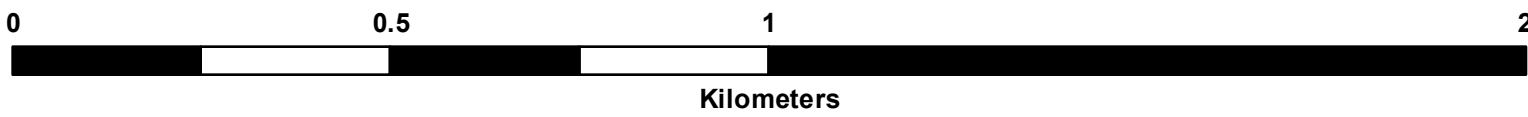
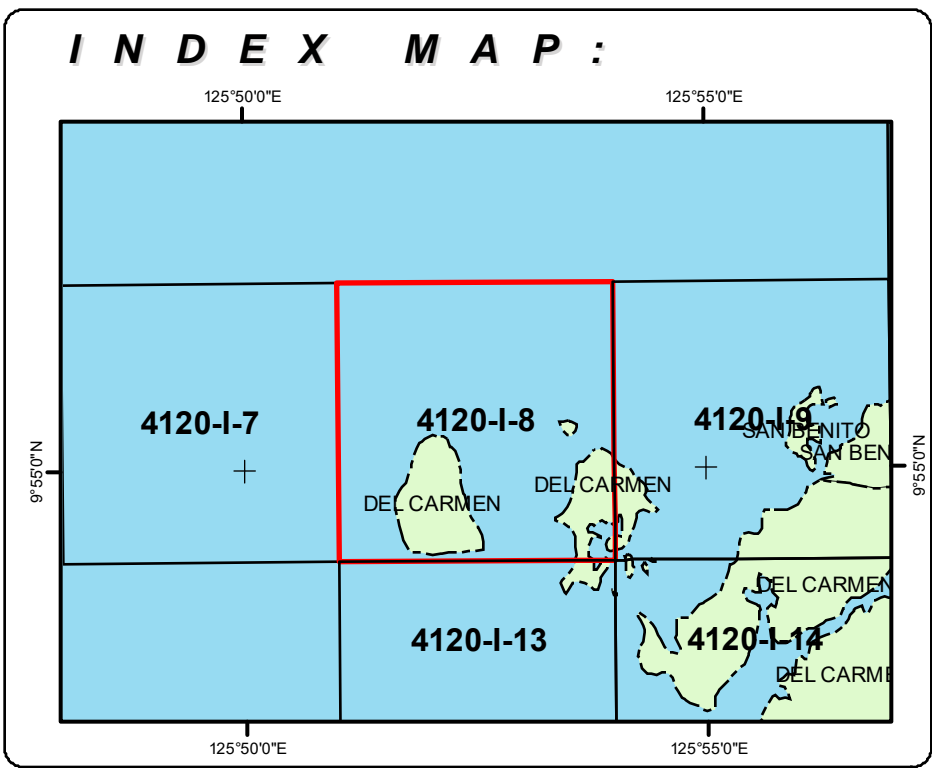
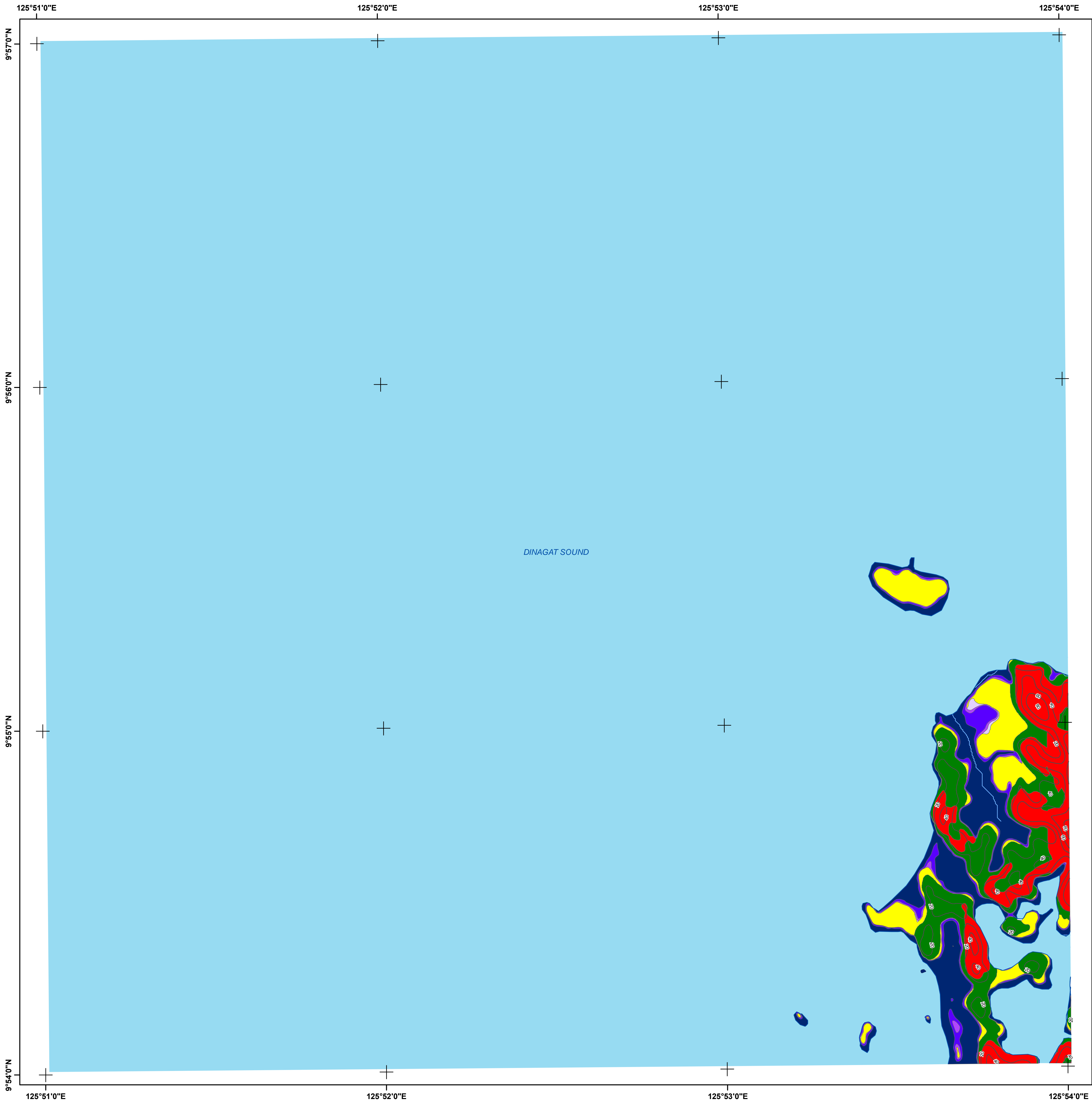




# DETAILED LANDSLIDE AND FLOOD HAZARD MAP OF DEL CARMEN, SURIGAO DEL NORTE, PHILIPPINES 4120-I-8 HALIAN QUADRANGLE



## LEGEND :

- |  |                    |  |                                 |
|--|--------------------|--|---------------------------------|
|  | Main road          |  | Barangay center location        |
|  | Secondary road     |  | Purok/Sitio location (Barangay) |
|  | Track; trail       |  | School                          |
|  | River              |  | Hospital                        |
|  | Municipal boundary |  | Church                          |
|  | Contour (meter)    |  | Proposed relocation site        |

## Landslide

- |  |                                                                                                                                                                                                                                                    |  |                   |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------|
|  | <b>Very high landslide susceptibility</b><br>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. |  |                   |
|  | <b>High landslide susceptibility</b><br>Areas usually with steep to very steep slopes and underlain by weak materials. Areas with numerous old/inactive landslides.                                                                                |  |                   |
|  | <b>Moderate landslide susceptibility</b><br>Areas with moderately steep slopes. Soil creep and other indications of possible landslide occurrence are present.                                                                                     |  |                   |
|  | <b>Low landslide susceptibility</b><br>Gently sloping areas with no identified landslide.                                                                                                                                                          |  |                   |
|  | <b>Debris flow / Possible accumulation zone</b><br>Areas that could be affected by landslide debris.                                                                                                                                               |  |                   |
|  | Active landslide                                                                                                                                                                                                                                   |  | Creep             |
|  | Inactive landslide                                                                                                                                                                                                                                 |  | Tension crack     |
|  | Landslide area with mitigating measure                                                                                                                                                                                                             |  | Gully             |
|  | Rock fall/Rock slide prone area                                                                                                                                                                                                                    |  | Riverbank erosion |
|  | Old landslide deposits                                                                                                                                                                                                                             |  |                   |
|  | Recent landslide deposits                                                                                                                                                                                                                          |  |                   |
|  | Areas susceptible to ground subsidence/sinkhole development                                                                                                                                                                                        |  |                   |

## Flood

- |  |                                                                                                                                                                                                                                                                                                                                                                                          |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Very high flood susceptibility</b><br>Areas likely to experience flood heights of greater than 2 meters 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 area along river banks; also prone to flashfloods.      |
|  | <b>High flood susceptibility</b><br>Areas likely to experience flood heights of greater than 1 up to 2 meters 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 area along river banks; also prone to flashfloods.   |
|  | <b>Moderate flood susceptibility</b><br>Areas likely to experience flood heights of greater than 0.5m up to 1 meter and/or flood duration of 1 to 3 days. These areas are subject to widespread inundation during prolonged and extensive heavy rainfall or extreme weather condition. Fluvial terraces, alluvial fans, and infilled valleys are areas moderately subjected to flooding. |
|  | <b>Low flood susceptibility</b><br>Areas likely to experience flood heights of 0.5 meter or less and/or flood duration of less than 1 day. These areas include low hills and gentle slopes. They also have sparse to moderate drainage density.                                                                                                                                          |

- |  |                                  |  |                       |
|--|----------------------------------|--|-----------------------|
|  | Direction of rising floodwater   |  | Flood depth (meter)   |
|  | Direction of receding floodwater |  | Flashflood exit point |



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
**MINES AND GEOSCIENCES BUREAU**  
North Avenue, Diliman, Quezon City

ALL RIGHTS RESERVED  
PUBLISHED DECEMBER 2015

**Data Sources :**  
MGB Geohazard Assessment Team  
Lands Geological Survey Division  
Geosciences Division MGB Regional Office XIII  
National Mapping and Resource Information Authority

**GIS Processing :**  
Lands Geological Survey Division

**Coordinate System :**  
Spheroid : Clark 1866  
Projection : Transverse Mercator  
Datum : Luzon 1911

Mapping scale 1:10,000