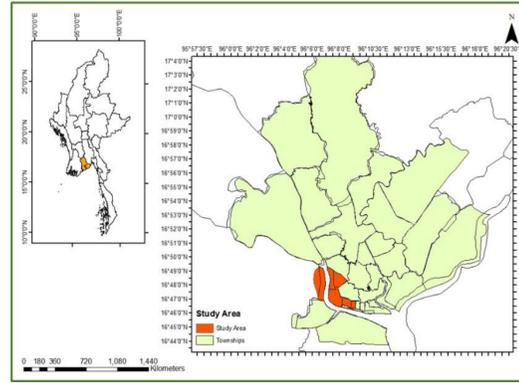




## Introduction

Groundwater is a renewable and invisible resource and it is needed to be sustainably managed and it plays an important role in the social and economic growth of a country. In the absence of fresh water resources, groundwater is exploited to meet the demand exerted by various sectors. As in other urban areas of the world, the development of economic activities and the growth of population in Yangon city have led to the increased exploitation of natural resources including water. In Yangon where almost 10% of the total population of the country is living, YCDC's served population is about 39% in the year of 2015/2016 field surveys. Since the water supplied by YCDC is about 39% and the left 61% have to rely on groundwater, lakes and rivers. Most of the residents rely on their private tube wells and therefore the number of authorized or unauthorized tube wells tapping into groundwater is increasing. This would lead excessive use of groundwater which can result groundwater quality degradation through salt water/ sea water intrusion due to depletion of groundwater table. It is therefore necessary to have a detailed knowledge on the groundwater resource of Yangon city.

## Case Study Area



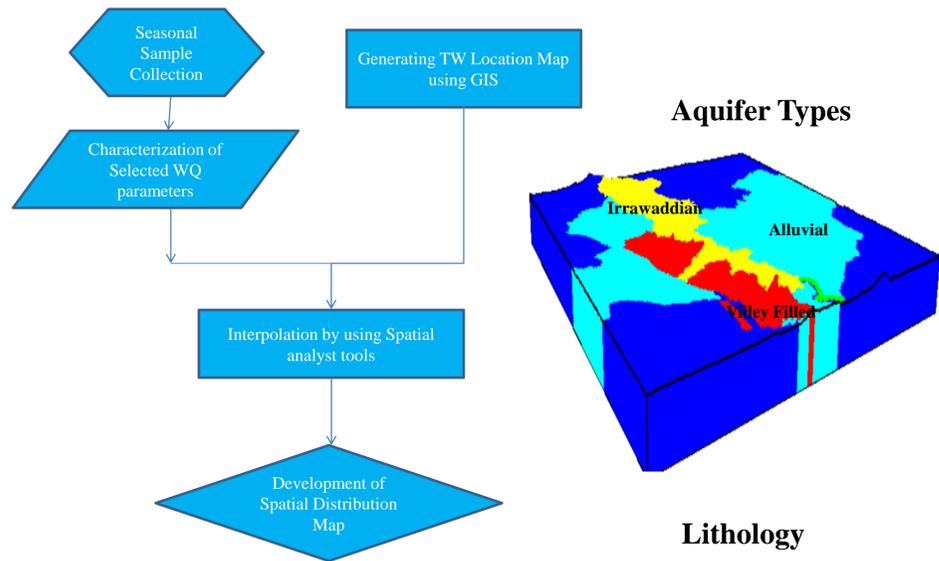
## Current Water Sources that supply Yangon

Gyobu Reservoir	27 MGD
Phugyi Reservoir	54 MGD
Hlawga Reservoir	14 MGD
Ngamoeyik WTP (1st phase)	45 MGD
Ngamoeyik WTP (2nd phase)	45 MGD
<b>YCDC Tube Wells (425 nos.)</b>	<b>16 MGD</b>
<b>Total Water Supply Capacity</b>	<b>201 MGD</b>

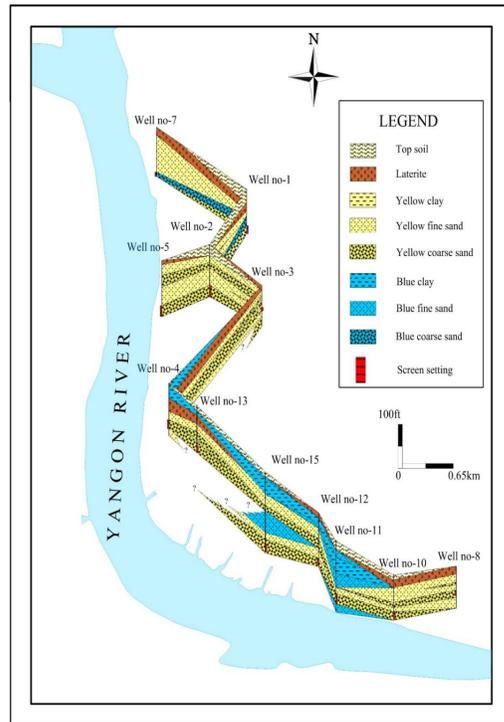
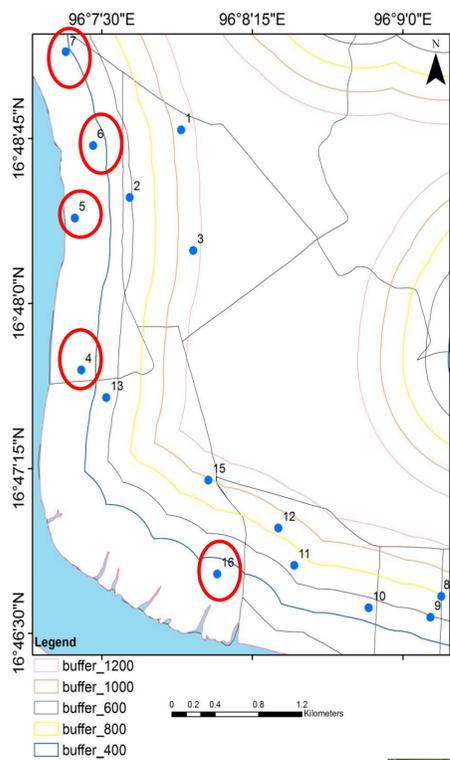
**Main Water Sources**  
Surface water (92%)  
Groundwater ( 8%)

**Private tube wells with no statistics**

## Methodology



## Data Collection



## Water Sample Collection in the field

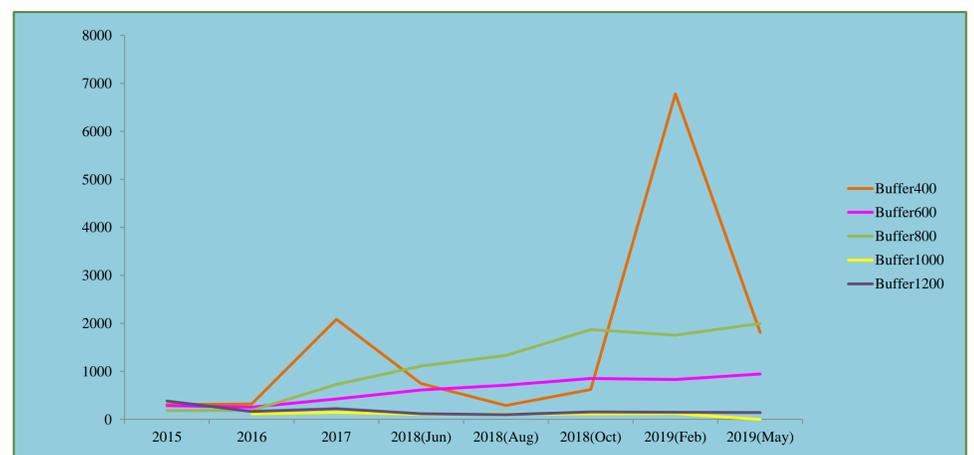
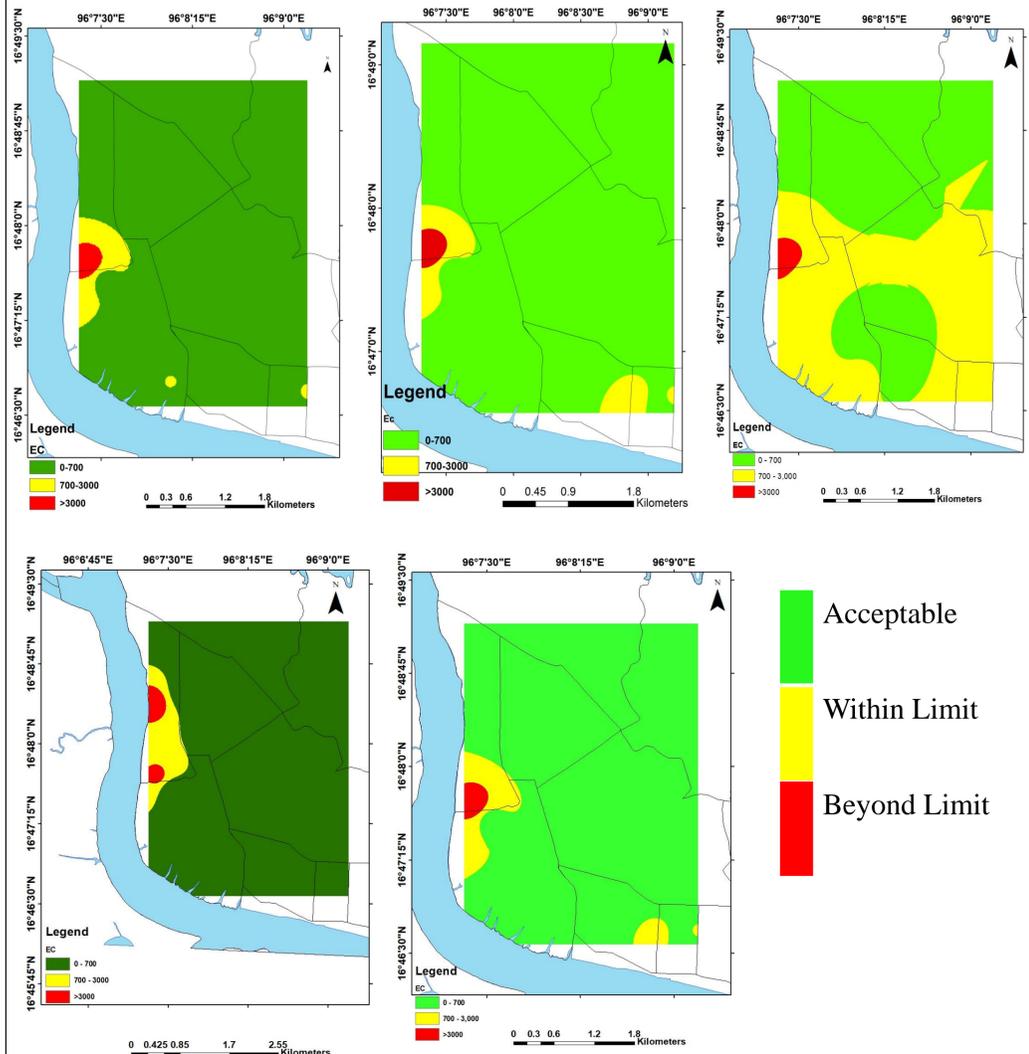


Parameters	WHO Guidelines	IS-10500:2012 Guidelines	Unit
pH	6.5-8.5	6.5 to 8.5	-
TDS	1000	500-2000	(mg/l)
EC	1500	700-3000	(µS/cm)
Turbidity	5	1-5	(NTU)
Iron	0.3	0.3	(mg/l)
Chloride	250	250-1000	(mg/l)
Total Hardness	500	200-600	(mg/l)
Total Alkalinity	250	200-600	(mg/l)

## Lab Experiment



## Result and Discussion



## Conclusions

- Among the YCDC tube wells in the selected townships, 15 tube wells are selected according to the Yangon River which has a tidal effect. The distance from the river can be grouped into five buffer lines: 400,600, 800, 1000 and 1200 Buffer from the river.
- Based on the historical data and current sample data shows an increase in EC along the buffer lines.
- The most significant line is Buffer 400, which is near the tidal river, Yangon River.
- Based on the **EC, Cl and Salinity** results, it can be seen that **depletion of groundwater table** occurs in the study area.

## Recommendations

- Groundwater Extraction should be controlled in the areas where vulnerability to sea water intrusion occurs.
- More water quality parameters should be tested for domestic uses as this research tested 9 parameters for salt water intrusion especially.