

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Background of Study**

Water is very important to human daily life. The sources are from lakes, rivers, streams, and oceans and it is very important for people for their daily routine such as cleaning, bathing, drinking, washing and so on. One of water source in Malaysia is from lake. Lake is a stagnant water area surrounding by land which connect to rivers, streams, ocean or moving water.

Tasik Chini is the main source of water to the local community around the area. They used the water from lake for their daily activities such as cleaning, washing, bathing and so on. Tasik Chini is the second largest lakes in Malaysia which consist of 12 series of lakes and connected to the Pahang River. There are some human activities give bad impact to the water quality of Tasik chini such as mining, logging, agriculture and the building of infrastructure for resort and National Service Centre near to the lake.

Water quality in lake will be affected by surrounding activity near the lake area. The quality of water is identified in terms of it physically, biological and chemical parameters. According to (Tchobanolous G and Schorder D, 1985), water quality in lake is about the degradation of natural process of eutrophication. Social development will accelerate the eutrophication process.

Human activities near the lake which handled under control will cause lake water Polluted. Water pollution is an additional of material and energy which will caused harmful to human beings, animals and aquatic life whom use the water. Term water pollution refers to any types of aquatic contamination between two extremes which are a highly productive enriched water body and a body of water poisoned by toxic chemicals which eliminate living organism or even exclude all forms of life, (Shafi,2005).

## **1.2 Problem Statement**

Chini Lake is one of the lake that are involved with water quality pollution. The iron mine was re-activation at this lake in 2005 because of the high demand for iron. Melai is the largest mining area at Tasik Chini. According to (M. B. Gazim et al. 2012), there are logging, iron ore mining, and oil palm activities carry out by local residents at Melai Village upstream of the catchment. Previously, mining was carried out by an appointed mining company, but abandoned once the Government terminated their contract. These activities give bad impact to the environment especially to the water quality of Tasik Chini due to the presence of nutrients and heavy metal.

The mining activity increase heavy metal concentration such as iron (Fe), aluminium (Al), barium (Ba), and magnesium (Mg) in water body (Fernandez, 2012). The effect of heavy metal concentration can harm the health of the lake and its inhabitants. Unwell-operated mining activity will caused increasing of heavy metal concentrations in water body.

## **1.3 Research Objectives**

The objectives of this study are as following:

- i. To analyse the previous data at Sg. Gumum, Sg. Jerangking, Sg. Kenawar, Sg. Melai, PLKN/ P.Balai and Resort in Tasik Chini on 2013.
- ii. To evaluate the characteristics of current water quality in the study area based on WQI and NWQS.

## **1.4 Scope of Study**

The scope of study on this research is based on mining activity near at selected river which is Jemberau, and Chini Down Stream. Mining activity near Jemberau, and Chini Down Stream caused of mining runoff which can contributes heavy metal concentration can affect the water quality at Tasik Chini. Jemberau river with type locality and location at Pahang, East Coast, Malaysia, Southeast Asia, with Latitude  $3^{\circ} 22' 49.4''$  ( $3.3804^{\circ}$ ) north and Longitude  $102^{\circ} 55' 22.4''$  ( $102.9229^{\circ}$ ) east. For the average elevation 46 metres (151 feet). There are two types of test were conducted which are in-situ test and laboratory test. There are 8 laboratory test have been conducted which are Biological Oxygen Demand (BOD<sub>5</sub>) test, Chemical Oxygen Demand (COD) test, Total

Suspended Solid (TSS) test, Suspended Solid (SS) test, Ammonical Nitrogen test, Phosphorus test, Nitrate test and Potassium test. For in situ test, 5 tests are conducted which are, temperature, pH, electrical conductivity, dissolved oxygen (DO) and turbidity.

### **1.5 Significant of Study**

This study can know the water quality at Tasik Chini (Chini Lake) effect by mining activity on dry and wet season are determine by Water Quality Standards for Malaysia (NWQS) and Water Quality Index (WQI). Mining activity is one of the effect that contribute pollution of water quality in Jemberau river, Chini Up Stream and Chini Down Stream are determine. The data and result will be useful for water quality for this research project.