# EVALUATION OF CHANNEL WATER QUALITY IN SHAMANUR, DAVANGERE CITY

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**Abstract**. *In the present study the water sample is collected from a channel near Shamanur, Davangere city. Grab sampling method was carried out from the month of December to April 2015-2016.Physico-chemical characteristics of the water were determined, and 14 parameters were considered. Analysis of the same was conducted in the laboratorial experimental work. The results obtained were found under the permissible limits. The evaluation results shows that channel water can be utilized for agricultural purposes.*

***Key Words:*** *Sampling, water analysis, pH, SAR, Eutrification*

## 1. INTRODUCTION

Water is the main source for agriculture. Water is polluted in agriculture due to the use of chemical fertilizers, improper use of land for solid waste disposal. Yield of the crop is mainly dependent on the quantity and quality of the water. If the water that is being used for the agriculture is having low pH content, it turns out to be acidic in nature. With high exposure it hinders the growth of the crops that is being cultivated. It is very necessary to maintain the quality of the water, since it is being used for various purposes. The live stock gets affected if the water is contaminated with pollutants and the microbes. Therefore it is significant to monitor the quality of the water from time to time.

### 1.1 SOURCES OF CONTAMINANTS

The sources of contaminants are not determined in particular. The pollutants get induced into the water through many non point sources. Some point sources of the pollutants may be gathered as the chemical fertilizers used for the agricultural purpose for the enhancement of the crop yield with providing certain nutrients. At some point of time it may be also contributing from the nearby industries or by the cleaning of the vehicles and live stocks. Direct disposal of the wastes from the industries will lead to significant variation in pH, turbidity and aesthetics of the water.

## 2. MATERIALS AND METHODOLOGY

### 2.1 EQUIPMENTS REQUIRED

- pH meter
- Conductivity meter
- Flame photometer
- Conical flasks
- Pipettes and Burettes

### 2.2 SAMPLING METHOD

Grab Sampling is adopted for the present study. It is a process of collecting a sample at a point at the same instant of time.

### 2.3 METHODOLOGY

14 parameters were studied and the same are shown as below with respect to the methods they adopt.

**Table -1: Methods adopted for determining water quality parameters**

| SL NO | PARAMETERS | METHODS |
|---|---|---|
| 1 | pH | pH meter |
| 2 | TDS | Conductivity meter |
| 3 | Electrical Conductivity | Conductivity meter |
| 4 | Chlorides | Titrometric |
| 5 | Calcium | Titrometric |
| 6 | Magnesium | Titrometric |
| 7 | Sodium | Flame photometer |
| 8 | Potassium | Flame photometer |
| 9 | Carbonates | Titrometric |
| 10 | Bicarbonates | Titrometric |

Initially 4 Stations were taken for determining 14 parameters that are considered. Sampling of the water is carried out on the monthly basis starting from the month of December to April 2015 -2016. Each of the parameter was determined by the experimental work.

## 3. RESULTS AND DISCUSSION

### 3.1 pH

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 7.85 | 7.60 | 7.89 | 7.55 |
| JAN | 6.82 | 7.32 | 6.96 | 7.66 |
| FEB | 7.41 | 6.97 | 7.54 | 7.32 |
| MAR | 7.07 | 6.91 | 7.12 | 7.05 |
| APR | 7.10 | 7.32 | 6.90 | 7.22 |

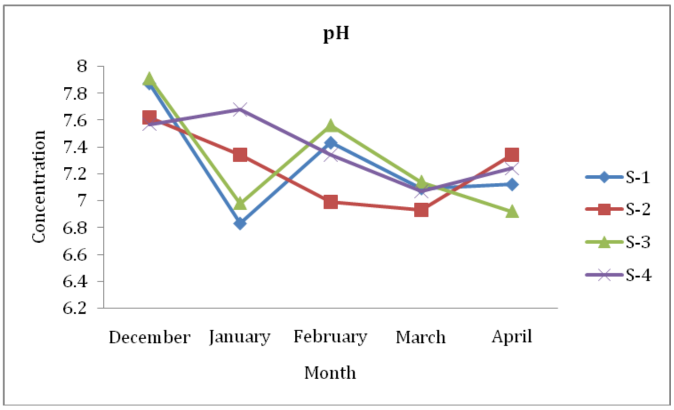


Fig 3.1 – Monthly variation with respect to different stations

### 3.2 TOTAL DISSOLVED SOLIDS

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 157 | 172 | 14602 | 190 |
| JAN | 153 | 167 | 152 | 206 |
| FEB | 227.5 | 170 | 167.8 | 230 |
| MAR | 196.8 | 185.5 | 147.7 | 210 |
| APR | 161 | 193 | 151.6 | 196.4 |

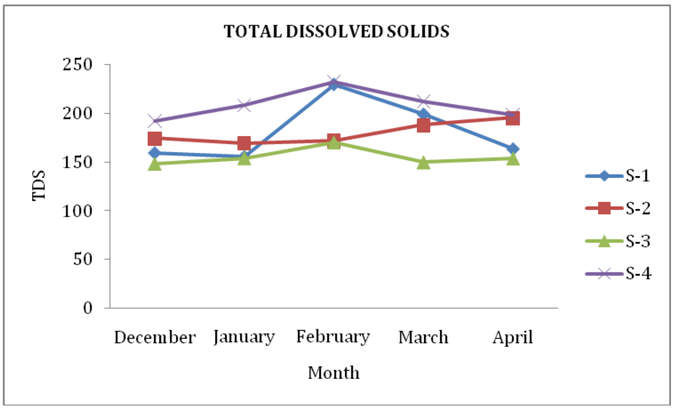


Fig 3.2 – Monthly variation with respect to different station

### 3.3 ELECTRICAL CONDUCTIVITY

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 237 | 218 | 248 | 315 |
| JAN | 246 | 229 | 240 | 244 |
| FEB | 246 | 216 | 236 | 223 |
| MAR | 248 | 210 | 238 | 216 |
| APR | 243 | 228 | 223 | 217 |

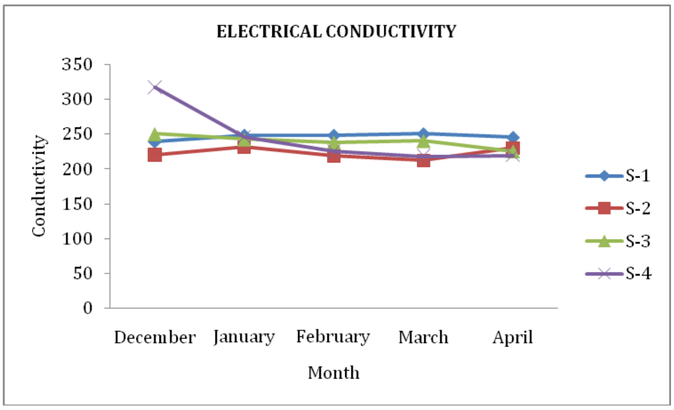


Fig 3.3 – Monthly variation with respect to different stations

### 3.4 CHLORIDE

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 12 | 15.15 | 12.1 | 18.7 |
| JAN | 7.6 | 10.33 | 10.9 | 9.3 |
| FEB | 23.9 | 19.43 | 20 | 21.1 |
| MAR | 13.5 | 16.6 | 10.4 | 19 |
| APR | 17.6 | 19.6 | 15.1 | 14.3 |

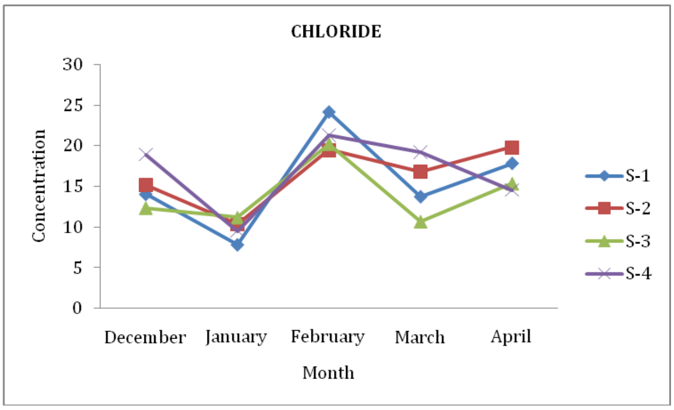


Fig 3.4 – Monthly variation with respect to different stations

### 3.5 CALCIUM

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 52 | 49.1 | 54 | 48 |
| JAN | 55.1 | 57.4 | 48.7 | 52.5 |
| FEB | 57.9 | 56.1 | 57.6 | 54.3 |
| MAR | 42 | 50.2 | 48.6 | 42.1 |
| APR | 52 | 44.1 | 45.8 | 51 |

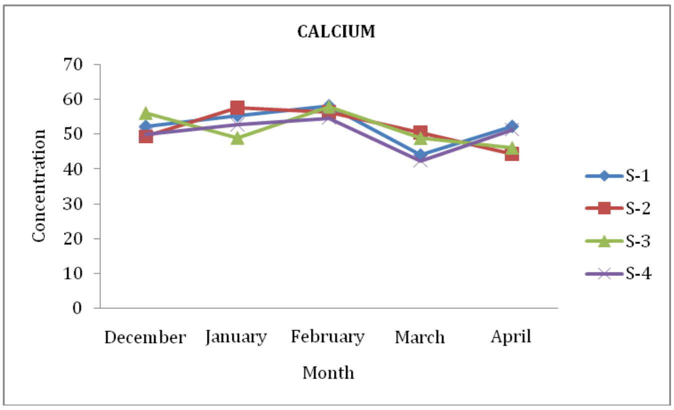


Fig 3.5 – Monthly variation with respect to different stations

### 3.6 MAGNESIUM

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 12.3 | 18.9 | 16.1 | 9.8 |
| JAN | 15.1 | 17.2 | 18 | 12 |
| FEB | 17.8 | 16.5 | 12.7 | 14.4 |
| MAR | 13.9 | 10.4 | 18.5 | 11.9 |
| APR | 12.2 | 14.6 | 11.7 | 17.5 |

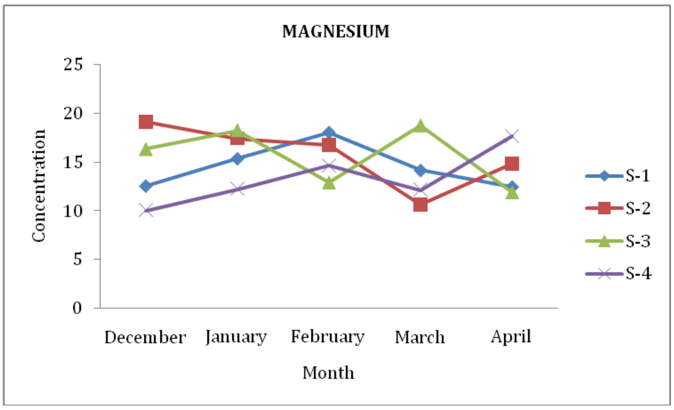


Fig 3.6 – Monthly variation with respect to different stations

### 3.7 SODIUM

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 10.6 | 12.1 | 6.9 | 9.1 |
| JAN | 13.2 | 11 | 8.2 | 10.4 |
| FEB | 18.5 | 15.4 | 16.9 | 14.1 |
| MAR | 12.6 | 8.9 | 7.3 | 14.2 |
| APR | 8.4 | 9.9 | 6.2 | 12.6 |

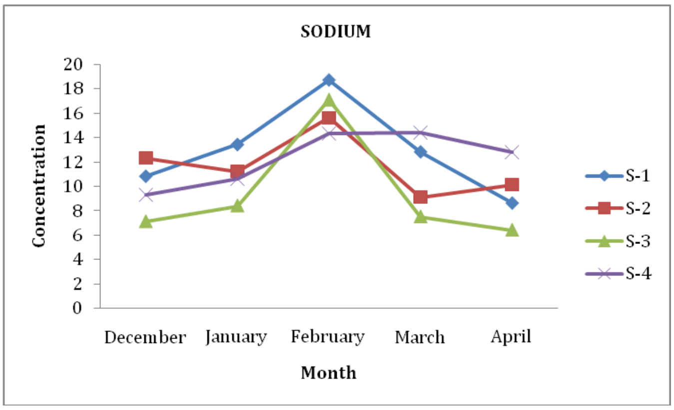


Fig 3.7 – Monthly variation with respect to different stations

### 3.8 POTASSIUM

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 6.8 | 12 | 9.1 | 10.1 |
| JAN | 10.9 | 9.4 | 11.1 | 12.3 |
| FEB | 11.3 | 11 | 8.8 | 9.9 |
| MAR | 9.1 | 10.2 | 10.8 | 7.8 |
| APR | 11.4 | 11.2 | 10.3 | 11 |

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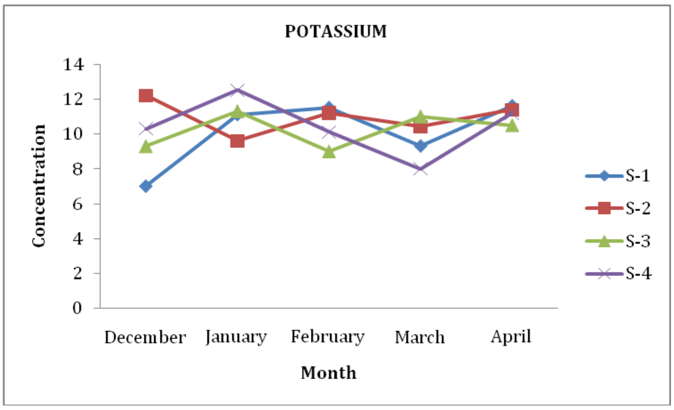


Fig 3.8 – Monthly variation with respect to different stations

### 3.9 CARBONATES

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 0.063 | 0.02 | 0.080 | 0.074 |
| JAN | 0.016 | 0.013 | 0.15 | 0.02 |
| FEB | 0.041 | 0.067 | 0.031 | 0.052 |
| MAR | 0.066 | 0.051 | 0.077 | 0.067 |
| APR | 0.01 | 0.027 | 0.014 | 0.022 |

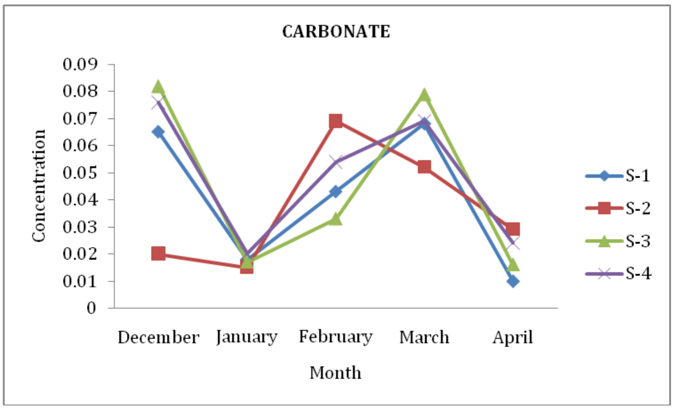


Fig 3.9 – Monthly variation with respect to different stations

### 3.10 BI-CARBONATES

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 0.063 | 0.39 | 0.69 | 0.50 |
| JAN | 0.2 | 0.36 | 0.56 | 0.19 |
| FEB | 0.1 | 0.19 | 0.17 | 0.20 |
| MAR | 0.60 | 0.46 | 0.36 | 0.39 |
| APR | 0.2 | 0.21 | 0.15 | 0.13 |

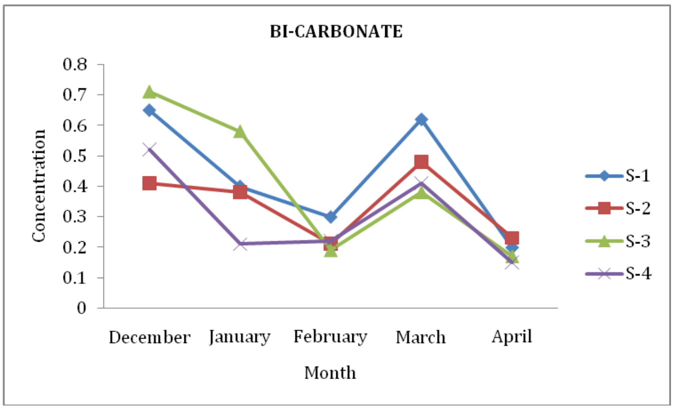


Fig 3.10 – Monthly variation with respect to different stations

### 3.11 SODIUM ADSORPTION RATIO (SAR)

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 1.6 | 1.9 | 0.9 | 1.4 |
| JAN | 2 | 1.6 | 1.2 | 1.6 |
| FEB | 2.8 | 2.3 | 2.6 | 2.2 |
| MAR | 2.1 | 1.4 | 1 | 2.5 |
| APR | 1.3 | 1.6 | 0.9 | 1.9 |

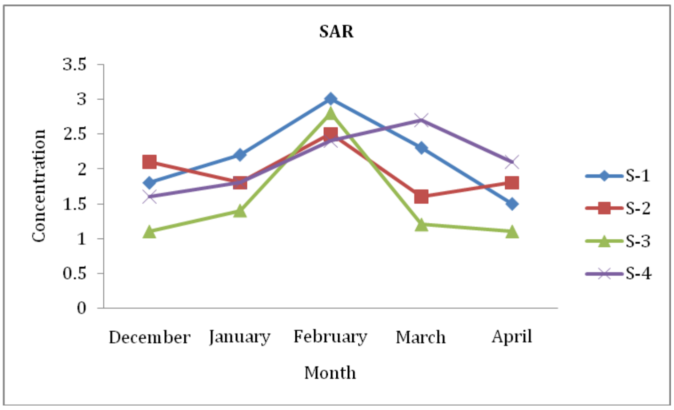


Fig 3.11 – Monthly variation with respect to different stations

### 3.12 RESIDUAL SODIUM CARBONATE(RSC)

| MONTH | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| DEC | 0.17 | 0.8 | 0.17 | 0.21 |
| JAN | 0.8 | 0.07 | 0.13 | 0.04 |
| FEB | 0.05 | 0.064 | 0.054 | 0.067 |
| MAR | 0.2 | 0.13 | 0.9 | 0.13 |
| APR | 0.055 | 0.073 | 0.054 | 0.041 |

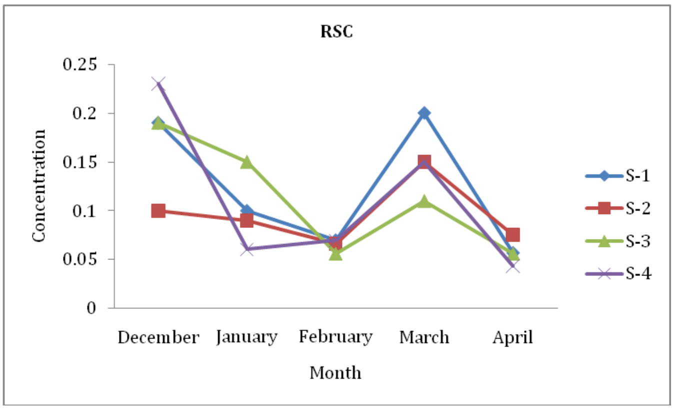


Fig 3.12 – Monthly variation with respect to different stations

## 4. CONCLUSIONS

From the above tables and graphs of the water analysis done .It is evident that the analyzed parameters were found within the permissible limit and is suitable for agricultural purpose.

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