



Overview Countermeasures Pollution in Waters Harbor Peacock Crossing, Banten Province

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Abstract. Pollution that occurs in port waters and its surroundings is largely caused by activities at the port. The more the number of ships coming to the port increases, it can be indicated that the greater the level of pollution that will occur. The results of the discovery of pollution that occurred at the Merak Ferry Port, among other things, came from the dominant waste produced from ships in the form of plastic, used oil spills, and dirty oil, including hazardous and toxic waste whose disposal was directly thrown into the port waters, besides that, the port pool was also polluted. due to piles of rubbish. Pollution that occurs in port waters also has an impact on the organisms that live in them. This type of research is descriptive qualitative, namely a method used by researchers to discover knowledge or theories regarding research at a certain time. The data obtained is then presented using qualitative descriptive techniques, namely to reveal the characteristics of the variables that are the focus of the researcher. The data used are primary and secondary data, while the data analysis techniques used are Gap Analysis. After observations were made and a lot of pollution was found in the waters, it was concluded that there were no pollution control tools and materials and the level of competence of personnel in pollution control was inadequate. It is appropriate for the Merak Ferry Port to try to overcome existing pollution.

Keywords: Environmental Pollution, Ports, Pollution Prevention, Ships.

1 Introduction

One source of pollution in the coastal environment and Merak Harbor comes from household waste which pollutes the waters due to the lifestyle of residents who still throw rubbish carelessly around the environment both in the water and on land. Apart from that, the biggest cause of pollution at Merak Harbor comes from ship activities at the port. The more the number

of ships coming to the port increases, it can be indicated that the greater the level of pollution that will occur. Ships as a water transportation fleet in Indonesia, when stopping at ports routinely produce the dominant waste produced from ships in the form of a mixture of dirty oil which is considered B3 waste (Hazardous and Toxic Materials).

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2 Research Methodology

The data analysis techniques used by researchers in the research are, Gap analysis (Gap Analysis) which is interpreted as a comparison between the current actual performance and the expected potential performance. Gap analysis or gap analysis is a method for identifying whether tools for controlling water environmental pollution at Merak Port are available and in accordance with standards. Researchers identify whether the current system meets needs by looking at the gap between current conditions and conditions according to the regulations needed to find out what is desired but has not been or cannot be fulfilled. Researchers conducted a gap analysis on two aspects, including the fulfillment of pollution control equipment and the level of readiness of port personnel in efforts to carry out pollution control.

The gap or gaps that exist between the conditions according to the rules and the actual conditions will encourage finding a solution that can fill the gap. Gap Analysis is formed from 3 components, namely:

1. Details of the characteristics of the current situation, namely details of the characteristics of the water conditions at the Merak Ferry Port and what are the causes of pollution in the port waters.
2. Details of a number of things needed to achieve future goals, namely details of tools and personnel efforts in dealing with water pollution that Merak Port will need in the future.
3. Details of a number of things causing the gap, namely the gap between the conditions according to the regulations and the actual conditions at the Merak Ferry Port.

The second data analysis technique is the Guttman Scale. The Guttman scale is a scale that is consistent and firm in providing answers such as right and wrong, yes and no. Each item in the skills/action questionnaire consists of 2 points, namely Yes (Y) and No (T). The researcher used the Guttman scale, namely for the answer "Yes" a score of one was given, while the answer "No" was given a score of zero according to the provisions stated by Sugiyono (2013: 139) regarding the Guttman scale. After scoring, the questions are calculated using a percentage (%). The conditions are as follows:

$$\frac{\sum \text{Answer 'Yes'}}{\sum \text{Questionnaire Answers}} \times 100\%$$

- 0.00 - 0.25 = No association or low association (weak association)
- 0.26 - 0.50 = Moderately low association (moderately weak association)
- 0.51 - 0.75 = Moderately high association (moderately strong association)
- 0.76 - 1 = High association (strong association) up to perfect association

Based on these criteria, if it is related to research it can be explained as follows:

- a) 0%-25%, meaning that the Merak Ferry Port has not implemented a water pollution control system as maritime protection.
- b) 26%-50%, meaning that the Merak Ferry Port has not consistently implemented a water pollution control system as maritime protection.
- c) 51% -75%, meaning that the Merak Ferry Port consistently implements a water pollution control system as maritime protection.
- d) 76%-100%, meaning that the Merak Ferry Port is very consistent in implementing a water pollution control system as maritime protection.

After obtaining the results using the calculation method as described above, the final value is assumed to be included in the knowledge criteria as follows:

- a) If the knowledge score is $\geq 75\%$: good
- b) If the knowledge value is $\leq 74\%$: less

3 Result and Discussion

3.1 Data Presentation

This technique presents data which are respondents' answers to a number of questions or statements asked in the questionnaire. The aim is to make it easier to analyze and provide a clear picture of the situation. Descriptive analysis carried out in this research is by describing the results of the questionnaire in the form of graphs and tables of the results of measuring research variables.

3.2 Data Analysis

Researchers made observations to see that each personnel had a certificate of competence in handling pollution and it was found that there were no special competent personnel as evidenced by a certificate for dealing with pollution such as B3 waste (Dangerous and Toxic Goods) in the waters of the Merak Ferry Port but there were only cleaning personnel around the port.

Researchers also conducted surveys and interviews with cleaning personnel around the Merak Ferry Port, it was discovered that there used to be trucks

specifically for transporting waste and trucks transporting oil from ships to land. However, now it is no longer there so all pollution in the port is handled at once by cleaning personnel.



Fig. 1. Personnel Cleaning Up Waste Pollution in Waterways.

3.3 Discussion

- A. Researchers conducted a questionnaire form survey of 20 respondents who were cleaning personnel at the Merak Ferry Port where each statement was assessed using the Guttman scale. The main aim of researchers using the Guttman scale in research is to screen respondents who fulfill 100% of the statements stated in the scale so that their level of readiness in dealing with pollution can be known.

$\frac{\sum \text{Answer 'Yes'}}{\sum \text{Questionnaire Answers}} = 100\%$	
Criteria	Value: $\geq 75\%$: good
	Value: $\leq 74\%$: less

From the results of the questionnaire, it was concluded that the level of readiness of port personnel in dealing with pollution at the Merak Ferry Port was on average 40-60%, which was categorized as insufficient.

- B. Based on surveys conducted in the field, no pollution prevention tools or materials were found to be provided to anticipate pollution in the port environment. Based on interviews conducted with the operators of the Merak Ferry Port, there was no

special need for pollution problems occurring at the Port. However, it is appropriate for the Merak Ferry Port to enforce regulations by providing pollution control equipment and materials considering the findings of pollution in observations made by researchers during the research. Researchers also found various types of rubbish piled up between the dock pontoons.



Fig. 2. Garbage piled up on the edge of the pontoon.

4 Conclusion

4.1 Conclusion

Based on the results of data analysis and discussion of problems contained in the previous chapter, conclusions can be drawn regarding efforts to overcome pollution at the Merak Ferry Port, namely as follows:

1. Conditions comply with the regulations of the Minister of Transportation Regulation Number 39 of 2021 concerning Pollution Management in Ports and Waterways which requires Every port has tools and materials to control pollution, which do not correspond to the actual conditions at the port.
2. The level of competence of port personnel in dealing with pollution does not yet exist. Personnel at the port can only clean up rubbish around the environment, but the water conditions of the Merak Ferry Port in 2023 will still be heavily polluted by rubbish and oil, so training is needed for personnel on dealing with water pollution.

4.2 Suggestion

There are suggestions that can be taken based on problem solving and The conclusions from this research are as follows:

1. Protection of the maritime environment is a joint obligation between port managers and service users, so there should be cooperation between both parties.
2. Improve the pollution control competency of Merak Ferry Port personnel.
3. It is necessary to monitor the optimization of the use of the Oily Water Separator above so that waste containing oil does not occur in the water.
4. For service users, there is a need for self-awareness not to throw rubbish into the sea in order to protect the environment and marine biota.
5. For researchers, it is hoped that they can continue to deepen things that have not been studied in this research. There are still many things that must be prepared and evaluated if in the future there will be problem-solving proposals from researchers regarding pollution and maritime protection in the waters of the Merak Ferry Port.

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