

## **STUDY AREA**

### **Location**

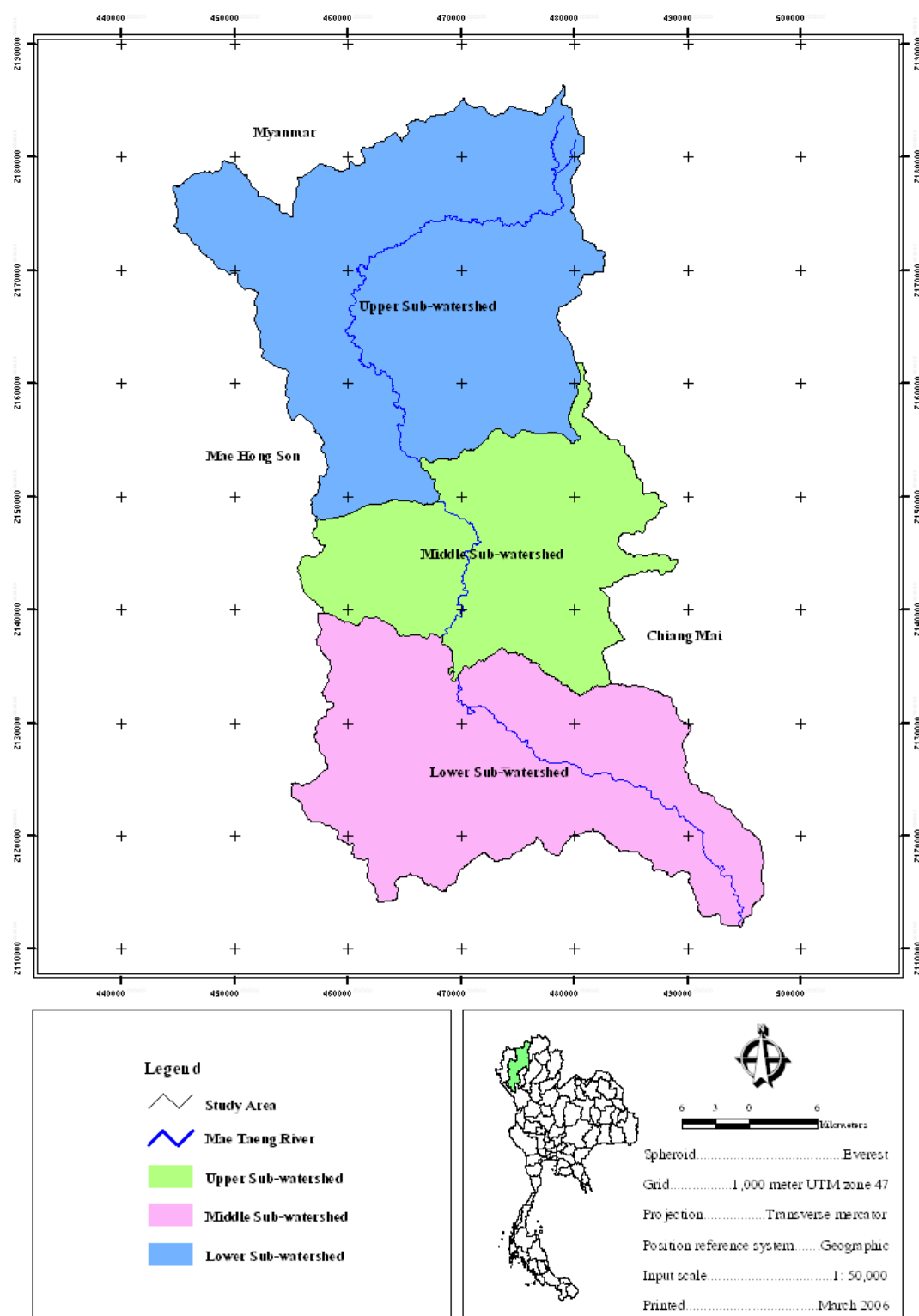
Mae Taeng watershed covers 1,953 square kilometers (Figure 2) in Wiang Haeng District, Chiang Dow District, and Mae Taeng District, Chiang Mai province, the Northern of Thailand. It situates between the latitude 19° 5' -19° 45' N and the longitude 95° 25' -99° 5' E. (Office of Environmental Policy and Planning, 2000). Mae Taeng river is the main river, flows in dominantly north-south direction from its headwaters on an unnamed peak on the Thai-Myanmar border to its confluence with the Ping river, some 35 kilometers north of Chiang Mai. The river is some 120 kilometers in length, falls 1,300 meters and drains an area of approximately 1,953 square kilometers extending between latitude 19° 05' to 19° 45' N and longitude 98° 28' to 99° 00'. It is flanked on the western boundary by the smooth rounded summits of granite mountains such as Doi Chang (1,962 meters msl) and Doi Sam Mun (1,725 meters msl), while the eastern boundary is dominated by the angular, limestone massif of Doi Luang Chiang Dow (2,175 meters msl) the third highest mountain in Thailand. To the east of watershed is the Ping watershed, of which the Mae Taeng is a tributary. At the confluence, the drainage basin of the Mae Taeng is actually larger than of the Ping river (1,916 square kilometers). The Ping river subsequently enters the Chao Phraya river, the main drainage basin of the country, which enters sea in the Gulf of Thailand. The Mae Taeng is hence main headwater tributary to this system. To the west of the Mae Taeng watershed is the Pai river, a tributary to Salween river that enters the sea in Myanmar (Department of Local Administration, 2000).

Three sub-watersheds are classified within Mae Taeng watershed as upper, middle and lower watersheds. The upper watershed is 43 % of total area; consist of Wiang Haeng District and Chiang Dow District. Middle watershed is 24 % of total area, consist of Chiang Dow District. And the lower watershed is 33 % of total area.

### **General Characteristics**

#### **Climate**

The Mae Taeng watershed is within the tropical monsoon zone, with main influences from the southwest monsoon in mid-May to mid-September, the northeast monsoon from mid-February, and from cyclonic storms and inter-tropical fronts. The effects of this are to give a notably seasonal variation in climate with abundant precipitation associated with the southwest monsoon and a relatively dry northeast monsoon. In the spring the transition between these two main influences is marked by a hot dry period as the northeast becomes increasing dominated by tropical influences.



**Figure 2** The study area of Mae Taeng watershed  
Source of data: Department of Environmental Quality Promotion, 2004

### **Topography**

Mae Taeng watershed is characterized as mountainous with high slope. The high mountainous area is about 90 % of the total watershed. The slope is more than 16 %. The elevation of the area is from 340 - 2,200 meters from the mean sea level (Figure 3). The average height of mountain is about 1,000 meters. There are four main valleys and narrow plains close to Mae Taeng river: Baan Kae Noi plain where Baan Kae Noi settled at the beginning of Mae Taeng river, Baan Wiang Hae-Baan Piang Luang is the large plain in Mae Taeng watershed; Baan Lua Muang is located in the middle of Mae Taeng watershed, and a large plain of Mae Taeng district located at the end of Mae Taeng watershed. Each plain has large community settlements and agricultural land are found on these plains where slope range are from 0-35 %.

### **Watershed classification**

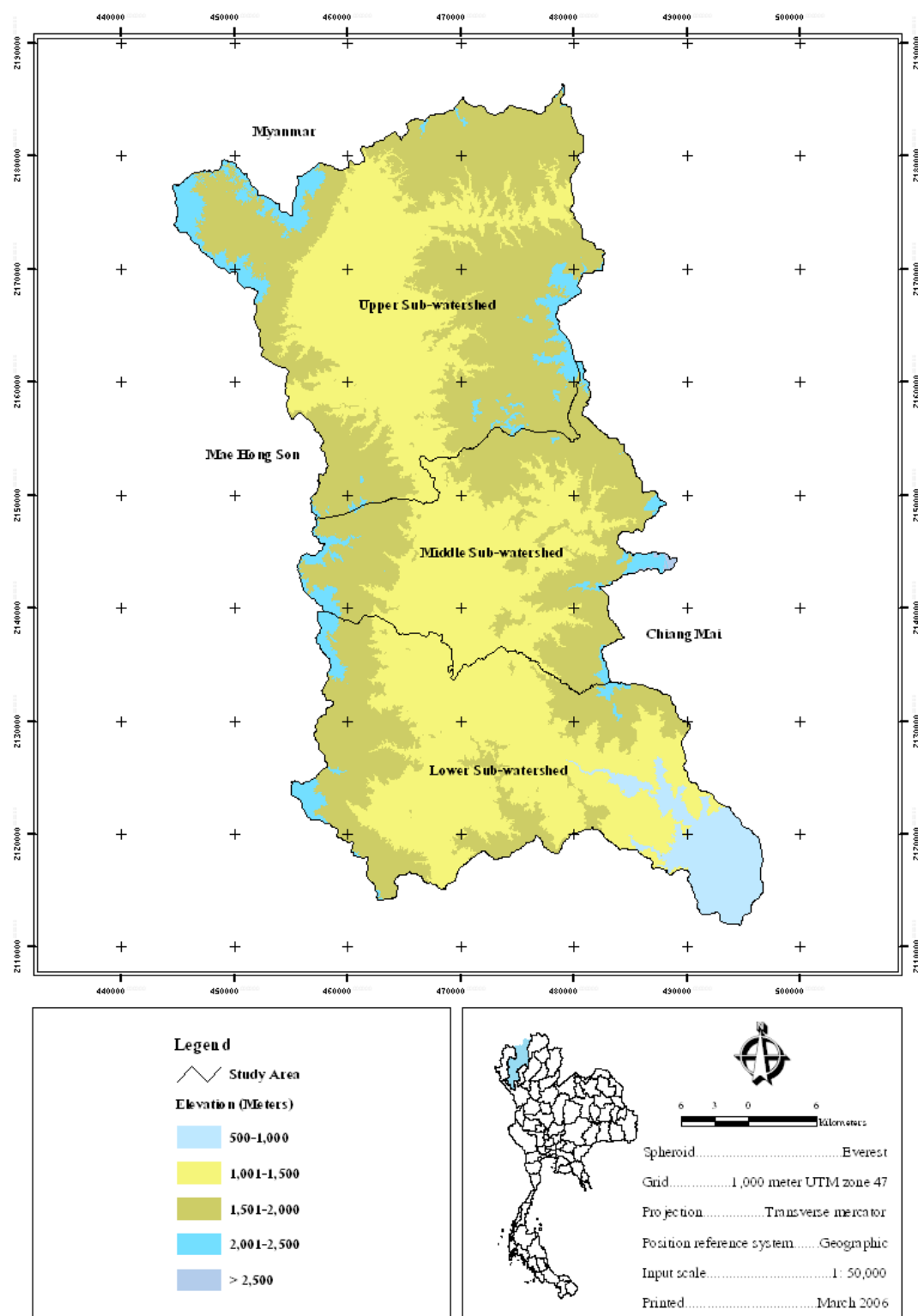
Mae Taeng watershed was classified into 6 classes such as 1A and 1B (protected or conservation forest and headwater source), class 2 (commercial forest), class 3 (fruit-tree plantation), class 4 (upland farming), and class 5 (lowland farming). Most areas are mountainous area covered with class 1A. Lower watershed consist of class 1A more that other sub-watershed (Figure 4).

### **Land Uses**

Most Mae Taeng watershed are covered with forest (77.3 % of total area) under several protected areas such as Doi Chiang Dow Wildlife Sanctuary establish in 1978, Huay Nam Dang National Parks establish in 1995, Mai Pai establish in 1996, and Chiang Dow National Parks establish in 2000. Forest plantation are also found in Mae Taeng watershed (3.07 %). The rest are encroachment land (4.31 %), orchard (1.98 %), paddy field (1.9 %), and settlement areas (1.6 %), respectively (Figure 6).

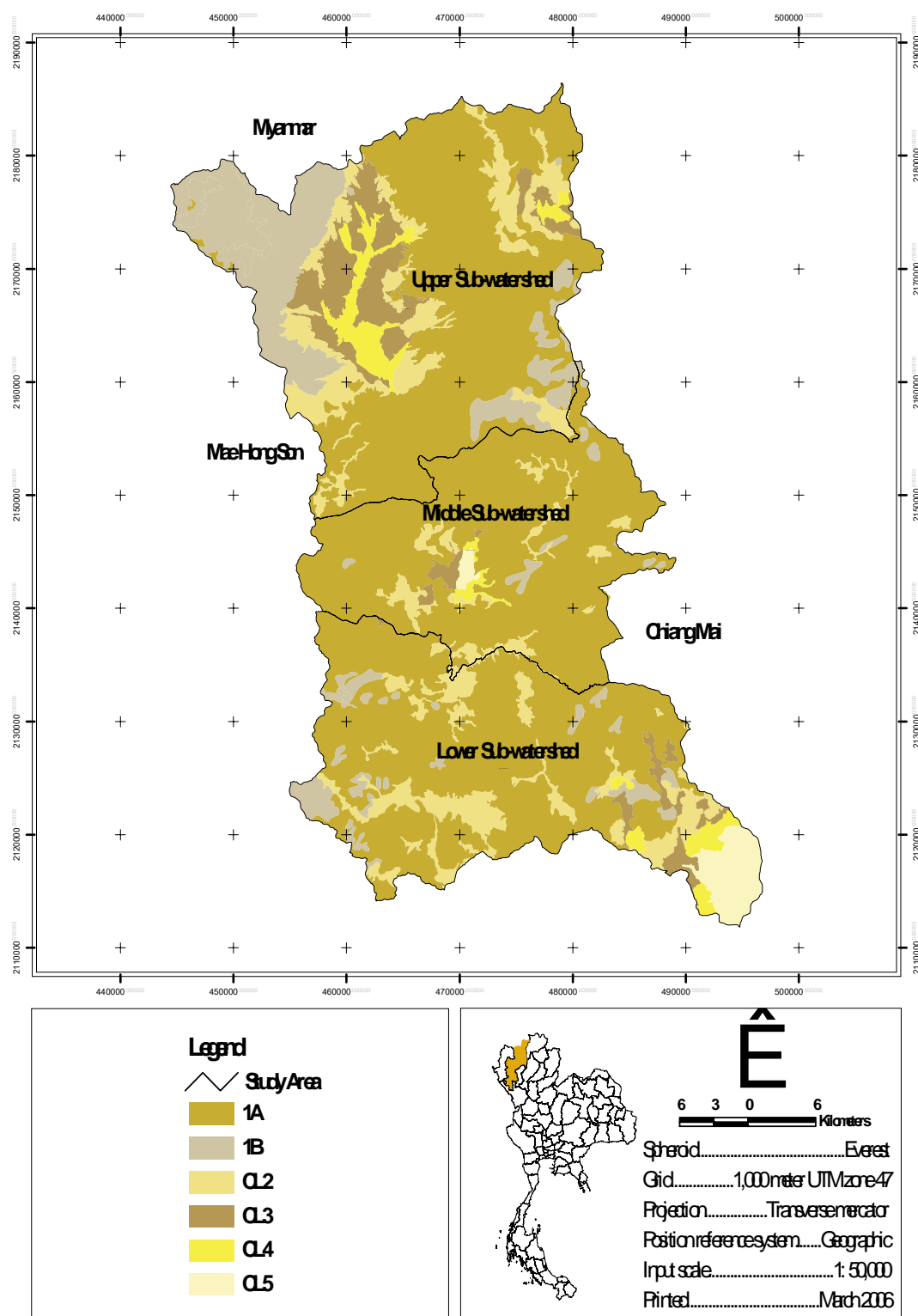
### **Water quality**

In 2000, the Office of Environmental Policy and planning collected surface water from in Mae Taeng river for 2 times, in 6 sample sites and 9 parameters (turbidity, suspended solid, pH, electric load, soluble oxygen, nitrate, phosphate, BOD, coliform bacteria, and fecal coliform bacteria). It found water quality Type III which meant to be useful for consumption but needs some treatment. By law, Mae Taeng river should be quality Type I because its water source is in natural condition and should not need any water treatment.

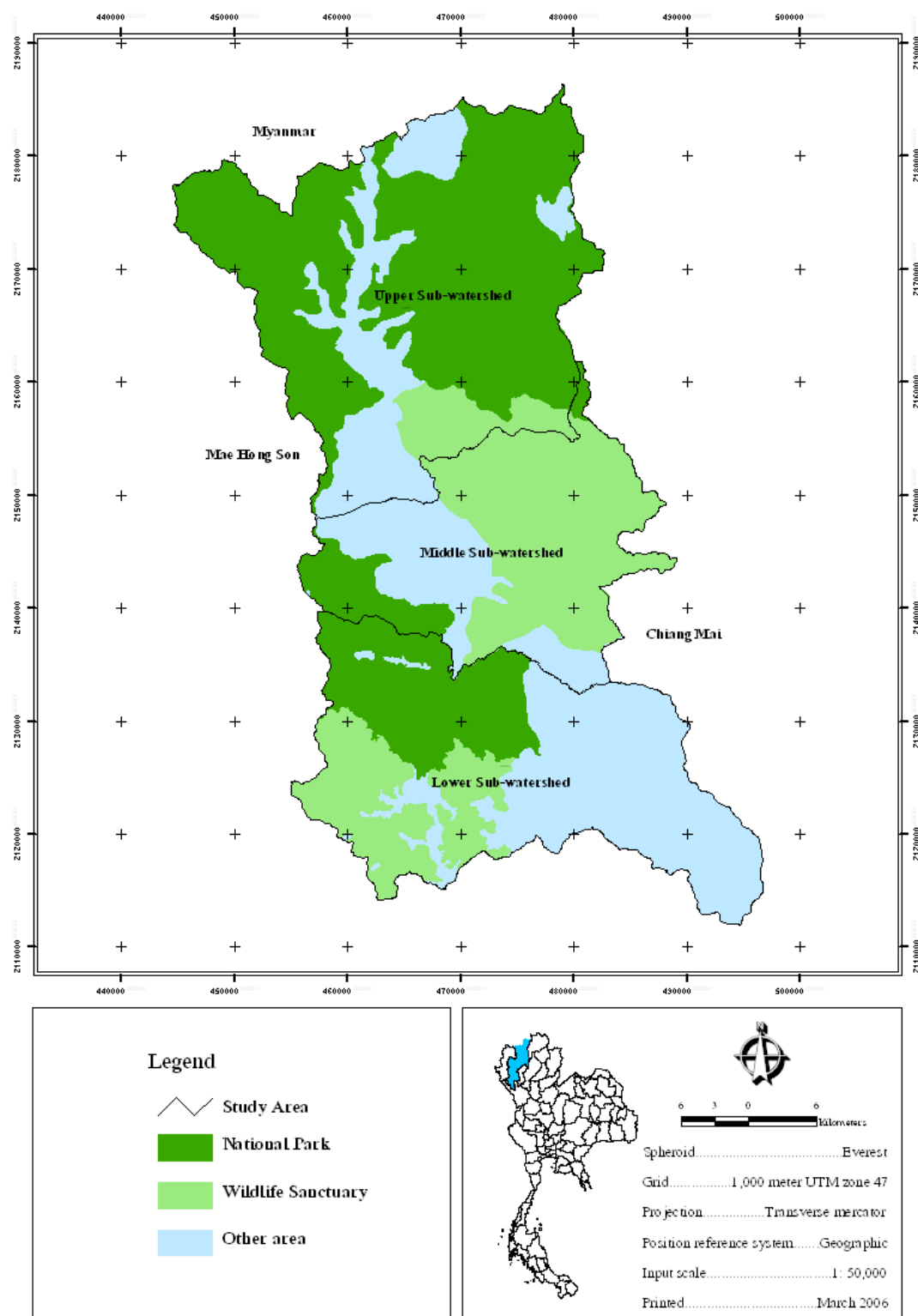


**Figure 3** Elevation of Mae Taeng watershed

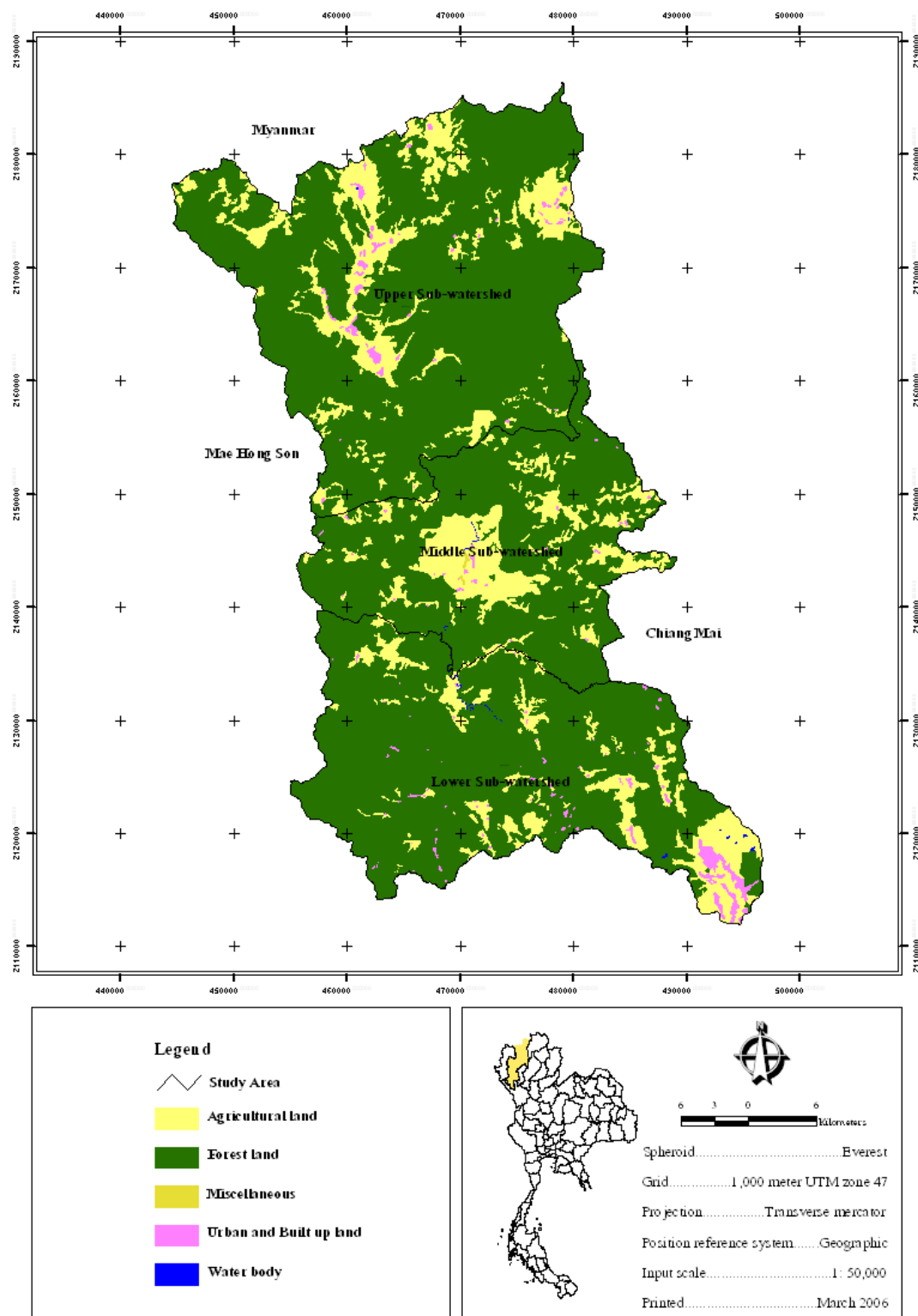
Source of data: Department of Environmental Quality Promotion, 2004



**Figure 4** Watershed classification map of Mae Taeng watershed  
 Source of data: Department of Environmental Quality Promotion, 2004



**Figure 5** Protected area map of Mae Taeng watershed  
Source of data: Department of Environmental Quality Promotion, 2004



**Figure 6** Land Use classification map of Mae Taeng watershed  
 Source of data: Department of Environmental Quality Promotion, 2004

## **Communities**

Mae Taeng Watershed has 7 communities and has been occupied by two major ethnic groups - the lowlanders and highlanders. The lowlanders are mainly northern Thai (Khon Muang) who occupy the fertile valley growing rice with the supply of water from traditional irrigation system (Muang Fai). The highlanders who occupy the upland and highlands are comprised of a variety of minority groups such as Karen, Lisu, Lahu, Hmong, and Yunnanese. Most of the highlander practice shifting cultivation. However, there is a significant number of lowerlander moving into the highlands to become involved in tea production.

### **The Upper watershed**

Upper area consists of 3 SAOs; Muang Haeng sub-district, Saen Hai sub-district and Piang Lung sub-district.

#### **Muang Haeng sub-district**

Muang Haeng is under Wiang Haeng district and covers 11 villages; Ban Mae Haad, Ban Kong Lom, Ban Pa Pai, Ban Wiang Haeng, Ban Huai Hok, Ban Sam Meoun, Ban Na Mon, Ban Pam, Ban Pang Kwai, Ban Kong Lom Yai, and Ban Lao Woo (Lahu). Population size is 7,505 persons (male = 3,892 persons and female = 3,616 persons). Most people work in rice field because the middle of this area is plain good for rice production.

#### **Saen Hai sub-district**

Saen Hai is under Wiang Haeng district and covers 5 villages; Ban San Duang Dee, Ban Sam Poo, Ban Muang Pock, Ban Ma Ha Tat, and Ban Pang Por. Population size is 3,017 persons (male = 1,542 persons and female = 1,475 persons) and most of people are Chan (the people form Chan state in Myanmar). They work in the rice field and grow garlic in dry season.

#### **Piang Lung sub-district**

Piang Lung is under Wiang Haeng district and covers 6 villages; Ban Piang Lung, Ban Jong, Ban Mai Ka Ya Yon, Ban Muang Greur, Ban Hai Kai, and Ban Pak Sam. Population size is 13,426 persons (male = 7,093 persons and female = 6,333 persons). Most people work in rice field and trade goods with Mayanmist because the area is Thailand-Myanmar.

### **The Middle watershed**

Middle area consists of 1 SAO; Muang Kong sub-district.

#### **Muang Kong sub-district**

Muang Haeng is under Chiang Dow district and covers 11 villages; Ban Mae Haad, Ban Kong Lom Ban Ban Ps Pai Ban Wiang Haeng, Ban Huai Hok, Ban Sam Meoun, Ban Na Mon, Ban Pam, Ban Pang Kwai, Ban Kong Lom Yai, and Ban Lao



Woo (Lahu). Population size is 7,505 persons (male = 3,892 persons and female = 3,616 persons). Most people work in rice field.

### **The Lower watershed**

Lower area consists of 3 SAO; Mae Taeng sub-district, Ban Change sub-district and Ban Kut Chang sub-district.

#### **Mae Taeng sub-district**

Mae Taeng is under Mae Taeng district. Population size is 4,238 persons (male = 2,129 persons and female = 2,109 persons). Most people are farmers. The topography is flood plain from Mae Taeng river. This sub-district is near Muang district, Chiang Mai Province about 60 km.

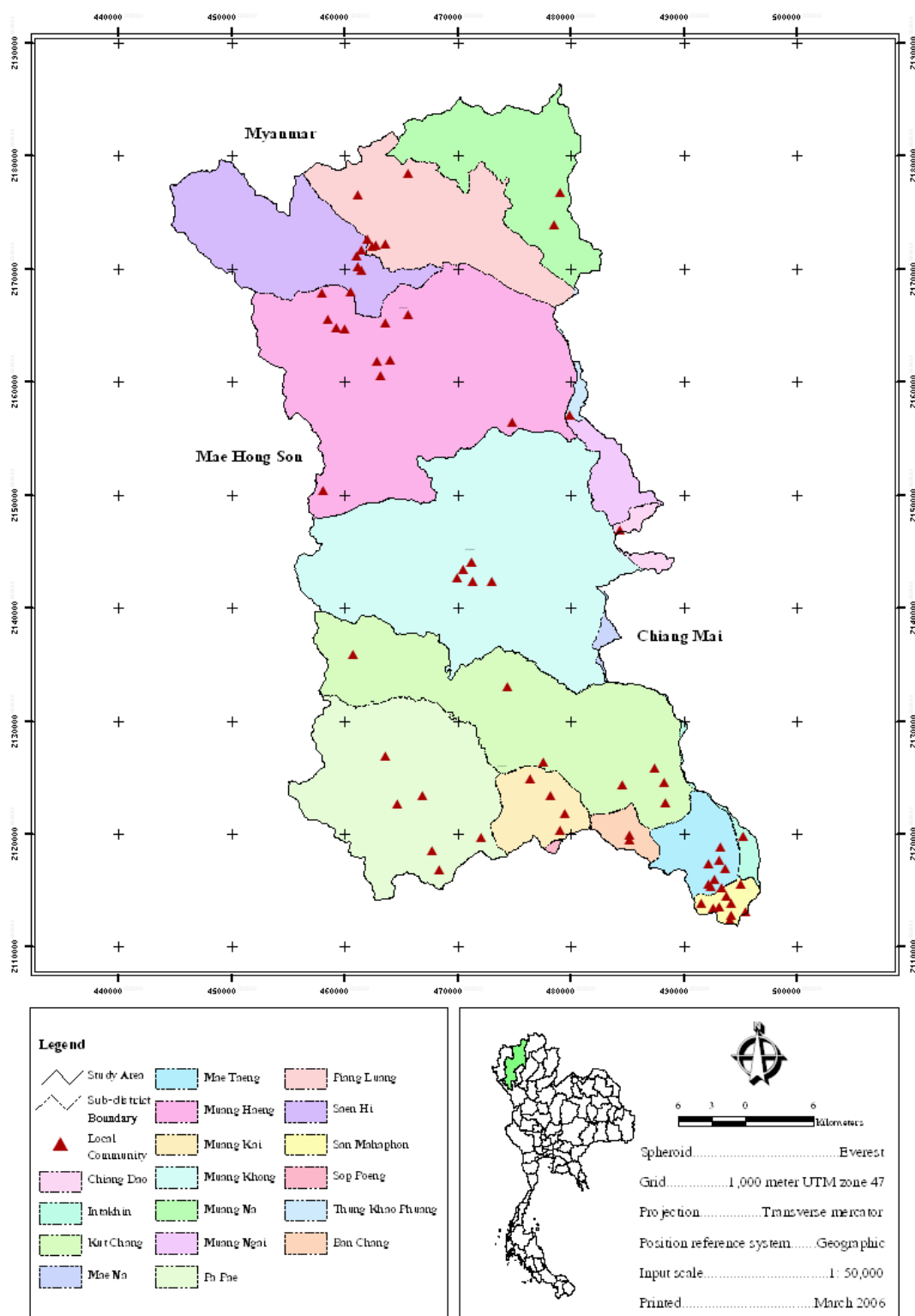
#### **Ban Change sub-district**

Ban Chang is under Mae Taeng district. Ban Chang means the house of people who take care elephants (Chang = elephants). Ban Change cover 5 villages; Ban San Pa Sak, Ban Kao Ma ka, Ban Pang Mai Dang, Ban Ma Ha Tat, and Ban Pang Por. Population size is 2,431 persons (male = 1,730 persons and female = 1,701 persons). Most of people are employee and farmer.

#### **Ban Kut Chang sub-district**

Ban Kut Chang is under Mae Taeng district. Ban Kut Chang covers 7 villages; Ban Muang Kut, Ban Mae Ta Mann, Ban Sop Guy, Ban Ton Kam, Ban Hui Nam Dung, Ban Thung La Kon, and Ban Pa Kao Lam. Population size is 4,097 persons (male = 1,992 persons and female = 2,105 persons) most of people are employee and farmer.

Figure 7 shows the distribution of local community within Mae Taeng watershed.



**Figure 7** Distribution of local community within Mae Taeng watershed, Chiang Mai province

Source of data: Department of Environmental Quality Promotion, 2004