

Estimating of groundwater use in the Nam Panai watershed

Activities of Internship and Bachelor Thesis

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Overview

Groundwater use survey from four villages in the Nam Panai watershed:

1. Objective of the survey

2. Methodology

- Selecting Villages and information for the survey
- Questionnaire for interview

3. Result of the survey

- Analysis (database) on data collected from the survey

4. Additional activities during this internship

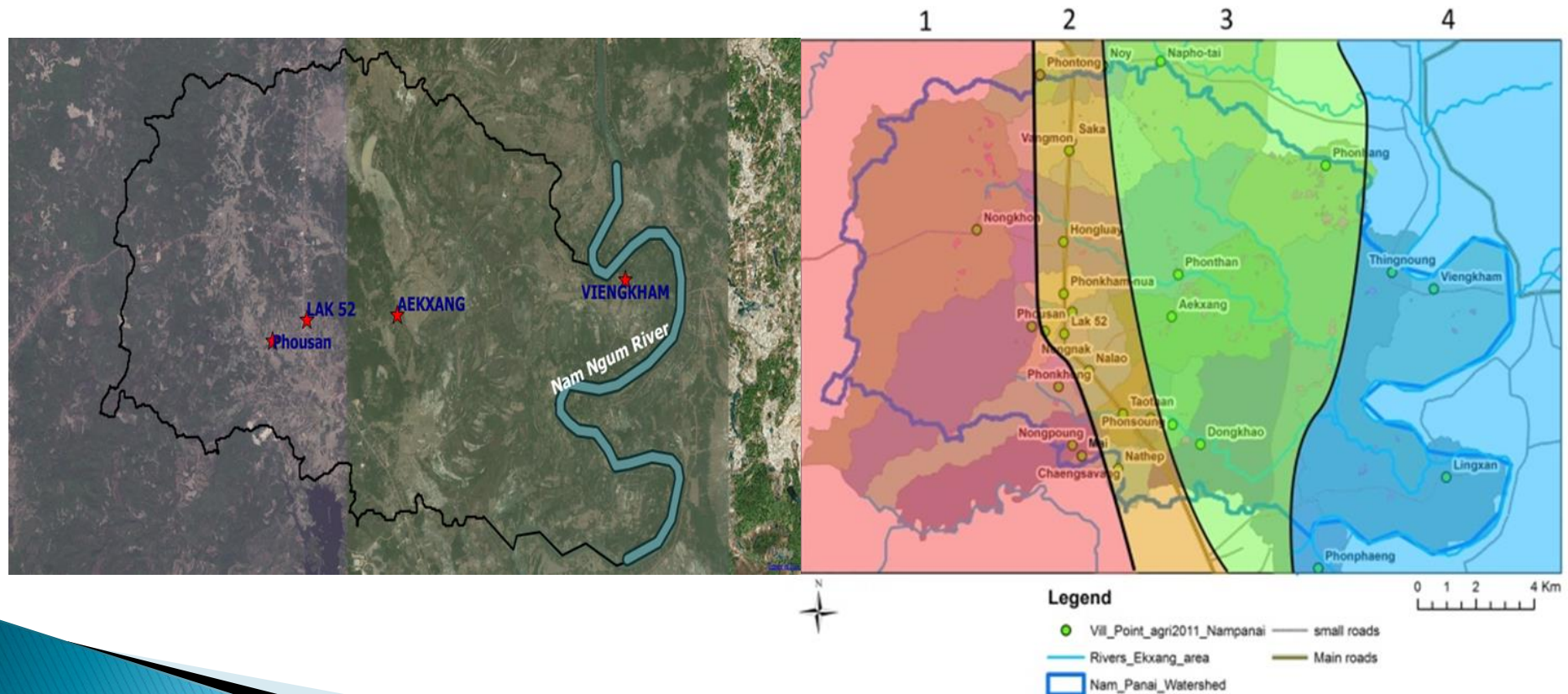
- Pumping test in Ekxang village
- Mapping irrigated area in Nam Panai watershed

5. Actions have to be taken for Bachelor Thesis

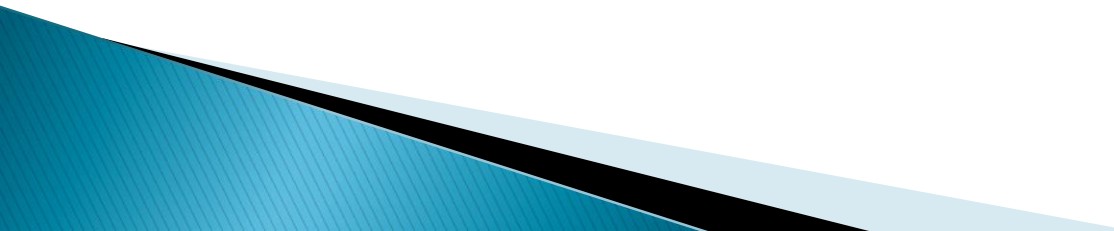
1. Objective of the survey

2. Methodology

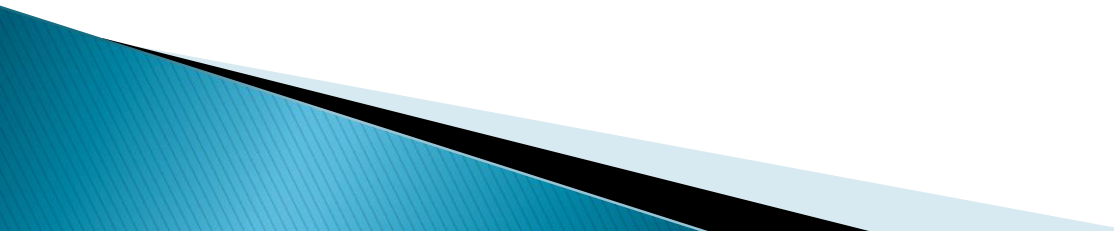
- Selecting Village for the survey and information of the Villages



- Questionnaire of Interview

1. Personal details
 2. Source of water
 3. Boreholes and pump information
 4. Groundwater abstraction
 5. Garden use
 6. Animal keeping
 7. Farming use–crops irrigation
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3. Results of the survey

- Analysis (Database) on data collected from the survey
 - The average depth of the well for each Village
 - Extrapolated use of the groundwater per person of the four villages
 - Estimating total use of the groundwater for each village
 - Difference of the groundwater use between these Villages (Drinking/cooking/washing, watering animals, watering crops).
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4. Additional activities during this internship

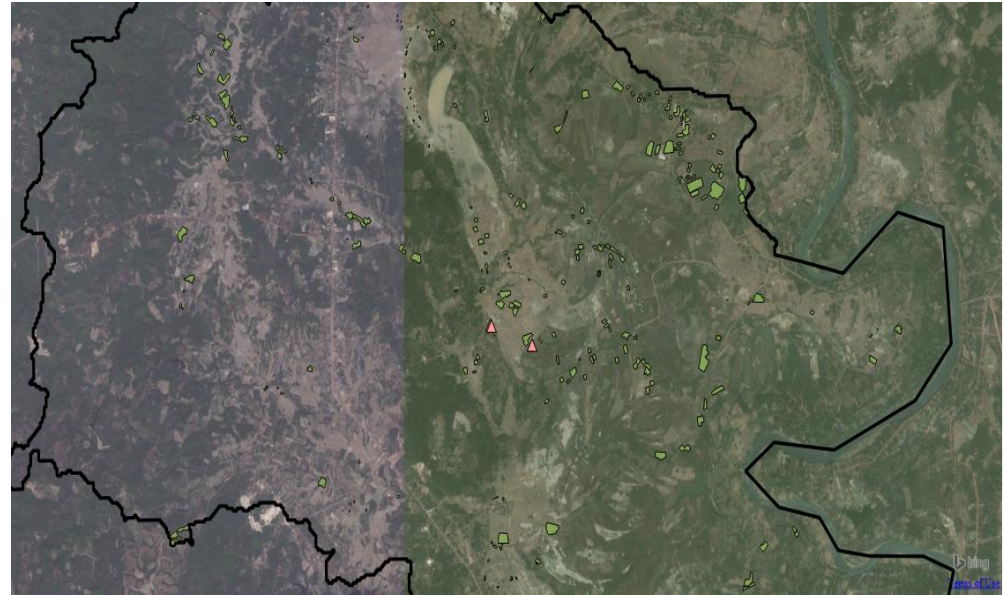
□ Pumping test

Assisting for a pumping test in Ekxang Village, about 50km North from Vientiane Capital.

This pumping test aim to estimate the hydraulic conductivity of the aquifer.



- Mapping irrigated area in the Nam Panai watershed
 - ▶ Using satellite imagery and QGIS software
 - ▶ Total 246 ha are irrigated. Only 1.1 % of watershed surface.
 - ▶ Result used for Water Balance.



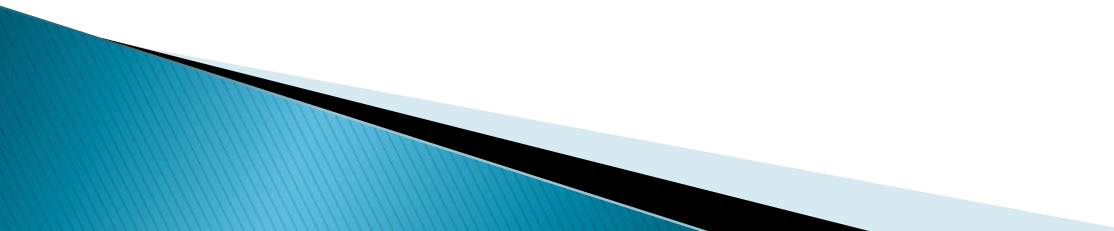
(Result of mapping the irrigated area)

5. Actions have to be taken for Bachelor Thesis

Today, ongoing work continuing from the previous work, within a similar topic: “Estimating on Groundwater Use from 4 Villages in Phonhong District, Vientiane Province”

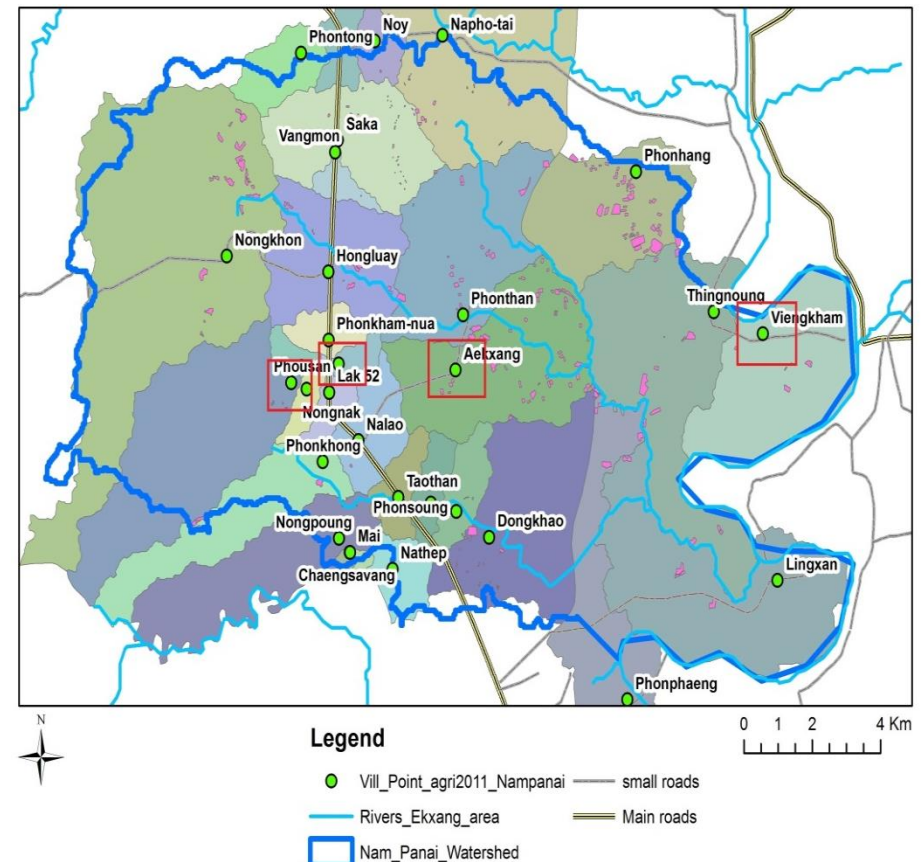
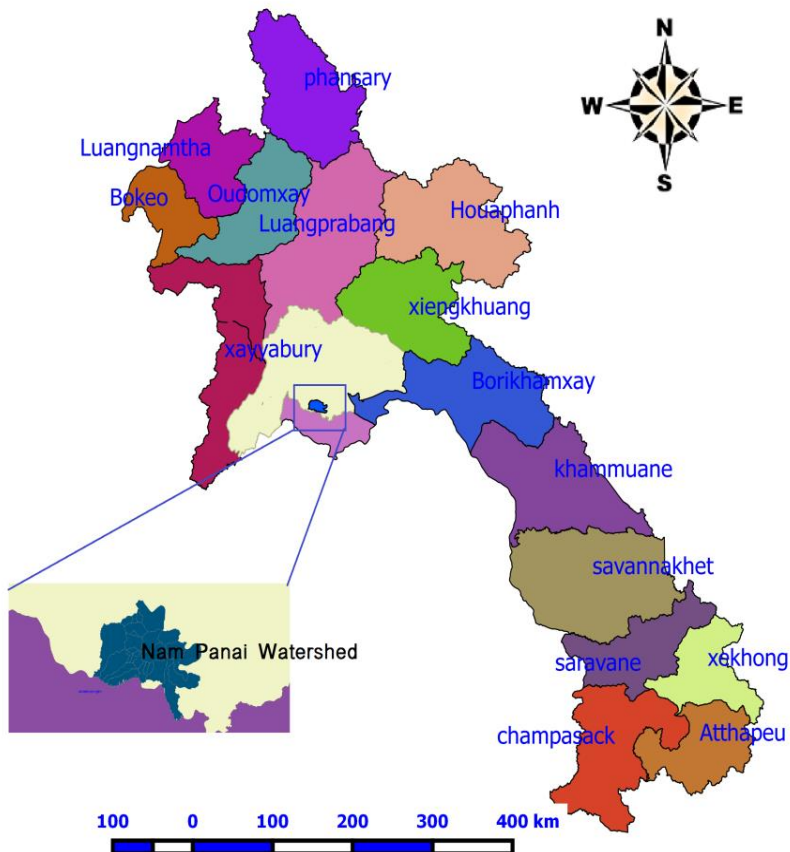
I. Objectives:

The objectives of this research are as follows:

1. To quantify the amount (volume) of groundwater that is used by villagers from each of the 4 villages in Phonhong District, Vientiane Province.
 2. To understand the environmental issues/negative impacts that may result from the over-pumping of groundwater.
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II. Study Sites:

This study will take place in the same 4 target villages located on the Vientiane Plains: Ekxang, Lak 52, Phousan, and Viengkham village of Phonhong district, Vientiane province. (look at maps below)



III. Methodology

10 households for each village will select for the survey which uses groundwater for different activities, such as: domestic use, livestock, crops and irrigation.

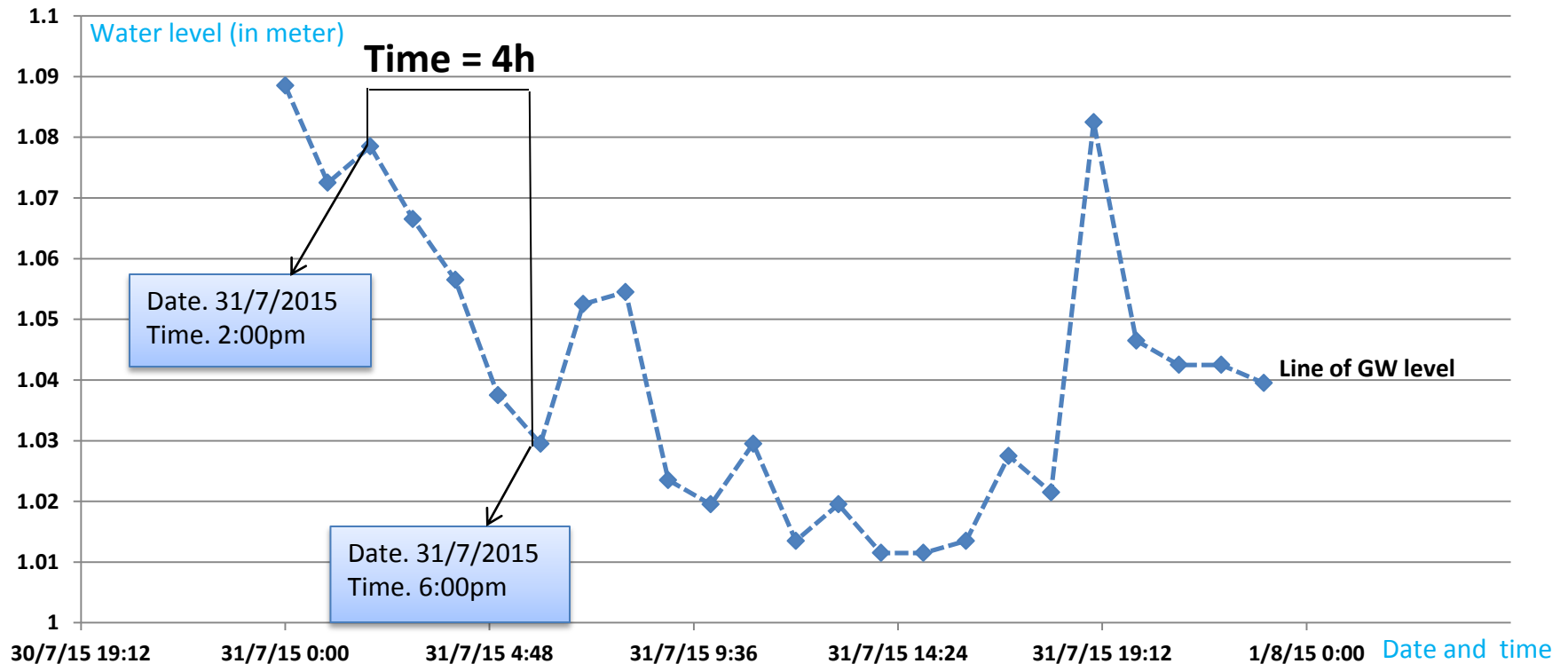
Groundwater Use will be estimated in each of the four villages by using methods as following:

- Questionnaire to interview villagers
- Measuring duration of pumping by using the logger (by recording water level variable during pumping)
- Using Water Counter to measure the amount of GW use.



III. Methodology:

An example of data analysis on Water level logger equipment



$$Q \text{ (quantity)} = t \text{ (time)} \times v \text{ (velocity)}$$

T (time) get from analysis on water level

V (velocity) get from hand measurement by using bucket

A scenic landscape featuring a vast, green field in the foreground, dotted with small yellow wildflowers. In the middle ground, a line of trees with varying shades of green and some brown foliage stretches across the horizon. The sky above is a clear, vibrant blue, filled with soft, white, fluffy clouds. The overall atmosphere is peaceful and natural.

Thanks for your attention