KILLING THE RIVER

HOW INDOMINCO MANDIRI COAL MINING LEAVES A DEADLY LEGACY AND POISONS WATER of PALAKAN-SANTAN RIVERS IN EAST KALIMANTAN
ACKNOWLEDGMENT OF THANKS TO

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MEMBUNUH SUNGAI
Bagaimana Pertambangan Batubara Indominco Mandiri
Meninggalkan Warisan Maut Dan Meracuni Air Sungai
Palakan-Santan Di Kalimantan Timur
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1. Environmental Impacts Analysis - EIA (ANDAL)
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3. Regional Public Service Agency (BLUD)
4. Agency for Environment (BLH)
5. The Village Consultative Agency (BPD)
6. Social Security Administration (BPJS)
7. National Standardization Agency (BSNi)
8. Iron (Fe)
9. Calcium Carbonate/Hardness (CaCO₃)
10. Watershed (DAS)
11. The Council Security Social (DJS)
12. Department of Public Works (MPW)
13. Employees Provident Fund (EPF)
14. Hectares (ha)
15. Maringkayu District Student Association (HMKM)
16. Borrowing and Use of Forest Area Permits (IPPKH)
17. Acute Infection of Respiratory Channel (ISPA)
18. Mining Advocacy Network (JATAM)
19. Pension Plan (JHT)
20. AMDAL Assessment Commission (KPA)
21. Ministry of the Environment and Forestry (KLHK)
22. Kilometer (km)
23. Manganese (Mn)
24. Metric Ton (MT)
25. Coal Mining Exploitation Work Agreement (PKP2B)
26. Generating Electric Power Steam (power plant)
27. District Court (PN)
28. PT Indominco Mandiri (IMM)
29. PT Indo Tambangraya Megah (ITM)
30. Plan for Management of the Environment of Life (RPL)
31. High School (SMA)
32. Letter of Decree (SK)
33. Indonesian National Standard (SNI)
34. Stadion Utama Palaran (SUP)
35. Kutai National Park (TNK)
36. Total Dissolved Solid (TDS)
37. Total Suspended Solid (TSS)
38. Tuberculosis (TB)
39. Forum for Environmental Living (WALHI)
40. Central Indonesian Time (WITA)
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An Open Pit of PT Indominco Mandiri.
T Indominco Mandiri was the holder of a Coal Mining Exploitation Work Contract (PKP2B) since 11 November 1988 with an area concessions of 24,121 ha. The contract period was valid until 2028 in Kutai Kartanegara Regency, Bontang City and East Kutai Regency, East Kalimantan Province.

As many as 65.14 percent of its shares are controlled by Banpu Mineral, the remaining shares are owned by the public. Among them, the largest was 3.53 percent shares owned by companies affiliated with the Employees Provident Fund (EPF). EPF was a pension fund company that manages workers’ funds. Based in Kuala Lumpur, Malaysia. The remaining 1.16 percent of shares are owned by the Social Security Board (DJS), the Employment of Pension Security Program (JHT) which was connected to the Indonesian Social Security Administration (BPJS).

By the time PT IMM PKP2B license expires in 2028, there will be 53 holes with an area of 2,823.73 ha which is equivalent to 32 times the area of the Palaran Stadium and sports hall in Samarinda. Damaged land and mine pits will be abandoned. According to environmental documents, it was suspected that they were not closed and left open just like that. This has spread across the west block and the east block owned by this company. This includes a mine pit filled with toxic water at Pit L11N1 with an area of 53.05 ha. Without undergoing proper reclamation and restoration, these damages has and will continue to be inherited to the Bontang people’s raw water sources.

The East Kalimantan JATAM team then conducted an inspection and tracing on one of the settling ponds where the waste water flowed into Palakan River and emptied into Santan River. The team selected the settling pond - SP-34 which was the closest reservoir to Pit 19D in the east block which then became the location for the inspection.

The East Kalimantan JATAM team conducted water sampling at three location points. The first point was flow settling pond or waste water storage pond SP-34 which was at the coordinate point: 117° 19’56.683 “E 0° 6’3.222 “N, the second point was carried out in Palakan River which was at the Coordinate point: 117° 19’31.343 “E 0° 5’4.646 “N and the third point at the mouth of Palakan River which met Santan River which was at the Coordinate point: 117° 19’17. “E 699 0° 2’37.838 “N.

At the three sampling points, the test results found that the average level of water acidity or very acidic pH after being tested reached 2.57 (point 1), 2.73 (point 2) and 2.69 (point 3). Test results also found levels of heavy metal Iron (Fe) which reached 3 times the quality standard threshold (point 1), then 7 times (point 2) and 16 times (point 3).

Likewise, the level of heavy metal content of Manganese (Mn) reached 4 times (point 1), 28 times (point 2) and 29 times, including the increase in Total Dissolved Solid (TDS).
Of the three sampling points and water quality test results based on the parameters of East Kalimantan Regional Regulation No. 02 of 2011 and Government Regulation No. 82 of 2001 Concerning Water Quality Management and Water Pollution Control, it can be concluded that PT Indominco Mandiri (IMM) has violated the two regulations above.

Sampling and testing during this inspection was carried out during PP No. 82 of 2001 was still effective, now this PP has been revised by Government Regulation No. 22 of 2021, Concerning the Implementation of Environmental Protection and Management, but without changing the technical standards, the standards in PP No. 82 of 2001 are still valid as a reference.

Therefore the East Kalimantan JATAM team found that PT IMM has failed in implementing environmental management. Furthermore, referring to the PT IMM Environmental Management Plan document, there are a number of agencies mentioned in the document with supervision responsibility; thus they too have failed in conducting their duty.

JATAM Kaltim urges that the two public shareholders; the Employees Provident Fund (EPF), the one which manages pension fund managing workers’ fund company, based in Kuala Lumpur, Malaysia and the Social Security Council (DJS) Employment of the Pension Security Program (JHT) affiliated with the Indonesian Social Security Administration (BPJS) to save their reputation by evaluating its share involvement policy in PT IMM, which directly contributed to the destruction of the environment and the climate crisis in East Kalimantan.

JATAM Kaltim also urges the government to follow up the findings of the investigation results in this report according to its authority, conduct audits, evaluate and impose sanctions to law enforcement. JATAM Kaltim also urged the central government and East Kalimantan Province not to continue the PT IMM contract extension later in 2028.

Desember 2020, Samarinda, Kalimantan Timur.

Writing Team
In July 2015, PT Indominco Mandiri submitted a revised Environmental Impact Analysis (AMDAL) to increase coal production from 16 million tonnes to 20 million tons/year. To boost this, Indominco will increase coal dredging by diverting and removing three rivers respectively starting from Santan River with a length of 7,183 meters, the Kare River 1,760 meters and Palakan River with 5,400 meters, to take the coal content of them.

Santan River watershed was one part of the Karangan River watershed with a river length of 78.0 km and 22.15 km of which was plotted by a concession belonging to Indominco Mandiri, while the river segment to be diverted was 7.18 km long with a watershed area of 544 km².

However, in 2015 the plan to relocate the river was thwarted by protests and community demonstrations together with students. They collected 400 signatures of community rejection starting from the Head of Santan Hulu, Santan and Santan Hilir Villages. Village officials such as the Village Consultative Body (BPD), school teachers from Kindergarten to Senior High School (SMA), including the community of farmers, fishermen, village elders to students.

Actions and organizations carried out by the students, including those organized by the Marang Kayu Subdistrict Student Association together with the Mining Advocacy Network (JATAM) of East Kalimantan, were inflamed since they were on campus. They organized the awareness of students who came from the three villages and villages around Santan River. Organizing a free forum and actions in front of the Public Works Office, which was authorized to issue technical recommendations for relocation to the front of the East Kalimantan Governor’s office from the beginning to the middle of 2015.

On October 28, 2015, community pressure and students achieved results, the Governor of East Kalimantan at that time finally issued letter No. 660.2/5957/B.1.2/BLH/2015 which was addressed to the director of environmental impact prevention for the business and/or activities of the Ministry of Environment and Forestry as well as the Chairman of the Central AMDAL Assessment Commission (KPA).

Likewise the Public Works Office, after being protested and approached through demonstrations in the end, they also issued a letter SD/Bid-SDA/929.k/XI/2015 on November 16, 2015 which withdrew and canceled technical recommendations for river diversion and responded to protests by the Marangkayu District Student Association (HMKM) so far.

The community together with students and JATAM Kaltim then urged the central government, the Ministry of Environment and Forestry (KLNK) to hold a meeting in Jakarta, on 12 February 2016 to cancel this plan together with JATAM Nasional, WALHI and Greenpeace Indonesia.

Eventually, This plan was canceled, Indominco Mandiri then revised the AMDAL by issuing a plan to relocate the river, even though Indominco Mandiri was still increasing its production from 16 million tons to 20 million tons per year which was approved by the Minister of Environment and Forestry, Siti Nurbaya on 18 April 2018.¹

The disturbance and poisoning of Palakan River also contributed to Santan River, because Palakan River stretches along into Santan River.

On Sunday, July 19, 2020, East Kalimantan JATAM conducted a field investigation and sampling to test water quality in Palakan River area. Palakan River itself was a part of the Santan tributary area (DAS), which is geographically located in the administrative area of East Kutai Regency, East Kalimantan Province.

Palakan River flew and was also located upstream in the Kutai National Park (TNK) which emptied into

Santan River. The length of Palakan River reaches 5,600 meters or 5.6 km. Palakan River Watershed (DAS) was crossed by the coal mining working area of PT IMM located in the east block. PT Indominco Mandiri (IMM) operated in Palakan River after previously obtained a permit from the Ministry of Environment and Forestry through a Borrowing-to-Use Forest Area Permit for coal exploitation and its supporting facilities covering an area of 11,718.20 ha in a production forest area in East Kutai Regency.

PT IMM also discharged water from the coal mining waste settling pond channeled to Palakan River body. Palakan River as a buffer zone on Santan river had changed its landscape and changed its function due to PT IMM’s coal mining activities which having impacts mentioned as followed;

Resulting in changes in the water system of the surrounding area, increasingly turbid surface water around the mining site and decreasing river water quality. In the long run, this process would lead to silting of the river channel causing floods.

As a result of PT IMM’s coal mining activities, other causes of environmental problems with the emergence of complaints from residents living around the riverbanks, in Palakan and Santan.

Before the presence of the mining, the water from Santan River, coming from the Palakan River, had been used by residents for their daily needs such as bathing, washing, fishing, and even drinking. The water of Santan River has clean and clear water quality. After the operation of PT IMM’s coal area in the upstream area of the Palakan River, the river water quality became increasingly turbid, so that it had been flowing to Santan River which caused the water from Santan River was not suitable for domestic needs, residents living along the river experience clean water problems.

This report aims to obtain information about the destruction and poisoning of the Palakan River, which was currently included in the coal mining concession owned by PT Indominco Mandiri (IMM) as well as a water flow contaminated by their waste. Took samples and tested the quality of river water, conducted analysis and collect knowledge and historical testimony of residents of the Palakan River and Santan River.

Through this report, JATAM Kaltim also summarized company profile information, which was behind it, traced of environmental and human rights violations, to what deadly insights would be. Indominco would the environment and residents at the time of the Indominco finished the contract in 2028.

**BOX 1. INDOMINCO MANDIRI PROFILE: WHO ARE BEHIND IT, TRACK RECORD AND THE DEADLY LEGACY**

Indominco Mandiri is one of eight coal mining companies under Indo Tambangraya Megah Tbk group. The eight companies are PT Trubaindo Coal Mining, PT Bharinto Ekatama, PT Jorong Barutama Greston, PT Kitadin, PT Nusa Persada Resources, PT Graha Panca Karsa, PT Tepian Indah Sukses and PT Indominco Mandiri.


In general, the coal sales of Indominco Mandiri and the Indo Tambangraya Megah Group Tbk. Reaching up to 21.2 million tonnes flowed to:

**Table 1. Percentage of Production and Coal Buyer Countries from PT IMM**

<table>
<thead>
<tr>
<th>No.</th>
<th>BUYER COUNTRIES</th>
<th>SALES PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>China</td>
<td>22%</td>
</tr>
<tr>
<td>2.</td>
<td>Jepang</td>
<td>21%</td>
</tr>
<tr>
<td>3.</td>
<td>Indonesia</td>
<td>18%</td>
</tr>
<tr>
<td>4.</td>
<td>Filipina</td>
<td>10%</td>
</tr>
<tr>
<td>5.</td>
<td>Thailand</td>
<td>6%</td>
</tr>
<tr>
<td>6.</td>
<td>Bangladesh</td>
<td>6%</td>
</tr>
<tr>
<td>7.</td>
<td>Korea</td>
<td>5%</td>
</tr>
<tr>
<td>8.</td>
<td>India</td>
<td>4%</td>
</tr>
<tr>
<td>9.</td>
<td>Malaysia</td>
<td>4%</td>
</tr>
<tr>
<td>10.</td>
<td>Taiwan</td>
<td>3%</td>
</tr>
<tr>
<td>11.</td>
<td>Vietnam</td>
<td>1%</td>
</tr>
<tr>
<td>12.</td>
<td>Others</td>
<td>1%</td>
</tr>
</tbody>
</table>

2 FY20 Results, Investor and Analyst Update PT Indo Tambangraya Megah Tbk, 25 Februari 2021.
Figure 2.
MINING OPERATIONS OF PT INDOMINCO MANDIRI & INDOTAMBANG RAYA MEGAH GROUP

NOTE:
- Province Border
- Distric Border
- Capital
- City
- Big River
- Small River
- Lake
- Mining Company
- Port
- Load Transfer Point
The majority shareholder of Indo Tambangraya Megah Tbk.\(^3\) was Banpu Minerals (Singapore) Pte. Ltd. 65.143 percent, 31.808 percent public shares and 2.953 percent held by treasury shares, the remaining 0.095 percent held by members of the board of directors and commissioners.

PT Indominco Mandiri was the holder of a Coal Mining Concession Work Agreement (PKP2B) since 11 November 1988 with a concession area of 24,121 ha, the contract period is valid until 2028.

The largest shareholders\(^4\) were Banpu Minerals (Singapore) Pte Ltd which controls 736,071,000 total shares equivalent to 65.14 percent, the rest is controlled by BNYMSANV RE BNYMLB RE Employees PROVIDENT FD BOARD - 2039844119 holding 39,926,600 total shares equivalent to 3.53 percent.

Employees Provident Fund (EPF) was a pension fund company that manages funds owned by employees, based in Kuala Lumpur, Malaysia. The EPF has the status of a federal legal entity under the Malaysian finance ministry.

Others, the Social Security Board (DJS), Employment Pension Security Program (JHT) which was connected to the Social Security Administration (BPJS) also controls 13,074,500 shares, the number of shares equivalent to 1.16 percent.

The rest was SSB 2Q1W S/AI SHARES EMERGING MARKETS DIVIDEND ETF-2144612823 to UBS AG SG S/A RESOURCES VENTURE LTD-2091144730 and followed by several other shareholders.

The composition of the board of directors was overseen by Kirana Limpaphayom as President Director, A.H Bramantya Putra as Deputy President Director. Mulianto, Jusnan Ruslan, Yulus Kurniawan Gozali, Stephanus Demo Wawin, Ignatius Wuryanto and Padungsak Thanakij all served as Directors.

Meanwhile, the composition of the board of commissioners was occupied by Prof. Dr. Djisman S. Simanjuntak as President Commissioner and Independent. Somruede Chaimongkol as Commissioner with Fredi Chandra, Mahyudin Lubis, Somsak Sithinamsuwan and Prof. Djoko Wintoro, PhD.\(^5\)

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\(^3\) Indo Tambangraya Megah, Annual Report, 2019.

\(^4\) Indo Tambangraya Megah, Annual Report, 2019, page 68.

\(^5\) Indo Tambangraya Megah, Annual Report, 2019, page 44.
INFOGRAPHIC

TRACK RECORD AND DEADLY LEGACY

Until the end of the PKP2B permit in 2028, there would be as many as 53 holes within an area of 2,823.73 ha which was equivalent to an area 32 times larger than the Palaran Stadium and Sports Center which would be abandoned, not covered and left open just like that.

The area of the mine pit left by location:
- **West Block**: 2,057.79 ha
- **East Block**: 765.94 ha
- **Total**: 2,823.73 ha

The mine pits that were not reclaimed were “written-off” and will become a source of raw water for the residents of Bontang City. Locations:
- **Name**: L11N1
- **Location**: West Block
- **Quit Production**: in 2013
- **Width**: 53.05 ha

There was 1 giant mining hole measuring 369 ha, equivalent to more than 4 x the area of the Palaran Main Stadium Complex (SUP complex: 88 ha) given to the residents of Santan and Bontang City. Information:
- **Pit’s name**: 19D
- **Location**: East Block

As a result of Indominco mining in the upstream area, every year residents of 3 Santan Villages and residents of Bontang City experienced flooding in residential areas and fields.

As a result of forest clearing and mining in the upstream area of Bontang River and Santan River, residents in these 2 areas experience clean water concerns throughout the year.

There are millions of heavy metals being poisons in mine pit rivers coming from 18 million kilograms of TNT and dynamite explosives.
As a result of the tailings being dumped into Santan River, indigenous biota of Santan River went extinct, two of them were the Kepah shells and Biawan fish.

The crocodiles’ natural habitat continues to be pressured. From 1998 to 2010, 11 residents of 3 Santan Villages had cross path with and killed by the crocodiles. Nowadays, the risk becomes higher as the river ecosystem increasingly ruined by the poisoning of Santan River.

Crocodiles are common in estuary areas, when their habitat is disturbed, they find it difficult to find food, thus they had move closer to residential areas. The communities who also rely everyday on the river felt threaten.

PT IMM was proven guilty to amass dangerous wastes B3 called Fly ash and Bottom ash without permit from the ministry of environment. The hazardous waste from PT Indominco was its CPP disposal. In 2018 PN Tenggarong decided to convict PT Indominco and was obliged to pay a fine of 3 billion rupiah to the state.

The proximity of the CPP location, stock pile and conveyor activities operating for 24 hours affected residents in the village of Santan Tengah RT 10 Santan Ilir Village, especially in RT 04 and 05 as well as Sekambing Bontang Lestari area were exposed to ISPA, tuberculosis and symptoms of nasovaring cancer.

When the world was battling a pandemic, instead of housing and sharing the logistical needs for its employees, PT Indominco deliberately still required all workers to continue working. No reduction in working hours and not even routine swab tests to be carried out to ensure worker’s safety.

Coal loading and unloading activities in the Bontang Bay and the Laut Santan Hilir, both through conveyors and vessels, had resulted in coal contamination of the coastal areas along Bontang Bay to Kersik Beach. This had an impact on the destruction of coastal and marine ecosystems in the region. A number of problems had arisen, among others, the reduction in the catch of traditional fishermen and an increase in the cost burden for fishermen, especially fuel. Now, traditional fishermen were no longer able to catch fish with a distance of less than 2 nautical miles, fishing now had to go farther.
Team of JATAM Kaltim conducted information collection on the condition and quality of water on the Palakan River, through several methods:

1. The method of collecting the results of previous interviews considered still relevant and also conducting in-situ interviews to trace the historical testimonies of residents of the Palakan River and Santan River.

2. The water sampling method used the combined method of places in one time period. This method was based on the National Standardization Agency (BSNI) with the number SNI of 06-2412-1991.

3. Conducted sample test results at an accredited laboratory.

4. Conducted an AMDAL review, conducted a resume of the relevant company documents.

The East Kalimantan JATAM team conducted water sampling at three location points. The first point was the flow of the settling pond or wastewater, the coordinate point of 117° 19'56.683 "E 0° 6'3.222" N, the second point was done on the Palakan River, the coordinate point was 117° 19'31.343 "E 0° 5'4.646" N and the third point was at the mouth of the Palakan River, the coordinate point was 117° 19'17. E 699 0° 2'37.838" N, the time for water sampling carried out was on Sunday, 19 July 2020 in sunny weather conditions.
There were 22 settling ponds or ponds for collecting waste from coal mining accommodating the activities of dozens of pits in west block and east block, in all over the mining concession of PT Indominco Mandiri (IMM) in 2015, but on the way, in 2018, based on the Analysis of Environmental Impact document (AMDAL) there was an increased of coal production and supporting facilities from 16 million tons/year to 20 million tons/year in January 2018, now the number of settling ponds had been reduced to a total of 15 settling ponds, which were spread over 3 settling ponds on the west block and 12 in the east block.  

The East Kalimantan JATAM team then conducted an inspection and tracing on one of the settling ponds where the waste water flowed into the Palakan River and emptied into the Santan River, the team chose the settling pond - SP-34 which was the closest reservoir to Pit 19D in the east block to become the location of examination. The area of the settling pond pool was 6.84 ha and a storage volume of 130,000 m³.  

From the results of the investigation, some information was obtained, one of which was the distance between the PT IMM coal mining opening and the Palakan River bank line was only about 50 meters. The distance was so close that it caused a decrease in vegetation along the river which functions to hold back the rate of erosion. Mine openings were in the form of ground surface areas carried by water flow when it rained, so that the run off flow or “water seepage” in the ex-mining area would flow more quickly into the Palakan River. Water runoff or seepage along with “sediment” from the PT IMM mine was suspected to have resulted in a decrease in the quality of Palakan River water. The location of this finding was in the upstream area of the Palakan River with coordinates: 117° 19'56.683 "E 0° 6'3.222" N.  

According to Romiansyah, a resident of Santan Tengah Village, the water from the river that was close to the dumping location for the settling pond owned by PT IMM, the water changed color to turmid and yellow and caused itch when touched by human skin. The wood trees around PT Indominco Mandiri’s settling pond died.  

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The next activity the team carried out was a drone check to take photo and video documentation of the Palakan River area, which area was increasingly squeezed by the operations of the mining company PT IMM. This activity also aimed to record changes in the landscape in the Palakan River.  

From the results of the investigation, some information was obtained, one of which was the distance between the PT IMM coal mining opening and the Palakan River bank line was only about 50 meters. The distance was so close that it caused a decrease in vegetation along the river which functions to hold back the rate of erosion. Mine openings were in the form of ground surface areas carried by water flow when it rained, so that the run off flow or “water seepage” in the ex-mining area would flow more quickly into the Palakan River. Water runoff or seepage along with “sediment” from the PT IMM mine was suspected to have resulted in a decrease in the quality of Palakan River water. The location of this finding was in the upstream area of the Palakan River with coordinates: 117° 19'56.683 "E 0° 6'3.222" N.  

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The East Kalimantan JATAM team then conducted an inspection and tracing on one of the settling ponds where the waste water flowed into the Palakan River and emptied into the Santan River, the team chose the settling pond - SP-34 which was the closest reservoir to Pit 19D in the east block to become the location of examination. The area of the settling pond pool was 6.84 ha and a storage volume of 130,000 m³.

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6 Environmental Impact Analysis (AMDAL) to increase coal production and supporting facilities from 16 million tons / year to 20 million tons / year PT Indominco Mandiri, January 2018 Page I-88.
SAMPLE TAKING AND WATER QUALITY TEST

First point:
The upstream, on the water flow from the settling pond, SP-34 originating from Pit 19D (according to Figure 5).

Coordinate point:
117° 19'56.683" E 0° 6'3.222" N

Sample type:
Wastewater

Time:
12.02 Central Indonesia Time (WITA), 19 July 2020

The East Kalimantan JATAM team took water samples from PT Indominco Mandiri’s settling pond, on a sunny day. Under observation, the team also saw the water conditions in the settling pond receding. It was suspected that the company had released its waste water the previous day.

Sampling was carried out to determine the condition of the wastewater quality from the settling pond, whether or not it had been "treated" to control the content in the water before being released to the Palakan River.
There was also a water condition information board, with the status in July 2020. The board was located near the settling pond and the water ditch led to the Palakan River. From the information board found until July 11, 2020, PT IMM conducted monitoring and testing of acidity conditions water through pH and water discharge threshold, however, it was found that other monitoring columns such as Total Suspended Solid (TSS), Heavy Metal Manganese (Mn) and Heavy Metal Fe (Iron) were not observed.

The monitoring information board that was not monitored by the officers was suspected of negligence and acts of violation.

After taking samples, East Kalimantan JATAM team then took the results to the Health Laboratory of Regional Public Service Agency (BLUD) of East Kalimantan Provincial Government on July 20, 2020 for sample testing.

Of the twenty six (26) parameters, three (3) of the test result parameters were found exceeding the quality standard threshold for coal waste water which was strictly regulated and limited by the East Kalimantan Regional Regulation No. 02 of 2011 Concerning Water Quality Management and Water Pollution Control.

The three parameters exceeding were the acidity level (pH) reaching 2.57 meaning very acidic, the content of heavy metal Iron (Fe) reaching four and a half times the quality standard threshold. Likewise, the heavy metal content of Manganese (Mn) was up to four and a half times of the quality standard.

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7 Attached on the Appendix Page.
8 East Kalimantan Regional Regulation No. 02 Year of 2011
Field facts also showed that along the river flow there were neither household nor factory activities, so it was strongly suspected that since the beginning the water was released into the body and the flow of the Palakan River had violated the threshold for coal waste water regulated by the government.

JATAM Kaltim team also found that the data listed on the daily monitoring information board by PT IMM also did not match the results of the test conducted by the JATAM team at point one (1), the water came out of this settling pond water gate.

The test results found the water acidity level or pH after the test reached 2.57 or very acidic. Meanwhile, the information board column on July 19 had not yet been confirmed. If you look for the closest comparison to the results of monitoring the Information board on July 16, 2020, the acidity level was said to be 6.39 or still in the safe limit (between 6-9) but was significantly different from the findings of laboratory results stating the pH was 2.57 or very acidic.

The following was a resume of JATAM team analysis and laboratory results:

<table>
<thead>
<tr>
<th>No.</th>
<th>PARAMETER</th>
<th>UNIT</th>
<th>STANDARD</th>
<th>TEST RESULT</th>
<th>ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>pH</td>
<td>-</td>
<td>6-9</td>
<td>2.57</td>
<td>Very Acidic</td>
</tr>
<tr>
<td>2</td>
<td>Iron (Fe)</td>
<td>mg/L</td>
<td>7</td>
<td>32,614</td>
<td>4.5x</td>
</tr>
<tr>
<td>3</td>
<td>Manganese (Mn)</td>
<td>mg/L</td>
<td>4</td>
<td>18,216</td>
<td>4.5x</td>
</tr>
</tbody>
</table>

* Based on the East Kalimantan Regional Regulation No. 02 of 2011.

On the same day and under similar conditions, the East Kalimantan JATAM team continued taking water samples at the second point (according to the map image) to get back to know the condition of water quality in the Palakan tributary.

Through the results of laboratory tests on the samples taken, the East Kalimantan JATAM team found contamination elements that were consumptive with the sample results at the first point; the rediscovery of a number of test results parameters that exceeded the river water quality standard threshold; the acidity level (pH) which reached 2.73 or very acidic, the heavy metal content of Iron (Fe) which was up to seven times, heavy metal Manganese (Mn) which was up to twenty-eight times, including the increase in Total Dissolved Solid (TDS).

Some things that had recently appeared in findings exceeding the quality standard were the hardness level (CaCo$_3$) reaching eleven times and the high Zinc (Zn) content reaching four times. All of them use parameters test in the East Kalimantan Regional Regulation No. 02 of 2011 and Government Regulation No. 82 of 2001, Concerning Water Quality Management and Water Pollution Control.

The presence of Zinc (Zn) and increased acidity, heavy metals Iron (Fe) and Manganese (Mn) according to several journals also came not only from wastewater directly from the settling pond but could also be caused by “run off” or “water seepage” from piles of coal and silt due to coal mining activities containing Manganese, Iron, had a very acidic pH and also contained Zinc. (Swift, M. C. 2007. Effect of coal pile runoff on stream quality

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**Figure 12.** Water sampling at point 1.

This affirmed the suspicion of the East Kalimantan JATAM team, because in the vicinity of the location there, found some silt which was thought to have originated from mining activities, a number of dead wood trees and mud were seen covering the area, the JATAM team succeeded in recording the image.

The following is a resume of the JATAM team analysis and laboratory results:

<table>
<thead>
<tr>
<th>No.</th>
<th>PARAMETER</th>
<th>UNIT</th>
<th>STANDARD</th>
<th>TEST RESULT</th>
<th>ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>TDS (Physics)</td>
<td>mg/L</td>
<td>1000</td>
<td>1352</td>
<td>Exceeds</td>
</tr>
<tr>
<td>2.</td>
<td>pH</td>
<td>-</td>
<td>6-9</td>
<td>2.73</td>
<td>Very Acidic</td>
</tr>
<tr>
<td>3.</td>
<td>Iron (Fe)</td>
<td>mg/L</td>
<td>0.3</td>
<td>2.249</td>
<td>7 x</td>
</tr>
<tr>
<td>4.</td>
<td>Manganese (Mn)</td>
<td>mg/L</td>
<td>0.1</td>
<td>2.853</td>
<td>28 x</td>
</tr>
<tr>
<td>5.</td>
<td>Hardness (CaCO₃)</td>
<td>mg/L</td>
<td>50</td>
<td>555,00</td>
<td>11 x</td>
</tr>
<tr>
<td>6.</td>
<td>Zinc (Zn)</td>
<td>mg/L</td>
<td>0.05</td>
<td>0.201</td>
<td>4 x</td>
</tr>
</tbody>
</table>

* Based on East Kalimantan Regional Regulation No. 02, 2011, and Government Regulation No. 82 of 2001 Concerning Water Quality Management and Water Pollution Control.

The East Kalimantan JATAM team continued taking water samples at the third point (according to the map image) to find out more about the water quality conditions at the Palakan Estuary and Santan River, this was the point where the Palakan River met Santan River.

Through the results of laboratory tests on the samples taken, the East Kalimantan JATAM team found contamination elements that were consistent with the results of the samples at the first and second points; the rediscovery of a number of test
results that exceeded the parameters of river water quality standard as the acidity level (pH) reached 2.69 or very acidic, the content of heavy metal Iron (Fe) reaching sixteen times the heavy metal Manganese (Mn) which reached twenty-nine times, including the increase in Total Dissolved Solid (TDS) up to twice higher.

The finding of a hardness level (CaCO\(_3\)) was up to nine times and a high Zinc (Zn) content was quadrupled, similar to that of the second sampling point.

The following is a resume of the JATAM team analysis and laboratory results:

<table>
<thead>
<tr>
<th>No.</th>
<th>PARAMETER</th>
<th>UNIT</th>
<th>STANDARD</th>
<th>TEST RESULT</th>
<th>ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>TDS (Physics)</td>
<td>mg/L</td>
<td>1000</td>
<td>2266</td>
<td>2x</td>
</tr>
<tr>
<td>2.</td>
<td>Iron (Fe)</td>
<td>mg/L</td>
<td>0.3</td>
<td>4,945</td>
<td>16 x</td>
</tr>
<tr>
<td>3.</td>
<td>Hardness (CaCO(_3))</td>
<td>mg/L</td>
<td>50</td>
<td>490.00</td>
<td>9 x</td>
</tr>
<tr>
<td>4.</td>
<td>Manganese (Mn)</td>
<td>mg/L</td>
<td>0.1</td>
<td>2,938.9</td>
<td>29 x</td>
</tr>
<tr>
<td>5.</td>
<td>pH</td>
<td>mg/L</td>
<td>6-9</td>
<td>2.69</td>
<td>Very Acidic</td>
</tr>
<tr>
<td>6.</td>
<td>Zinc (Zn)</td>
<td>mg/L</td>
<td>0.05</td>
<td>0.279</td>
<td>4 x</td>
</tr>
</tbody>
</table>

* Based on East Kalimantan Regional Regulation No. 02 of 2011 and Government Regulation No. 82 in 2001 Concerning Water Quality Management and Water Pollution Control.

Of the three sampling points and water quality test results based on the parameters of East Kalimantan Regional Regulation Number 02 in 2011 and Government Regulation No. 82 in 2001 Regarding Water Quality Management and Water Pollution Control, it could be concluded that PT Indominco Mandiri (IMM) had violated the two regulations above.

Likewise, based on the Environmental Management Plan (RPL) document of PT IMM itself\(^9\) stated that to measure the indicator of the success of environmental management, then the assessment of water quality in and out of the settling pond could be compared with the parameters of East Kalimantan Regional Regulation No. 02 in 2011 and Government Regulation No. 82 in 2001 Concerning Water Quality Management and Water Pollution Control, therefore the East Kalimantan JATAM team found that PT IMM had failed in implementing its environmental management.

Referring to the PT IMM RPL document, there were a number of supervisory agencies mentioned in the document, there were a number of agencies responsible for oversight that neglect to carry out their supervision duty, resulting in failures to implement environmental management in accordance with its commitments in PT IMM RPL document was not running well; Ministry of Energy and Mineral Resources (Kemen ESDM), Ministry of Environment and Forestry (KLHK), Environmental Agency (BLH) East Kalimantan Province, Distamben (now the Department of Energy and Mineral Resources) East Kalimantan, East Kutai Regency BLH, Bontang City BLH, East Kutai BLH and Kutai Kartanegara BLH.

While the discovery of Zinc (Zn) and an increase in acidity, according to several journals, may not only came from wastewater directly from the settling pond but could also be caused by “run off” or “water seepage” from piles of coal and silt due to coal mining activities that had also been carried out containing a very acidic pH and also contains Zinc which the source of the impact came from excavation, transportation and stockpiling overburden which was thought to cause disruption to the diversity and an abundant amount of biota in water bodies such as Palakan River flew out into Santan River.

In PT IMM RPL document, apart from constructing a sedimentation pond in each location that has the potential to cause a run-off, PT IMM should have treat it through a “coagulant” material and carried out a “neutralization” of the acidity level or pH\(^10\). However, the findings of the East Kalimantan JATAM team in fact, showed the water content of the river in the nearest location of the silt thought

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9. Environmental Management Plan (RPL) of PT Indominco Mandiri, Increasing Coal Production and Supporting Facilities, From 16 Million Tons/Year To 20 Million Tons/Year, Page II-14

10. Environmental Management Plan (RPL) of PT Indominco Mandiri, Increasing Coal Production and Supporting Facilities, From 16 Million Tons/Year To 20 Million Tons/Year, Page II-28
to create a run off actually contained excess acidity levels, contained heavy metals and contained Zinc and increased water hardness.

The testimony of residents in the process of tracing by East Kalimantan JATAM team: now a number of water biota in Palakan River and Santan River have disappeared, including aquatic biota such as Biawan Fish and Kepah Shells. Therefore, East Kalimantan JATAM team found that PT IMM has failed in implementing environmental management resulting a disruption of aquatic biota.
EMPIRICAL AND HISTORICAL EVIDENCE OF PALAKAN AND SANTAN RIVERS

Administratively, Santan Village is included in Marangkayu District, Kutai Kartanegara Regency. The name Santan Village was a gift from Kutai Sultanate and now there were three villages in Santan area called as: Santan Ulu, Santan Tengah and Santan Ilir Villages with a total population of 8,569.

There is a river crossing the three villages and located in the districts of Kutai Kartanegara and East Kutai. This river is known as Santan River with a length of about 78 km.

Sultan Kutai Aji Muhammad Parikesit (Raja Kutai; 1920-1960) according to history told by the residents, had granted the request of the immigrants from Sulawesi and the village openers to inhabit the village with fertile land, split by a river and facing this Makassar Strait. In its history it had not take long for residents to build a village, because the very strategic area conditions at that time had been to directly face the Makassar Strait and divided by the river flowing and serving water to the village, wetting the residents’ agricultural lands that had made it fertile.

Since the beginning of the relocation of residents to Santan area, Santan River had played an important role in the residents’ living space. The river had been an important transportation medium connecting villages. Around 1980-1990, the land road of Santan Village had not yet fully connected, residents crossed Santan River to sell agricultural products, such as rice, coconut, coffee, cocoa, banana, etc. had been transported by ship to Samarinda and Bontang City.

Santan River had been so vital to the life of Santan people that it formed a collective identity in three villages, marked by the river uniting them. Santan River had not been just an identity, but the water of the river had been the water of life. The river had been the main source of water for daily needs and had been an abundant producer of fish and shrimp for fishermen.

The economy of the people of Santan had been supported by the agricultural and fisheries sectors, one of which had been coconut plantations. Coconut trees had been easy to find in the yard or behind the residents’ houses. Based on data from the Santan Village Government, at least 3,000 coconuts had been distributed throughout East Kalimantan (Kaltim) on a daily basis. Santan Village had been a coconut producing center in East Kalimantan Province. Coconut plantation area in Kukar District, it had reached 11,344 ha or the largest among other districts or cities.

Nature’s service had been a gift providing for living survival. It had been proven by the history of river civilization having formed a social structure and various local wisdoms in Santan Village. Santan River had been the lifeblood of economic, social and ecological aspects. Santan River had also been a major source of water; water had obtained freely by residents for washing, cooking and even drinking. Fish had been abundant, food sources had been never lacking, rivers had been a place to play, as well as a place for social interaction along the riverbanks for its society.
Now, the glory of Santan River is only a story and a memory, all of which has disappeared under the pretext of an investment in order to increase state income and the welfare of local residents. The Orde Baru government sold out a protected forest concession located upstream of Santan River for a coal mining to Thailand called PT Indominco Mandiri (IMM). Since 1997, PT IMM had received a Work Agreement on Coal Mining Concession (PKP2B) with concession area of 25,121 ha.

In the upper of Santan River, it is connected to Palakan River. The Palakan River area is not a residential area but was used by residents of Santan Ulu Village as a water transportation, route for fishing, foraging wood and for hunting forest animals.

Now the water condition of the Palakan River was increasingly alarming since the operation of the coal mining company, PT IMM, the decline in the quality of Palakan River water had a direct impact on the lives of the people in the three villages that Santan River passes, including the villages of Santan Ulu, Santan Tengah and Santan Ilir.

According to the testimony of Arbaim (65 years), the decline in water quality in Palakan River was marked by a change in the color of the water. These changes has continued to worsen in the past six years, so that the villagers of Santan Ulu who had been active using the river every day felt extremely bothered with the changing of color and muddy. So that river water is no longer suitable to be used as a support for the daily needs of residents. The water quality of Palakan River has changed due to the disposal of the waste of PT IMM. The turbid and muddy river water flew into Santan River so that its was not suitable for the daily needs of the residents of Santan Village.

Arbaim said they had to walk about 2 kilometers away to get to village. Whereas prior to PT Indominco Mandiri’s mining activities, it had been rare to find water upstream of Palakan River so shallow that it was accessible for boats to pass through, even though during the dry season.
“Right now, when it doesn’t rain for four days, the river water is so shallow that we no longer feel like going through it by ces boat” said Arbaim.

Waste pollution from the Palakan River caused a decrease in the wealth of biota in Santan River watershed. Fish and shrimp were decreasing in population, even it was once abundant by shellfish which were now extinct.

According to Ridwan (60 years), a resident of Santan Tengah Village, a fisherman who often used traps to catch giant prawns, usually giant prawns were the dominant catch in this river. Around 2005, giant prawns (udang galah) had still been easy to find, with only 20 units of traps (bubu) scattered along the river, they could get 3 kg of prawns a day. Currently, with 33 traps installed, they only get the catch of 1.5-2 kg per 2 days, Ridwan admitted that the last time he had got a large number of catches was around 2012. This drastic drop in giant prawns was due to the turbid river water, affecting the number of catches he said.

The last Kepah shell found by residents was in 2015, when the river water suddenly turned green and acidic, which was thought to have caused the fish to die and the shells being found were only the shells that began to rot. According to information from residents of Santan Ulu Village, the incident coincided with the death of the fish from the Palakan River. (Parading the Competing Economy, 2019).
On 28 October 2015, the Village Head of Santan Ulu sent an official letter to the Governor of East Kalimantan and a number of related agencies. In the letter, residents asked the Environment Agency for the Province of East Kalimantan and Kutai Kartanegara to examine the condition of the river water, which had turned green. The provincial BLH team accompanied by village officials conducted water sampling tests at several points. As a result, Santan River was predicted to experience what was called an algae bloom. This was a condition when there was an explosion in the algae population in the waters due to changes in environmental conditions.

THE LAST KERANG KEPAH (KEPAH CLAMS)

Mrs. Hawati (55 years), a resident of Sungai Santan, said that the shellfish had been the original biota of Santan River taken by the people of Santan Village for consumption and also as an economic support for the residents. Kepah clams had been consumed as an alternative and substitute for fish when entering the dry season, usually it had been cooked by frying or called “oseng-oseng” with a mixture of spices such as onions, garlic, galangal, lemongrass and chilies add up the delicacy.

Looking for shellfish had been a side job for the villagers of Santan Ulu at RT 01 only done when entering the dry season, most of the residents of RT 01 started to go down to Santan River to look for shells by diving, usually in one day the shells taken in one ces boat (boat with a small engine). As the shells obtained, had been separated from the shell and then it’s sold at a price of Rp10,000 per plastic pack, in one pack weighing about half a kilogram, residents usually sold shells to Desa Kersik market, which had been a neighboring village and some other had been sold around to other nearby villages, starting in the morning around 07.00 am to 11.00 pm selling at home starting from morning to evening, they had sold shellfish 10 to 20 packs per day.

"The buyers usually come from the villagers of Santan Tengah, Santan Ilir and some of the villagers around the sub-district of Marangkayu," said Ms. Hawati reminiscing.

In 2013, Mrs. Hawati explained, the income from selling shellfish in a day had earned around Rp100,000 to Rp200,000. The economy of the residents before the extinction of the shellfish had been greatly helped, because the shellfish had been a side income for the residents, especially when entering the dry season.

In 2015 the shellfish in Santan river had then died simultaneously, the shells obtained by the residents had only been rotting shellfish ones, this incident had happened when the water of Santan River had turned green, which was thought to have occurred due to the algae boom, allegedly for the chemical reactions in the river due to waste disposal and acid mine drainage.

"Now it’s no longer possible to collect kerang kepah in Santan River", Mrs. Hawati recalled, “that was the last time I found the shells,” she concluded.

**PLAYING TRICKS: DISPOSAL OF WASTE DURING HEAVY RAIN**

According to Herman (45 years), also a resident of Santan Ulu Village who went through the river every day to take care of his garden located upstream of Santan River using a ces boat. Brownish color and muddy, all of which was thought sent from the waste water of coal mining originating from the Palakan River.

"This has been happening for about 5 years. Palakan River water is always cloudy, whether it's the rainy season or the dry season, because mining companies continue to dispose of their waste. Sometimes the water in Santan River is only clear for 2-3 days. Suddenly, the river water turns cloudy again when the company dumps its waste again," said Herman.

"Previously, the company had disposed its waste once in two weeks, depending on the condition of the water discharge in the settling pond. If it was full, it was immediately released into Palakan River. Usually companies play cat-and-mouse. They disposed its waste when it rained because the waste water would mix with rainwater," he added.

*Figure 21.
The water of Santan River in 2015 turned green, presumably there was an algae boom. Found fainting and even dead fish within this condition.*
“So that the rain condition becomes the reason for releasing waste water from the Settling pond, added Herman. “This condition caused the wastewater from the mouth of the Palakan River to look like the color of Milo drinking water, even though the water condition of Santan River upstream is not as cloudy as the Palakan River water, ” he concluded.

HABITAT DAMAGED, INCREASING THE RISK OF CROCODILES ATTACK

Crocodiles had started attacking residents in villages along Santan River in 1999, 10 residents had become victims of the river’s crocodiles until now, the victims had been residents of three villages; Santan Ulu, Santan Tengah and Santan Ilir villages. The highest number of residents being attacked by crocodiles had been in 2007, in one year there were 3 victims eaten by crocodiles while doing activities in Santan River\textsuperscript{12}.

The increase in crocodile attacks on residents had begun with the activities of mining companies in the upstream area of Santan River, including Palakan River which had damaged the ecosystem that should have been the natural habitat of those crocodiles, changing the river that had been once clear to muddy, the disappearance of the food chain in the upper reaches of the river, thus luring the crocodiles downstream to find food.

Before the terror from the crocodiles, almost all the activities of the residents taking place in the river had never been disturbed by the crocodiles. The residents were active in the river, starting from bathing, washing, swimming and fetching water for cooking purposes. Since the had been victims, residents were now afraid to go out to Santan River. To avoid the threat of crocodiles, residents believe that a communication between humans and the crocodiles had to be enbridged again.

\textsuperscript{12} Notes and Documentation, Taufik, Tani Muda Santan, 2020
now some residents every year carried out the ritual of buying, rejecting reinforcements so that the inhabitants of Santan river would no longer disturb humans anymore, since a long time ago rituals of Belian and Melarung (to float) these offerings which had been done before.

**FLOODS CONTINUES TO INUNDATE**

In early April 2017, huge floods inundated Santan Village, Marang Kayu District, Kutai Kartanegara. The head of Santan Tengah Village, Nasrullah, explained the worrying condition of his village. Floods came every time it rained caused by overflowing of the rivers. “When there is a flood, Santan Tengah is with the highest water due to the overflow of the river in Santan Ulu,” he explained.

Nasrullah said that, last year the flood had come at times unpredictably. Floods bringing brown mud damaged people’s rice fields and gardens. In fact, this April, was the harvest schedule.

“Everything is damaged, farmers are clearly losing money because hundreds of hectares of corn and banana crops failed to harvest. We surrendered, but we have to take steps to handle it,” he added

Residents have difficulty with clean water. Some bought it, some water was supplied by the village, but they could not reach people who are far away,” concluded Nasrullah.

In the April 2018 flood, the water level in Santan Tengah Village was about 1 meter high. In addition, residents were also terrorized by crocodiles living in the Santan River, which rose to prey on residents’ livestock and even threatened the lives of residents.

Before 2017 and 2018, floods also occurred in December to February 2015. At that time 2,400 residents in 3 of Santan Villages, from Santan Hulu to Tengah (Central) and Downstream, were submerged. In addition to submerging thousands of houses, the overflow of the Santan River also resulted in incalculable material losses. The majority of Santan residents working as chili and corn farmers failed to harvest.

One of the material losses that had not been calculated was the cost of making higher the houses, because they were often affected by floods.

Mining operations by PT Indominco Mandiri in the upper stream were suspected of contributing to an increase in the volume and frequency of floods continuing to inundate villages around Santan River. The demolition of the mining resulted in sedimentation and mud that became increasingly shallow caused the river water to run over and flooded the residential areas of Santan residents along with the coming of the rain.
Floods hit Santan Village in December 2017 submerging Santan Ulu, Santan Tengah and Santan Ilir Villages due to the overflow of Santan River. This flood was the biggest and the worst with the depth of water around the chest of an adult.

Photo source: Tani Muda Santan

This flood caused some material losses received by residents. One of them was the engine of the vehicles were damaged and the road access in the village was disconnected. So that residents could not travel using their vehicles during floods and had to pay their own costs to repair damaged vehicles.

Photo source: Tani Muda Santan.

Flooding caused access to the Santan Tengah Village road to be submerged by water, resulting damage to public facilities. It required the village government to use limited village funds to repair road access damaged by floods. In addition, residents were also worried about the emergence of crocodiles preying on their livestock.

Photo source: Tani Muda Santan.
INDOMINCO DESTROYED THE NATURE OF EAST KALIMANTAN FOR THREE DECADES

PT Indominco Mandiri was one of 13 mining companies in Indonesia that received privileges from the then President of the Republic of Indonesia, Megawati Soekarnoputri. PT IMM was exempted from the provisions of Article 38 of Law 41 of 1999 concerning the prohibition of open-pit mining in protected forest areas through Regulation in Lieu of Law No. 19 of 2004.

The destructive power of 13 mining companies allowed to mine openly in this protected forest area causing the protected forest area along with the biodiversity and history on it to be lost when mining is later completed, including draining problems downstream from its mining operations in the villages around the rivers, Palakan–Santan. A number of other alleged problems included the demolition of areas outside of the mining concession.

The following is a portrait of three decades of how PT Indominco Mandiri’s operations have drastically changed the landscape of East Kalimantan.
The result of investigation through water sample testing was compared with waste water quality standard regulated in the Regional Regulation of East Kalimantan No. 02 of 2011 and Government Regulation No. 82 of 2001 Concerning Water Quality Management and Water Pollution Control, this report supports the allegation that PT Indominco Mandiri (IMM) has violated the two regulation above.

Sampling and testing during this inspection were carried out when PP No. 82 of 2001 was still effective, now this PP was revised by Government Regulation No. 22 of 2021 Concerning the Implementation of Environmental Protection and Management, but it did not change its technical standards, the standards and parameters of river water quality standards in PP No. 82 of 2001 are still valid for reference.

Meanwhile, East Kalimantan Regional Regulation No. 02 of 2011 Concerning Water Quality Management and Water Pollution Control was still effective, including technical standards and waste water quality standards from coal mining activities used as a reference.

East Kalimantan JATAM team concluded that:

01. At the first point of sampling, the floodgate of settling pond SP-34, a monitoring information board was found, yet was not monitored by the officer. So it was suspected of being an act of negligence and an act of violation.

02. At the first point of sampling, it was found that three (3) parameters of the test results exceeded the quality standard threshold for coal wastewater regulated and strictly limited by East Kalimantan Regional Regulation No. 02 of 2011 Concerning Water Quality Management and Water Pollution Control. The three parameters exceeding were the level of acidity (pH) reaching 2.57 which meant very acidic, the content of heavy metal iron (Fe) reached four and a half times the quality standard threshold. Likewise, the heavy metal content of Manganese (Mn) was four and a half times higher than the quality standard.

03. At the second point of sampling, in Palakan River body, East Kalimantan JATAM team found elements of pollution that were consistent with the sample results at the first point, the rediscovery of a number of test results parameters exceeding the river water quality standards, the acidity level (pH) which reached 2.73 or very acidic, heavy metal content iron (Fe) which reached seven times, and the heavy metal Manganese (Mn) which reached twenty-eight times, including the surge in Total Dissolved Solid (TDS).

Some that also recently appeared in the findings exceeding the quality standard threshold were the level of hardness (CaCo) reached eleven times and the high content of Zinc (Zn) reached four times of the standard. All of the parameters above are set by the East Kalimantan Regional Regulation No. 02 of 2011 and Government Regulation No. 82 of 2001, Concerning Water Quality Management and Water Pollution Control.

04. At the last point of sampling, the East Kalimantan JATAM team found pollution elements consistent with the sample results at the first and second points, the finding again showed a number of test results that exceeded the river water quality standard parameter, the acidity level (pH) which reached 2.69 or highly acidic, heavy metal content of iron (Fe) up to sixteen times, heavy
metal Manganese (Mn) up to twenty-nine times, including a spike in Total Dissolved Solid (TDS) up to twice higher than the standards.

The finding of hardness level (CaCo$_3$) reached nine times and high Zinc (Zn) content reached four times, just like the second sampling point.

The discovery of Zinc (Zn) content and an increase in the acidity level which according to several journals also came not only from wastewater directly from the settling pond but could also be caused by "water run off" from coal piles and sludge due to coal mining activities which also contained a very acidic pH and also contains Zinc which the source of the impact came from excavation, transportation and stockpiling of overburden thought to cause disturbances to the diversity and abundance of biota in water bodies such as the Palakan River flew out into Santan River.

In PT IMM's RPL document, apart from making a settling pond or sedimented pond at each location having the potential to cause run off and water seepage, PT IMM should have carried out a treatment through the "coagulant" and carried out "neutralization" of the acidity level or pH. However, the JATAM Kaltim team's findings showed that the water content in the river in the nearest location of silt thought to create run off and seepage actually contained excess acidity levels, heavy metals and Zinc and increases water hardness.

The testimony of residents in the process of tracing by the East Kalimantan JATAM team: now a number of water biota in the Palakan River and Santan River have disappeared, including water biota such as Biawan Fish and Kepah Shells. Therefore, the East Kalimantan JATAM team found that PT IMM had failed in carrying out environmental management which resulted in the disruption of aquatic biota.

A number of supervisory agencies that were responsible for its oversight neglected in carrying out the supervision resulting in failure to implement environmental management in accordance with commitments in the RPL document of PT IMM running ie; Ministry of Energy and Mineral Resources (Kemen
ANALYSIS

01 PT IMM was suspected to have violated the Kaltim Regulation No. 02 of 2011 Concerning Water Quality Management and Water Pollution Control. Where at the information point on the water quality standard for coal mining activities, the person in charge of the activity is obliged to check the pH (acid-base level) of the water every day. For parameters Iron (Fe) and Manganese (Mn) have to be measured at least monthly.

02 PT IMM is suspected to have violated the water quality status that has been determined by the minister, governor, regent/mayor in accordance with Article 123 of PP No. 22 of 2021 on Implementation Protection and Management of the Environment.

03 It is suspected that the minister, governor or regent/mayor do not monitor water quality in accordance with their authority as regulated under PP No. 22 of 2021 Concerning the Implementation of Environmental Protection and Management, including the Palakan River and Santan River. By comparing the results of water quality monitoring with water quality standards in accordance with Article 123 paragraph (1) in the same PP.

04 PT IMM is alleged to have not carried out waste water management as regulated in Article 130 of PP No. 22 of 2021 Concerning the Implementation of Environmental Protection and Management.

05 PT IMM is suspected of having violated the quality standards of water bodies receiving waste water from coal mining businesses and/activities as regulated in Article 126 PP No. 22 of 2021, Concerning the Implementation of Environmental Protection and Management.

06 Alleged pollution by PT IMM has been known since July 2020 and has violated the 24 hour time limit, the longest time limit for tackling water pollution for which the cost of overcoming was borne by the person in charge of the business/activity. In accordance with the regulations contained in article 152 PP No. 22 of 2021 Concerning the Implementation of Environmental Protection and Management.

07 Environmental crime analysis. Based on the results of sampling and testing of PT IMM settling pond water samples, Palakan River water and Palakan River estuary in Santan River by the JATAM Kaltim team, it could be concluded that PT IMM’s waste water disposal activities have violated the obligation to comply with surface water quality standards. The official issuing the waste water disposal permit for PT IMM, in this case the Governor of East Kalimantan was obliged to provide administrative sanctions in the form of government coercion to PT IMM to improve wastewater management and restore the water quality of the Palakan and Santan Rivers to reduce below the water quality standard applied.

In terms of criminal law enforcement, PT IMM could be sentenced to a minimum of three years and a maximum of ten years in prison and a minimum fine of three billion rupiahs and a maximum of ten billion rupiah for intentionally committing an act resulting an exceeding water quality standard in accordance with Article 98 Paragraph (1) Law Number 32 of 2009 Concerning Environmental Protection and Management.

08 Corporate Crime Analysis. Based on the results of an investigation by the Mining Advocacy Network (JATAM) showing that there have been environmental crimes in the form of violations of waste water quality standards, environmental pollution and destruction of the Palakan river in Kutai Kartanegara, the location of PT Indominco Mandiri (PT IMM) to exploit its mining and PT IMM's attitude was seen as to ignore this practice. In fact, it is strongly suspected that PT IMM benefited from the negligence of this officer. By not managing waste and the environment properly and correctly. So that it has more than a minimum of two legal evidence and there
was no doubt that PT IMM has committed an environmental crime and must be legally responsible based on the provisions of Law No. 32 of 2009 Concerning Environmental Protection and Management in Article 116 paragraph (1) and (2) which states:

(1) If an environmental crime is committed by, for, or on behalf of a business entity, the criminal charges and criminal sanctions are imposed on:
   a. Business entity; and/or
   b. The person who gives the order to commit the criminal act or the person who act as the leader of the activity in the crime

(2) If the environmental crime as referred to in paragraph (1) is committed by a person based on an employment relationship or based on another relationship acting within the scope of work of a business entity, criminal sanctions will be imposed on the giver of the order or the leader in the crime without regard to the offense the crime is committed individually or collectively.

In addition to the main crime, PT IMM as an alleged perpetrator of a non-environmental crime can also be subject to additional penalties as stipulated in Article 119 of Law Number 32 of 2009 Concerning Protection and Environmental Management which states:

"In addition to the penalties referred to in this Law, business entities may be subject to additional penalties or disciplinary measures in the form of:
   a. Deprivation of profits derived from criminal acts;
   b. Closing all or part of business and/or activity places;
   c. Corrections due to criminal acts;
   d. The obligation to do what is neglected without rights; and/or
e. Placement of the company under supervision for a maximum of 3 (three) years.

Settling Pond Data Manipulation Crime Analysis

Along the way, JATAM Kaltim Team also explored PT Indominco Mandiri (IMM) ANDAL Documents published in 2018, JATAM Kaltim found irregularities in the form of inconsistencies in the company’s mining settling pond amount. On pages I-88 and I-89 of table 1.36 it was recorded that PT IMM had a total of 15 settling ponds, with a distribution of 3 settling ponds in the west block and 12 other settling ponds in the east block. However, on the map display on page II-66, there were only 11 settling ponds in the eastern block.

The difference between the data in the table and the map regarding the number of settling ponds in this eastern block is questionable. The validity of the data in the environmental technical document is questionable. The discrepancy in the available data shows that in the preparation of PT IMM’s ANDAL document was suspected to be incorrect and manipulative so that it had an impact on monitoring and law enforcement efforts related to environmental protection.

If the information is incorrect and manipulative, the initiator of the AMDAL, including PT IMM, can be categorized as qualifying for Article 113 of the Environmental Protection and Management Law (PPLH) No. 32 of 2009 stating that;

“Everyone who provides false information, misleading, omitting information, destroying information, or providing incorrect information needed in relation to supervision and law enforcement relating to environmental protection and management as referred to in Article 69 paragraph (1) letter j shall be sentenced to a maximum imprisonment of 1 (one) year and a maximum fine of Rp. 1,000,000,000.00 (one billion rupiah).”

DEMANDS

JATAM Kaltim urges to conduct audits, evaluate and impose sanctions to law enforcement which include:

01 Urge the ministers, governors and regents mayors in accordance with his/her authority to follow up on the findings of this report by preparing a plan for protection, management, control, prevention, counter measures, recovery water quality and water pollution according to Article 124 and Article 127 of PP No. 22 of 2021 Concerning the Implementation of Environmental Protection and Management.

02 Urge the ministers, governors and regents mayors according to their authority to follow up the findings of this report by protecting, managing, controlling, preventing, overcoming, restoring water quality and water pollution at and around points according to the findings in this report based on articles 127 and 128 of PP No. 22 of 2021 Concerning the implementation of Environmental Protection and Management.

03 Urge PT IMM as the person in charge of businesses and/or activities causing water pollution to be obligated to restore water quality by starting from (a) Cleaning water polluting elements (b) Remediation (c) Rehabilitation (d) Restoration and/or (e) Others in accordance with the development of science and technology. Everything is based on article 153 PP No. 22 of 2021 Concerning the Implementation of Environmental Protection and Management.

04 Urge the central and the province government of East Kalimantan not to continue the PT IMM contract extension later in 2028.

05 Urge that the two public shareholders, the Employees Provident Fund (EPF), which is a pension fund company that manages workers’ funds, based in Kuala Lumpur, Malaysia and the Social Security Council (DJS) Manpower Day Security Program. Pension Plan (JHT) which was affiliated with the Indonesian Social Security Administration (BPJS) to save their reputation by evaluating its share involvement policy in PT IMM, because it directly contributed to the destruction of the environment and climate concerns in East Kalimantan.

06 Stating that everyone and the surrounding community who were affected or not, have the right to:

   a. Obtain information on the plan for Water Quality Protection and Management determined by the minister, governor, or regent/mayor.
b. Receive education about sources of pollutants, the dangers of water pollutants and efforts to protect and manage water quality.

c. Participate in monitoring water quality.

d. Participate in maintaining and improving water quality.

e. Submit complaints and raise objections to water pollution occurring in the environment and/or

f. Obtain legal protection in the context of fighting for the protection and management of water quality as an effort to fight for the right to a good and healthy environment.

All of the above were based on article 157 128 PP No. 22 of 2021 Concerning the Implementation of Environmental Protection and Management.

Stating that the community could play an active role in the protection and management of water quality in the form of:

a. Monitoring water bodies independently in their respective environments.

b. Making efforts to reduce water pollutant bodies in their respective environments.

c. Delivering correct and accurate monitoring result information.

d. Promoting water pollution reduction movement.

e. Doing partnerships with the parties in the framework of reducing water pollution and/or.

f. Carrying out an ecriparian program for the restoration of ecosystems for water bodies.

All of this was based on Article 158 128 of PP No. 22 of 2021 Concerning the Implementation of Environmental Protection and Management.

PT IMM has committed an environmental crime and must be held accountable legally based on the provisions of Law Number 32 of 2009 Concerning Environmental Protection and Management for acts that result in exceeding water quality standards in accordance with Article 98 Paragraph (1) as well as Article 116 paragraphs (1) and (2) which state that a business entity should be responsible.

As a form of its criminal responsibility, PT IMM must be taken to court by law enforcers as the laboratory of logic which should be open to the public so that legal facts can be found and the truth of the existence of a causal relationship between corporate actions and the consequences that occur. Moreover, Indonesia already has Supreme Court Regulation Number 13 of 2016 Concerning Procedures for Handling Criminal Cases by Corporations. So, in fact, there would be no doubt for law enforcers to take action against PT IMM to be responsible for the criminal acts that have been committed.

In addition to the targeted efforts of PT IMM case, things that need to be considered to expand criminal liability is open up to the possibility to impose criminal responsibility on affiliated corporations such as holding companies, subsidiary companies, and sister companies who also enjoy profits or benefits from corporate crimes committed by PT IMM.
A former mine pit planned for a river cross section made by PT Indominco in the east block.
Photo source: JATAM Drone, 2020
INTERVIEW LIST

1. Hawati (55 years), resident of Santan Ilir Village
2. Arbaim (65 years), resident and farmer of Santan Hulu Village
3. Herman (45 years), resident of Santan Ulu Village, Farmer dan User of boat to transport in Santan River.
4. Ridwan (60 years), resident of Santan Tengah Village, river fisherman.

REFERENCE LIST

1. Environmental Impact Analysis (ANDAL) to increase coal production and supporting facilities from 16 million tons/year to 20 million tons/year PT Indominco Mandiri, January 2018.
2. KA ANDAL Document, Planned Activities to increase coal production and supporting facilities for PT Indominco Mandiri from 16 million tons to 20 million tons per year, 2015.
3. FY20 Results, Investor and Analyst Update PT Indo Tambangraya Megah Tbk, 25 February 2021.
6. East Kalimantan Regional Regulation No. 02 of 2011 Concerning Water Management and Water Pollution Control.
7. Government Regulation No. 82 of 2001, Concerning Water Quality Management and Water Pollution Control Along with Attachments to Water Quality Criteria by Class.
8. Government Regulation No. 22 of 2021, Concerning the Implementation of Environmental Protection and Management Along with the Attachment of the National Water Quality Standards, for River Water Quality Standards and so on.
9. Parachuting a Competitive Economy, Solutions Against Coal Mining Economic Persuasion, Strategies and Strategies of Residents in Bengkulu, East Kalimantan and North Kalimantan, JATAM, 2019
Appendix I:

**Water Quality Criteria Based on Class (PP No. 82 of 2001)**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>UNIT</th>
<th>CLASS</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>°C</td>
<td>deviation 3</td>
<td>deviation 3</td>
</tr>
<tr>
<td>Dissolved Residue</td>
<td>mg/L</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Suspended Residue</td>
<td>mg/L</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>INORGANIC CHEMISTRY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>mg/L</td>
<td>6-9</td>
<td>6-9</td>
</tr>
<tr>
<td>BOD</td>
<td>mg/L</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>COD</td>
<td>mg/L</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>DO</td>
<td>mg/L</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Total Phosphate as P</td>
<td>mg/L</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>NO 3 as N</td>
<td>mg/L</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>NH3-N</td>
<td>mg/L</td>
<td>0.5</td>
<td>(-)</td>
</tr>
<tr>
<td>Arsenic</td>
<td>mg/L</td>
<td>0.05</td>
<td>1</td>
</tr>
<tr>
<td>Cobalt</td>
<td>mg/L</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Barium</td>
<td>mg/L</td>
<td>1</td>
<td>(-)</td>
</tr>
<tr>
<td>Boron</td>
<td>mg/L</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Selenium</td>
<td>mg/L</td>
<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td>Cadmium</td>
<td>mg/L</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Chrome (VI)</td>
<td>mg/L</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/L</td>
<td>0.02</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Deviation of temperature from its natural state.

For conventional drinking water treatment, suspended residue is 5000 mg/L.

If naturally outside that range, then it is determined by natural conditions.

Minimum limit.

For fisheries, free ammonia content for sensitive fish ≤ 0.02 mg / L as NH3.

For conventional drinking water treatment, Cu 1 mg/L.
## Water Quality Criteria Based on Class (PP No. 82 of 2001)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>UNIT</th>
<th>CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>I</td>
</tr>
<tr>
<td>Iron</td>
<td>mg/L</td>
<td>0,3</td>
</tr>
<tr>
<td>Lead</td>
<td>mg/L</td>
<td>0,03</td>
</tr>
<tr>
<td>Manganese</td>
<td>mg/L</td>
<td>0,1</td>
</tr>
<tr>
<td>Mercury</td>
<td>mg/L</td>
<td>0,001</td>
</tr>
<tr>
<td>Zinc</td>
<td>mg/L</td>
<td>0,05</td>
</tr>
<tr>
<td>Chlorida</td>
<td>mg/L</td>
<td>600</td>
</tr>
<tr>
<td>Sianida</td>
<td>mg/L</td>
<td>0,02</td>
</tr>
<tr>
<td>Fluorida</td>
<td>mg/L</td>
<td>0,5</td>
</tr>
<tr>
<td>Nitrit as N</td>
<td>mg/L</td>
<td>0,06</td>
</tr>
<tr>
<td>Sulphate</td>
<td>mg/L</td>
<td>400</td>
</tr>
<tr>
<td>Free Chlorin</td>
<td>mg/L</td>
<td>0,03</td>
</tr>
<tr>
<td>Sulfur as H₂S</td>
<td>mg/L</td>
<td>0,002</td>
</tr>
</tbody>
</table>

**NOTE**

- For conventional drinking water treatment, Fe ≤ 5 mg/L.
- For conventional drinking water treatment, Pb ≤ 0.1 mg/L.
- For conventional drinking water treatment, Zn ≤ 5 mg/L.
- For conventional drinking water treatment, NO₂-N ≤ 1 mg/L.
- For conventional drinking water treatment, S as H₂S < 0.1 mg/L.
- For ABAM it is not required.

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For conventional drinking water treatment, Fe ≤ 5 mg/L.

For conventional drinking water treatment, Pb ≤ 0.1 mg/L.

For conventional drinking water treatment, Zn ≤ 5 mg/L.

For conventional drinking water treatment, NO₂-N ≤ 1 mg/L.

For ABAM it is not required.
Appendix II:

Government Regulation of the Republic of Indonesia Number 22 of 2021
Regarding the Implementation of Environmental Protection and Management

NATIONAL RAW WATER QUALITY STANDARD

I. RAW RIVER WATER AND LIKE QUALITY STANDARD

<table>
<thead>
<tr>
<th>NO.</th>
<th>PARAMETER</th>
<th>UNIT</th>
<th>CLASS 1</th>
<th>CLASS 2</th>
<th>CLASS 3</th>
<th>CLASS 4</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Temperature</td>
<td>°C</td>
<td>Dev 3</td>
<td>Dev 3</td>
<td>Dev 3</td>
<td>Dev 3</td>
<td>The difference with the air temperature above the water surface.</td>
</tr>
<tr>
<td>2.</td>
<td>Total Dissolved Solids (TDS)</td>
<td>mg/L</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>2.000</td>
<td>Does not apply to the estuary.</td>
</tr>
<tr>
<td>3.</td>
<td>Total Suspended Solids (TSS)</td>
<td>mg/L</td>
<td>40</td>
<td>50</td>
<td>100</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Color</td>
<td>Pt-Co Unit</td>
<td>15</td>
<td>50</td>
<td>100</td>
<td>-</td>
<td>Not applicable to peat water (based on natural conditions).</td>
</tr>
<tr>
<td>5.</td>
<td>Acidity (pH)</td>
<td>-</td>
<td>6 - 9</td>
<td>6 - 9</td>
<td>6 - 9</td>
<td>6 - 9</td>
<td>Not applicable to peat water (based on natural conditions).</td>
</tr>
<tr>
<td>6.</td>
<td>Biochemical Oxygen Demand (BOD)</td>
<td>mg/L</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Chemical Oxygen Demand (COD)</td>
<td>mg/L</td>
<td>10</td>
<td>25</td>
<td>40</td>
<td>80</td>
<td>Minimum limit</td>
</tr>
<tr>
<td>8.</td>
<td>Dissolved Oxygen (DO)</td>
<td>mg/L</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Sulphate (So42)</td>
<td>mg/L</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Chloride (Cl)</td>
<td>mg/L</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Nitrate (as N)</td>
<td>mg/L</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Nitrite (as N)</td>
<td>mg/L</td>
<td>0,06</td>
<td>0,06</td>
<td>0,06</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Amoniac (as N)</td>
<td>mg/L</td>
<td>0,1</td>
<td>0,2</td>
<td>0,5</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Total of Nitrogen</td>
<td>mg/L</td>
<td>15</td>
<td>15</td>
<td>25</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Total of Phosphor (as P)</td>
<td>mg/L</td>
<td>0,2</td>
<td>0,2</td>
<td>1,0</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Fluoride (F)</td>
<td>mg/L</td>
<td>1</td>
<td>1,5</td>
<td>1,5</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Sulfur as H2S</td>
<td>mg/L</td>
<td>0,002</td>
<td>0,002</td>
<td>0,002</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Cyanide (CN)</td>
<td>mg/L</td>
<td>0,02</td>
<td>0,02</td>
<td>0,02</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Free Chlorine</td>
<td>mg/L</td>
<td>0,003</td>
<td>0,03</td>
<td>0,03</td>
<td>-</td>
<td>For raw water, drinking water is not required.</td>
</tr>
<tr>
<td>20.</td>
<td>Dissolved Barium (Ba)</td>
<td>mg/L</td>
<td>1,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Dissolved Boron (B)</td>
<td>mg/L</td>
<td>1,0</td>
<td>1,0</td>
<td>1,0</td>
<td>0,1</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Dissolved Mercury (Hg)</td>
<td>mg/L</td>
<td>0,001</td>
<td>0,002</td>
<td>0,002</td>
<td>0,005</td>
<td></td>
</tr>
</tbody>
</table>

23. Arsenic...
### NATIONAL RAW WATER QUALITY STANDARD

#### I. RAW RIVER WATER AND LIKE QUALITY STANDARD

<table>
<thead>
<tr>
<th>NO.</th>
<th>PARAMETER</th>
<th>UNIT</th>
<th>CLASS 1</th>
<th>CLASS 2</th>
<th>CLASS 3</th>
<th>CLASS 4</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.</td>
<td>Dissolved Arsen (As)</td>
<td>mg/l</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0,10</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Dissolved Selenium (Se)</td>
<td>mg/L</td>
<td>0,01</td>
<td>0,05</td>
<td>0,05</td>
<td>0,05</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Dissolved Iron (Fe)</td>
<td>mg/L</td>
<td>0,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Dissolved Cadmium (Cd)</td>
<td>mg/L</td>
<td>0,01</td>
<td>0,01</td>
<td>0,01</td>
<td>0,01</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Dissolved Cobalt (Co)</td>
<td>mg/l</td>
<td>0,2</td>
<td>0,2</td>
<td>0,2</td>
<td>0,2</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Dissolved Manganese (Mn)</td>
<td>mg/L</td>
<td>0,1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Dissolved Nickel (Ni)</td>
<td>mg/L</td>
<td>0,05</td>
<td>0,05</td>
<td>0,05</td>
<td>0,1</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Dissolved Zinc (Zn)</td>
<td>mg/L</td>
<td>0,05</td>
<td>0,05</td>
<td>0,05</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>Dissolved Copper (Cu)</td>
<td>mg/l</td>
<td>0,02</td>
<td>0,02</td>
<td>0,02</td>
<td>0,2</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>Dissolved Lead (Pb)</td>
<td>mg/L</td>
<td>0,03</td>
<td>0,03</td>
<td>0,03</td>
<td>0,5</td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>Hexavalent Chromium (Cr-VII)</td>
<td>mg/L</td>
<td>0,05</td>
<td>0,05</td>
<td>0,05</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>Oil and fat</td>
<td>mg/L</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>35.</td>
<td>Total Detergent</td>
<td>mg/L</td>
<td>0,2</td>
<td>0,2</td>
<td>0,2</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>Phenol</td>
<td>mg/L</td>
<td>0,002</td>
<td>0,005</td>
<td>0,01</td>
<td>0,02</td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>Aldrin/Dieldrin</td>
<td>µg/L</td>
<td>17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>BHC</td>
<td>µg/L</td>
<td>210</td>
<td>210</td>
<td>210</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>Chlordane</td>
<td>µg/L</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>DDT</td>
<td>µg/L</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>Endrin</td>
<td>µg/L</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>Heptachlor</td>
<td>µg/L</td>
<td>18</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>43.</td>
<td>Lindane</td>
<td>µg/L</td>
<td>56</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>Methoxychlor</td>
<td>µg/L</td>
<td>35</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>Toxapan</td>
<td>µg/L</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>46.</td>
<td>Fecal Coliform</td>
<td>MPN/100 mL</td>
<td>100</td>
<td>1.000</td>
<td>2.000</td>
<td>2.000</td>
<td></td>
</tr>
<tr>
<td>47.</td>
<td>Total Coliform</td>
<td>MPN/100 mL</td>
<td>1.000</td>
<td>5.000</td>
<td>10.000</td>
<td>10.000</td>
<td></td>
</tr>
<tr>
<td>48.</td>
<td>Trash</td>
<td>nhil</td>
<td>nhil</td>
<td>nhil</td>
<td>nhil</td>
<td>nhil</td>
<td></td>
</tr>
<tr>
<td>49.</td>
<td>Radioactivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gross-A</td>
<td>Bq/L</td>
<td>0,1</td>
<td>0,1</td>
<td>0,1</td>
<td>0,1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gross-B</td>
<td>Bq/L</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Keterangan:
Kelas satu merupakan air yang peruntukannya dapat digunakan untuk air baku air minum, dan/atau peruntukan lain yang mempersyaratkan mutu air yang sama dengan kegunaan tersebut.

Kelas dua merupakan air yang peruntukannya dapat digunakan untuk prasarana/sarana rekreasi air, pembudidayaan ikan air tawar, peternakan, air untuk mengairi pertanaman, dan/atau peruntukan lain yang mempersyaratkan mutu air yang sama dengan kegunaan tersebut.

Kelas tiga merupakan air yang peruntukannya dapat digunakan untuk pembudidayaan ikan air tawar, peternakan, air untuk mengairi tanaman, dan/atau peruntukan lain yang mempersyaratkan mutu air yang sama dengan kegunaan tersebut.

Kelas empat merupakan air yang peruntukannya dapat digunakan untuk mangairi pertanaman dan/atau peruntukan lain yang mempersyaratkan mutu air yang sama dengan kegunaan tersebut.

PRESIDEN REPUBLIK INDONESIA,


ttd.

JOKO WIDODO

Salinan sesuai dengan aslinya

KEMENTERIAN SEKRETARIAT NEGARA
REPUBLIC INDONESIA
Deputi Bidang Perundang-undangan dan Administrasi Hukum,

[Signature]

Silvanna Djaman

SK No 097107 A
Appendix III:

Water Quality Standards Perda No. 02 of 2011 on Coal Wastewater Quality Standards

LEMBARAN DAERAH PROVINSI KALIMANTAN TIMUR

NOMOR: 02

PERATURAN DAERAH PROVINSI KALIMANTAN TIMUR
NOMOR 02 TAHUN 2011
TENTANG
PENGELOLAAN KUALITAS AIR DAN PENGENDALIAN PENCERAMAN AIR

DENGAN RAHMAT TUHAN YANG MAHA ESA
GUBERNUR KALIMANTAN TIMUR,

Menimbang:

a. bahwa air merupakan salah satu sumber daya alam yang memenuhi hajat hidup orang banyak, sehingga perlu dilestarikan fungsinya agar tetap bermanfaat bagi kehidupan manusia serta mahluk hidup lainnya;

b. bahwa untuk melestarikan fungsi air pada sumber air sebagaimana dimaksud dalam huruf a perlu dilakukan pengelolaan kualitas air pada sumber air secara terpadu dengan memperhatikan kepentingan generasi sekarang dan mendatang serta keseimbangan ekologis;

c. bahwa kualitas air pada sumber air di wilayah Provinsi Kalimantan Timur semakin menurun akibat pembuangan air limbah industri dan kegiatan lainnya, sehingga untuk meningkatkan daya tampung beban pencemaran air pada sumber air perlu dilakukan pengelolaan kualitas air dan pengendalian pencemaran air;

d. bahwa berdasarkan pertimbangan sebagaimana dimaksud dalam huruf a, huruf b dan huruf c, perlu membentuk Peraturan Daerah tentang Pengelolaan Kualitas Air dan Pengendalian Pencemaran Air.

Salinan sesuai dengan aslinya
Kepala Biro Hukum Setda
Prov. Kaltim,

Ttd

H. SOFYAN HELMI, SH, M.Si
Pembina Utama Muda
Nip. 19560628 198602 1 004

GUBERNUR KALIMANTAN TIMUR,

Ttd.

H. AWANG FAROEK ISHAQ

Samarinda, 15 April 2011
LEMBARAN DAERAH PROVINSI KALIMANTAN TIMUR

NOMOR: 02

PERATURAN DAERAH PROVINSI KALIMANTAN TIMUR
NOMOR 02 TAHUN 2011
TENTANG
PENGELOLAAN KUALITAS AIR DAN PENGENDALIAN PENCEMARAN AIR

1.27 Baku Mutu Limbah Untuk Kegiatan Pertambangan Batubara

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>Kadar Maksimum (mg/L)</th>
<th>Metode Uji</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TSS</td>
<td>300</td>
<td>SNI 06-6986 27-2005</td>
</tr>
<tr>
<td>2</td>
<td>Besi Total (Fe)</td>
<td>7</td>
<td>SNI 6985.5-2003</td>
</tr>
<tr>
<td>3</td>
<td>Mangan Total (Mn)</td>
<td>4</td>
<td>SNI 6985.5-2003</td>
</tr>
<tr>
<td>4</td>
<td>pH</td>
<td>6.0 - 9.0</td>
<td>SNI 06-6988 11-2004</td>
</tr>
</tbody>
</table>

Keterangan:
- a. Bila nilai TSS terlampaui yang disebabkan pengaruh alam (hujan) maka perusahaan wajib memberitahukan / keterangan disertai data curah hujan.
- b. Pemantauan / sampling minimum dilakukan 2 kali per minggu untuk parameter TSS.
- c. Parameter pH harus diukur setiap hari.
- d. Parameter Fe dan Mn harus diukur minimal setiap bulan.
- e. Untuk parameter pH, Fe, Mn dan TSS yang mengulangnya diatur dalam point b, c dan d dapat dilakukan di laboratorium milik perusahaan untuk pengujian harian.

Samarinda, 15 April 2011

Salinan sesuai dengan aslinya

Kepala Biro Hukum Setda
Prov. Kaltim,
Ttd

H. SOFYAN HELMI, SH, M.Si
Pembina Utama Muda
Nip. 19560628 198802 1 004

GUBERNUR KALIMANTAN TIMUR,
Ttd.

H. AWANG FAROEK ISHAK
## Appendix IV:

### Laboratory Test Results of Point I Water Samples

#### LAPORAN HASIL UJI

**LABORATORIUM PENGUJI**
BADAH LAYANAN UMUM DAERAH (BLUD)
UPTD LABORATORIUM KESEKHATAN
PROVINSI KALIMANTAN TIMUR
Jl. K.H. Ahmad Dhalan No. 27 Telpon. (0541) 741732 Fax. (0541) 205754
Samarinda - 75117

**Nomor LHU:** 07548/LHU/LABKES-VII/2020
**Nama Pelanggan:** Romiansyah
**Alamat:** Jl. Martika 1 No. 7 Samarinda
**Tlp/Fax:** 08136705931, 085256859004
**Personel yang dihubungi:** Romiansyah
**Jenis Sampel:** Air Limbah
**No. FPPS:** 07548
**No. Sampel:** 0353/AL/KIV/2020
**Kode Sampel:** S1 (Aliiran Pembuangan Limbah)
**Deskripsi Sampel:** Air Bocorana kenab dan Ikabau
**Tanggal Penerimaan:** 20 Juli 2020
**Tanggal Sampling:** 20 Juli 2020
**Tanggal Pengujian:** 20 Juli 2020 sd 30 Juli 2020

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>Satuan</th>
<th>Baku Mutu</th>
<th>Hasil Uji</th>
<th>Spesifikasi Metode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Zat Padat Terlindung (TDS)</td>
<td>mg/L</td>
<td>2000 4000</td>
<td>4340</td>
<td>SNI 6980:27 : 2019</td>
</tr>
<tr>
<td>2</td>
<td>Zat Padat Tersuspensi (TSS)*</td>
<td>mg/L</td>
<td>200 400</td>
<td></td>
<td>SNI 6980:3 : 2019</td>
</tr>
<tr>
<td></td>
<td>**</td>
<td>**</td>
<td>6-9 6-9</td>
<td>2.57</td>
<td>SNI 6989.11 : 2019</td>
</tr>
<tr>
<td>3</td>
<td>pH*</td>
<td>**</td>
<td></td>
<td></td>
<td>APHA, 2510-B, 23PF th 2017</td>
</tr>
<tr>
<td>4</td>
<td>BOD5</td>
<td>mg/L</td>
<td>50 150</td>
<td></td>
<td>SNI 6982 : 2019</td>
</tr>
<tr>
<td>5</td>
<td>COD*</td>
<td>mg/L</td>
<td>100 300</td>
<td></td>
<td>SNI 6989.31-2005</td>
</tr>
<tr>
<td>6</td>
<td>Phospat (PO4)*</td>
<td>mg/L</td>
<td>--- ---</td>
<td>---</td>
<td>SNI 6989.19-2009</td>
</tr>
<tr>
<td>7</td>
<td>Klorin Bebas (Cl)</td>
<td>mg/L</td>
<td>1 2</td>
<td>0.9</td>
<td>APHA, 4500-Cl.A, 23PF th 2017</td>
</tr>
<tr>
<td>8</td>
<td>Klorida (Cl)*</td>
<td>mg/L</td>
<td>--- ---</td>
<td>---</td>
<td>SNI 6989.19-2009</td>
</tr>
<tr>
<td>9</td>
<td>Selenium (Se)</td>
<td>mg/L</td>
<td>0.05 0.5</td>
<td>&lt;0.0021</td>
<td>SNI 6989.21-1991</td>
</tr>
<tr>
<td>10</td>
<td>Besi Terlindung (Fe)*</td>
<td>mg/L</td>
<td>5 10</td>
<td>32.614</td>
<td>SNI 6989-84 : 2009</td>
</tr>
<tr>
<td>11</td>
<td>Mangen Terlindung (Mn)*</td>
<td>mg/L</td>
<td>2 5</td>
<td>18.216</td>
<td>SNI 6989-84 : 2019</td>
</tr>
<tr>
<td>12</td>
<td>Cadmium (Cd)*</td>
<td>mg/L</td>
<td>0.05 0.1</td>
<td>&lt;0.0002</td>
<td>APHA, 3050CD, 3113B,Cd 23PF th 2017</td>
</tr>
<tr>
<td>13</td>
<td>Crom Val 8 (Cr8+)*</td>
<td>mg/L</td>
<td>0.1 0.5</td>
<td>&lt;0.0019</td>
<td>APHA, 3500-Cr B: 23PF th 2017</td>
</tr>
<tr>
<td>14</td>
<td>Timbal (Pb)*</td>
<td>mg/L</td>
<td>0.1 1</td>
<td>&lt;0.002</td>
<td>APHA, 3050CD, 3113B, Pb 22PF th 2017</td>
</tr>
<tr>
<td>15</td>
<td>Zink (Zn)*</td>
<td>mg/L</td>
<td>5 10</td>
<td>1.886</td>
<td>SNI 6989-84 : 2009</td>
</tr>
<tr>
<td>16</td>
<td>Temicaga (Cu)*</td>
<td>mg/L</td>
<td>2 3</td>
<td>0.0000</td>
<td>SNI 6989-84 : 2019</td>
</tr>
<tr>
<td>17</td>
<td>Cromium Total (Cr-T)*</td>
<td>mg/L</td>
<td>0.5 1</td>
<td>&lt;0.028</td>
<td>SNI 6989-84 : 2019</td>
</tr>
<tr>
<td>18</td>
<td>Air Rataan (Hg)</td>
<td>mg/L</td>
<td>0.002 0.005</td>
<td>&lt;0.0002</td>
<td>SNI 6989-78 : 2019</td>
</tr>
<tr>
<td>19</td>
<td>Asen (As)</td>
<td>mg/L</td>
<td>0.1 0.5</td>
<td>&lt;0.002</td>
<td>SNI 6989.54-2005</td>
</tr>
<tr>
<td>20</td>
<td>Fluorida (F)*</td>
<td>mg/L</td>
<td>2 3</td>
<td>0.0128</td>
<td>SNI 6989.26-2005</td>
</tr>
</tbody>
</table>

Sheet 1 - Wastewater Samples - Sewage Disposal Stream
<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>Satuan</th>
<th>Baku Mutu</th>
<th>Hasil Uji</th>
<th>Spesifikasi Metode</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>Amonia (NH₃-N)</td>
<td>mg/L</td>
<td>1</td>
<td>5</td>
<td>0.7286</td>
</tr>
<tr>
<td>22.</td>
<td>Nitrat (NO₃-N)</td>
<td>mg/L</td>
<td>20</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Nitrit (NO₂-N)</td>
<td>mg/L</td>
<td>10</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Fosfor</td>
<td>mg/L</td>
<td>0.5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Minyak Lemak</td>
<td>mg/L</td>
<td>10</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>MBAS, Detergen</td>
<td>mg/L</td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Catatan:
1. Hasil uji di atas hanya berlaku untuk sampel yang diuji.
2. Laboratorium tidak bertanggung jawab terhadap pengambilan dan pengambilan sampel yang dilakukan pelanggan.
3. Laporan Hasil Uji ini terdiri dari 2 halaman.
5. Laboratorium melakukan pengujian sampel maksimum 1 bulan (dua bulan) dan tanggal penyerahan (LH/U) (maksimum satu bulan keterlambatan dari sampel masuk ke laboratorium).
7. Tanda *** = Batas Toleransi.
8. Tanda ** = Tidak mempunyai satuan.
9. Tanda * = Tidak mempunyai satuan baku mutu.
10. Tanda * = Tidak ditemukan pengujian.
11. Tanda x = Dibawah limit deteksi metode (MDL).
12. pH = Dijual al laboratorium jika sampel dilakukan pengujian dan diuji di lapangan jika sampling dilakukan oleh PPC.

Mengetahui

Kepala Seksi Pelayanan,

[Signature]

NIP. 19680627 198903 2 008

Peryelia Kimia,

[Signature]

Sadanah, SKM

NIP. 19740805 199603 2 004

Samarinda, 04 Agustus 2020

Sheet 2 - Wastewater Samples - Sewage Disposal Stream
LABORATORIUM PENGIUH
BADAN LAYANAN UMUM DAERAH (BLUD)
UPTD LABORATORIUM KESEHATAN
PROVINSI KALIMANTAN TIMUR
Jl. K.H Ahmad Dahlah No.27 Telp. (0541) 741732 Fax. (0541) 205754
Samarinda - 75117

LAPORAN HASIL UJI

Nomor LIHU : 7548/LIU/LABKES-VII/2020
Nama Pelanggan : Romiansyah
Alamat : Jl. Markisa 1 No. 7 Samarinda
Tlp/Fax : 081356705931/085250859004
Personel yang dihubungi : Romiansyah
Jenis Sampel : Air Badan Air
No.FPSS : 7548
No. Sampel : 1006/BA.VII/2020
Kode Sampel : S2 (Anal. Sangai)
Deskripsi Sampel : Air Berwarna kerah dan Tidak Berbau
Tanggal Pencirman : 20 Juli 2020
Tanggal Sampling : 20 Juli 2020
Tanggal Pengujian : 20 Juli 2020 s/d 30 Juli 2020

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>Satuan</th>
<th>Baku Mutu</th>
<th>Hasil Uji</th>
<th>Spesifikasi Metode</th>
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<tbody>
<tr>
<td>A. Fisika</td>
<td></td>
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<tr>
<td>1.</td>
<td>Residu Terlarut (TDS)</td>
<td>mg/L</td>
<td>1000</td>
<td>1325</td>
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<tr>
<td>2.</td>
<td>Residu Tersuspensi (TSS)*</td>
<td>mg/L</td>
<td>50</td>
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<td>SNI 6089.3-2019</td>
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<tr>
<td>3.</td>
<td>Warra*</td>
<td>Skate TCU/Pl,Co</td>
<td>10</td>
<td>****</td>
<td>SNI 6098.50-2011</td>
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<tr>
<td>B. Kimia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Air Rata (Hg)</td>
<td>mg/L</td>
<td>0.001</td>
<td>&lt;0.0028</td>
<td>SNI 6089.78 : 2019</td>
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<tr>
<td>5.</td>
<td>Arsen (As)</td>
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<td>0.05</td>
<td>&lt;0.032</td>
<td>SNI 606869.54-2005</td>
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<tr>
<td>6.</td>
<td>Amoniak (NH₃-N)*</td>
<td>mg/L</td>
<td>0.5</td>
<td>0.3445</td>
<td>SNI 60689.30-2005</td>
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<tr>
<td>7.</td>
<td>Besi (Fe)*</td>
<td>mg/L</td>
<td>0.3</td>
<td>2.249</td>
<td>SNI 6098.94 : 2019</td>
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<tr>
<td>8.</td>
<td>Fluorida (F)*</td>
<td>mg/L</td>
<td>0.5</td>
<td>&lt;0.0467</td>
<td>SNI 60689.29-2005</td>
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<tr>
<td>9.</td>
<td>Kalsium (Ca)*</td>
<td>mg/L</td>
<td>0.01</td>
<td>&lt;0.0303</td>
<td>APHA, 3000D, 3113B, Cd 230 : 1977</td>
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<td>10.</td>
<td>Kalsium (CaCO3)</td>
<td>mg/L</td>
<td>50</td>
<td>055.00</td>
<td>SNI 60689.13-2004</td>
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<tr>
<td>11.</td>
<td>Klorida (Cl)*</td>
<td>mg/L</td>
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<td>****</td>
<td>SNI 6089.19-2009</td>
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<tr>
<td>12.</td>
<td>Kromium Valensi (V)+*</td>
<td>mg/L</td>
<td>0.05</td>
<td>****</td>
<td>APHA, 3500-Br B, 2304 : 1977</td>
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<tr>
<td>13.</td>
<td>Mangen (Mn)*</td>
<td>mg/L</td>
<td>0.1</td>
<td>2.863</td>
<td>SNI 6098-84 : 2019</td>
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<tr>
<td>14.</td>
<td>Nitrit (NO₂-N)</td>
<td>mg/L</td>
<td>10</td>
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<td>APHA, 4500-OI A, 2305 : 1977</td>
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<tr>
<td>15.</td>
<td>Nitri (NO₃-N)*</td>
<td>mg/L</td>
<td>0.06</td>
<td>****</td>
<td>SNI 60689.9-2004</td>
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### Sheet 2 - Water Samples of Water Bodies - Tributary

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>Satuan</th>
<th>Baku Mutu</th>
<th>Hasil uji</th>
<th>Spesifikasi Metode</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Kebersihan Oksigen Blok (BOD)</td>
<td>mg/L</td>
<td>2</td>
<td>***</td>
<td>APHA, 5210-B, 23rd th 2017</td>
</tr>
<tr>
<td>17</td>
<td>Kebersihan Oksigen Kimia (COD)**</td>
<td>mg/L</td>
<td>10</td>
<td>***</td>
<td>SNI 6989:2 : 2019</td>
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<tr>
<td>18</td>
<td>pH*</td>
<td>**</td>
<td>6-8</td>
<td>2,73</td>
<td>SNI 6989.11 : 2019</td>
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<tr>
<td>19</td>
<td>Zinc (Zn)**</td>
<td>mg/L</td>
<td>0,05</td>
<td>0,201</td>
<td>SNI 6989-64 : 2019</td>
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<td>20</td>
<td>Sianida (CN)</td>
<td>mg/L</td>
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<td>0,00</td>
<td>APHA, 4500 CN 23rd th 2017</td>
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<tr>
<td>21</td>
<td>Sulfit (SO3)</td>
<td>mg/L</td>
<td>400</td>
<td>***</td>
<td>SNI 6989:20 : 2019</td>
</tr>
<tr>
<td>22</td>
<td>Tembaga (Cu)**</td>
<td>mg/L</td>
<td>0,02</td>
<td>&lt;0,0105</td>
<td>SNI 6989-84 : 2009</td>
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<tr>
<td>23</td>
<td>Timbun (Pb)**</td>
<td>mg/L</td>
<td>0,03</td>
<td>&lt;0,0017</td>
<td>APHA, 3030, 3130, Cd 23rd th 2017</td>
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<tr>
<td>24</td>
<td>Pospat (PO4-P)**</td>
<td>mg/L</td>
<td>0,2</td>
<td>0,2</td>
<td>SNI 00.6699.31-2005</td>
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<td>25</td>
<td>Mnyah/Lemak</td>
<td>mg/L</td>
<td>1</td>
<td>0,02</td>
<td>SNI 00.6699.16-2004</td>
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<td>26</td>
<td>Diferens (MNAS)</td>
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<td>0,0021</td>
<td>SNI 00.6699.51-2005</td>
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<tr>
<td>27</td>
<td>Selenyum (Se)</td>
<td>mg/L</td>
<td>0,01</td>
<td>&lt;0,001</td>
<td>SNI 00.2475-1991</td>
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</tbody>
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**Catatan:**
1. Hasil uji di atas berlaku untuk sampel yang diuji
2. Laboratorium tidak bertanggung jawab terhadap pengambilan dan pengembalian sampel yang dilakukan pelanggan
3. Laporan Hasil Uji ini terdiri dari 2 halaman
5. Laboratorium melayani pengaduan/complaint maksimum 1 (satu) minggu terhitung dari tanggal penyampaian LKH. (maksimum satu bulan terhitung dari sampel masuk ke Lakis).
7. Logam berat merupakan Logam Tertentu.
8. Tanda * = sudah terbelum
9. Tanda ** = Tidak memenuhi batas
10. Tanda *** = Tidak memenuhi baku mutu
11. Tanda **** = Tidak dapat diketahui
12. Tanda = = Dibawakan limit dalam metode (4DL)
13. pH = Di laboratorium jika sampel dilakukan pelanggan dan diuji di lapangan jika sampel dilakukan oleh PRC.
**LABORATORIUM PENGUJI**
BADAN LAYANAN UMUM DAERAH (BLUD)
UPTD LABORATORIUM KESEHATAN
PROVINSI KALIMANTAN TIMUR
Jl. K.H. Ahmad Dahan No. 27 Telp. (0541) 741732 Fax. (0541) 205754
Samarinda - 75117

**LAPORAN HASIL UJI**

Nomor LIU : 7548/LIU/LABKES/VII/2020
Nama Pelanggan : Romiansyah
Alamat : Jl. Markisa 1 No. 7 Samarinda
Tlp/Fax : 08136705931/085250859004
Personel yang dihubungi : Romiansyah
Jenis Sampel : Air Badan Air
No. FIPS : 7548
No. Sampel : 0663/BAD/K VII/2020
Kode Sampel : 53 (Muara Sungai)
Deskripsi Sampel : Air Berwarna kemerah dan Tidak Berbau
Tanggal Penerimaan : 20 Juli 2020
Tanggal Sampling : 20 Juli 2020
Tanggal Pengujian : 20 Juli 2020 s/d 30 Juli 2020

<table>
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<tr>
<th>No.</th>
<th>Parameter</th>
<th>Satuan</th>
<th>Baku Mutu</th>
<th>Hasil Uji</th>
<th>Spesifikasi Metode</th>
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<tr>
<td>A. FIBKA</td>
<td>Residu Tertunduk (TDS)</td>
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<td>Residu Terdispersi (TSS)</td>
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<td>Warna*</td>
<td>Unit TCU/PCU</td>
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<td>Air Reaksi (R)</td>
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<td>Arsen (As)</td>
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<td>Ammonium (NH-N)*</td>
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<td>Besi (Fe)*</td>
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<td>Fluorida (F)*</td>
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<td>Kadmium (Cd)*</td>
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<td>Kromium (VI)*</td>
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<td>APHA, 3000-Cr B. 220th th 2017</td>
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<td>Mangga (Ni)*</td>
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<td>Nitrat (NO3-N)</td>
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<td>10</td>
<td>****</td>
<td>APHA, 4500-CI.A, 230th th 2017</td>
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<td>Nitrit (NO2-N)*</td>
<td>mg/L</td>
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<td>No.</td>
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<td>Hasil Uji</td>
<td>Spesifikasi Metode</td>
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<td>-----------</td>
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<td>---------------------</td>
</tr>
<tr>
<td>16</td>
<td>Kebutuhan Oksigen Blok (BOD)</td>
<td>mg/L</td>
<td>2</td>
<td>***</td>
<td>APHA, 5210-B, 23th th 2017</td>
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<tr>
<td>17</td>
<td>Kebutuhan Oksigen Kima (COD*)</td>
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<td>***</td>
<td>SN1 6969.2 : 2019</td>
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<td>pH**</td>
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<tr>
<td>19</td>
<td>Seng (Zn)**</td>
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<td>0,279</td>
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<tr>
<td>20</td>
<td>Isinda (CN)</td>
<td>mg/L</td>
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<td>0,00</td>
<td>APHA, 450C CH-D-323th th 2017</td>
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<tr>
<td>21</td>
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<td>mg/L</td>
<td>400</td>
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<td>SN1 6989.20 : 2019</td>
</tr>
<tr>
<td>22</td>
<td>Tembaga (Cu)**</td>
<td>mg/L</td>
<td>0,02</td>
<td>&lt;0,0105</td>
<td>SN1 6989.84 : 2009</td>
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<tr>
<td>23</td>
<td>Timbal (Pb)**</td>
<td>mg/L</td>
<td>0,03</td>
<td>&lt;0,0017</td>
<td>APHA, 3000D, 3139B.C4 D-33th th 2017</td>
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<td>24</td>
<td>Peopit (PO4-P)**</td>
<td>mg/L</td>
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<td>***</td>
<td>SN1 05.6969.31-2005</td>
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<tr>
<td>25</td>
<td>Minkallemak</td>
<td>mg/L</td>
<td>1</td>
<td>***</td>
<td>SN1 05.6969.10-2004</td>
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<tr>
<td>26</td>
<td>Detergen (MSAS)</td>
<td>mg/L</td>
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<td>&lt;0,0021</td>
<td>SN1 05.6969.51-2005</td>
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<tr>
<td>27</td>
<td>Selenium (Se)</td>
<td>mg/L</td>
<td>0,01</td>
<td>&lt;0,0021</td>
<td>SN1 05.2475-1991</td>
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</table>

Catatan:
1. Hasil uji di atas berlaku untuk sampel yang telah dilakukan analisis.
2. Laboratorium telah bertanggung jawab terhadap ketersediaan dan pengambilan sampel yang dilakukan pelanggan.
3. Laporan Hasil Uji di tercari dari 2 halaman.
4. Laporan Hasil uji ini adalah berasal dari UPTD Laboratorium Kesahlan Provinsi Kalimantan Timur.
5. Laboratorium melakukan pengukuran yang mencakup kuantitas maksimum 1 (satu) mengikuti aturan di dalamnya dan standar yang telah ditetapkan oleh Kementerian Kesehatan.
7. Laporan ini merupakan Logam Terlarut.
8. Tanda * = Budi Tidak Terkait.
11. Tanda **** = Budi Tidak Mempunyai Kekuatan.
12. Tanda ***** = Budi Tidak Mempunyai Baku Mutu.
13. pH = Di laboratorium jika sampel dilakukan pengujian dan di lapangan jika sampel dilakukan oleh PPC.
LABORATORIUM PENGUKI
BADAN LAYANAN UMUM DAERAH (BLUD)
UPTD LABORATORIUM KESEHATAN
PROVINSI KALIMANTAN TIMUR
Jl. K.H. Ahmad Dahan No. 27 Telp. (0541) 741732 Fax. (0541) 205754
Samarinda – 75117

LAJORAN PASI UJI

Nomor LIHU : 7548 LIHU/LABKES/XII 2020
Nama Pelanggan : Romiayrah
Alamat : jl. Markisa No. 7 Samarinda
Tlp/Fax : 081316709991/085250859904
Personil yang dilibatkan : Romiayrah
Jenis Sampel : Air Limbah
No. FPPS : 4021
No. Sampel : 0353/AL-K/VII/2020
Kode Sampel : S1 (Aliran Pembuangan Limbah)
Deskripsi Sampel : Air Berwarna keruh dari Berburu
Tanggal Perencanaan : 20 Juli 2020
Tanggal Sampling : 20 Juli 2020
Tanggal Pengujian : 20 Juli 2020 s/d 30 Juli 2020
Hasil Pengujian :

<table>
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<tr>
<th>No.</th>
<th>Parameter</th>
<th>Satuan</th>
<th>Baku Mutu</th>
<th>Hasil Uji</th>
<th>Spesifikasi Metode</th>
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<td>***</td>
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<td>Temperatur</td>
<td>°C</td>
<td>38 40</td>
<td>***</td>
<td>APHA, 2500-B, 23rd th 2017</td>
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<td>3</td>
<td>Kecepatan</td>
<td>Skala NTU</td>
<td>* * *</td>
<td>071.00</td>
<td>SNI 08.6988.25-2005</td>
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<tr>
<td>4</td>
<td>Warna</td>
<td>Skala TCU</td>
<td>* * *</td>
<td>6989.80</td>
<td>2011</td>
</tr>
<tr>
<td>5</td>
<td>Sulfida (H2S)</td>
<td>mg/L</td>
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<td>SNI 6989.70 : 2009</td>
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<td>6</td>
<td>Sianida (CN)</td>
<td>mg/L</td>
<td>0.05 0.5</td>
<td>0.00</td>
<td>APHA, 4510-CN-II 23rd th 2017</td>
</tr>
<tr>
<td>7</td>
<td>Sulfat (SO4)</td>
<td>mg/L</td>
<td>* * *</td>
<td>6989.20</td>
<td>2019</td>
</tr>
<tr>
<td>8</td>
<td>Aluminium</td>
<td>mg/L</td>
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<td>0.7657</td>
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<td>Zat Organik</td>
<td>mg/L</td>
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<td>5.43</td>
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<tr>
<td>10</td>
<td>DHL</td>
<td>µS</td>
<td>* * *</td>
<td>***</td>
<td>APHA, 2510-B, 23rd th 2017</td>
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<tr>
<td>11</td>
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<td>%a</td>
<td>* * *</td>
<td>***</td>
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</table>

Catatan:
1. Hasil uji di atas berlaku untuk sampel yang digunakan dan Laboratorium tidak bertanggung jawab terhadap pengambilan sampel
2. Laboratorium tidak bertanggung jawab terhadap pengambilan dan pengiriman sampel yang dilakukan pelanggan.
3. Laporan Hasil Uji ini telah dibuat dan disahkan secara lengkap dan sesuai terutama dengan UPTD Laboratorium Kesahatan Provinsi Kalimantan Tengah.
4. Laboratorium menjamin pengambilan sampel minimal 1 (satu) mg/L atau jumlah lebih dari sampel minimal ke laboratorium.
5. Buku Mutu sesuai dengan Peraturan Menteri Kesehatan Republik Indonesia No. 02 Tahun 2011 dan hanya berlaku untuk parameter yang digaji makan dalam basis waktu penyampelan sampel.
6. Tanda * = Tidak ditemukan atau baku mutu.
7. Tanda ** = Tidak ditemukan atau baku mutu.
8. Tanda *** = Tidak ditemukan atau baku mutu.
9. Tanda e = Dibawah limit deteksi atau MLD.

Samarinda, 04 Agustus 2020

Mengetahui,
Kepala Seksi Pelayanan,
Ranawati SKM

[Signature]
NIP. 19680627 198903 2 008

Rangsang, SKM

[Signature]
NIP. 19740805 199603 2 004

Wastewater Sample Lab Results - Sewerage Stream
# Lab Results of Water Body Samples - Tributaries

## Lab Results of Water Body Samples - Tributaries

### LAPORAN HASIL UJI

Nomor LIHU: 7548/LIHU/LABKES/VII/2020  
Nama Pelanggan: Romiannyah  
Alamat: Jl. Markisa 1 No. 7 Samarinda  
Telp/Fax: 0812678931-085256859004  
Proveni yang dihubungi: Romiannyah  
Jenis Sampel: Air Badan Air  
No FIPS: 7548  
No. Sampel: 0553/BA.K VII/2020  
Kode Sampel: S2 (Anak Sungai)  
Deskripsi Sampel: Air Bawah keruh dan tidak Berbau  
Tanggal Penelitian: 29 Juli 2020  
Tanggal Sampel: 29 Juli 2020  
Tanggal Pengujian: 29 Juli 2020 s/d 30 Juli 2020  
Hasil Pengujian:  

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>Satuannya</th>
<th>Baku Mutu</th>
<th>Hasil Uji</th>
<th>Spesifikasi Metode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Suhu</td>
<td>°C</td>
<td>Deviasi 3</td>
<td>**</td>
<td>APHA, 2550-B, 23rd Ed 2017</td>
</tr>
<tr>
<td>2</td>
<td>Keterluaran</td>
<td>NTU</td>
<td></td>
<td>95.50</td>
<td>SNI 06.6899-25-2005</td>
</tr>
<tr>
<td>3</td>
<td>Kromium Total (Cr-T)</td>
<td>mg/l</td>
<td></td>
<td>0.028</td>
<td>SNI 6989-84-2019</td>
</tr>
<tr>
<td>4</td>
<td>Sulfida (HgS)</td>
<td>mg/l</td>
<td></td>
<td>0.032</td>
<td>SNI 6899-70-2009</td>
</tr>
<tr>
<td>5</td>
<td>Fenol</td>
<td>mg/l</td>
<td></td>
<td>0.031</td>
<td>SNI 6899-21-2004</td>
</tr>
<tr>
<td>6</td>
<td>Aluminium (Al)</td>
<td>mg/l</td>
<td></td>
<td>0.5914</td>
<td>SNI 6899-35-2005</td>
</tr>
<tr>
<td>7</td>
<td>Zat Organik (KMOCl)</td>
<td>mg/l</td>
<td></td>
<td>10.69</td>
<td>SNI 6899-22-2004</td>
</tr>
<tr>
<td>8</td>
<td>Lodna Bebas (Cl)</td>
<td>mg/l</td>
<td></td>
<td>0.03</td>
<td>APHA, 4500-CIA, 23rd Ed 2017</td>
</tr>
<tr>
<td>9</td>
<td>Oksigen Tertartat (DO)</td>
<td>mg/l</td>
<td>≥ 8</td>
<td>**</td>
<td>SNI 06.6899-14-2004</td>
</tr>
<tr>
<td>10</td>
<td>Daya Hantar Listrik (DHL)</td>
<td>μS</td>
<td></td>
<td>**</td>
<td>APHA, 2510-B, 23rd Ed 2017</td>
</tr>
<tr>
<td>11</td>
<td>Sairinis</td>
<td>%</td>
<td></td>
<td>**</td>
<td>APHA, 2520-B, 23rd Ed 2017</td>
</tr>
<tr>
<td>12</td>
<td>Bau</td>
<td>***</td>
<td></td>
<td>**</td>
<td>APHA, 2150-B, 23rd Ed 2017</td>
</tr>
</tbody>
</table>

**Catatan:**
1. Hasil uji di atas berlaku untuk sampel yang disini.
2. Laboratorium telah bertanggung jawab terhadap pengujian dan pengambilan sampel yang dilakukan pelanggan.
3. Laporan Hasil Uji ini terdiri dari 1 halaman.
4. Laporan Hasil Uji ini tidak boleh digunakan, daripada sama kepada dan atau termasuk UPTD Laboratorium Kesihatan Provinsi Kalimantan Timur.
5. Laboratorium mengalami pengujian kompetensi dalam 1 (satu) sampel dengan 100% persentase dari sampel yang disini dan hanya berlaku untuk parameter yang disini.
7. Data diperoleh dari penelitian LIHU.
8. Data yang tidak memenuhi bulat mutu.
9. Data yang tidak memenuhi persyaratan.
10. Data yang tidak memenuhi batas.

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Lab Results of Water Body Samples - Tributaries
<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>Satuan</th>
<th>Baku Mutu</th>
<th>Hasil Uji</th>
<th>Spesifikasi Methode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Suhu</td>
<td>°C</td>
<td>Deviasi ± 0</td>
<td>255.00</td>
<td>SN 06.6989.25-2005</td>
</tr>
<tr>
<td>2</td>
<td>Keberahan</td>
<td>NTU</td>
<td>± 0.028</td>
<td>0.028</td>
<td>SN 06.6989-84-2019</td>
</tr>
<tr>
<td>3</td>
<td>Kromium Total (Cr-T)</td>
<td>mg/L</td>
<td>0.002</td>
<td>0.002</td>
<td>SN 06.6989.7-2009</td>
</tr>
<tr>
<td>4</td>
<td>Sulfida (H2S)</td>
<td>mg/L</td>
<td>0.001</td>
<td>0.001</td>
<td>SN 06.6989.1-2004</td>
</tr>
<tr>
<td>5</td>
<td>Feniol</td>
<td>mg/L</td>
<td>0.592</td>
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<td>SN 06.6989.13-2003</td>
</tr>
<tr>
<td>6</td>
<td>Zat Organik (KMO)</td>
<td>mg/L</td>
<td>10.09</td>
<td>10.09</td>
<td>SN 06.6989.12-2004</td>
</tr>
<tr>
<td>7</td>
<td>Klorida Bebas (Cl)</td>
<td>mg/L</td>
<td>0.03</td>
<td>0.03</td>
<td>APHA, 4500-C Cl, 23rd ed. 2017</td>
</tr>
<tr>
<td>8</td>
<td>Oksigen Terlarut (DO)</td>
<td>mg/L</td>
<td>≥ 6</td>
<td>6.00</td>
<td>SN 06.6989.1-2004</td>
</tr>
<tr>
<td>9</td>
<td>Daya Hantar Lihit (DHL)</td>
<td>µS/cm</td>
<td>2510.0</td>
<td>2510.0</td>
<td>APHA, 4500-D, 23rd ed. 2017</td>
</tr>
<tr>
<td>10</td>
<td>Sintesis</td>
<td>%</td>
<td></td>
<td>8 %</td>
<td>APHA, 4500-A, 23rd ed. 2017</td>
</tr>
<tr>
<td>11</td>
<td>Bau</td>
<td></td>
<td></td>
<td>2100.0</td>
<td>APHA, 23rd ed. 2017</td>
</tr>
</tbody>
</table>

Catatan:
1. Hasil uji di atas berlaku untuk sampel yang disini.
2. Laboratorium tidak bertanggung jawab terhadap pengukuran dan pengamalan sampel yang dilakukan pelanggan.
4. Laboratorium melakukan pengukuran sampel minimum 1 (satu) minggu terhitung dari tanggal pengiriman LHU (maksimum sebelum terhalang dari sampel masih ke lab).
7. Tanda = Tidak memenuhi balik mutu.
8. Tanda ** = Tidak memenuhi kualifikasi.
10. Tanda < = Dibawah limit baku metode (MDL).
PT Indominco’s huge open mining pit in the east block.

The Mining Advocacy Network is a network of non-governmental organizations (NGOs) and community organizations that are concerned with issues of human rights, gender, the environment, indigenous peoples and social justice related to the mining and oil and gas industry.

Indonesia does not only endure destructive mining practices on its land and natural resources but also has a long and sad list of human rights violations including forced evictions, loss of livelihoods and violence against women and children.

JATAM works with affected communities in many areas of Indonesia that have been damaged by mining and oil and gas activities. JATAM’s positions and demands were born out of concern regarding the massive destruction of the environment and socio-economy of the local community due to the mining and oil and gas industries.

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or you can also contact National JATAM at

www.jatam.org

and other social media channels.
KILLING THE RIVERS
How Indominco Mandiri Coal Mining Leaves A Deadly Legacy And Poisons Water Of Palakan-Santan Rivers In East Kalimantan

WRITERS
Adi Rahman, Ahmad Saini, Riza Irawan Ferdi,
Romiansyah, Taufik Iskandar, Teresia Jari, Pradarma
Rupang.

MAPS & DRONE
Ahmad Saini

EDITOR
Merah Johansyah

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