A STUDY OF EVALUATION OF WATER QUALITY IN LUMUT PORT BY USING PH ANALYSISIN THE REDUCTION OF SEA CREATURES HARMNESS

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ABSTRACT

This initiative focuses on Perak, Malaysia, Manjung River water quality. Potential of hydrogen analysis measured marine animal attachment at Lumut Port. Second, identify water quality data factors. In order to compare Manjung River water quality trends for validation. Water is essential to humans and ecosystems; hence water quality is significant. This study collected water samples in a selected research zone using the specific appropriate equipment. In this river, marine creatures were most affected by pH, followed by temperature, conductivity, dissolved oxygen, salinity, and turbidity. Identifying water sampling sites wasthe goal. Know the area before taking water samples. The concept was based on a station at Port Lumut, it monitors Lumut water. The experiments were repeated to measure the acidity of the water sampling.Color water variations wase observed by researchers during and after sampling. The water sample datawas recorded by the researcher. To obtain the accuracy of the readings, the measurements were compared with the standard-compliant water samples weekly, daily, and hourly. The water quality will affect the aqua life system.

Keywords: *Conductivity, pH, toc sensor, dissolved oxygen, alkaline*

1.0 INTRODUCTION

Water is essential to life, industry, farming, and other professions. The world population and demand for fresh water have expanded rapidly in recent decades. The physical, chemical, and biological aspects of water quality vary throughout time and place. Poor water quality harms humans, marine life, and the ecosystem. Thus, it is crucial to determine the water issue and source of contamination. The project must also halt pollution and prepare to prevent it.

The research venue is Lumut Port on Peninsular Malaysia's western coast. The project territory isthe principal tributary of the Manjung River, the Dinding River. A facility at the Lumut Port pollutes the water. Daily marine activities, such as ports, shipyards, piers, fisheries, and agriculture, occur aroundthe Dinding river. These activities pollute because the water in Lumut Port is contaminated. This investigation will determine if the water quality at three locations is clean or contaminated. In order to determine the water quality, this investigation analyzed its physical features. Nature will be affected by the increased need for marine activities that require land-sea coordination. Due to polluted water, [13] believes marine operations should decrease.

This project examined how water quality changes affect marine operations. Pollution at ports may be causedby ships or their cargo. Humans obey all the regulations to limit pollution. The worst water pollution might harm aquatic species, reducing their numbers and affecting the local environment. Water contamination may also damage humans since water is a vital resource for many everyday activities.

Water is one of the most important elements on the earth, which is very useful to humans, animals and also plants. The contents in water may not be replaced by any liquid that exists on this earth because all liquid hastheir own contents which make them different on purpose they are used for. [6] stated that water quality is such an important thing to focus on. This is because, from the water quality experimental, the project known the level of the pollution in water area following the parameter that been chosen by the researchers itself.

Water quality is crucial because water is very important to all the living things which includes human and ecosystem as well as health [1], also stated that water that has a good quality is very necessary for living things. Water resources are usually contaminated by industrial sewage. Manjung has palm oil processing, wheat and fertilizer production, food manufacturing, and wood, brick, steel, and other building material factories. These processes produced a lot of non- biodegradable organic material and chemical and toxic waste, which will be discharged into the ocean.Dinding river imports and exports serve nearby trades. Ships may leak oil while being repaired, loaded,or unloaded, and workers often discard waste in estuaries, worsening water quality. This double whammy degrades the environment. This project identified pollution sources using water quality parameters. [2]\

There were many marine operations in Lumut water that have the potential to contaminate the water, affecting sea species and humans. This investigation found poor water quality in Dinding River and no recent evidence to guarantee its safety. Cloud programs monitor water quality to safeguard marine life. The analysis of data from a large number of probes reveals the locations of rivers and ponds.Data on water quality may also be provided for use in further research by this project. [4]
The commercial area of Bandar Seri Manjung, which is situated between Sitiawan and Lumut, is responsible for a considerable amount of the pollution that is found in the river. The number of organic wastes that is dumped into rivers is greatly exacerbated by the presence of commercial marketplaces and dining establishments.

The location that was regarded to be within the scope of the inquiry was restricted to only the neighborhood of Lumut Port because of the technique that was employed to collect the sample of seawater. This resulted in the investigation only covering a small portion of the island. Throughout the course of the investigation that we are now working out, we will be making use of data pertaining to a variety of various aspects, some of which include pH, temperature, conductivity, total dissolved solids, dissolved oxygen, and salinity.

2.0 RESEARCH METHODOLOGY

Due to the method that was used to get the sample of saltwater, it was determined that it could only be utilized in the region immediately around Lumut Port. Throughout the course of the investigation, the project will make use of data on a great deal of different aspects, including pH, temperature, conductivity, total dissolved solids, dissolved oxygen, and salt. It is referring to the block diagram illustrated below, which is labelled as Figure 1.

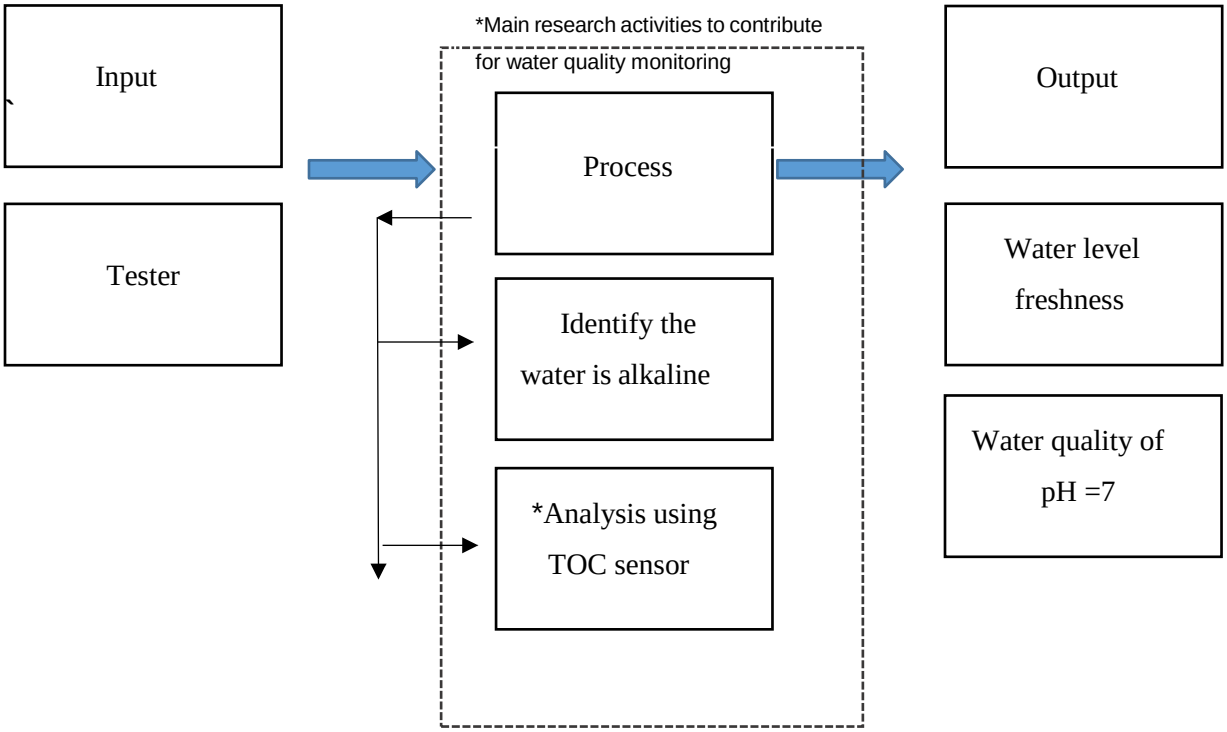

Figure 1: Block Diagram

Lumut Port in Malaysia, Perak west coast is off the Straits of Malacca. Strategically located for liquid and dry bulk transshipment in South-East Asia, the Middle East, Atlantic Basin, China, and Australia/Pacific. Lumut Port data investigation showed multiple boats entered. The ship docked with many activities. The sample sites spanned latitude (4°15'32.2"N) and longitude (100°39'48.0"E).

After that, testing and detecting procedures determine the water's alkalinity and marine life suitability. If the test is alkaline, we shall continue. If the experiment fails to generate an alkaline result, it must beremeasured until it does. The project observes watercolor changes at the sites where collect samples and thereafter. This phase decides the investigation. All water samples meeting those parameters will be compared by week, day, and hour of testing.

3.0 FINDING OF THE RESEARCH

The project offered water sample analysis examples. The project observed weekly water samples from the study location. Extreme weather, tides, currents, and human activities affect water hue and cleanliness. Six parameters assessed all 60 water samples. pH, salinity, temperature, conductivity, TDS, and DO are the parameters. ArowanaPro (Temp) (pH) and BLE-0800 System for Conductivity, Total Dissolved Solids, and Dissolved Oxygen measure these parameters. The project calculated the station-average parameter value using the Equation (1) below.

$$the\ total: \frac{\Sigma W}{number\ of\ stations} \quad (1)$$

Equation 1 showed the calculation of total parameters with the number of stations. The chart below averages station parameter values. As shown, parameter checks at each site yielded results within the same range. The parameter values were equivalent and had few notable variances. The water samples were collected at the same spot and during the same activities, such as fishing, yachting, docking ships and others. Conductivity, TDS, and DO are above the typical values of 45.57 mS/cm, 29.00 g/L, and 5.00 mg/L, respectively. Alkaline water has a pH value between 7.46 and 7.59.

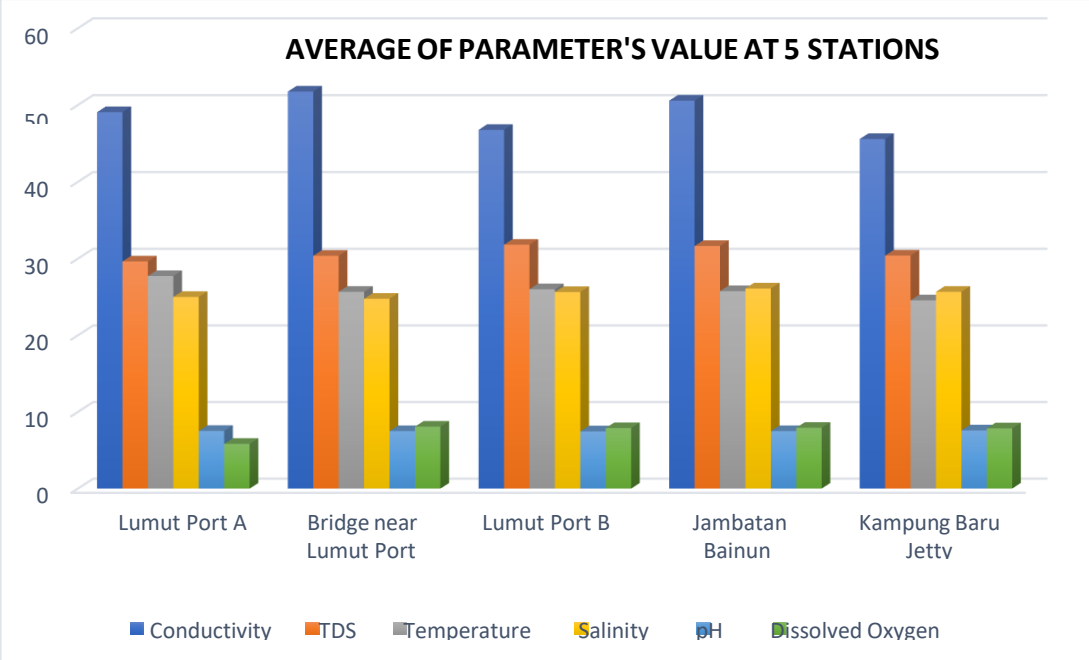

Figure 2: Average of parameter value at 5 stations

Figure 2 of the table shows that the water at every point was observed. The involved stations are Lumut A, which is located at (4°16'52"N 100°37'58"E). There was a 50-meter radius around each station, so that's where the water samples were taken. Station 1's pollution level of 0.72 makes it good for port water activities and protecting sea life. After that, the pollution score at station 2 was the same as at station 1, which showed that sea life in Lumut Port was healthy. The water quality at the station is good for marine life. All the weather, waves, currents, and activities are the same at each spot. This could be

why the values in the five places where all the same and in the same range.

As a consequence of this, referring to Table 1 show, that the dissolved oxygen, salinity, total dissolved solid, conductivity, temperature, and pH of the water, all of which are between 0.72 and 0.74, have an effect on the marine life and aquatic life in the Perak River, where there aren't a lot of things for them to do. This is because the dissolved oxygen level in the water is between 0.72 and 0.74.

Table 1: Measurement pollution index

Station	**Pollution Index**	**Status of Water Quality**
1	0.72	Good condition
2	0.72	Good condition
3	0.70	Good condition
4	0.73	Good condition
5	0.74	Good condition

Station 2 is located outside the UniKL MIMET's slipway and a bit far from the slipway. It is depicted in Figure 3. It is located under the bridge near the Lumut port. There are 6 parameters analyzed which were Conductivity, pH, TDS, DO, temperature, and salinity of the water for these stations. The results are shown in Table 2.

Figure 3: Water sampling taken at Station 2

Table 2 shows the findings for the water sampling and quality which were quite similar to the earlier location. Conductivity averages 51.75 mS/cm. Week 1's 93.00 mS/cm was the highest. The lowest conductivity values were 44.8 mS/cm in the 2nd week and 27.54 g/L in the 7th week, lowest TDS. TDS peaked at 40.33 g/L in Week 1. This occurred because both parameters were linked. TDS standard deviation averages 30.37 g/L. Week 12 has the highest temperature, 27.3 degrees Celsius, while week 1 has the lowest, 24.6 degrees Celsius. Salinity was recorded next. The lowest salinity was 23.17g/Kg in week 1, followed by 29g/Kg in weeks 8 and 9. Salinity averaged 24.77g/Kg. The most recent result, which is 9.50 Mg/L, was reported for DO during week 4. This is possible since it was raining in the morning when the samples were being collected, which is when the samples were being taken. The value was at its lowest during Week 12 which is 8.02Mg/L. The DO value at this location, on average, was 8.08. The average pH is 7.5, indicating neutral water. Week 8 had the highest value of 7.9 across all stations and weeks.

Table 2: Findings of water parameters at Station 2

STATION 2														
PARAMETER	**UNIT**	**W 1**	**W 2**	**W 3**	**W 4**	**W 5**	**W 6**	**W 7**	**W 8**	**W 9**	**W 10**	**W 11**	**W 12**	**AVERAGE**
Total Dissolved Solids	g/L	40.33	33.33	29.14	29.0	28.8	29.4	27.54	29.78	30.14	29.78	28.23	29.06	30.37
Conductivity	mS/Cm	93.00	44.8	47.5	47.6	47.2	48.5	48.3	49.4	48.5	48.23	49.01	49.03	51.75
Temperature	(°C)	24.6	25.9	24.8	25.6	26.7	26.9	23.6	24.9	26.1	25.4	26.3	27.3	25.67
pH	-	7.3	7.4	7.4	7.5	7.8	7.5	7.4	7.9	7.4	7.5	7.5	.7.6	7.51
Salinity	g/kg	23.17	25.4	25.7	26	25	27	27	29	29	27	25	28	24.77
Dissolved Oxygen	Mg/L	-	8.45	8.56	9.50	9.40	8.70	8.3	9.04	8.90	9.01	8.72	8.02	8.08

4.0 CONCLUSION AND RECOMMENDATION

In a nutshell, the project proved that the water quality is determined by its chemical, physical, synthetic, organic, and microbiological content improved the aqua system life. Assessing water quality determines its status, environmental safety, and local contamination. Lumut water quality and community impacts were evaluated. This is due to the study area polluted water and ocean oil spills. The project could measure Dinding River current due to a lack of reliable water quality data. Thus, this study aims were to collect data from a weekly Dinding River water sample utilizing sampling methodologies and analyze its water quality. Water samples were screened for foreign contaminants by colour. Variables included pH, total dissolved solids, dissolved oxygen, salinity, temperature, and conductivity. In order to get more accurate water quality results at the study site, a further examination is needed.

This investigation was hampered by various obstacles and limits. Weather has been the biggest challenge since it makes water sampling riskier. The water sample was hard to get and evaluate due to poor transportation and lab equipment shortages. This project results may be used as a basis for future Dinding River water quality and pollution research, despite data processing limitations. Water samples must be collected for the project's investigation. Recommendations and e-system of water sampling process can be improved to get more accurate data of water parameters.

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