

Need To Comprehending Ground Water Way Using Geological Information System in Padappai Region

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ABSTRACT

Water is an capital to anybody in this world. The baptize qualities are disconnected as physical, actinic and biological parameters. The baptize affection is arrested by testing the baptize samples. In our activity the baptize samples of 8 zones accept been taken in and about Padappai Arena in Kundrathur Panchayat, Abuttals of 10 kms. To analyse the baptize sample qualities triology of sampling analysis gives the contagion of baptize arena and apparent level. These datas are again feeded to GIS. GIS (GEOGRAPHICAL INFORMATION SYSTEM) is an avant-garde mapping technology that allows the users to actualize and collaborate with an array of maps and abstracts sources. The map locations of Latitude and Longitude admonition are acclaimed and it is again affianced at Google Earth. Further the abuttals areas about the zones of baptize samples which taken it to be created. GIS software will advise us to Geo-Referencing the affianced credibility at the zones. After agriculture Latitude and Longitude of able-bodied points, it is exported as apparent map. After creating the apparent map, the Attribute table at the ARCGIS Software is created to access the datas for the corresponding zones. The backdrop of layers will acquiesce us to accomplish the datas to be arresting of all the alone ambit and it is exported as Thematic maps. We activated the baptize samples and classified into 10 Physio-Chemical Parameters. Each alone will be mapped. The Spatial Analyst apparatus will advice us to actualize the map of Apparent Inverse Distance Weighed (IDW) which is calmly arresting to apperceive the alone ambit from High arena to low arena of alone zones of baptize samples taken. After that the map is exported and it shows the alone ambit of all zones. This shows all the qualities of baptize samples in and abreast future, it can be continued and the baptize ability areas are accepted for the locations.

KEY WORDS: Groundwater parameters, Mapping By GIS, Georeference, Spatial Analyst, Individual Parameters maps, Physio-Chemical and water standard caliber.

1. INTRODUCTION:

Water may be a colourless, transparent, scentless fluid that type starting with sea, lake, river, Furthermore sprinkle and will be the fundamental from claiming liquids about living creatures. It will be those oxide about hydrogen. Water freezes during 0°C Furthermore boils during 100°C. Water might a chance to be devoured through groundwater and surface water. Earth holds just 3% about new water which were in the type about glaciers (69%), groundwater (30%) Furthermore surface water (0.3%).

Surface water is An water that lies over the soil surface for example, such that lakes, waterway alternately pond What's more these surface water are Regularly lost through release of ocean, evaporation, evapotranspotation Also ground water revive. Surface water might undoubtedly dirtied The point when contrast with ground water done Different lifestyle.

Ground water will be a new water which is found underneath those world surface. It will be likewise water that is streaming inside aquifers.

Water utilize portray the aggregate sum from claiming water withdrawn from its sourball will be on be utilized. We utilization water for drinking, cooking, washing What's more agricola purposes. It will be likewise utilized for generating material such as food, paper What's more fabric and so forth throughout this way, observing and stock arrangement of all instrumentation may be enha. Ground water may be frequently all the cheaper,more helpful Furthermore lesquerella defenseless will contaminate those surface water. Thusly , it is regularly utilized for open water supplies for sample groundwater gives those bigger sources from claiming usable water stockpiling. Groundwater may be typically replenished Toward surface water starting with precipitation, streams and streams. The point when this revive achieves those water table. Likewise water mores through the landscape, it collects solvent salts. Primarily sodium, chloride, the place such water enters the air through evapotranspiration, those slats need aid left behind significant land corruption issues from claiming dirt saltiness Also water logging result, consolidated for expanding level from claiming salt clinched alongside surface water. Concerning illustration An hence harm need struck them on nearby trading and lending and earth. Water shortage involves, water stress, water stockpiling (or) deficits Furthermore water crises. This might be expected will both common and human Components. However huge numbers report card propose that the shortage will be a greater amount because of those human variable afterward anything for example, industrialization, irrigation, Domesticated usage, and so on.Those absence of new water asset should help water interest two- third of the worldwide populace live under condition of opposite water shortage. Those expanding planet population, enhancing living standards, evolving utilization patterns, Also extension from claiming irrigated agribusiness need aid the principle crashing strengths for those climbing worldwide request for water. The point when water nature may be poor, it influences not best oceanic life yet the encompassing biological community and also blacks. Physical properties for water caliber incorporate temperature Also turbidity. Concoction aspects includes parameters for example, ph Also broken down oxygen. Elements influencing water qualities need aid climatic deposition, soil erosion, seepage, overflow (or) regulate release.

Both groundwater Also surface water majorly dirtied because of area about industry Also shameful utilization for assets around that area.

The goal of the project is should evaluate What's more guide the water personal satisfaction of Padappai area done Kundrathur panchayat. Utilizing GIS programming, over Padappai area we gathered 8 water tests to puts such as Naduveerapattu, Manimangalam, Varatharajapuram, Aadhanur, Oragadam, Serapenchery, Padappai, Malaipattu starting with kundrathur panchayat utilizing limit guide the gathered water example were provided for with TWAD to trying physical and concoction parameters for example, Turbidity, aggregate disintegrated solids, pH, , aggregate Hardness, Calcium, Magnesium,, iron , Nitrate, Chloride, sulfate.

1.1.PROBLEM IN STUDY AREA: There are three fundamental wellsprings of groundwater contamination. This incorporates regular source, waste transfer activities, spills, breaks Also non purpose wellspring exercises. Such exercises would agricola exercises. Those ground water personal satisfaction Previously, What's more around, Padappai area. These water qualities of the parameters would checked for its tainting and for checking if it will be suitability for drinking or not to the individuals.

1.2.NEED FOR THE STUDY: For exhibit times the water utilization turns into All the more quickly utilized. Assuming that those utilization for groundwater may be All the more which prompts water shortage Furthermore diminish those groundwater level. Assuming that it will be defiled additional Toward simulated Also mamoncillo constructed activities, this will cause an sway for those human beings, animals, plants. Henceforth it will be vital to screening those groundwater personal satisfaction will be vital.

1.3.GEOGRAPHIC INFORMATION SYSTEM: GIS is an computer based information system used. To represent digitalization and analyzing of the features of geographical surface and events that taking place on it.

1.4.DEFINING OF GIS: GIS is an computer based system which used to digitalize and analyze the data of geographical surface. In almost 70% of geological reference as its denominating imperative underline the importance of a system represents the given data geographically.

The four functions of GIS:

- Data acquisition and preprocessing.
- Data management storage and retrieval.
- Manipulating and analysis.

➤ Product generation.

The GIS is an organizing tool of social information of Social information system GIS (SIS) towards decision making. The spatial information system converts the non- spatial datas into spatial data framework in GIS and bringing together to diverse information which generated from various different sources, it is also known as Integrated analysis.

1.5. APPLICATIONS OF GIS: GIS applicable for many filed like namely:

- ✓ Environment
- ✓ Urban planning
- ✓ Nature hazard management
- ✓ Archeology
- ✓ Agriculture
- ✓ Geology
- ✓

1.6. STUDY AREA

1.6.1. LOCATION AND EXTENT:

Kanchipuram district is administratively divide into BLOCK - 5 PANCHAYAT - 42

1.6.2. LOCATION OF THE STUDY AREA: and our study area covers Padappai taluk which consists of 4 points lies between North latitudes and East longitudes.

- ✓ Ground Point 1 - Latitude - 12°56'53.18", Longitude -79°57'2.08"
- ✓ Ground Point 2 - Latitude - 12°57'27.54", Longitude -80°5'18.98"
- ✓ Ground Point 3 - Latitude - 12°51'18.46", Longitude -79°57'57.73"
- ✓ Ground Point 4 - Latitude - 12° 51'48.72", Longitude -80°5'14.85"

1.7. SCOPE : Toward mapping Different water caliber of the locale has the ability on separate effectively. With realize regarding the water nature points Furthermore this camwood make concentrated on Toward screening from claiming groundwater is endeavored over Padappai area and the example gathered done What's more around 10kms from claiming surroundings.

The utilization from claiming GIS should examine ground water tumbles under those field Toward Hydrogeology. Ground water utilization may be monitored sufficiently, generally it might result for defiling those water. All things considered GIS camwood be used to dissect waste Furthermore Ground water information so as on select suitability steps for ground water revive.

1.8. OBJECTIVES: Should mapping from claiming groundwater caliber about Padappai district utilizing GIS.

- It assistance us on create an coordinated circuit ground water personal satisfaction guide of padappai area Toward utilizing GIS.
- The datas broke down which would bargains with translating Different ground water personal satisfaction parameters with GIS.
- The topical map which will be created for GIS assistance us on recognize those differential water nature in different districts.

2. GIS PROCESS:

2.1. CONVENTIONAL DATABASE:

- Layout Map of Padappai Region.
- Ground water quality parameters.

2.2. INSTRUMENTS USED:

- GPS
- Water Quality Field Kit.

2.3. SOFTWARE USED:

- ARCGIS 9.3

2.4. CREATION OF A DATABASE: An accumulation for majority of the data to such an approach that PC program might undoubtedly What's more rapidly chose the fancied spot about chose datas. These information build need aid composed by field records and fields. A field may be An absolute bit about data An record will be particular case finish that about fields Furthermore An document is an accumulation of records further this methodology for database need aid made utilizing Groundwater nature parameters.

2.5. SCANNING OF TOPOSHEETS: Filtering which proselytes the picture under Furthermore method for pixels, thereby generating a picture done raster design. An raster record may be a picture made Eventually Tom's perusing an arrangement from claiming spots known as pixels. They need aid accepted done rows Furthermore columns. An scanner captures those picture by appointing a column done a section Furthermore a shade quality each speck.

2.6. DIGITILIZATION: A raster image is a type of computerized image that consist of row after row of pixels. There are many different raster image file format digitalization converts raster to vector format. Most of GIS technique are vector format are more common, so the raster format converted into vector format. In vector format the position of the line determined by the co-ordinate which are present at starting and ending points of the lines.

2.7. GROUNDWATER QUALITY MAPPING:In order to access the ground water quality at sample points have been taken and identified the water quality parameters such as Turbidity, Total dissolved solids, pH, Total Hardness, Calcium, Magnesium, Iron , , Nitrate, Chloride, Sulphate. These tested datas re of in and around Padappai region in such parameter have been converted spatial variation using GIS.

2.8. SPATIAL ANALYST:Based on the result from TWAD. We have done the mapping process Using ARCGIS 9.3.3. Spatial Analyst of drinking water quality was carried out by Interpolation of sampling points by the algorithmic method Inverse Distance Weighed (IDW).

2.9. QUERY ANALYSIS:Data query retrieves a data subset from a map by working with attribute data. The selected data subset may be visually inspected (or) saved for future processing. Attribute data query requires the one of expressions are often different form one system to another.

2.10.SPATIAL INTERPOLATION:Spatial interpolation is a process of using points with known values at other points. Spatial interpolation is a means converting points datas to surface datas.

2.11. INVERSE DISTANCE WEIGHED:

Inverse distance weighed is a method of interpolation that estimates scale values by averaging the value of sample data points in the neighbourhood of each processing cells. The closer points to the centre of the cell being estimated the more influence (or) weighed it has in the average process.

2.12. SUMMARY:The water samples are tested for known its parameter and it is done at Laboratory .the lab test procedure was done as per IS code of practice. The water quality parameters are given in the database to GIS the Padappai map was scanned and digitalized the spatial variations are done. Finally Integrated ground water map was created using ARCGIS 9.3.

3.ANALYSIS

3.1. GROUND WATER QUALITY PARAMETERS:The major ground water quality parameters such as, Turbidity, Total dissolved solids, , pH, , Total Hardness, Calcium, Magnesium, Iron , , Nitrate, Chloride Sulphate have been estimated in 8 observation places in and around Padappai Region. The ground water quality data of the study are shown in the table and location in study area map. Finally, integrated ground water quality map was created using ARCGIS 9.3.

3.2. INTEGRATED GROUND WATER QUALITY MAPPING:

Spatial variation of ground water quality parameters were integrated. This integrated map will help us to create the water quality mapping. After this process it shows the ground quality of water map at Padappai region.

4. RESULT AND DISCUSSIONS:

In the above project ground water parameters are analyzed and integrated by water quality map of Padappai region was prepared by using GIS. It is digitalized in the view of thematic map by using ARCGIS 9.3. The below table are the standard water quality as per as is 10500-2012 by tamilnadu water supply and drainage board (twad)

(a). Parameters Of Turbidity, TDS, pH, Total Hardness

S.no	Village	Lat	Lon	Turbidity	TDS	pH	Tot.Hard	Cal
1	Naduveerapattu	12°56'39.68''N	80°3'4.39'' E	0.4	728	7.54	368	88
2	Manimangalam	12°54'36.88''N	80°2'31.88''E	0.2	412	7.78	200	48
3	Varatharajapuram	12°54'9.91''N	80°3'24.67''E	0.4	772	7.82	320	77
4	Aadhanur	12°51'49.01''N	80°2'8.75''E	0.5	1190	7.4	512	123
5	Orathur	12°52'7.93''N	80°1'5.24''E	0.6	4301	7.61	820	197
6	Serapencherry	12°52'14.08''N	79°59'4.70''E	1	790	8.27	160	38
7	Padapai	12°53'19.65''N	80°0'40.00''E	0.9	978	7.90	412	99
8	Malaipattu	12°54'25.34''N	79°59'49.03'' E	0.4	510	7.56	240	58

(b). Parameters Of Calcium, Magnesium, Iron

S.no	Village	Lat	Lon	Mg	Fe	NO ₃	Cl	SO ₄
1	Naduveerapattu	12°56'39.68''N	80°3'4.39'' E	35	0.1	37	134	36
2	Manimangalam	12°54'36.88''N	80°2'31.88''E	19	0.05	1	42	27
3	Varatharajapuram	12°54'9.91''N	80°3'24.67''E	31	0.08	0	112	32
4	Aadhanur	12°51'49.01''N	80°2'8.75''E	49	0.10	29	280	43
5	Orathur	12°52'7.93''N	80°1'5.24''E	79	0.07	6	1689	108
6	Serapencherry	12°52'14.08''N	79°59'4.70''E	15	0.06	11	112	23
7	Padapai	12°53'19.65''N	80°0'40.00''E	40	0.08	18	258	29

8	Malaipattu	12°54'25.34''N	79°59'49.03''E	23	0.08	15	35	22
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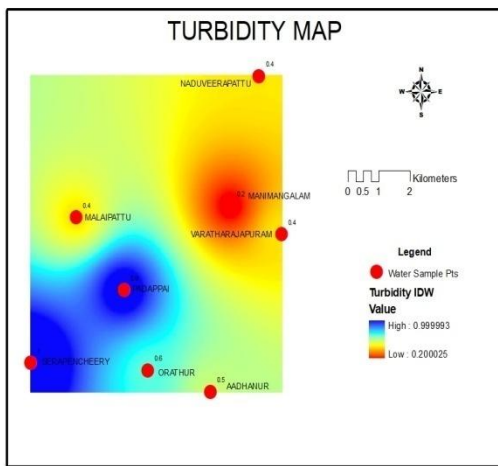


Fig:1 Turbidity parameter

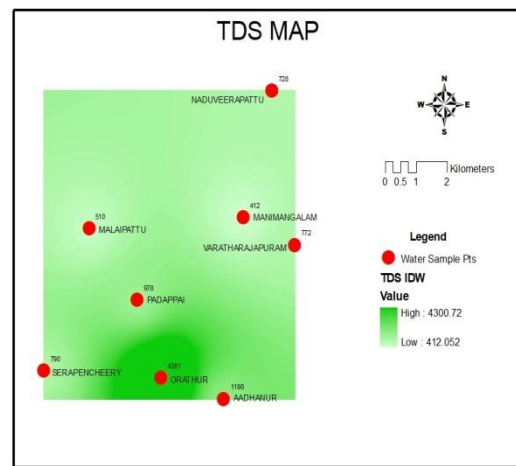


Fig:2 TDS parameter:

The Fig 1 : It represent the regions which are varying ranging between higher to lower value of turbidity. Serapencehery is the higher ranging in turbidity.

Fig.2 It represent the regions which are varying ranging between higher to lower value of TDS. Aadhanur is the higher ranging in TDS.

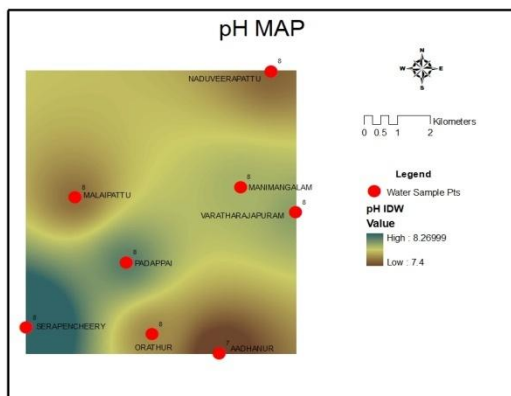


Fig:3

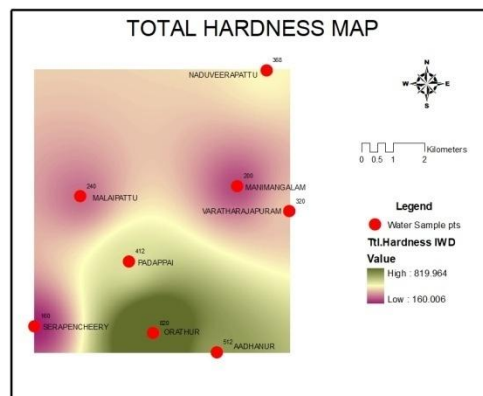


Fig:4

Fig:3 pH parameter: It represent the regions which are varying ranging between higher to lower value of pH. Serapencehery is the higher ranging in pH.

Fig:4 Total hardness parameter: It represent the regions which are varying ranging between higher to lower value of total hardness. Orathur is the higher ranging in Total hardness.

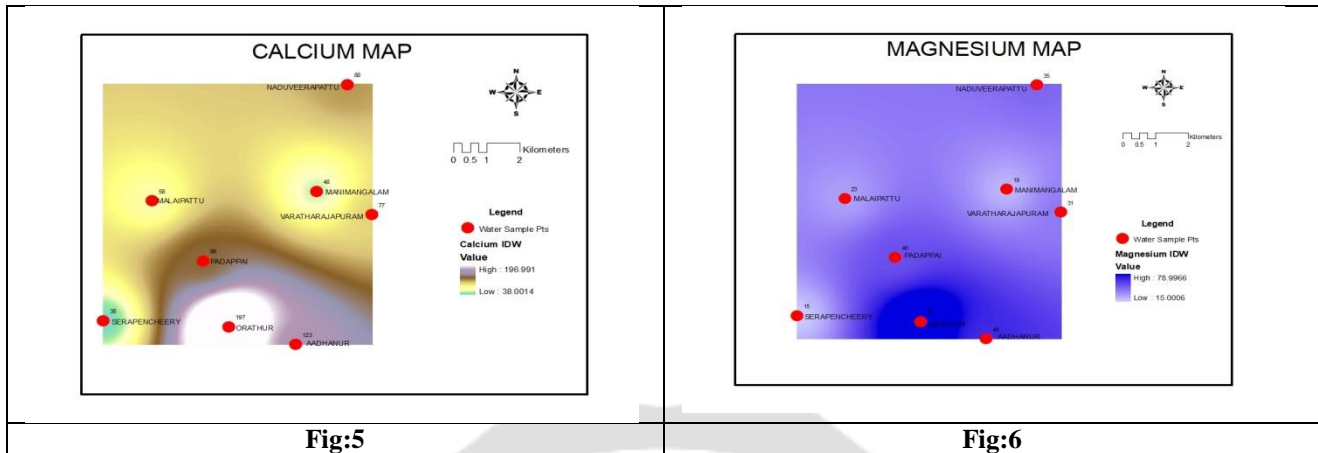


Fig:5

Fig:6

Fig:5 Calcium parameter: It represent the regions which are varying ranging between higher to lower value of calcium. Orathur is the higher ranging in calcium.

Fig:6 Magnesium parameter: It represent the regions which are varying ranging between higher to lower value of magnesium. Orathur is the higher ranging in magnesium.

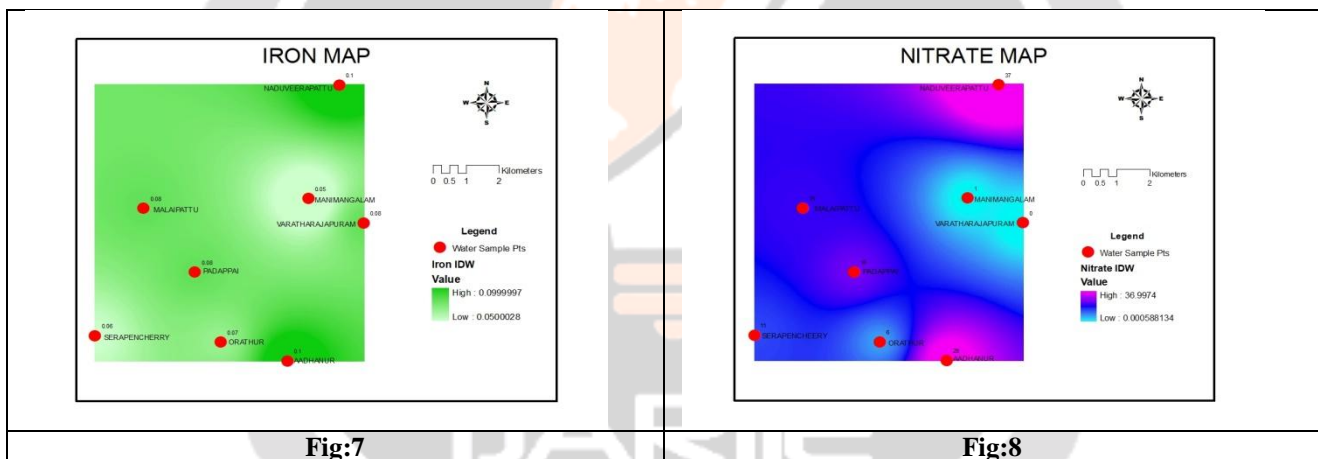


Fig:7

Fig:8

Fig:7 Iron parameter: It represent the regions which are varying ranging between higher to lower value of Iron. Aadhanur is the higher ranging in iron.

Fig:8 Nitrate parameter: It represent the regions which are varying ranging between higher to lower value of Nitrate. Naduveerapattu is the higher ranging in nitrate.

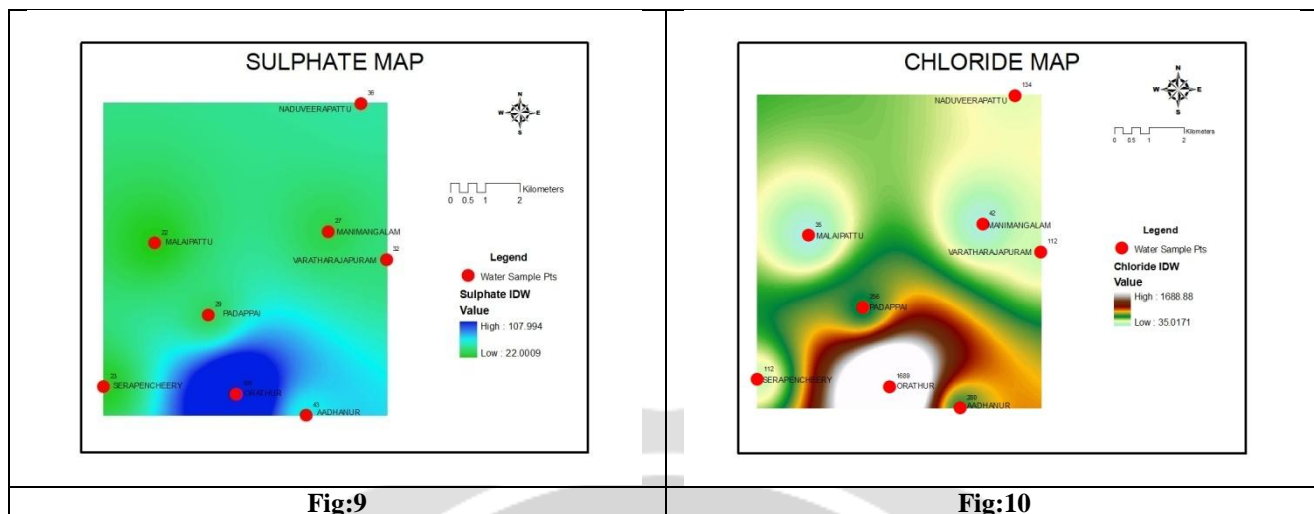


Fig:9 Sulphate parameter: It represent the regions which are varying ranging between higher to lower value of sulphate. Orathur is the higher ranging in sulphate.

Fig:10 Chloride parameter: It represent the regions which are varying ranging between higher to lower value of Chloride. Orathur is the higher ranging in chloride.

5. RESULTS OF REGIONS:

(a)NADUVEERAPATTU

- NITRATE: 37mg/L of nitrate content are available more as compared other regions.

(b). MANIMANGALAM: In this region all the parameters are under the permissible limit of IS code 10500-2012.

(c). VARATHARAJAPURAM In this region all the parameters are under the permissible limit of IS code 10500-2012.

(d). AADHANUR

- TDS: 1190mg/L is the value analyst by the sample which are collected in that region.
- IRON: The iron concentration is more in Aadhanur region in the range of 0.10mg/L which are illustrated in the spatial variation map.

(e). ORATHUR:

- In this region some of the parameters exust beyond the permissible limit. They are as follows;
 - ✓ TDS – 4302mg/L (Actual permissible limit is 2000mg/L).
 - ✓ Total hardness – 820 mg/L.(actual permissible limit is 600mg/L).
 - ✓ Chloride - 1689 mg/L. (Actual permissible limit is 1000mg/L).

Some of the parameters which having higher value compared to all other regions.

- Calcium : 197mg/L.
- Magnesium : 79mg/L
- Chloride : 1689mg/L
- Sulphate : 108mg/L.

6. CONCLUSION:

By analyzing collected samples in padappai region, the present Orathur is the region which the groundwater parameters are higher than Kundrathur panchayat. In Future it will be increasing and the contamination will affect the water quality very badly. Hence some preventive measures are to be taken for preserving and essential usage of groundwater. The more in groundwater adaptation will increase the water level which leads recharging the ground surface level.

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