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ASSESSMENT OF GROUND WATER QUALITY AND ITS TREATMENT AT URULI DEVACHI

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ABSTRACT
The Daily waste generation in Pune city is 1000-1200 mt/Day of which 80% waste collection and disposal of waste at to dump site every day. This solid waste is deposited at Urali Devachi Village. This open dumping site has neither linear system nor other mechanism for groundwater pollution. Author proposed to carry out the investigation into ground water quality and around Municipal Solid waste dumping site. The study parameters for leach ate and groundwater quality were determined in the parameters like Ph, Chloride,totalhardness.TDS,BOD,COD, Standard methods were used for the analysis of the samples. Rag-pickers workers, vehicle drivers those residing nearer areas are continuously exposed and it becomes the source of air pollution. It has been observed that leachate originates from solid waste land. The community based on solid waste decomposition is a good and safe disposal method, biological decomposition of segregated organic waste is more useful for solid waste management, and it can easily convert waste to Fertilizer

KEYWORD: Groundwater pollution, municipal solid waste dumping site, Hydro chemical Analysis

INRODUCTION
Pune city is located at latitude $18^0$31' N & longitude $73^0$55' E. Pune city area is situated in the Valley of Mula–Mutha Rivers. The Pune city is located on the banks of the Mutha River on typical rugged Deccan trap topography with difference in elevation between highest and lowest point being 30 meters. Physiographically, the Pune city is divided into four sections according to the pattern of natural drainage.Pune is the 8^{th} largest city in India and the2^{nd}largest in the state of Maharashtra. Population about 4 million Households.

OBJECTIVES OF INVESTIGATIONS
To measure the Parameters of quality of water and assess the risk of contamination**.** Following is the specific objectives:

- Assessment of water status
- To find out the contamination element in Ground water
- To make awareness on water quality and pollution.

MATERIALS AND METHODS
The samples were carried out manually, and water samples are stored in containers. Collected water samples were analyzed within 24 hrs.The occurrence of the ion and impurities in the ground water like bore well and open well are mainly depends upon the geologic formation at the particular area. The hydrogeology of the Pune District forms on the basis of selection of the water quality Parameters like Color, Temperature, PH, Turbidity, Conductivity, Total Hardness, Total Alkalinity, Total Dissolved solids, Total Suspended solids, Biochemical Oxygen Demand, Chemical Oxygen Demand, Chlorides, Sulphates, Phosphates, Nitrates, Calcium, Magnesium, Sodium, Potassium and Biological test. The study area is located around the Municipal solid waste dump site which results in percolation of leachate in groundwater.

Table-1:Pre-Monsoon Season Test Analysis Results

Sr.no	Parameters	Desired limit	Result (Pre Monsoon)					
			OW1	OW2	OW3	OW4	BW1	BW2
1	PH	6.5-8.5	7.2	7.2	8.3	8.6	7.2	7.3
2	Temperature	230c	4.2	2.3	2.5	1.2	6.3	2.3
3	Turbidity	5 NTU	1.2	1.1	2.1	2	0	0
4	Total Hardness	300mg/l	276	268	248	234	267	252
5	TDS	500mg/l	712	840	1100	980	542	360
6	BOD	30mg/l	31	28	37	42	42	43
7	COD	250mg/l	980	786	565	428	400	387
8	Chlorides	250mg/l	620	578	523	431	623	343
9	Magnesium	30 mg/l	54	67	32	78	60	55
10	Alkalinity	200mg/l	950.4	823.68	702.9	559.35	176.22	143.55

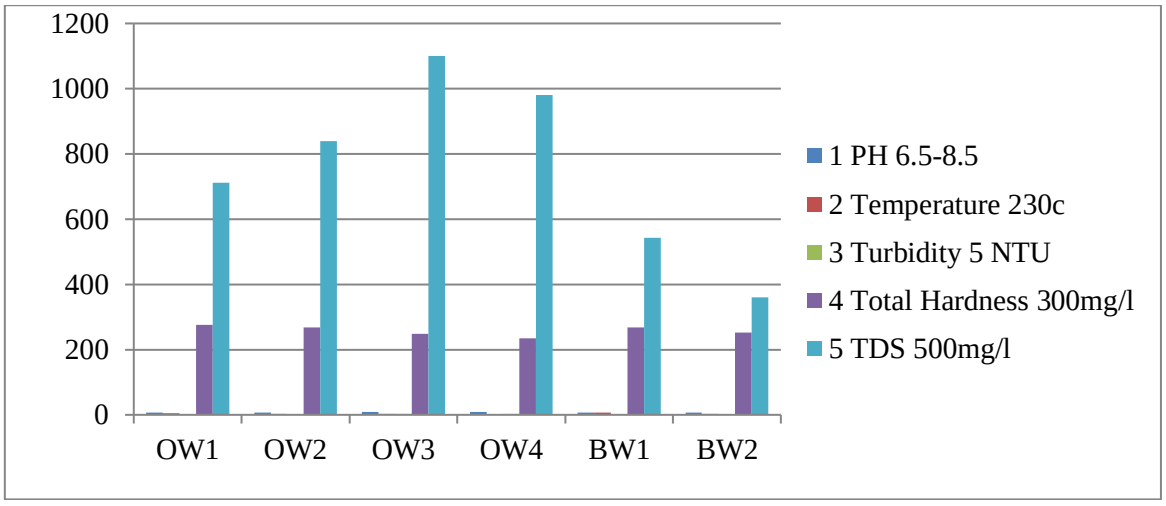

Fig.1 concentration of PH, Temperature.,Turbidity,Total Hardness,&TDS

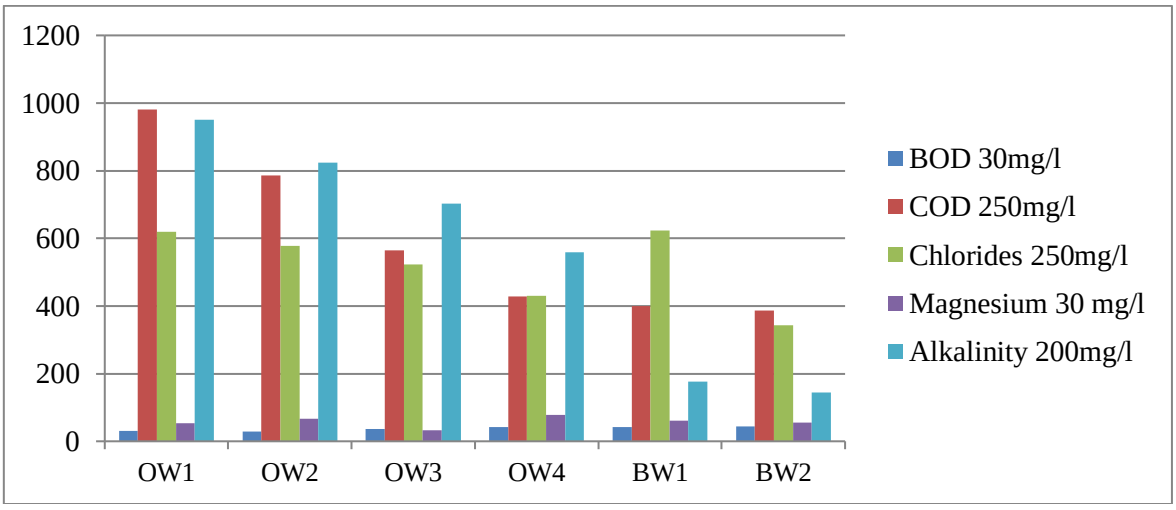

Fig.2 Concentration of BOD, COD, Chlorides, Magnesium &Alkalinity

Table-2: Post-Monsoon Season Test Analysis Results

Sr.no	Parameters	Desired limit	Result (Post Monsoon)					
			OW1	OW2	OW3	OW4	BW1	BW2
1	PH	6.5-8.5	5.7	5.9	6.2	6.7	7.2	7.4
2	Temperature	230c	18.3	20	21.2	22.2	21	20.2
3	Turbidity	5 NTU	0	0	1.2	1	0	0
4	Total Hardness	300mg/l	423	632	320	479	375	280
5	TDS	500mg/l	698	862	934	785	354	315
6	BOD	30mg/l	47	42	52	56	41	38
7	COD	250mg/l	76	85	65	78	48	50
8	Chlorides	250mg/l	267	260	354	453	398	352
9	Magnesium	30 mg/l	105	125	180	151	171	95
10	Alkalinity	200mg/l	120	100	110	108	80	75

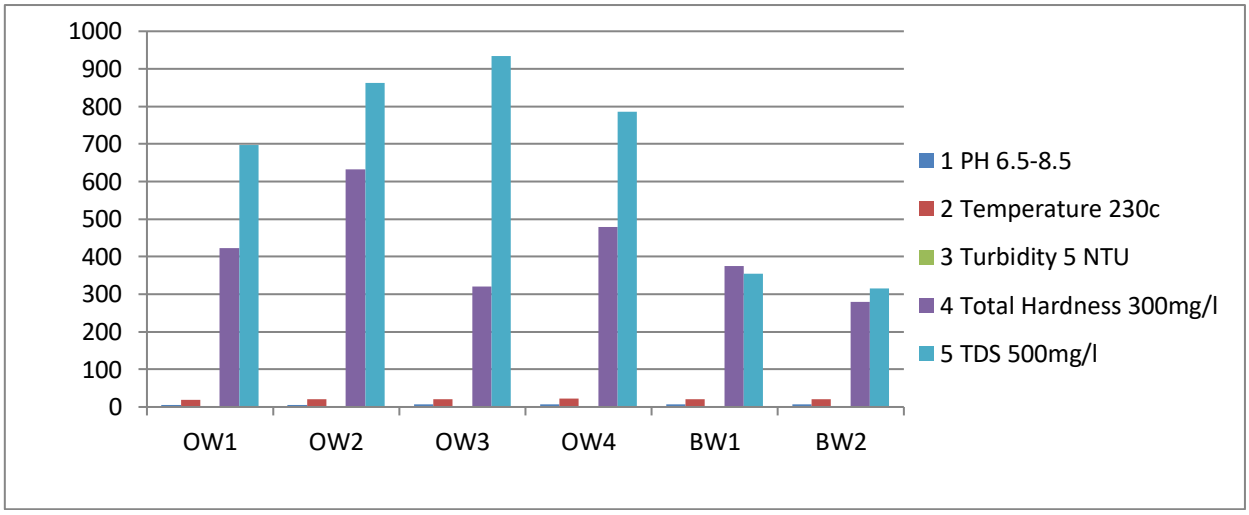

Fig.3 Concentration of PH, Temperature, Turbidity, Total Hardness &TDS

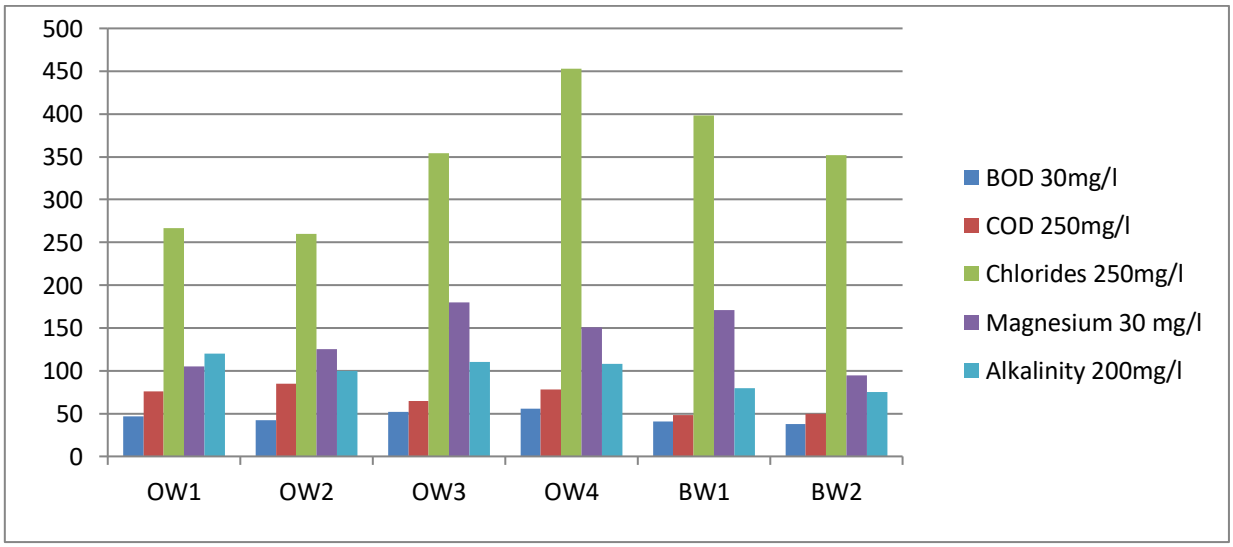

Fig.4 Concentration of BOD, COD, Chlorides, Magnesium &Alkalinity

RESULTS AND DISCUSSION

The Sampling stations were selected randomly within 3 km radial distance from Dumping site by grab sampling methods. Four water samples were collected from open wells located around 699, 1170, 1161.30, 1310.07, meters and Two water samples were collected from bore well located at 1025.50, 950.05 meters respectively with reference to the solid waste landfill site. Ground water quality parameter studied for open wells and bore wells around the solid waste dumping site. These samples were studied during post monsoon (Nov 2015) and pre monsoon (April 2016) period for mentioned water quality Parameters. The results are shown in Table No 1.and Table 2. The discussions for the same from Table-2 (Post Monsoon) are as follows-No color was observed for all samples which showed that organic matter was absent in the samples. Temperature was observed as specified limit. The limits varying from 18.3 to 22.2 degree Celsius.PH was within limits for all samples. All the samples are not shown undesirable Turbidity level. All were water samples were in limits ranging from 0 to 1.2 NTU.

The total hardness not within limit, Total Alkalinity was ranging from 75 to 120 mg/lit and was within limits. Total Dissolved solids for samples open well -1 to open well-4 exceed the desired limits. But in BW1 &BW2 is within limit. Biological Oxygen Demand is disturbed and need to be controlled. Higher BOD level is responsible for disturbance for well ecosystem and hence the well water has got bad odors. The BOD values for all the samples were excess that of desired limits. COD values for all the Samples were within the range which shows the absence of mixing of any industrial waste water. Chloride level is beyond acceptable limit. The desirable limit being 250 mg/lit, all the samples showed values ranging between 260 to 453 mg/lit. Higher value of Chloride may impart a salty taste to the water. It can be predicted that leachate is the source for these heavy metals. The desirable limit for magnesium being 30 mg/lit, but all samples are not in desired limits. Alkalinity values for all the samples were within the range.

CONCLUSION:

From above observation it may it may concluded that Concentration of TDS, BOD, COD, Chlorides, Magnesium and Alkalinity Exceeds desired the limit as APHA in Pre-Monsoon season. From result Analysis of post monsoon season concentration of TDS, BOD, Chlorides and Magnesium is not in desired limit. But it is observed that concentration of BOD, Chlorides, Magnesium, and Alkalinity is more as compared to Post monsoon season. Concentration of BOD, COD, Chlorides, Magnesium and Alkalinity observed in well water exceed the limits so it is not safe for drinking, commercial use irrigation and industrial purpose. From the overall study it is observed that dumping site of Municipal solid waste at ground not only affect the environment but also on human health and property in vicinity area.

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