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Barangay Culi-Ram	Barangay Marbon	Barangay Zilovia
Barangay Del Monte	Barangay Sabang Gibung	
Barangay Desamparados	Barangay San Agustin	



Department of Environment and Natural Resources
MINES AND GEOSCIENCES BUREAU
Regional Office No. 10, Surigao City



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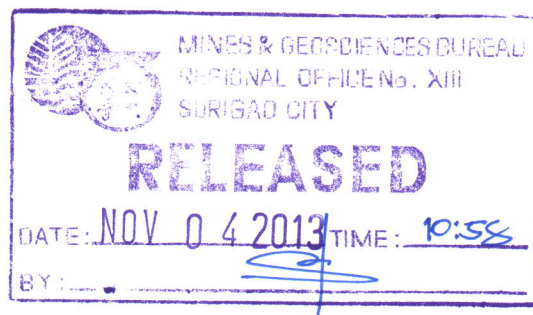
November 4, 2013

HONORABLE JESRYL E. MASENDO

Municipal Mayor

Municipality of Talacogon

Province of Agusan del Sur



Dear **Mayor Masendo**,


Respectfully furnishing your end the document entitled "Results of the MGB Landslide and Flood Assessment and Mapping (1:10,000 scale) of the Municipality of Talacogon, Province of Agusan del Sur". The assessment is in line with the government's effort aimed at reducing, if not totally mitigating the destructive effects and impacts of natural hazards to the populace.

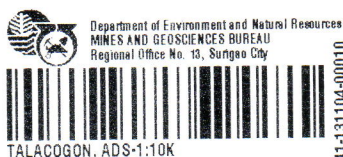
The Office expresses its deep gratitude for the support and assistance rendered to the Geohazard Mapping and Assessment Team of our Regional Office during the conduct of the field survey.

We look forward to a continuing partnership and collaboration with the LGU of Talacogon, Agusan del Sur in the nation's overall disaster risk reduction program.

Very truly yours,

BY THE AUTHORITY OF THE OIC, MMD:


ROMEO M. DALODADO
Chief, Geosciences Division
Officer, In-Charge



GSD-13-10-Ghz-52

Cc: Hon. Director , DENR, MGB
Hon. Gov., ADS
Honorable Representative, 1st District, ADS
OCD-RDRMC Caraga

RED, DENR,R-XIII
PENRO, ADS
CENRO, Talacogon, ADS
DILG, R-XIII

**"MINING SHALL BE PRO-PEOPLE AND PRO-ENVIRONMENT
IN SUSTAINING WEALTH CREATION AND IMPROVED QUALITY OF LIFE."**

RESULTS OF THE MGB LANDSLIDE AND FLOOD ASSESSMENT AND MAPPING (1:10,000 SCALE) OF THE MUNICIPALITY OF TALACOGON, PROVINCE OF AGUSAN DEL SUR

The Mines and Geosciences Bureau-Department of Environment and Natural Resources (MGB-DENR) conducted landslide and flood assessment and mapping (1:10,000 scale) of areas within the municipality of Talacogon on August 26, 2013 to September 5, 2013. The assessment is in line with the government's efforts aimed at reducing, if not, totally mitigating the destructive effects and impacts of natural hazards on the populace. Comprising the geohazard assessment team are Joel A. Calugcugan, Melvin A. Mantilla, Elaine L. Galido, geologists from MGB – Caraga Region XIII with the assistance of GSD personnel Mr. Evangelino M. Morales, Jr., Dionesio A. Surigao Julius A. Sulapas and Samuel A. Jardenil.

The MGB-DENR particularly covered the following areas:

- Puroks 1 to 5 in Barangay Batucan
- Puroks 1 to 8 in Barangay Buena Gracia
- Puroks 1 to 10 in Barangay Causwagan
- Puroks 1 to 5 in Barangay Culi-ram
- Puroks 1 to 16 in Barangay Del Monte
- Puroks 1 to 4 in Barangay Desamparados
- Puroks 1 to 7 in Barangay Labnig
- Puroks 1 to 9 in Barangay La Flora
- Puroks 1 to 7 in Barangay Maharlika.
- Puroks 1 to 7 in Barangay Marbon
- Puroks 1 to 5 in Barangay Sabang Gibung
- Puroks 1 to 9 in Barangay San Agustin (Pob.)
- Puroks 1 to 4 in Barangay San Isidro (Pob.)
- Puroks 1 to 8 in Barangay San Nicolas (Pob.)
- Puroks 1 to 8 in Barangay Zamora
- Puroks 1 to 9 in Barangay Zillovia

The assessed areas were rated as having low, moderate, high or very high (critical) susceptibility to landslide. The landslide susceptibility rating parameters are as follows:

Very High : Areas usually with steep to very steep slopes and underlain by weak materials. Recent landslides, escarpments and tension cracks are present. Human initiated effects could be an aggravating factor.

High : Areas usually with steep to very steep slopes and underlain by weak materials. Areas with numerous old/inactive landslides.

Moderate : Areas with moderately steep slopes. Soil creep and other indications for possible landslide occurrence are present.

Low : Gently sloping areas with no identified landslides.

Likewise, the assessed areas were also rated as having low, moderate or high susceptibility to flooding. The flood susceptibility parameters are as follows:

High : Areas likely to experience flood heights of greater than 1.0 meter and/or flood duration of more than 3 days. These areas are immediately flooded during heavy rains of several hours; include landforms of topographic lows such as active river channels, abandoned river channels and areas along river banks; also areas prone to flashfloods

Moderate : Areas likely to experience flood heights of 0.5 to 1.0 meter and flood duration of 1 to 3 days. These areas are subject to widespread inundation during periods of prolonged and extensive heavy rainfall or extreme weather condition. Fluvial terraces, alluvial fans, and infilled valleys are areas subjected to moderate flooding

Low : Areas likely to experience flood heights of less than 0.5 meter and/or flood duration of less than one day. These areas include low hills and gentle slopes. They also have sparse to moderate drainage density

The barangay officials were presented with a *Landslide and Flood Threat Advisory* when appropriate. This advisory informs them of their area's susceptibility to landslides and floods and contains the corresponding recommendations.

Summarized below are the results of the assessment of the covered areas:

Table 1. Results of Landslide and Flood Assessment at Barangay Batucan

Purok	Landslide Susceptibility Rating	Flood Susceptibility Rating	Recommendations
1	Low	Low to Moderate	Observe for rapid increase/decrease of water level along the creek traversing at the purok, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankment. Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation is advised if rapid increase/decrease of water level along the creek is observed. Proper drainage canals are recommended to facilitate surface run-off.
2	Gen. Low; portion Moderate at the back of the Barangay Hall	Moderate	Observe for presence of mass movement (e.g. landslide, tension crack) especially for houses located at the back of the Barangay Hall where man-made excavation in defining slope has been made. Strictly prohibit future settlement

			<p>along ridge edges and foot of slopes; for vigilance of residents located at the foot of slopes during inclement weather conditions. Observe for rapid increase/decrease of water level along Batucan Creek, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankment. Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation is advised if rapid increase/decrease of water level along the creek is observed. Recommend to reconstruct damaged riprap structure along Batucan Creek. Proper drainage canals are recommended to facilitate surface run-off.</p>
3	Gen. Low; portion Moderate at the back of the Barangay Hall	Low	<p>Observe for presence of mass movement (e.g. landslide, tension crack) especially for houses located at the back of the Barangay Hall where man-made excavation in defining slope has been made. Strictly prohibit future settlement along ridge edges and foot of slopes; for vigilance of residents located at the foot of slopes during inclement weather conditions. Observe for rapid increase/decrease of water level along creek, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankment. Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation is advised if rapid increase/decrease of water level along the creek is observed. Proper drainage canals are recommended to facilitate surface run-off.</p>
4	Low on low-lying areas; Moderate on houses at slope along Nat'l Road	None on elevated areas; Moderate on houses near the bridge including F.E. Lopez Elem. School	<p>Observe for presence of mass movement (e.g. landslide, tension crack) for houses located along sloping areas at the National Road. Observe for saturated ground and/or seeps. Report such observations at the concerned municipal authorities or to the MGB; for vigilance of the residents during inclement weather conditions. Observe for rapid increase/decrease of water level along the creek, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankment especially near Batucan Bridge. Provide an evacuation site which is safe from</p>



			landslide and flooding. Pre-emptive evacuation is advised if rapid increase/decrease of water level along the creek is observed. Define and provide concrete line canals, especially at F.E. Lopez Elementary School to facilitate surface run-off during heavy rainfall. Proper drainage canals are recommended to facilitate surface run-off.
Sitio Domoog	Low	Low	Observe for rapid increase/decrease of water level along creek traversing at the Sitio, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankment. Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation is advised if rapid increase/decrease of water level along the creek is observed.

Table 2. Results of Landslide and Flood Assessment at Barangay Buena Gracia

Purok	Landslide Susceptibility Rating	Flood Susceptibility Rating	Recommendations
1	None; Partly Low	None; Partly Low	Relocate entire purok situated along Agusan River embankment which is prone to flooding and flash-flood. Flood height experienced by the local communities is from 10 meters and 5 meters common flood-height.
2	Low; Partly None	Low to None; Partly High	Removal of RCP culvert and replacement of proper designed of box-culvert type is highly recommended at Purok 2 with geographic coordinates 8°25'16.8"-N/125°47'59.4"-E; Construct proper drainage canals on this area to facilitate surface run-off; Identify and construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquiring at-least two (2) rubber boats and two (2) mobile dump-trucks are badly needed for rescue operation and mobilization.
3	Low to None; Partly Very High at Buena Gracia Elem. School campus	Low to Moderate; Partly None	Observed for and/or monitor for presence of mass movement and report to the MGB/municipal authorities (e.g. landslides, tension cracks); Observed for saturated ground or seeps and sunken or



			displaced road surfaces and report to the MGB/municipal authorities; Prohibit settlement along or within the river-banks/creek-banks; Prohibit settlement directly located on foot-slope; Observed for sunken or displaced road surfaces; Immediate demolition of one (1) school building of Buena Gracia Elementary School affected by active soil creeping and mass-movement; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquiring at-least two (2) rubber boats and two (2) mobile dump-trucks are badly needed for rescue operation and mobilization.
4	High; Partly Low to None	None; Partly Low to Moderate	Removal of RCP culvert across Sunrise Creek flowing S45°W and replacement of proper designed of box-culvert type is highly recommended at Purok 2 with geographic coordinates 8°25'32"-N/125°47'23.4"-E; Construct proper drainage canals on this area to facilitate surface run-off; Identify and construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquiring at-least two (2) mobile dump-trucks are badly needed for rescue operation and mobilization.
5	Low to None	None; Partly Low to Moderate	Construct proper drainage canals on this area to facilitate surface run-off; Identify and construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquiring at-least two (2) mobile dump-trucks are badly needed for rescue operation and mobilization.
6	Low; Partly None	Low; Partly Low to Moderate	Regular de-clogging of the box-culvert across the national highway should be implemented with coordinates 8°24'42.1"-N/125°47'34.3"-E; Construct proper drainage canals on this area to facilitate surface run-off; Identify and



			construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquiring at-least two (2) mobile dump-trucks are badly needed for rescue operation and mobilization.
7 "Malihaw"	None	High	Relocate entire purok which is prone to high-flooding with common flood-height of 5 meters depth and flash-flood; Prohibit settlement along intermittent/perennial creeks/rivers; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquiring at-least two (2) rubber-boats are badly needed for rescue operation and mobilization.
8"Brgy. Site"	Low; Partly None	Low; Partly Low to Moderate	Relocate entire purok which is prone to high-flooding with common flood-height of 5 meters depth and flash-flood; Prohibit settlement along intermittent/perennial creeks/rivers; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquiring at-least two (2) rubber-boats are badly needed for rescue operation and mobilization.

Table 3. Results of Landslide and Flood Assessment at Barangay Causwagan

Purok	Landslide Susceptibility Rating	Flood Susceptibility Rating	Recommendations
1	Low	Gen. Low; High on Lanos creek	Observe for rapid increase/decrease along Lanos Creek and Malihao Creek, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankments. Recommend to provide box-type culvert along Lanos Creek and riprap along embankments of Lanos creek as it joins the Malihao creek. Elevating portion of the barangay road located at the mentioned creek at the boundary of Purok 1 and Purok 2 is also recommended. Provision of proper drainage canals is also recommended to facilitate surface run-off especially during heavy rains.
2	None	Gen. Low; High on Lanos creek	Observe for rapid increase/decrease along Lanos Creek and Malihao

			Creek, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankments. Recommend to provide box-type culvert along Lanos Creek and riprap along embankments of Lanos creek as it joins the Malihao creek. Elevating portion of the barangay road located at the mentioned creek at the boundary of Purok 1 and Purok 2 is also recommended. Provision of proper drainage canals is also recommended to facilitate surface run-off especially during heavy rains
3	Low	Gen. Low with portion High near Lanos Creek	Observe for rapid increase/decrease along Lanos Creek, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankments. Provision of proper drainage canals is recommended to facilitate surface run-off especially during heavy rains.
4	None	Low	Provide concrete line canals to facilitate surface run-off especially during heavy rainfall events.
5	Low	Gen. Low; portion High along Dangkias Creek	Observe for rapid increase/decrease of water level along Dangkias Creek, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along Dangkias creeks, embankments. Recommend to provide box-type culvert along Dangkias Creek. Also elevating this portion of the road is recommended.
6 (Sitio San Isidro)	None	Moderate	Observe for rapid increase/decrease of water level along Patay Creek, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankments. Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation is advised during extreme weather events. The barangay is recommended to acquire rubber boats for rescue operation purposes. Proper drainage canals are recommended.
7 (Sitio San Roque)	None	Moderate	Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation is advised during extreme weather events. The barangay is recommended to acquire rubber boats for rescue operation purposes. Proper drainage canals are recommended.
Sitio Lapus-lapus	None	High	Relocating the entire sitio is highly recommended. Provide a relocation that is safe from landslide and

			flooding. The barangay is recommended to acquire rubber boats for rescue operation purposes.
Sitio Villa Hermosa	None	Low to Moderate	Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation is advised during extreme weather events. The barangay is recommended to acquire rubber boats for rescue operation purposes.
Sitio Mejorada	Low	Moderate to High	Sitio Mejorada is situated in an elevated area and is not affected with flooding. However, the rice fields surrounding the sitio experience flooding due to Agusan River backflow especially during extreme weather events, making the sitio isolated. Recommend to provide a clear pilot road going to the sitio and the barangay is recommended to acquire at rubber boats for rescue operation purposes. The barangay is advised to send necessary assistance (e.g. food and water supply) to Sitio Mejorada before the rainy months comes so that the sitio has something to rely on when they become isolated during the rainy months.

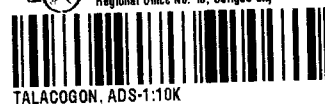
Table 4. Results of Landslide and Flood Assessment at Barangay Culi-Ram

Purok	Landslide Susceptibility Rating	Flood Susceptibility Rating	Recommendations
1	Moderate to High	None; Partly High	The area is prone to landslide and river-scouring; Construct proper drainage canals on this area to facilitate surface run-off; Identify and construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding and river-scouring especially along Gasa-gasa Creek flowing S45°E; Regular de-clogging and embankment concreting of Gasa-gasa Creek must be implemented to minimize scouring; Observed for sunken or displaced road surfaces; Develop an early warning (e.g., signages) at (for critical areas only) on steep-slopes where houses situated foot-slopes; Prohibit settlement directly located on foot-slopes; Develop an early warning device/system; Activate BDCC all the time for quick response



			during emergency; Acquiring at-least two (2) mobile dump-trucks are badly needed for rescue operation and mobilization.
2	High; Partly Low	None; Partly High	<p>The area is prone to landslide and river-scouring; Removal of RCP culvert and replacement of proper designed of box-culvert type is highly recommended at Purok 2 with geographic coordinates 8°25'26.8"-N/125°46'47.8"-E; Construct proper drainage canals on this area to facilitate surface run-off; Identify and construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding and river-scouring especially along Gasagasa Creek flowing S45°E; Regular de-clogging and embankment concreting of Gasagasa Creek must be implemented to minimize scouring; Observed for sunken or displaced road surfaces; Develop an early warning (e.g., signages) at (for critical areas only) on steep-slopes where houses situated foot-slopes; Prohibit settlement directly located on foot-slopes; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquiring at-least two (2) rubber boats and two (2) mobile dump-trucks are badly needed for rescue operation and mobilization.</p>
3	Very High; Partly Low	None; Partly High	<p>The area is prone to landslide; Relocate all houses directly within the tension cracks; Construct proper drainage canals on this area to facilitate surface run-off; Identify and construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding and flash-flood; Observed for sunken or displaced road surfaces; Develop an early warning (e.g., signages) at (for critical areas only) on steep-slopes where houses situated foot-slopes; Prohibit settlement directly located on foot-slopes; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency.</p> <p>Damaged road sections going to</p>

			<p>Purok 3 should be repair due to landslide and intense erosion with GPS readings at 8°30'31.9"-N/125°46'52.5"-E, 8°30'27.5"-N/125°46'48.9"-E, 8°30'27.3"-N/125°46'47.3"-E and 8°30'08.1"-N/125°46'31.5"-E.</p> <p>Recommended bridge structure be constructed on this section with GPS reading 8°29'33.5"-N/125°46'32.7"-E.</p>
4	High	None; Partly Moderate to High	<p>The area is prone to landslide and flash-flood; Relocate all houses directly within the tension cracks; Construct proper drainage canals on this area to facilitate surface run-off; Identify and construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding and flash-flood; Observed for sunken or displaced road surfaces; Develop an early warning (e.g., signages) at (for critical areas only) on steep-slopes where houses situated foot-slopes; Prohibit settlement directly located on foot-slopes; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquiring at-least two (2) mobile dump-trucks are badly needed for rescue operation and mobilization.</p>
5	None; Partly Low to Moderate	High; Partly Low	<p>The area is prone to landslide, river flooding by Agusan and Culi Rivers and flash-flood; Relocate all houses directly within Culi Creek flowing S55°W; Construct proper drainage canals on this area to facilitate surface run-off; Identify and construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding and flash-flood; Observed for sunken or displaced road surfaces; Develop an early warning (e.g., signages) at (for critical areas only) on steep-slopes where houses situated foot-slopes; Prohibit settlement directly located on foot-slopes; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquiring at-least two (2) rubber-boats are badly needed for rescue operation and</p>



			<p>mobilization.</p> <p>No further development to be done at the Culi-Ram Elementary School near foot-slope. Coordinate MGB-R13 technical team for any development structure on this area.</p> <p>Re-channeling and embankment concreting of the Gasa-gasa Creek should be implemented to facilitate surface run-off and mitigate river-scouring.</p> <p>Road piloting going to Purok-5 from barangay proper should be constructed.</p>
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Table 5. Results of Landslide and Flood Assessment at Barangay Del Monte

Purok	Landslide Susceptibility Rating	Flood Susceptibility Rating	Recommendations
1	None	Low	Recommend to provide concrete line canals to facilitate surface run-off especially during heavy rainfall.
2	None	High	Observe for rapid increase/decrease of water level along Malihao Creek, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankment. Provide a relocation site which is safe from landslide and flooding. Pre-emptive evacuation is advised if rapid increase/decrease of water level along the creek is observed. The barangay should acquire rubber boats for rescue operation purposes. For long-term solutions, relocating the residents located near Malihao Creek is recommended. Recommend to define existing drainage canals and conduct regular maintenance to facilitate surface run-off sufficiently.
3	Portion None; portion Moderate on houses located at barangay road going to Sitio Tuboran	Portion None on elevated areas; Portion Moderate on low-lying areas	Observe for presence of mass movement (e.g. landslide, tension crack) especially to those houses located at the barangay road going to Sitio Tuboran and those houses located on the foot of slopes. Also observe for saturated grounds and/or seeps; report such at the concerned municipal authorities or to the MGB; for vigilance of residents located at the foot of slopes especially during inclement weather conditions. Prohibit future settlement directly and/or near the foot of slopes and

			creeks embankments. Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation for those affected by flooding is advised especially during extreme weather events. Recommend to define existing drainage canals and conduct regular maintenance to facilitate surface run-off sufficiently.
4	None	Low	Provision of concrete line canals is recommended to facilitate surface run-off especially during heavy rainfall events. Define existing drainage canals and conduct regular maintenance.
5	None	Low	Recommend to define existing drainage canals and conduct regular maintenance to facilitate surface run-off sufficiently. Concretizing existing drainage canals is recommended.
6	None	Low	Recommend to define existing drainage canals and conduct regular maintenance to facilitate surface run-off sufficiently. Concretizing existing drainage canals is recommended.
7	Low	Gen. Low; portion Moderate near Malihao Creek	Observe for rapid increase/decrease in water level along Malihao Creek, possibly accompanied with increased turbidity (soil content) especially during inclement weather conditions. Prohibit future settlement along creeks embankments. Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation for those residents affected when Malihao creek overflows is recommended. Conduct regular maintenance on existing drainage canals.
8	None	Gen. Low to Moderate; portion High near Malihao Creek	Observe for rapid increase/decrease in water level along Malihao Creek, possibly accompanied with increased turbidity (soil content) especially during inclement weather conditions. Prohibit future settlement along creeks embankments. Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation for those residents affected when Malihao creek overflows is recommended. Conduct regular maintenance on existing drainage canals.
9	None	High	Observe for rapid increase/decrease of water level along Malihao Creek, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankment. Provide a relocation site which is safe from landslide and

			<p>flooding. Pre-emptive evacuation is advised if rapid increase/decrease of water level along the creek is observed. The barangay should acquire rubber boats for rescue operation purposes. For long-term solutions, relocating the residents located near Malihao Creek is recommended. Recommend to define existing drainage canals and conduct regular maintenance to facilitate surface run-off sufficiently.</p>
10	None	Low to Moderate	<p>Observe for rapid increase/decrease of water level on the creeks traversing the purok, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along creeks embankments. Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation is recommended if rapid increase/decrease of water level is observed on creeks. Recommend to replace existing RCP culverts located at Purok 10 proper and along Maybuyo Creek at the barangay road going to Sitio San Miguel.</p>
Sitio Cebuna	Low	Gen. Low to Moderate; Portion High along Labnig Creek	<p>Observe for rapid increase/decrease of water level on Labnig Creek, possibly accompanied with increased turbidity (soil content). Conduct regular maintenance on the creek and remove the organic wastes (twigs, bamboo stalks) that obstruct the flow of water and clogged up the waterways. Also recommend to put up additional box culvert along Labnig Creek to provide an additional water outlet and accommodate more volume of water especially during extreme weather events. Prohibit future settlement along the creeks embankments. Provide an evacuation site which is safe from landslide and flooding. Pre-emptive evacuation is recommended if sudden increase/decrease of water level along Labnig Creek is observed during inclement weather conditions.</p>
Sitio Mabini	Low	Gen. Low; Portion Moderate	<p>Observe for rapid increase/decrease of water level on the creek that traverses at the sitio, possibly accompanied with increased turbidity (soil content). Define the passageway of a creek that traverses at Sitio Mabini and conduct regular maintenance by removing organic materials that hinder the flow of water on the creek. Replace existing RCP culvert on the creek with a box-</p>



			type or a bigger barrel of RCP. Recommend to install proper drainage canals to facilitate surface run-off during heavy precipitation.
Sitio Noreca	Moderate	Low	Observe for presence of mass movements (e.g. tension crack, landslide). Also observe for saturated grounds or seeps. Report such to the concerned municipal authorities or to the MGB; for vigilance of residence located on the foot of slopes and on ridge edges during inclement weather conditions. Observe for rapid increase/decrease of water level along the creek that traverses at the purok, possibly accompanied with increased turbidity (soil content). Prohibit future settlement along the foot of slopes and near creek embankments. Provide an evacuation site which is safe from landslide and flooding.
Sitio San Miguel	Low	Low	Recommend to rehabilitate classrooms of Cortes Elementary School which cracks are visible after an about Magnitude 5.0 earthquake hit the area. Proper drainage canals are also recommended to the purok to facilitate surface run-off during heavy rainfall.
Sitio Sta. Cruz	High	None	Observe for presence of mass movements (e.g. tension crack, landslide). Also observe for saturated grounds or seeps. Report such to the concerned municipal authorities or to the MGB; for vigilance of residence located on the foot of slopes and on ridge edges during inclement weather conditions. Relocate residents directly located on the ridge edges to a safer site and prohibit future settlement along ridge edges and foot of slopes. Prohibit future construction of classrooms and/or school expansion along ridge edges at Corpuz Elementary School and Del Monte National High School (Corpuz Annex).
Sitio Tuboran	Moderate to High	None	Observe for presence of mass movements (e.g. tension crack, landslide). Also observe for saturated grounds or seeps. Report such to the concerned municipal authorities or to the MGB; for vigilance of residence located on the foot of slopes and on ridge edges during inclement weather conditions. Relocate residents directly located on the ridge edges to a safer site and prohibit future settlement along ridge edges and foot of slopes.