

Study the Effectiveness of Waste Management in Wwtp Palm Oil Factory in Order Anticipation of Environmental Pollution (Case Study Wwtp Palm Oil Factory DMP Company)

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Abstract: *Palm Oil Factories in addition to producing CPO products also produce liquid waste that can pollute the environment, liquid waste is necessary to good management. The purpose of this research is to evaluate and analyse the effectiveness and function of each point in Waste Water Treatment Plant (WWTP) DMP Company in lower waste water parameters from fat fit until the pond of electricity and provide recommendations for improvement. The research method used is a survey of the field and laboratory test. The number of samples is 11 fruits and sampling point specified by proposing sampling. The data has been analysed with the descriptive method by referring to a standard water discharged from the. The results of the study showed that the DMP Company own wastewater quantity and type of pond is sufficient quantity, but the quality still needs to be done to improve the management of the good. The occurrence of fluctuations in the value parameter of liquid waste water in the ponds that should go down in significance due to the ponds is not functioning optimally, especially cooling pond, facultative pond, anaerobic, aerobic and sedimentation pond. Value is COD, BOD and fats, oils high in ponds caused by not achieving ideal conditions for the ongoing processes of decomposition. At the pond fat fit to note is the setting at the time of quoting oil and pumping oil quotations to the plant, while the plant is operating quoting oil must be done is continuous so as to prevent the thick layer of oil in a pond of fat fit and at the other pools need to be done taking sludge, and manufacturing wide pond dike height, permanent and clean so there is no overflow during the rainy season and do not give rise to pollute the environment.*

Key Words: *Liquid Waste, WWTP, COD, environmental pollution*

I. Introduction

Palm oil has become one of the leading developed in accordance with the potential for very large and spread across the regions in Indonesia such as the area of Sumatra, Kalimantan and Sulawesi (Rahardjo, 2005). In addition to the production of crude palm oil (CPO) produced, Palm Oil Factory (POF) also produces a liquid waste that could potentially contaminate the environment. Effluent from the unit or installation of effluent treatment plants of CPO in Indonesia generally still does not meet the criteria according to the standard rules that apply, for example, levels of BOD liquid waste processing results were still above 100 ppm. Thus when it has been applied consistently on international standards which may require the ecolabelling, the CPO factories can not sell or export CPO abroad. Therefore urgently needed improvement of wastewater treatment systems to improve water quality of the final effluent that does not pollute the environment.

Based on Government Regulation No. 82 Tahun 2001 on Water Quality Management and Water Pollution Control and Ministry of the Environment No. 110 of 2003, on Guidelines for Determination of Capacity Load, Water Pollution In Water Resources, explained that the pollution load capacity of water is the ability of water to a water source to receive input pollution load without causing the water becomes polluted, then all mandatory EIA activities that impact negatively on the environment are required to conduct

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Almost all oil palm skelter waste water containing organic material that can be degraded. Therefore, in the waste management need to know the characteristics of the waste. A balance sheet of palm oil extraction is known that the amount of wastewater produced from one tonne of FFB produced was 2:50 tons, consisting of 2:35 tons of water, NOS (Non Oil Solid) 0:13 tonnes of oil and 0:02 tonnes. Processing liquid waste through a process of mechanical / physical, biological and chemical processes. Namely activation of the biological processes and the breeding of bacteria to break down organic materials into materials that are acidic volatile with the help of the waste water circulation. At the end of this phase is expected pH value will be lower. The next-volatile acid will decompose into methane, carbon dioxide, hydrogen sulphide etc. Sedimentation process will separate the liquid from the mud. At this stage the existence of an adequate amount of an appropriate model and will assist the process of photosynthesis. In order to meet the quality standards set by the government, the CPO industry generally treats waste water through the WWTP. Stages of the wastewater treatment process oil in principle to lower the key parameters that have been set in a way to condition for a process of mechanical / physical, biological and chemical processes.

DMP Company is one factor in Jambi Province, which exists in operation produce CPO, in addition to producing CPO also has shaped Liquid Waste, Solid and Gas. The aim of this study was to evaluate the WWTP system that has been created by DMP Company, to assess the effectiveness and functionality of each pool at the WWTP DMP Company in lowering parameters of waste water to the pond bioindicator and outlets, provide input and alternative improvements to refinement process DMP Company WWTP plant, in addition also to provide input and recommendations for consideration to the Regional Government.

II. Methodology

2.1. Sampling Research

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The sample in this study was taken from a wastewater pond POF WWTP DMP Company and surface water samples. The number of samples is 11 samples ranging from pond pools sample an outlet fat fit

2.2. Work Procedures And Data Collection

The method used is the field survey, observation and laboratory testing. Field surveys carried out in the process of wastewater treatment WWTP DMP Company with the aim of directly observing the process of wastewater treatment in each pool to the outlet which empties into the Batang Hari river bodies. Secondary data such as laboratory test results Regional Environmental Agency Jambi Province on documents obtained from the company in the form of a quarterly monitoring report. To see the efficiency and functionality of each pool samples were taken at each pool with a sample of 11 samples ranging from fat fit pond to pond outlet. Sample measurement using volumetric and spectrophotometric method with AAS instrument and UVVIS

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2.3. Data Analysis

Data obtained directly in the field that consists of the data at the time of the survey WWTP observation and treatment process that occurs at the WWTP DMP Company and measurement data in the laboratory parameters of waste water. Analysed by a descriptive method with reference to standards mill effluent (Living environment Decree No. 51 of 1995 regarding effluent quality standard for the industry)

III. Results And Discussion

3.1. Theoretical Study of Liquid Waste Treatment Plant Palm

DMP Company is a company engaged in the oil palm factory that produces Crude Palm Oil (CPO) in Prrovinsi Jambi. The DMP Company is located in the village of District of Batanghari river regency in Jambi province, which is \pm 115 km. The installed capacity is 60 tons Palm fresh fruit bunches per hour and the average operating capacity of 45 tons Palm fresh fruit bunches per hour. The CPO production process has several stages, starting from the stage of receipt of fresh palm fruit bunches (FFB) conducted at the loading ramp. The next phase is the sterilization, IE is boiling the fruit with. The next phase is the sterilization, IE is boiling the fruit with steam. Steam is used to pressurize 3 kg / cm² and temperature of 140oC for 75-90 minutes. After

sterilization, the fruit is separated from the bunch. This stage is known as treshing. Fruit that has been separated from Bunches are crushed using steam at a temperature of 90 ° C using a cutter. In the next phase, the oil is extracted from the fibre. The latter is a process of purification In addition to producing CPO, and Produce Palm Kernel Oil (PKO)

Almost all oil palm factory waste water containing organic material that can be degraded. Therefore, in the waste management need to know the characteristics of the waste from the Balance sheet of palm oil extraction is known that the amount of wastewater produced from 1 ton of CPO produced was 2.50 tons 2.35 tons consisting of water, NOS (Non Oil Solid) 0.13 tons and 0.02 tons of oil. To produce CPO. Palm Oil Mills also produces waste. The waste that comes out of the plant oil palm-shaped solid, gas and liquid. The waste that comes out of the plant oil palm-shaped solid, gas and liquid. Waste out of the POM actually cannot say 100% as waste, is more correct to say byproducts or side products.

Waste plant palm oil in bulk and have a negative impact on the environment is wastewater or palm oil mill effluent (POME). POME is wastewater generated by oil palm factory mainly comes condensate stew, hydrocyclones water and sludge separator. Each tonne of FFB processed to be formed Approximately 0.6 to 1 m³ of liquid waste. Liquid wastes are rich in organic carbon with COD values over 40 g / L and the nitrogen content of Approximately 0.2 and 0.5 g / L as ammonia nitrogen and total nitrogen. Characteristics of wastewater consists of 60% of the total wastewater from clarification Station, 36% of the total wastewater from the cooking station and 4% of the total wastewater originating from the core station.

Liquid waste management technologies generally using an open technology that consists of an anaerobic, facultative and aerobic with a total retention time of about 90-120 days. An open technology requires a large area (5-7 ha), maintenance costs are quite large and produce methane gas emissions into the atmosphere. Liquid Waste management is currently using only open ponds ranging considered to be less efficient and less environmentally friendly. The owner or management of POF has begun to change by modifying the existing pool with other management technologies. There are several technologies new wastewater treatment today, among the new technology it is a membrane and the latter sounds with electrocoagulation. Emergence or the development of wastewater management technology is due to some intent and purpose [9].

In addition to producing methane gas as energy, the current wastewater also been reported to produce hydrogen gas as energy. Liquid waste produces hydrogen gas using the electrocoagulation technology of processing liquid waste through a process of mechanical / physical, biological and chemical processes. Namely activation of the biological processes and the breeding of bacteria to break down organic materials into materials that are acidic volatile with the help of the waste water circulation.

At the end of this phase is expected pH value will be lower. The next-volatile acid will decompose into methane, carbon dioxide, hydrogen sulphide etc. Deposition process (sedimentation) will separate the liquid from the mud. At this stage the existence of an adequate amount of an appropriate model and will assist the process of photosynthesis. In order to meet the quality standards set by the government, the CPO industry generally treats waste water through the WWTP. Stages of the wastewater treatment process oil in principle to lower the key parameters that have been set in a way to condition for a process of mechanical / physical, biological and chemical processes [8].

Namely activation of the biological processes and the breeding of bacteria to break down organic materials into materials that are acidic volatile with the help of the waste water circulation. At the end of this stage the expected value will be lower pH (pH 5), Next-volatile acid will decompose into methane, carbon dioxide, hydrogen sulphide etc. In the CPO mill WWTP there are 8 types of pools, and the amount of the bond depends on the capacity of the pond. Number of pools can be added, especially to an anaerobic and aerobic could be 10 or more depending on the needs. The land area and the capacity of the plant, and is made in parallel. Each type pool has a different function and purpose [10].

The residence time of the waste is, Time detention hydrolysis with WWTP system is that during the 137 days, with a volumen between 85900-102750M³. The wastewater discharged from this Environmental Monitoring has fulfilled the effluent quality standards in accordance with the standard 100 mg / L and pH 6.0 - 9.0. Building WWTP POM consists of a Fat-Pit, cooling Pond, mixing pond, Seeding Pond, pond anaerobic primary and secondary (Anaerobic Pond), swimming pool consists of facultative aerobic, facultative Pond, an Algae Pond or sedimentation ponds and ponds indicator. POM efficiency can be improved by the use of Decanter, which only produces around 0.3-0.4 tonnes of waste for every 1 tonne of FFB processed, so that the liquid waste produced can be suppressed only 24 tons / hour or 1,667 m³ per 1 ton of CPO produced, Liquid waste that will be generated from the whole process of palm oil production is estimated to a maximum of ± 60% of all fresh fruit bunches processed [9].

3.2. CPO Production Process and Waste Water Sources

CPO production in palm oil mill DMP Company similar to the process performed by the CPO processing plant palm oil in general. Where the processing of fresh fruit bunches into Palm Oil Crud consists of process units as follows:

a). Proses Sterilization.

The process of sterilization is the boiling process with the goal to stop the activity of the enzyme lipase and oxidation that causes increased levels of free fatty acids (FFA) in Oil FFB, releasing the fruit from skilnet, to speed up the extraction process of quoting oil from palm kernel, lowering the water content of fruits and the core to simplify the compression process, breaking the emulsion and release the fibres and seeds as well as assist in the release of the core of the shell. The amount of wastewater produced by DMP Company is the unit of this process approximately 10% of Oil FFB. Water condensate from the sterilization process produces effluent with BOD and COD content of the highest to be able to reach a maximum of 90,000 ppm.

b). Threshing Process Fruit

Threshing palm fruit is done by a machine called a rotating thresher. In this unit there will be threshing so the fruit will be separated from their stems and fruit that has been released is transferred by bucket conveyer feeder to the cut pieces. This process is actually no liquid waste is generated directly, but in the washing or cleaning of the unit are used, water containing the washing oil and fibre or fine dust and a source of palm oil mill waste water.

c). Clarification Process Oil

Oil produced from the pressing process is still murky and contains a lot of water, so it remains to be purified so that no hydrolysis and oxidation. The elements Fe and Cu contained in NOS (non oil solid) can act as a catalyst for the oxidation process. Oil purification is done by means of filtration, precipitation and evaporation. Oil of extortion in the capacity of a tank equipped with a heater so that the oil clarification process more perfect. Oil from the tank is pumped continuously into the settling tanks to separate oil from water and solids. As well as oil storage tanks, the deposition process is also equipped with heating is done by passing hot water vapor (steam) in the heating pipe network. Oil that is on the top layer flowed into a storage tank, while mud and sediments flowed into fatpit then performed purification.

d). Separation process sludge and Demineralisation

In the process of separation of sludge or fatpit (Sludge Separator) produced quite a lot of waste. Sludge produced approximately the 50% of TBS, then to continue with washing hydrocyclone for washing fruit seed oil, in this process the amount of wastewater produced little. Demineralisation process required for the purposes Boiler unit, where the water is evaporated must have a quality that is free from censure mineral elements, so that no scaling in the boiler boiler. From this demineralisation process wastewater generated number a little compared with other units of liquid waste sources. To for cleaning and maintenance performed every a certain period. laundering carried out on the device process units, locations around the processing unit and in parts support, such as workshops, power house, pump house and so forth. In the process of washing liquid waste is also produced in an amount not much.

3.3. Existing Condition Processing

Processing of oil palm fruits for CPO is a process that is based on physical principles. Part of palm fruits that contain high levels of oil palm fruit is part of the fiber, so that the process is carried out by the emphasis (pressing) coco palm with a certain temperature. With the processing of vegetable raw materials that are the source of organic compounds a long chain, then pollutants in waste water from palm oil mill will also be dominated by organic compounds, in particular vegetable oil materials [6].

Wastewater treatment system at DMP Company uses System Instalation Liquid Waste Processing (ILWP), which consists of 15 ponds, namely: 3 pieces Colling pond (pond 1, 2 and 3), Asidification pond (Pond 4), Primary anaerobic pond 1 (pond 5), Primary anaerobic pond 2 (pond 6), Secondary anaerobic pond 1 (Pond 7), Secondary anaerobic 2 (pond 8), Facultative pond 1 (pond 9) Facultative pond 2 (pond 10), Primary aerobic pond (pond 11), primary sedimentation pond 1 (pond 12), primary sedimentation pond 1 (pond 12), Primary Sedimentation pond 1 (pond 13). Secondary sedimentation), Final pond 1. (Pond 14) and Final pond / Outlet pond (pond 15). All pools have different sizes, but the same relative depth is 6 meters, the pools were made there in the last series and parallel pool is lit, which empties into the creeks and last Sengkati river, DMP Company waste water from entering into receiving water bodies namely beaten river. From the field survey note that quantifies the number and size of the pool of liquid waste treatment pond at the WWTP DMP Company is

sufficient even exceeding the capacity of wastewater produced with a processing capacity of TBS \pm 45 ton/jam operating and operating life of 16 hours.

The amount of wastewater produced on average about 60% of the plant capacity. so if the CPO mill capacity of 45 tons of FFB per hour, the total amount of liquid waste about 27 tons per hour, equivalent to 277 m³ per day. But in quality ponds, pool WWTP inadequate and not well ordered and not yet function optimally in accordance with the function and purpose of each of making the pool. The process of wastewater treatment in the WWTP DMP Company from field observations, the process begins with the processing of wastewater in an oil reservoir (Fatfit). Where the waste water coming from the processing. Where the waste water coming from the processing unit is passed into a bath of oil separator or an oil citations (fat fit). Waste in Fatpit heated using steam at temperatures of 85-90°C At these temperatures the oil is still contained in the waste water to be easily separated. The oil can be taken back (oil recovery) of this unit amounted to 0.8 to 1.2%. The residence time (Detention Time) Td = 16 Hours. BOD of Fatpit is 30,000 - 40,000 ppm with a pH of around 4 - 5. Expenses effluent BOD of POF are generally average about 30,000 to 40,000 ppm, while the COD load of about 35,000 to 46,000 ppm [3]

From a POF fat fit wastewater discharged cooling pond. From field observations WWTP POF DMP Company already has three pieces of cooling pond, was adequate, but not well maintained, the grass was overgrown with grass, shallow, consequently cooling pond at the WWTP DMP Company not functioning optimally. Liquid waste oil POF quoted on fat fit has characteristic acidic with a pH of 4 -5.5 and a temperature of 70-80 ° C, before sewage flowed into the acidification pond where the temperature needs to be lowered to 40-45 ° C through a cooling pond. To raise the pH of 4 -, 4.5 to 7.5 calling wastewater from the neutralization pond flowed into the pond (Acidification ponds). WWTP from field observations at DMP Company already has a pond acidification of the fruit is quite large, as well as an ponds neutralization mini also functioned as a breeding pond bacteria, which should neutralize pond with a bacterial culture is separated and merged into a single pool [5].

BOD load to \pm 85% of the amount of pollutants in the waste liquid. Based on the content of organic compounds is high in mill effluent CPO (comparison BOD and COD are much greater than 30%, then the system, wastewater treatment plant CPO is dominated by the processing of biological significance. In the treatment of wastewater is biologically known two kinds of processes, IE aerobic and anaerobic, aerobic process needs oxygen carried by the air supply to the processing unit, while the anaerobic process does not require the supply of oxygen and produces methane gas [2].

The second process is anaerobic accommodated in 4 pieces totaling tub pond with the size of 127 x 136 x 6 m and 127 x 136 x 6 m, 35 x 50 x 6 m, 70x50x6 m. operated sequentially. The residence time 40 days when calculated by dividing the volume of the discharge, obtained ted = 38.4 days), Quality BOD of waste water that comes out of this anaerobic process about 3000 p.m. with a pH between 5-6. In an aerobic process that accommodated in 2 pieces aerobic pond. Spacious with a size of 127 x 138 x 6 M and 102 x 28 x 6 M. Time Live Ted = 60 days (when calculated by dividing the volume of the discharge, obtained Td = 62.5 days). The considered aerobic process can be accomplished only by air at the pool surface contact, without mechanical aerators or blowers. From field observations at the WWTP plant oil palm is known that the process of the last DMP company wastewater treatment before the final waste water into the pond or the pond outlet is two sedimentation ponds. In terms of the physical WWTP DMP Company already has an even sedimentation enough already exceeded the capacity of the waste, but care still less well. Sedimentation pond of waste water into the pond with the final pool size of 60 x30 x 6 m. and the final waste water out through an outlet, the small size of the pool outlet still needed to be enlarged, Although the concentration of parameter wastewater plant oil palm on the outlet is below the environmental quality standard, but the bias and fluctuating [3] [4].

3.4. Parameter Analysis Results on WWTP Wastewater PT. DMP

The entire effluent from the factory plant palm oil flowed into the pool Fat pit. Waste in the pit fat is heated using steam at temperatures of 85-90oC At this temperature the oil is still contained in the waste water to be easily separated. The oil can be taken back oil recovery of this unit amounted to 0.8 to 1.2%. The Detention Time 16 Hours. In general, this is the BOD of Fatpit 30000-40000 p.m. with a pH of around 4 - 5. From the pond fatpit liquid waste will be processed at the pond next ranging from pond to pond Coling bio indicator. Results of laboratory tests on the key parameters of wastewater POF at all ponds contained in WWTP can be seen in Table 1.

Table 1. Results of laboratory tests on the WWTP Wastewater DMP Company

No	Parameters	Unit	QSE	POND								
				AL-3	AL-4	AL-5	AL-6	AL-7	AL-8	AL-9	AL-10	AL-11
1	pH		6-9	4,45	7,21	7,81	7,74	7,97	8,59	8,77	9,56,	8,6
2	COD	mg/l	350	4755	196,4	281,5	170,1	435,9	214,8	350,2	462,7	150
3	Nitrogen totaly	mg/l	50	122	98,0	136,0	128,0	86,0	742,0	92,0	76,0	85,0
4	BOD	mg/l	100	1585	65,4	93,9	56,7	145,3	71,6	116,7	154,2	50
5	Oil & Grease	mg/l	25	2258	68,8	6,4	32,0	7,6	6,8	2,0	10,4	6,8

note : AL-3 = cooling pond 3, AL-4= acidification pond 4 , AL-5 = primary anaerobic pond 2, AL-6 = secondary anaerobic pond 1 , AL-7 = fakultatif pond 1, AL-8 = primary aerobic pond, AL-9 = primary sedimentation pond 1 dan 2, AL-10 = sedimentation pond 1 dan AL-11 = outlet final pond 2

From Table 1 it is known that the waste water in the cooling pond (AL-3) has shown a good change with a pH of 4 to 4.5, COD = 4755 mg / l, Total Nitrogen = 122 mg / l, BOD = 1585 mg / L and oil & grease 2258 mg / l. Then the pond Acidification (AL-4) an increase in pH significantly to 7.21, while the other parameters also decreased COD = 196.4, N-Toal = 98.0, BOD = 65.4 and oil & grease 68.8 mg / l. Results of field observations indicate that the treatment process at the anaerobic pond is already happening with good, but not perfect and is not maximized as shown by the results of laboratory tests on the parameters of waste water in the pool (AL-5 and AL-6) namely; water acidity quite stable pH range from 7.81 to 7.97, while for the other parameters have also been changed. In terms of available capacity, the actual number of existing anaerobic ponds is sufficient and anaerobic treatment process has been biased going well, but what happens now is that there are four anaerobic ponds are covered by silt deposition. Even mud sediment on the surface has hardened and black. In each pool, the depth and certain sections are grooves that are formed naturally and grooves of a channel wastewater from the previous poll. With such conditions, it is seen that the anaerobic treatment unit is not done properly

Dredging mud sediment should be done regularly and in operation there should be stirring. Stirring is indispensable Because It can create homogeneous conditions in every part of the stirring an extremely important given that the square-shaped pond will have dead space (dead space) on the corners. Precipitation is too early part of dead space that would spur the next doubling so that sediment deposition was widespread, there will be a reduction in the effective volume of anaerobic processing units. The liquid waste decomposition is not perfect and had suffered direct and silence settles at a point location alone.

The entire drainage and wastewater treatment process at unit. It does not require energy means there is no stirring, no pumping or making mud sediment. Better when anaerobic ponds are constructed in such a way, for example, with a water-resistant layer (geotextile liner) and using the media as a means of microbes grow and can function as a bio-filter, and the need to exercise care namely; taking ground, improvement of water drainage channels and waste, and enhance thicken pond. Based on the theory intake anaerobic process the residence time of at least about 5 days. So, if done a good care of the pool, the pool will function more optimally and degradation processes waste by anaerobic bacteria will take place properly. Facultative pond territory of Facultative pond 1 (AL-7) with a size of 70 x 50 x facultative pond 2 with a size of 86 x 40 x 6 m. Parameter test results showed pH 7.97, COD = 435.9 mg / l, N-Total = 86.0, COD = 245.3 mg / L and Oil & Grease 7.6. Aerobic pond there is a large fruit size is L-shaped with a size of 127 x 138 x 6 m and 102 x 28 x 6 m. Its depth aerobic pond together with an another pool at 6 am. This is not good Because too in the water so that circulation is not smooth. But what happened is almost Similar with an anaerobic, i.e. the occurrence of precipitation in all the corners of the pond. Crusting on the top or the surface of the pond IS AL so causing delays of water in contact with the fourth result on the aerobic pond turned into an anaerobic.

Due to the precipitation, the effective volume is reduced a lot, so the entire pool aerobics is no longer functioning optimally. From field observations can be seen that the aeration process has not take place to the maximum, although already there are two tools aerator but with the size of the pool is very large it is necessary the addition of several aerator again. Results of laboratory tests on the parameters of waste water in an aerobic (AL-8) is: pH 8.59, COD = 214.8 mg / L, N-Total 742 mg / l, BOD = 71.6 mg / l and Oil & grease = 6.8 mg / L, from these data it can be seen that in the pool has been a decline in aerobic wastewater parameters side close to normal. The wastewater treatment process is the process of sedimentation occurs in sedimentation ponds (AL-9 and AL-10), the pond is formed sedimentation or sediment, causing the separation between water with solids and facilitate oxygen and sunlight entering and penetrating to the bottom of the pond with Thus photosynthesis roses on a mini pool can occur with either. The results of laboratory analysis of samples of waste water in the pond discharge (outlet) showed that all tests parameters already under environmental quality standards, in terms of wastewater generated to the entity it was safe to enter the water. From the table above it can be seen that the pH of the wastewater in the pond outlet is 8.6, the content of COD = 150 mg / L, N-Total - 85.0 mg / L, BOD = 50 mg / L and the content of fatty oil is 6.8. This condition is quite good and below the quality standard, it Same with the test results Jambi Province Regional Environmental Agency in the last three months of monitoring parameters of the which contains all under environmental quality standards.

IV. Conclusions And Recommendations

4.1. Conclusions

From field surveys and test results on the samples libertarian wastewater pond at the WWTP DMP Company can be concluded as follows: DMP Company already has WWTP effluent treatment plant palm oil in quantity, type and number of ponds and sewage treatment process is sufficient, but the quality still needs to be improved management. There was a fluctuation in water parameters in the pond effluent wastewater pond DMP Company that should go down in significance due to the pools is not functioning optimally, especially cooling pond, facultative pond, anaerobic pond, aerobic pond and sedimentation ponds. The content of the waste water parameters at the WWTP plant oil palm DMP Company at the outlet has been quite good and the value is under environmental quality standards, and value COD, BOD and fats / oils high in ponds caused by not achieving ideal conditions for the ongoing processes of decomposition

4.2. Recommendation

1. At the pond fat fit to note is the setting at the time of quoting oil and oil pumped citations to the plant, while the plant is operating citations continuous oil should be done so as to prevent the thick layer of fat fit in a pound of oil.
2. Cooling pond needs to be repaired, scraped, cleaned, made dikes were wider and higher so there is no overflow during the rainy season.
3. Keep separated pond with pond neutralization of bacterial cultures, so that bacteria can grow and proliferate well, so bacteria amount needed to degrade the waste water can grow and develop Rapidly.
4. The Company is recommended to make periodic sludge, cleaning the ponds, making the pond bigger bearings and plain higher if permanent, make an open drainage channel of cement each ponds
5. Sedimentation pond is recommended to be used as bio-indicators pond by observing the terms and specifies an indicator, and the company no longer need to add a new pond.
6. Keep the addition and installation of the new aerator on an aerobic to enrich the amount of oxygen toilet and help break down the oil emulsion, so the content of COD and BOD can be done with maxima and column outlet needs a revision and expansion of the pond and are encouraged to flow into the marshes and not indirectly into the river.

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Picture 2.Foto WWTP Pools Palm Oil Factory DM Company Jambi Indonesia