Journal of Engineering and Social Sciences (JESS)

THE INFLUENCE OF WATER FACILITIES MAINTENANCE ON WATER QUALITY IN PDAM NGAGEL 1 SURABAYA

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ABSTRACT

Water buildings are physical infrastructure needed in river management and development, which are generally built in rivers and function for the utilization, protection, control and development of river resources. Water building facilities are defined as physical infrastructure used to control and manage water in rivers and lakes. The research method is a step-by-step scientific activity whose results are obtained from the stages of defining the subject, collecting information and analyzing it to gain an understanding of the subject, symptom or problem under consideration. Data collection techniques in this study used four techniques, namely literature study, observation, interviews, and documentation. Based on the research carried out at PDAM Ngagel I regarding the effect of water facility building maintenance on water quality at PDAM Ngagel Tirto, this is evidenced by the data obtained by researchers. The analysis technique used is qualitative descriptive analysis. The data that has been obtained is then presented by the researcher in accordance with the results of the research which refers to the focus of the research.

Keywords: information, observation, water facilities.

Introduction

Water buildings are physical infrastructure needed in the management and development of rivers, which are generally built on rivers and function for the utilization, protection, control and development of river resources. Water structures are defined as physical infrastructure used to control and manage water in rivers and lakes. So you can find most of these buildings in rivers or lakes. The shape and size it is built depends on needs, river capacity, development funds and the hydraulic properties of the river. The building construction does not require consideration of aesthetic value because of its

more massive nature. However, what needs to be ensured when constructing this building is that you must obtain PBG permission first.

However, to avoid local scouring around the building and have high efficiency, the front of the building is usually curved. The purpose of this building, apart from controlling and managing water, is to optimize water resources and minimize detrimental factors. For example, during the dry season, water structures are useful for managing small amounts of water well, or during the rainy season, water structures are useful for managing water discharge so that it does not trigger floods.

Water is a basic human need in everyday life that people need for various purposes such as drinking water, cooking, washing, bathing, watering plants and washing vehicles in very different amounts according to the level of social, economic life and people's living habits (Gleick, 1996). Water resources are one of the natural resources that are vital for life, as a natural resource, water resource management activities are important so that those who need water can get equal access both in meeting their basic needs for drinking water and sanitation, as well as for fulfill their livelihood needs as farmers to irrigate their crops and to produce various products whose production processes require water (Grönwall & Danert, 2020).

Clean water is one of the natural resources which has a very important function for human life and livelihood, as well as for advancing general welfare, so that it is the basic capital and main factor of development, water is an environmental component that is important for the survival, life of humans and living creatures. others (Government Regulation of the Republic of Indonesia Number 82 of 2001 concerning Water Quality Management and Water Pollution Control). Water needs are used to fulfill daily life activities, such as cooking, toileting, drinking and so on (Kadibadiba et al., 2018). Water requirement standards are very difficult to formulate, so an approach or assumption is needed to determine the minimum standards for water requirements (Hoekstra, 2011).

In everyday life, water is a natural resource that is very necessary for the life of all living creatures, including humans. All life activities that we undertake require water sources, therefore everyone has the right to receive water resources themselves. The community's need for water is generally met by PDAM (Regional Drinking Water Company). For this reason, companies must be able to meet needs while providing customer satisfaction so they can know what the market needs. PDAM Surya Sembada Kota Surabaya is a company engaged in services in providing clean water in Surabaya. One of the objectives of the establishment of PDAM Surya Sembada Surabaya City is to meet the community's need for clean water, development and

implementation of clean water, while another objective is to participate in developing the economy to support regional development by expanding employment opportunities and seeking profits as a source of regional income.

Customer-oriented companies always receive information about customer needs with the aim of dominating the market in their field. In terms of long-term goals, it is important to explore in detail a market-oriented approach through research and implementation strategies. In general, the marketing paradigm is to achieve consumer/customer satisfaction. Furthermore, product quality is a factor that influences customer satisfaction. In general, a product is anything that can be offered to the market for attention, acquisition, use, or consumption that can satisfy a want or need. By producing quality products, effective and efficient production will be achieved because the products produced are in accordance with customer needs and expectations.

Based on the initial observations that the author has made, there are still problems faced by customers regarding quality which can cause dissatisfaction from customers as customers of PDAM Surya Sembada, Surabaya City. The problem based on the existing phenomenon is that there is dissatisfaction from customers regarding the quality of PAM water received by customers, there are in some customers, it seems cloudy and still smells. Based on the background of the above phenomenon, the author is interested in conducting research with the title "The Effect of Water Facility Maintenance on Water Quality in the Surabaya City Government Area".

Research Methods

The approach used by researchers in this research is a qualitative research method because the material produced in this research is written or oral. This is in line with Colorafi and Evans (2016) data about other people and observed behavior in the form of written or spoken words. In this research, researchers took a non-probability sample: purposive sampling. The data collection technique in this research uses four techniques, namely literature study, observation, interviews and documentation. The analysis technique used in this research is the use of interaction model analysis. According to Donoho et al. (1998), there are three groups of analysis in interactive model analysis, namely data reduction, data representation, and inference.

Results and Discussion

A. Maintenance and Maintenance of PDAM Infrastructure

Maintenance is a routine and periodic maintenance and repair activity of elements which aims to ensure the continuity of drinking water facilities and infrastructure can be relied upon. Maintenance consists of routine and periodic maintenance where routine maintenance is used to maintain the service life of PDAM units. Meanwhile, periodic maintenance is to extend the service life of PDAM units which is usually followed by equipment replacement. PDAM maintenance includes maintenance of raw water units, production units, transmission units, distribution units and service units.

Routine maintenance includes maintenance activities for raw water units, production and network units, distribution units and service units based on applicable regulations.

1. Raw Water Unit

A. Construction of Raw Water Units
   a. Clean the environment from grass and dirt in water level raising dams.
   b. Mud Container/Grit Chamber: Immediately clean out mud or sand deposits if any.

B. Raw Water Pump
   a. Stop the pump if you hear any unusual noise or vibration.
   b. Clean the tapping filter and pump filter, if there is dirt.

C. Piping
   a. Check whether there are leaks in the piping, if necessary replace the gasket and tighten or replace the nuts and bolts.
   b. Check pipe supports. If necessary, replace or repair.
   c. Check the pipes for rust. If necessary, replace or repair.

D. Measuring Instruments
   a. The quality of raw water is always checked, to obtain the optimum coagulant dose in the production process.
   b. Quantity is measured using measuring instruments to determine the performance of the raw water pump.
   c. The manometer, volt meter and ampere meter on the pump are always kept clean.

E. Electrical Equipment
   a. The pump panel is always kept clean, dry, with sufficient ventilation and lighting.
   b. Avoid mice and spider nests.
   c. Panel component reserves are regularly checked.

2. Production Unit

A. Presedimentation Tank
   a. Check and clean the environment from dirt.

b. Check and clean the surface of the water in the tub from any dirt that may be carried through the filter.
c. Check and clean the inlet and outlet from dirt that may clog
d. Check and clean the environment from wild plants
e. Check the building construction for any damage that may occur
f. Check and clean the tub from the growth of moss and other aquatic plants.
g. Dispose of sludge deposits (hopper) periodically.
h. Check and clean the mud discharge valve and other equipment. If necessary, grease the valve threads.

B. Chemical Mixing Tank
a. Clean the chemical application tools and application room.
b. Check and maintain that the required amount of chemical solution is sufficient for continuous operation.
c. Rinse the application tool and chemical solution channel with drinking water some time before application is stopped.
d. Check and clean the filter valve, injection point and affixing tool channel for possible dirt deposits and blockages.
e. Check for possible leaks in the chemical solution lines and valves. If necessary, make repairs.
f. Check and clean the chemical solution tank and stirrer from any dirt or sediment that occurs.
g. Check the capacity of the sprinkler pump. If necessary, repair or replace parts that are not functioning properly.
h. Check and clean the chemical storage and application room for dirt and chemical spills.
i. Check mechanical and electrical equipment.

C. Fast Mixer
a. The concentration of chemical substances is always checked.
b. Drinking water channels and accessories are always maintained clean, smooth and without leaks.
c. Check and clean the application point of the chemical solution
d. Clean the dirt and scum that floats on the surface of the water.
e. Clean the moss if there is any.
f. Apply chlorine or other disinfectant in sufficient doses to avoid moss.
g. Check the function of the stirrer (if any), if necessary, repair or replace parts that are not functioning.

D. Slow Mixer
a. The concentration of chemical substances is always checked.

b. Drinking water channels and accessories are always maintained clean, smooth and without leaks.
c. Check and clean the doors and sides of the slow mixer chamber.
d. Clean the foam and dirt that floats on the surface of the water.
e. Open the drain valves for a few seconds to remove any sludge that may have settled.
f. Check for moss growth and clean it.
g. Check for moss growth on the walls of the slow mixing tank. Apply chlorine or other disinfectant in sufficient doses.
h. Check the mud discharge valves and if necessary carry out repairs.
i. If the slow mixer is equipped with a stirrer, check the function of the equipment and, if necessary, repair or replace parts that are not functioning.

E. Sedimentation Mixer

The quality of raw water from the sedimentation outlet is always monitored according to the manual, so that the filter loading does not exceed that required in the planning.

F. Wall/Sedimentation Tank
a. Check and clean the settling plate by spraying water.
b. Check for leaks and function of mud drain pipes and valves.
c. Check and clean dirt and foam floating on the water surface.
d. Check for moss growth and clean it.
e. Check the mud discharge valves and if necessary carry out repairs.
f. Observe the growth of moss on the walls of the tub.

G. Filtration Tank
a. Check and clean the side of the filter chamber.
b. Clean the fruit and floating dirt.
c. Check for moss growth and clean it.
d. Check the thickness of the filter media and add any gaps, if necessary.

B. Determination of K3 Policy

The determination of K3 policies is carried out by PDAM Surya Sembada City of Surabaya. In preparing the policy as intended, the Chair of P2K3 through:

1. Carrying out an initial review of K3 conditions which includes:
   a. Identification of potential hazards, risk assessment and control;
   b. Comparison of K3 implementation with other better companies and sectors;

c. Review of the causes and consequences of dangerous events;
d. Compensation and interruptions as well as the results of previous assessments related to safety; And
e. Assessment of the efficiency and effectiveness of the resources provided.
f. Pay attention to continuous improvement in K3 management performance; and periodically evaluate K3 management performance
g. Pay attention to input from workers/laborers and/or trade/labor unions.

2. PDAM Surya Sembada Kota Surabaya company leadership establishes and documents the organization's K3 Policy and ensures that the policy:
   a. In accordance with the K3 risks of activities, products or services at PDAM Surya Sembada Kota Surabaya.
   b. Involve the directors (management) with labor representatives including P2K3 (Occupational Safety and Health Advisory Committee).
   c. Includes a commitment to preventing work-related injuries and illnesses, as well as continuous improvement of K3 and SMK3 performance d) Includes its commitment to comply with relevant K3 laws and regulations, and with other requirements to which the organization adheres.
   d. Provide a framework for establishing and reviewing SMK3 goals and objectives.
   e. Documented, implemented, maintained and communicated to all employees.
   f. Communicated to everyone who works under the company's control with the intention that they are aware of their obligations towards K3.
   g. Available to related parties.
   h. Reviewed periodically (once a year) to ensure it remains relevant and appropriate for the organization.

The K3 policy has been created with the participation of employee representatives, P2K3 members, administrators and PDAM management. The K3 policy will later be socialized to all ranks and levels of positions at PDAM Surya Sembada Kota Surabaya, work partners and visitors at PDAM Surya Sembada City Surabaya, so as to create a safe, healthy and environmentally friendly work environment, which in the end can increase employee productivity and efficiency. in the management of PDAM Surya Sembada City of Surabaya.

Conclusion

Based on the results and discussion above, it can be concluded that first, the PDAM Surya Sembada laboratory unit in Surabaya city has 2 drinking water treatment installations, namely the Ngagel and Karang Pilang laboratories. The function of the laboratory is to carry out water testing which includes raw water, water during the processing process, and distribution water, including intensive physical, chemical and microbiological testing. Supported by modern facilities, experienced personnel and accredited with a quality management system and technical testing competency in accordance with the ISO 17025 standard by the National Accreditation Institute (KAN), thus guaranteeing the accuracy of test results. Second, water structures are not just reservoirs and dams, but structures where one is linked to another to create an irrigation system. In the concept of building protection, the planning for constructing a building must be able to survive and function as it should, over a relatively long period of time. The service life of a building is the time/period from when the building starts to function until the building can no longer function, due to damage so that the building's performance decreases. Third, the impact that occurs when maintaining water facilities is that when draining takes place, the performance of water facilities that have not been drained will increase, this will have an impact on their quality and quantity.

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