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Watershed Issues in Brief Bantay Kinayahan is a regular publication of the Interfacing Development Alternations for Sustainability (IDIS) Inc. to provide the public with relevant and concise information on pressing watershed issues.

ENVIRONMENTAL IMPACTS OF SAND AND GRAVEL QUARRYING IN DAVAO CITY



Davao City’s Anti-Mining Ordinance prohibits the extraction of metallic minerals, protecting the city’s residents and the environment from various negative effects brought about by the unsustainable practice. The ordinance provides for the strict regulation of non-metallic mining. However, there are no specific provisions on how the strict regulation will be implemented neither an implementing rules and regulations were developed. In December 2018, the Davao City council approved 30 new commercial sand and gravel applications out of the 64 applicants, in addition to the 53 registered quarry operators in the city.

Councilor Mabel Acosta’s demand for a threshold assessment of Davao City’s rivers to help the Council come up with sound evidence-based decision was brushed aside. While policymakers who pushed for the approval assured the body that such study will be pursued for future reference, to date, there is still no existing study or plan from any of the concerned government agencies.

The increasing number of commercial sand and gravel applications approved to address the demand as infrastructure development rise poses a threat to our river systems and the surrounding environment. What is alarming is the possibility that these extractions operate within or near the city’s conservation areas. The City’s Comprehensive Zoning Ordinance clearly prohibits the “exploitation of quarry resources and commercial sand and gravel resources”. The Watershed Code also prohibits quarrying in conservation areas and Agroforestry and Agricultural Non-Tillage Areas.

The Sustainable Davao Movement (SDM), particularly IDIS, Ecoteneo, and Minland, who are members of the Local Zoning Review Committee (LZRC) have been opposing the endorsement of the applications for quarry operation to the City Council. SDM have been demanding to the LZRC to call for a meeting with all quarry operators in the City and mandate them to submit a signed commitment to rehabilitate their areas but it was not approved. In response to the said concern, IDIS initiated the study, Environmental Impacts of Sand & Gravel Quarrying in Davao City to urge the City Mining Regulatory Board (CMRB) to establish a better monitoring system and ensure that environmental issues are addressed by the quarry operators.



“The Sustainable Davao Movement, particularly IDIS, Ecoteneo, and Minland have been opposing the endorsement of the applications for quarry operation to the City Council.”

SAND AND GRAVEL QUARRY SITES INSPECTED

Site No.	River/Creek	Barangay	Number of Operators
Site 1	Lasang River	Mabuhay, Paquibato Proper, Panalum	13
Site 2	Davao River (Upstream)	Malamba	8
Site 3	Davao River (Midstream)	Dalagdag	3
Site 4	Talomo River	Wangan	1
Site 5	Matina River	Langub, Matina Pangi, New Carmen	3
Site 6	Bayabas Creek	Bayabas	1
TOTAL			29

From January 25 to June 6, 2019, the City Environment and Natural Resources Office (CENRO) listed eighty (80) Sand and Gravel Quarrying Operations permittees. Twenty-nine (29) of these quarry operations are operating near the conservation zone.



SUMMARY OF FINDINGS

Environment Conditions	Social Effects	Compliance/Monitoring
Site 1 Davao River, Brgy. Malamba, Marilog District		
<ul style="list-style-type: none"> ▶ River water is highly silted, riverbanks are disrupted, used as road access and motorpool for trucks. ▶ The road at riverbanks is highly used due to the separator facility. 	<ul style="list-style-type: none"> ▶ Barangay roads going to the area are very dusty, rough, narrow, and unsafe for locals especially crossing students. 	<ul style="list-style-type: none"> ▶ Extraction cut off in the area is strictly at 5:00PM, CENRO inspects the sites daily at 11:00 AM. ▶ CENRO Ticketing officer stays along the Davao-Bukidnon Highway from 8am-5pm to monitor the truck loads coming from Brgy. Malamba. However, it was found out that operations (transportation of quarry resources) continue until night time or beyond the operation time as disclosed and complained by residents. ▶ Baranagay LGU is dependent on CENRO in terms of monitoring of sand and gravel operations. Requires operator/s to rehab the road but only upon receiving complaints from the local residents.
Site 2 Davao River, Brgy. Dalagdag, Calinan District		
<ul style="list-style-type: none"> ▶ River water is highly silted and turbid. 	<ul style="list-style-type: none"> ▶ Noise pollution in the nearby elementary school (Dalagdag Elementary School). 	<ul style="list-style-type: none"> ▶ Since areas are far from each other, there are no clear delineation lines or marks for burrow areas. Signages of every operator were present at site. ▶ There is a 4PM cut off operation with estimate of 7 truckloads per day. CENRO ticketing officer is stationed at Brgy. Riverside catching other trucks from other barangays.
Site 3 Lasang River, Paquibato		
	<ul style="list-style-type: none"> ▶ Even quarry areas are situated in residential settlements. Dust coming from trucks was documented as pollution to public road users. 	<ul style="list-style-type: none"> ▶ Minimum of 3 loads each day of river mix are delivered to Bunawan for further processing. In the previous years, illegal quarrying was an issue in the barangay, and CENRO advised them to apply for a permit to make the operation legitimate. Other operators from Lasang River are registered and extracting resources at the jurisdiction of Panabo City.
Site 4 Bayabas Creek, Toril District		
	<ul style="list-style-type: none"> ▶ Benefits from quarry operations like flood mitigation, livelihood and a 30 % share for the Barangay LGU are appreciated by residents. 	<ul style="list-style-type: none"> ▶ Quarry area is found within declared conservation zone, a clear violation of the Watershed Code and Zoning Ordinance of Davao City.
Site 5 Matina River, Talomo-Tugbok District		
<ul style="list-style-type: none"> ▶ The portion of Matina River in Langub has changed due to heavy sand and gravel extraction. Currently, the riverbank has a width of approximately 25 meters and a depth of one (1) meter. Also, heavy siltation is noted in the area. ▶ The river appears black, highly-turbid, with a notable foul smell, an indication of poor water quality due to leachate from the Carmen Sanitary Landfill. ▶ In New Carmen, the river is surrounded by rich vegetation, including bamboos, coconuts, etc. The presence of siltation can also be observed in the area. 	<ul style="list-style-type: none"> ▶ Dust and noise from the transporting of materials from batching plants are the main concern of the barangay. A resolution against batching of cement was already sent to BIR, CENRO, and City Health Office. ▶ Extraction is operated manually, utilizing labor workers as they use boats and spades to dive into the river with a depth of approximately 2-4 meters. The extracted sand and gravel are then loaded into the boat. 	<ul style="list-style-type: none"> ▶ Brgy. Langub still does not have an official monitoring method for the sand and gravel quarry operations. ▶ As of 2018, a quarry area in Matina Pangí was operating on an expired permit and was within the City's declared conservation areas.

ENVIRONMENTAL EFFECTS



1 DAMAGE TO RIPARIAN VEGETATION AND RIVERBANKS

Several quarry areas are often observed that riverbank easements are used as access roads for trucks and heavy equipment or stock-pile and separator facilities. The disturbance destroys natural riverbanks, reduces vegetative succession, and unnecessarily widens the river mouth. This is due to the heavy weight of passing equipment that contributes to the subsidy instead of elevating and strengthening the riverbanks for flood protection. Areas with weak vegetated riverbanks are prone to be easily eroded during heavy floods.



2 DUST, SEDIMENTATION, AND SILTATION

At the burrow areas, the water quality of regularly quarried rivers is found highly-silted and turbid due to aggregates and particles' movement. The nearby residential settlements and built-communities around these quarry areas are also found to have very dusty environs. This is because sand debris and particles carried by the wind from passing trucks fall along roads and roofs. Dust particles in the air are serious respiratory and health concerns.



3 BUILT SETTLEMENTS INCREASED RISK TO FLOODING

Most quarry areas are observed to have make-shift staff houses, offices, and other settlements built by the operating companies along riverbanks. These settlements with their employees have high risks to be affected by physical disasters, most especially flash floods.



4 NOISES CAUSED BY EXCAVATION AND CRUSHING

Quarry areas are sources of noise pollution—a quarry area in Brgy. Dalagdag was documented with industrial noises from excavation and transferring of boulders, which concerns a nearby public school. It was found that it operates during the daytime while classes are going on. Other residential settlements were also documented with noise pollution coming from nearby crushing and separator facilities.



5 WASTES FROM MAKE-SHIFT STAFF HOUSES

Various wastes coming from make-shift staff houses of operators are commonly observed. Solid waste and wastewater discharges coming from these houses commonly do not comply with regulatory standards. Most observed found to have no segregation and practiced littering, dumping, and even burning.

ENVIRONMENTAL MANAGEMENT

01

REGULAR SITE INSPECTIONS

CENRO conducts site inspections during pre-application, actual operation, and rehabilitation phases. Most quarry operations based in City proper are monitored at least once a week but in Paquibato, inspections are only done on Thursday every week or whenever necessary.

EXTRACTION CUT-OFF TIME

Regular time of operation starts at 7:00AM and ends at 5:00PM. However, cases of hauling beyond the regular time of operations are reported in Lasang River.

02

03

SIGNAGE AND DELINEATION MARKERS

Delineation markers made from tarpaulin are also used to present the area limit and boundary publicly. Some sites do not have signage boards due to theft issues.

MONITORING/TICKETING SYSTEM

The quarry ticketing system are used as transport log sheets to monitor and get information on the volume of extraction from the quarry area. In some quarry areas, ticketing officers are located in stationary offices or post. In Paquibato, tickets are collected from the quarry operator's personnel. In other areas, CENRO ticketing officers do not have a stationary outpost.

04

05

REHABILITATION

The only immediate mitigation method employed by quarry operators to protect conservation zones is planting of trees. The study revealed that rehabilitation initiatives in all of the quarry areas assessed generally had poor reforestation success and management such as few growth rate, efficient tree guards, and strong location disturbances.

ISSUES AND CONCERNS

MONITORING AND MANAGEMENT

- CENRO monitoring personnel have difficulty going to the field due to distance from main office.
- In barangays situated in Paquibato, the issuing of travel tickets are not by stations compared to other areas. Inspectors only collect and check the tickets monitored by the operators, since inspectors only visit the areas every Thursdays.
- Researchers have not found any delineation marks or signage strictly stating that quarrying is not allowed in the area, especially near the conservation zones.

ROAD ACCESS AND MAINTENANCE

- Barangays before Barangay Dalagdag complained about the trucks passing to their barangay roads which cause damages but most payments and services are directly paid to the main barangays with quarry operators.

POLITICAL INFLUENCE

- Most permittees are connected or related to barangay personnel staff or highly influenced by politics.

BARANGAY CONCERNS

- According to the LGU of Barangay Panalum, there have been reports of operators extracting at night around 7:00PM to 9:00PM with the use of night-lights.
- Barangays have questioned about quarry resources for gabion installation projects of DPWH. They have witnessed contractors illegally transporting the resources outside the site.

ISSUES AND CONCERNS

In the socio-environmental aspect, several safety risks and social issues were observed in some commercial sand and gravel quarrying operations.

1 PUBLIC ROAD SAFETY

- In some quarry areas, trucks loaded with rocks traverse through narrow and unpaved roads that residents, particularly children, frequently use.

2 OPERATIONAL SAFETY

- Quarry personnel are seen working without proper personal protective equipment.

3 CHILD LABOR INVOLVEMENT

- There were operators and assistants documented within early youth age.

CONCLUSION

Environmental conditions in areas with quarry operations suffered moderate/high level of damage and increased riverbank communities' risks and vulnerability to disasters.

There is a lenient system of approval for permittees as there are approved quarry operators operating within and near conservation areas. Clearly, a violation of the Watershed Code and other pertinent policies. Further, there is no clear indication of whether reports/complaints (e.g. operating during night time) submitted to CMRB are acted upon or validated on the ground. The study team also noted the lack of weighing stations to measure truckloads. The amount indicated in the ticket is based on agreed estimated volume of the operator and the ticketing officer taking into consideration the truckload capacity of the vehicle. In most cases, the indicated weight on the ticket is less than the actual truckload capacity. In effect, there can be no genuine monitoring of over-extraction.

The current monitoring system is ineffective in checking actual compliance of regulations for quarry operations, and in reporting the actual condition in the area as field visits by authorities are not frequently conducted due to the distance and inaccessibility of the quarry sites.

RECOMMENDATIONS

FOR CENRO

1 Application. Develop an enhanced and comprehensive approval process including validation of location/proximity to the City's declared conservation zones and requiring management plans from quarry operators to be disseminated to the public.

- For large number of permittees, DENR or the City Mining Regulatory Board should require and implement a programmatic environmental impact assessment of rivers to cover the whole stretch of the river including its tributaries.

2 Implementation. Improve monitoring system to go beyond spot checks of declared volume of extraction to include environmental conditions in the area and effects to nearby communities.

- Explore community-based reporting of violations and conditions through the BLGU tanod/police and community members.
- Riverbank reforestation programs must employ appropriate riparian vegetation and must be monitored. Quarry operators and/or BLGUs should submit regular reports/updates on the compliance of reforestation programs to the CMRB.
- Annual/semestral gathering of quarry operators shall be conducted to provide updates on environmental policies and implementation of LGU environment programs.

3 Rehabilitation. Establish a system where violations are tracked and will be used as the basis for approval/renewal of permits.

- Environmental conditions of the area should be assessed prior to recommending its conclusion for another round/continuous resource extraction.
- CMRB may also give recognition of quarry operators who have complied with the environmental laws and with a verifiable reforestation program.

FOR CITY COUNCIL

4 Long Term Policy

- The LGU should conduct a threshold capacity assessment especially for Davao and Lasang Rivers.
- Review and update the Mining Ordinance of Davao City and/or pass a separate ordinance specifically regulating sand and gravel or non-metallic quarrying.
- Ensure equitable benefit sharing to cover long-term costs of negative health, environmental, and social costs to the communities in the area. Barangays that are affected by the mining operations must also be given due benefits.



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