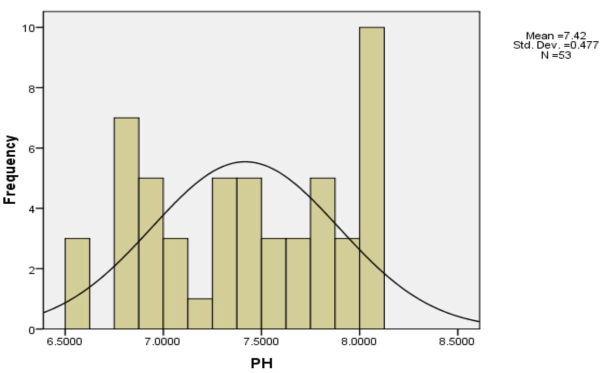

FIGURE 1. PH

Figure 1 shows the histogram plot for the legs from the figure, where it can be clearly seen that the data is slightly skewed to the right due to high values for 7.0-8.0, while all other values are under the normal curve, suggesting that the sample follows a normal distribution.

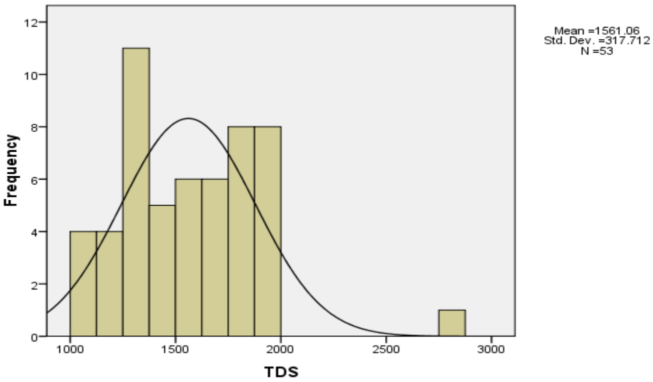

FIGURE 2. TDS

Figure 2 shows a histogram plot for the legs from Figure 1 where it can be clearly seen that the data is slightly skewed to the left due to the high values for 1000–2000, while all other values are under the normal curve, the sample substantially follows a normal distribution.

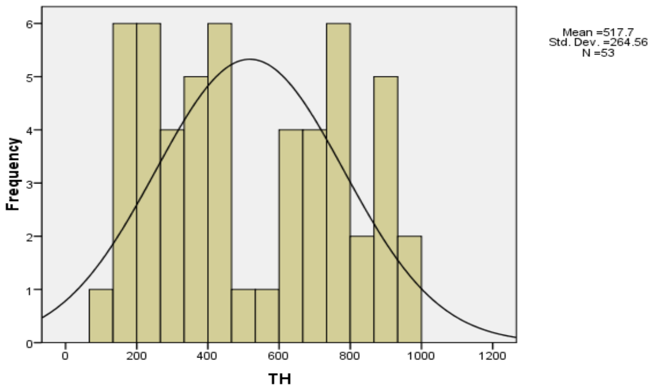

FIGURE 3. TH

Figure 3 shows a histogram plot for the legs from the figure where it can be clearly seen that the data is slightly skewed towards normal due to high values for 200–1000, while all other values are under the normal curve, the sample substantially follows a normal distribution.

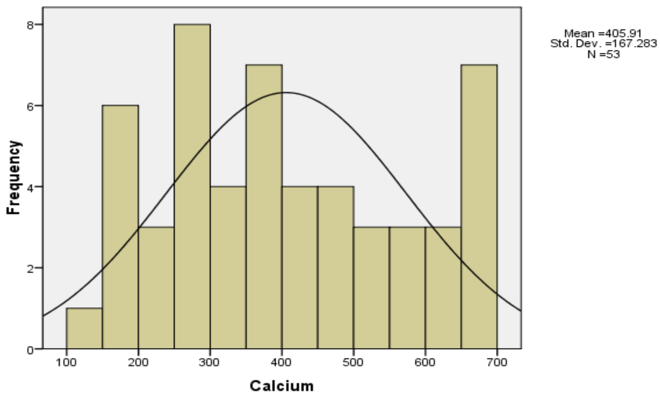

FIGURE 4. Calcium

Figure 4 shows a histogram plot for legs from Figure 1 where it can be clearly seen that the data is slightly skewed towards normal due to high values for 100-700, while all other values are under the normal curve, the sample substantially follows a normal distribution.

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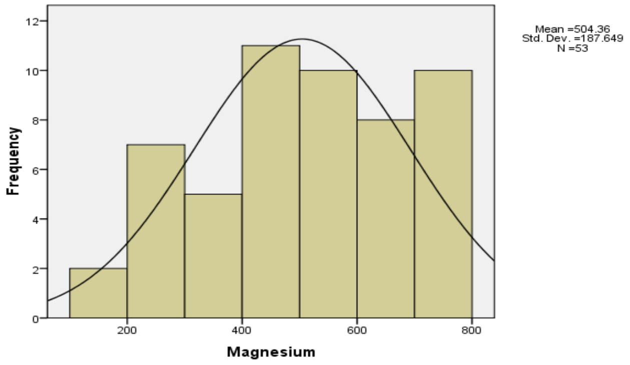

FIGURE 5. Magnesium

Figure 5 shows a histogram plot for legs from Figure 1 where it can be clearly seen that the data is slightly skewed to the right due to high values for 200–800, while all other values are under the normal curve, the sample substantially follows a normal distribution.

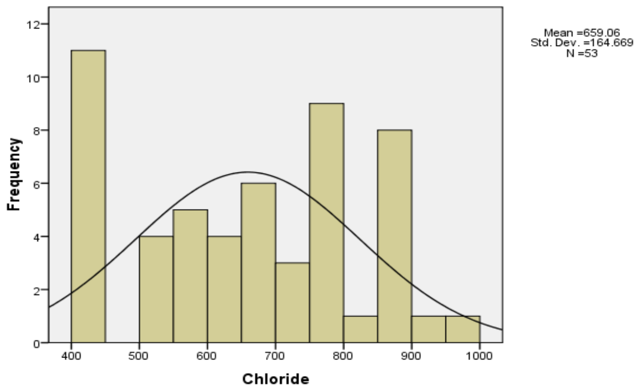

FIGURE 6. Chloride

Figure 6 where it can be clearly seen that the data is slightly skewed to the left due to high values for 500–1000, while all other values are under the normal curve, the sample substantially follows a normal distribution.

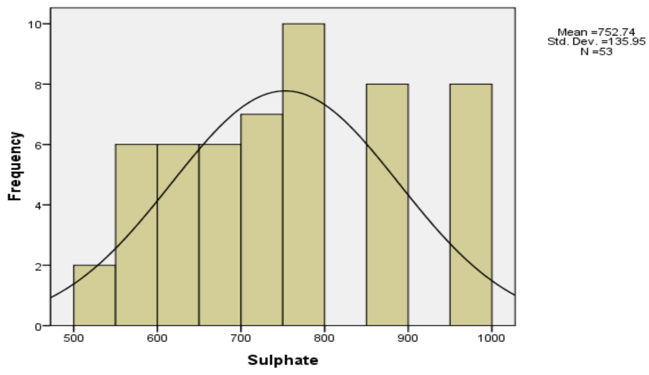

FIGURE 7. Sulphate

Figure 7 shows a histogram plot for feet from the figure where it can be clearly seen that the data is slightly skewed to the right due to high values for 500-800, while all other values are under the normal curve, the sample substantially follows a normal distribution.

TABLE 4. Correlations

	PH	TDS	TH	Calcium	Magnesium	Chloride	Sulphate
PH	1	-.207	-.065	.129	.008	.106	-.134
TDS	-.207	1	.152	.098	-.163	.166	-.126
TH	-.065	.152	1	.144	-.170	.291*	.059
Calcium	.129	.098	.144	1	.068	-.085	-.235
Magnesium	.008	-.163	-.170	.068	1	-.247	-.040
Chloride	.106	.166	.291*	-.085	-.247	1	.018
Sulphate	-.134	-.126	.059	-.235	-.040	.018	1

Table 4 shows the correlation between motivation parameters for PH is having highest correlation and Sulphate having lowest correlation with. Next TDS is having the highest correlation and Calcium having the lowest correlation with. Next TH is having the highest correlation and PH having the lowest correlation with. Next Calcium is having the highest correlation and Sulphate having the lowest correlation with. Next Magnesium is having the highest correlation and Chloride having the lowest correlation with. Next Chloride is having the highest correlation and Magnesium having the lowest correlation with. Next Sulphate is having the highest correlation and Calcium having the lowest correlation with.

3. CONCLUSION

Perceptions of drinking water quality Caused by various factors. Water managers and policy makers anticipate potential problems and projects or these factors should be taken into account to maximize the impact of policies. Although mostly aesthetic, Organoleptic often plays an important role and should be managed carefully. Specific principles and Surveys to inform service improvements and Qualitative methods may be used. Freshwater education is important from an early age and tap water utilities and Includes features like water resources Focus on local issues. Although work in this area is growing, there are knowledge gaps and research needs. These catchment-wide management plans It is the most effective means of addressing non-point source degradation of natural water quality parameters. Describes the desirable distribution of conditions across space and time an approach to water quality management, this differs significantly from implementing conventional site-specific or watershed-specific standards. A more distributed approach is consistent with the Clean Water Act, Includes the latest guidelines for hydrological analysis and Similar to existing progressive approaches to setting and applying water quality standards. Analysis based on repeated mixed logit structure, shows those individuals respond directly to physical water quality measures. Three development scenarios are explored, rather than providing adequate amounts, Iowans on improving subset of lakes for higher water quality they suggest that they give more value.

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