

**PROJECT REPORT**

**DETERMINATION OF SOIL PROPERTIES OF WAPDA  
COLONY (TARU JABBA) AND MAPPING THROUGH  
QGIS.**

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## INTRODUCTION:

Taru jabba WAPDA housing society is located at GT road, district Nowshera. It has almost 900 houses, parks, mosques, clinics, primary schools and commercial area. It is well planned town and easily accessible as it is on main road to main city Peshawar. But the main problem is that the water table is very low in this town area, because in past the area was lowland region saturated with water, swamps and marshes. Because of the still water the soil become cohesive clayey soil occurs in arid climate. people are constructing houses, but they are facing different problems regarding their foundation construction.

- **EXPERIMENTS**

1. Liquid limit
2. Plastic limit
3. Unconfined compression test
4. Standard proctor test.

### **Aims and Objectives**

- The objective of this study is to identify that what are the engineering properties of that soil, of different phases.
- And to map the identified spots using GIS and also to perform different analytical tools of GIS.

## Literature Review

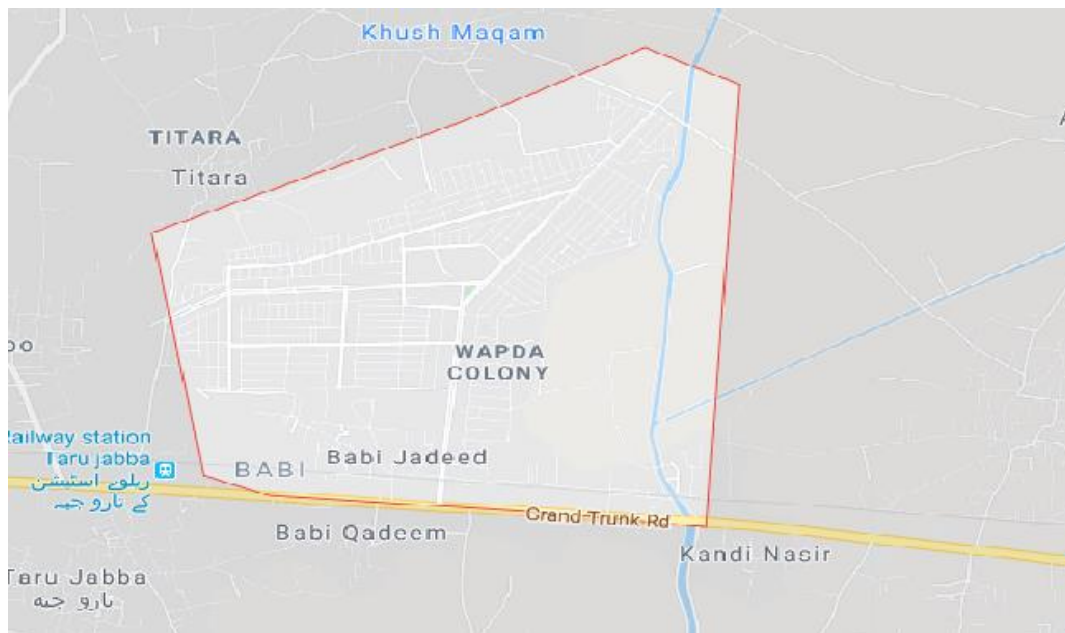
Different research papers were studied and researchers in different countries analyzed the soil properties according to their methodology.

## . Methodology

### 1. Site Selection:

The site was WAPDA colony district Nowshera , I collected differ soil sample of different phases of the colony and performs test on it.

The Map of the coloney is show below:



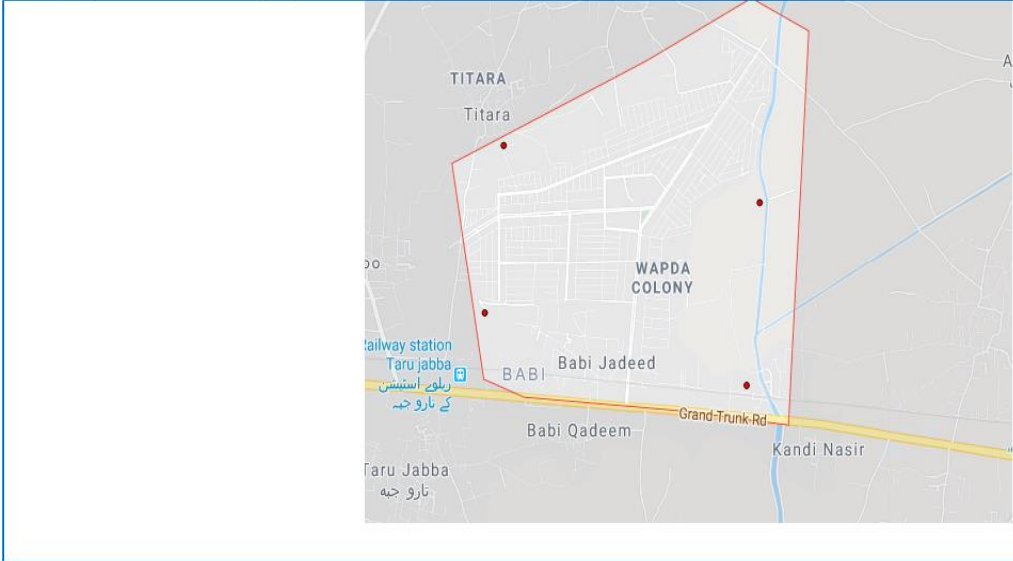


### 3. DATA ANALYSIS:

#### ❖ Georeferencing

Georeferencer - Capture without points.PNG

File Edit View Settings Help



on/off id srcX srcY dstX dstY dx[pixels] dy[pixels] residual[pixels]

on/off	id	srcX	srcY	dstX	dstY	dx[pixels]	dy[pixels]	residual[pixels]
✘	0	369.90	-188.43	71.75	34.03	0.00	0.00	0.00
✘	1	111.63	-275.12	71.73	34.02	0.00	0.00	0.00
✘	2	129.36	-143.45	71.73	34.03	0.00	0.00	0.00
✘	3	357.62	-332.25	71.75	34.02	0.00	0.00	0.00

GCP table

## ❖ Loading CSV file in GIS

QGIS 2.8.6-Wien

Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Help

Layers

- wapda map modified throu...
- Capture without points

Create a Layer from a Delimited Text File

File Name: E:/GIS/7700 gis/CSV (2).csv

Layer name: CSV (2) Encoding: UTF-8

File format:  CSV (comma separated values)  Custom delimiters  Regular expression delimiter

Record options: Number of header lines to discard: 0  First record has field names

Field options:  Trim fields  Discard empty fields  Decimal separator is comma

Geometry definition:  Point coordinates  Well known text (WKT)  No geometry (attribute only table)

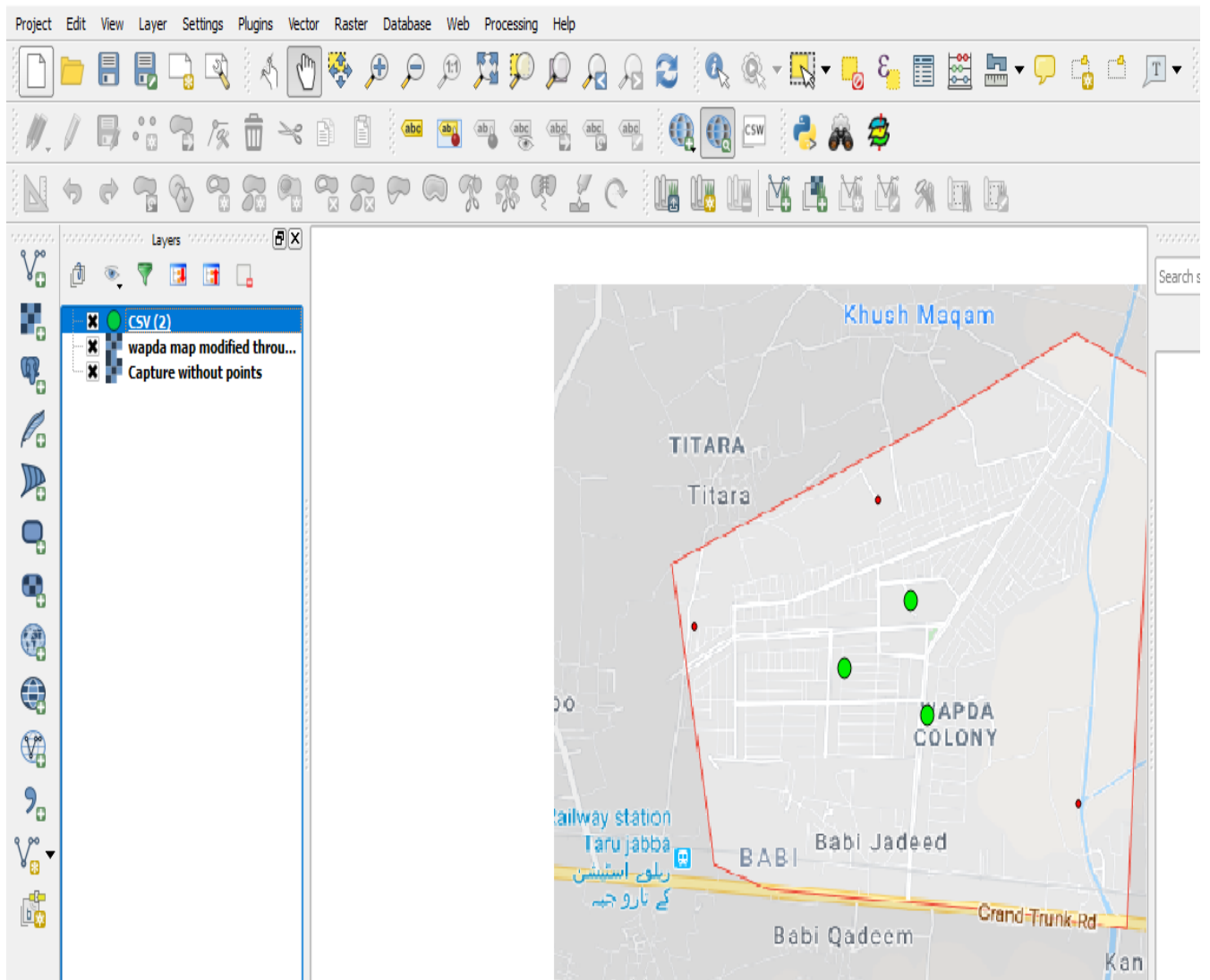
X field: easting Y field: northing  DMS coordinates

Layer settings:  Use spatial index  Use subset index  Watch file

	northing	easting	liquid limit	plastic limit	confined strenght	undrained shear strenght	elas
1	34.02247	71.742	41.30%	19.20%	52.9KPa	26.5kpa	949.2
2	34.02431	71.737	40.11%	19.10%	52.7KPa	26.1kpa	949.2
3	34.027	71.741	41.01%	19.12%	52.6kpa	26.3kpa	949.2

Map labels: Khush Maqam, TITARA, Titara, WAPDA COLONY, Babi Jadeed, Babi Qadeem, Grand-Trunk Rd, Kan

## ❖ POINTS OF SAMPLE COLLECTION IN GIS:



## ❖ ATTRIBUTE TABLE :

QGIS 2.8.6-Wien

Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Help

Layers

- CSV (2)
- wapda map modified throu...
- Capture without points

Attribute table - CSV (2) :: Features total: 3, filtered: 3, selected: 0

	northing	easting	liquid limit	plastic limit	confined strength	trained strength
0	34.02247	71.742	41.30%	19.20%	52.9kPa	26.5kpa
1	34.02431	71.737	40.11%	19.10%	52.7kPa	26.1kpa
2	34.027	71.741	41.01%	19.12%	52.6kpa	26.3kpa

Show All Features



## ❖ BASIC STATISTICS :

QGIS 2.8.6-Wien

Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Help

Input Vector Layer: CSV (2)

Use only selected features

Target field: northing

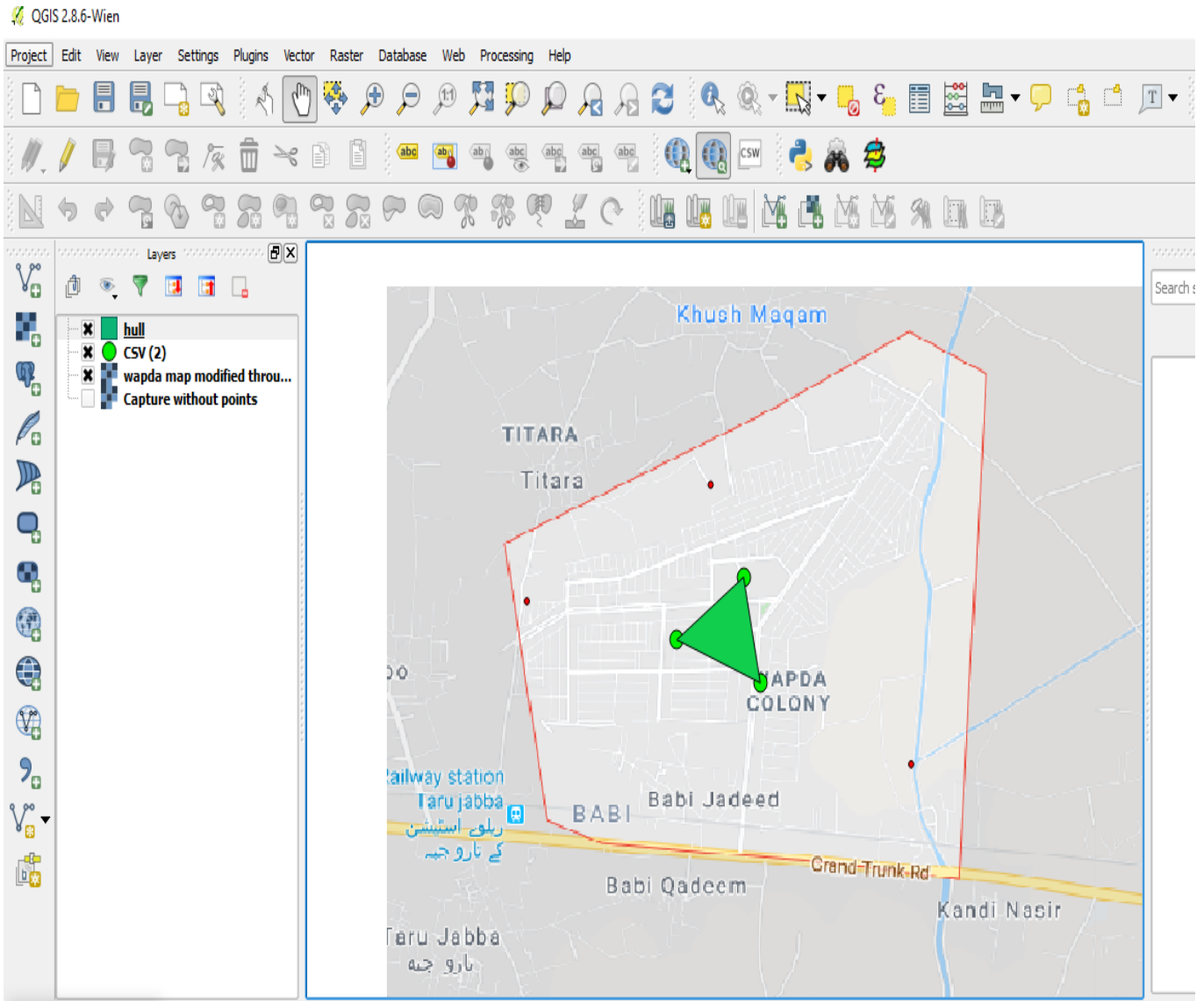
Statistics output

Parameter	Value
Mean	34.0245933333
StdDev	0.00186018517597
Sum	102.07378
Min	34.02247
Max	34.027
N	3.0
CV	5.46717827821e-05
Number of unique values	3
Range	0.00453
Median	34.02431

Press Ctrl+C to copy results to the clipboard

0% OK Close

## ❖ CONVEX HULL:



## ❖ NEAREST NEIGHBOURING POINTS:

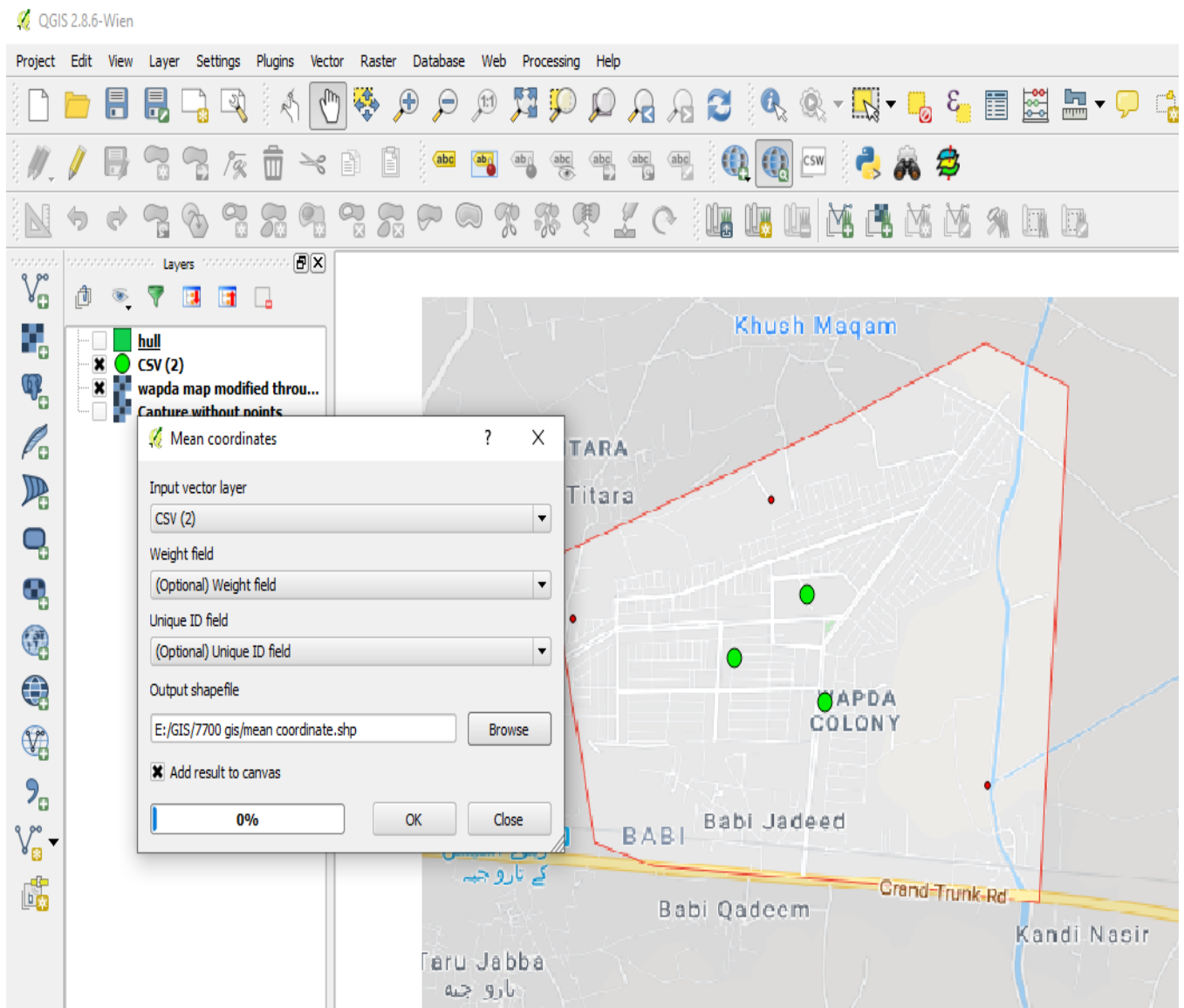
The screenshot displays the QGIS desktop environment. The main map shows a street grid with labels for 'Khush Maqam', 'WAPDA COLONY', 'Babi Jadeed', 'Babi Qadeem', 'Grand Trunk Rd', and 'Kandi Nasir'. A red dashed line outlines a specific area within the colony. Two green circular markers are placed on the map, representing the input points for the analysis. A dialog box titled 'Nearest neighbour analysis' is open in the foreground, showing the following statistics:

Parameter	Value
Observed mean distance	0.0046995028709
Expected mean distance	0.00137386316641
Nearest neighbour index	3.42064842105
N	3
Z-Score	8.02090230433

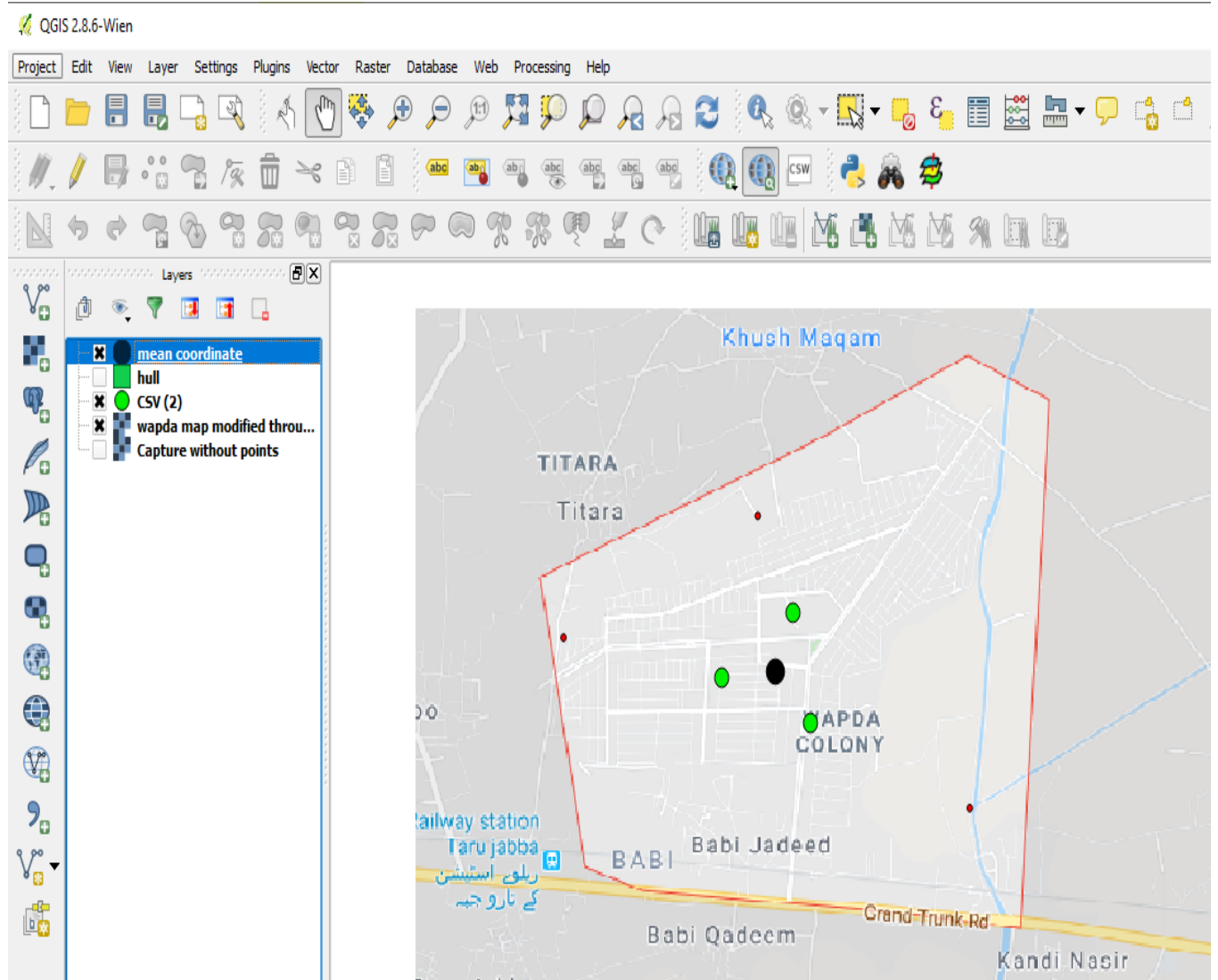
The dialog box also includes an 'Input Vector Layer' dropdown set to 'CSV (2)', a progress bar at 0%, and 'OK' and 'Close' buttons. The Layers panel on the left shows the following layers: 'hull', 'CSV (2)', 'wapda map modified throu...', and 'Capture without points'.

## ❖ MEAN CO ORDINATE:

1.



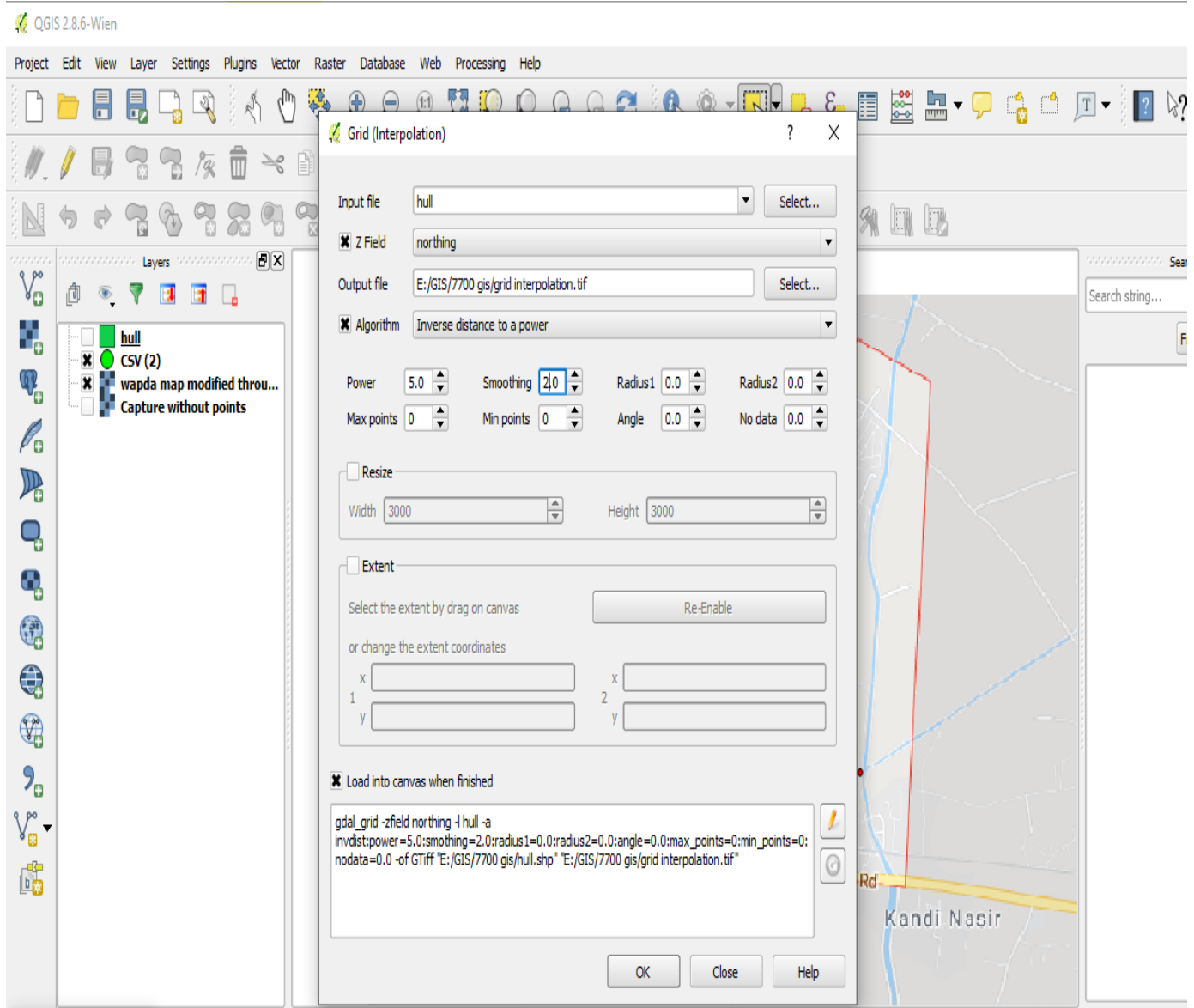
2.



BLACK MARK SHOWS THE MEAN POINT.

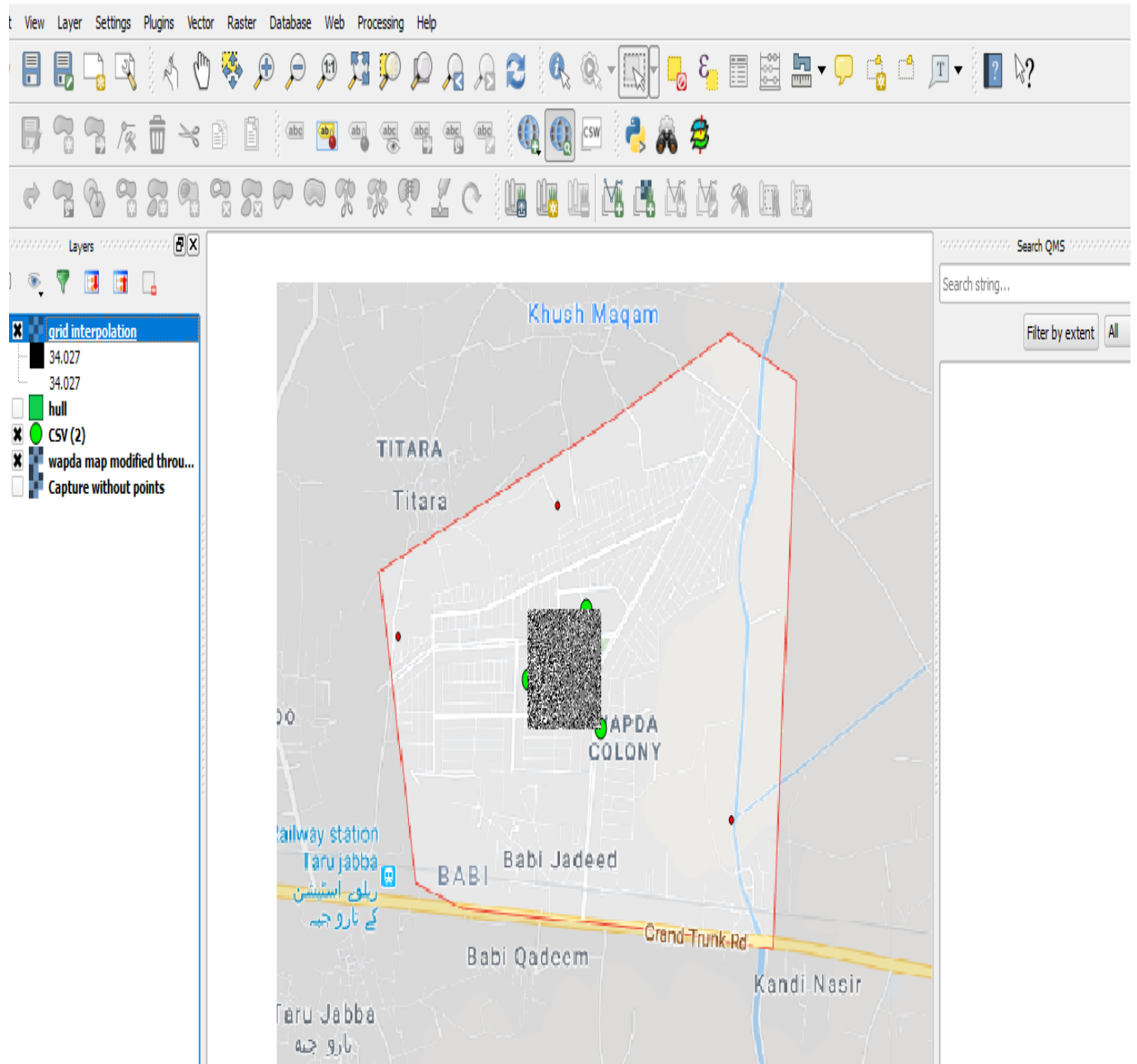
# ❖ GRID INTERPOLATION:

## 1.

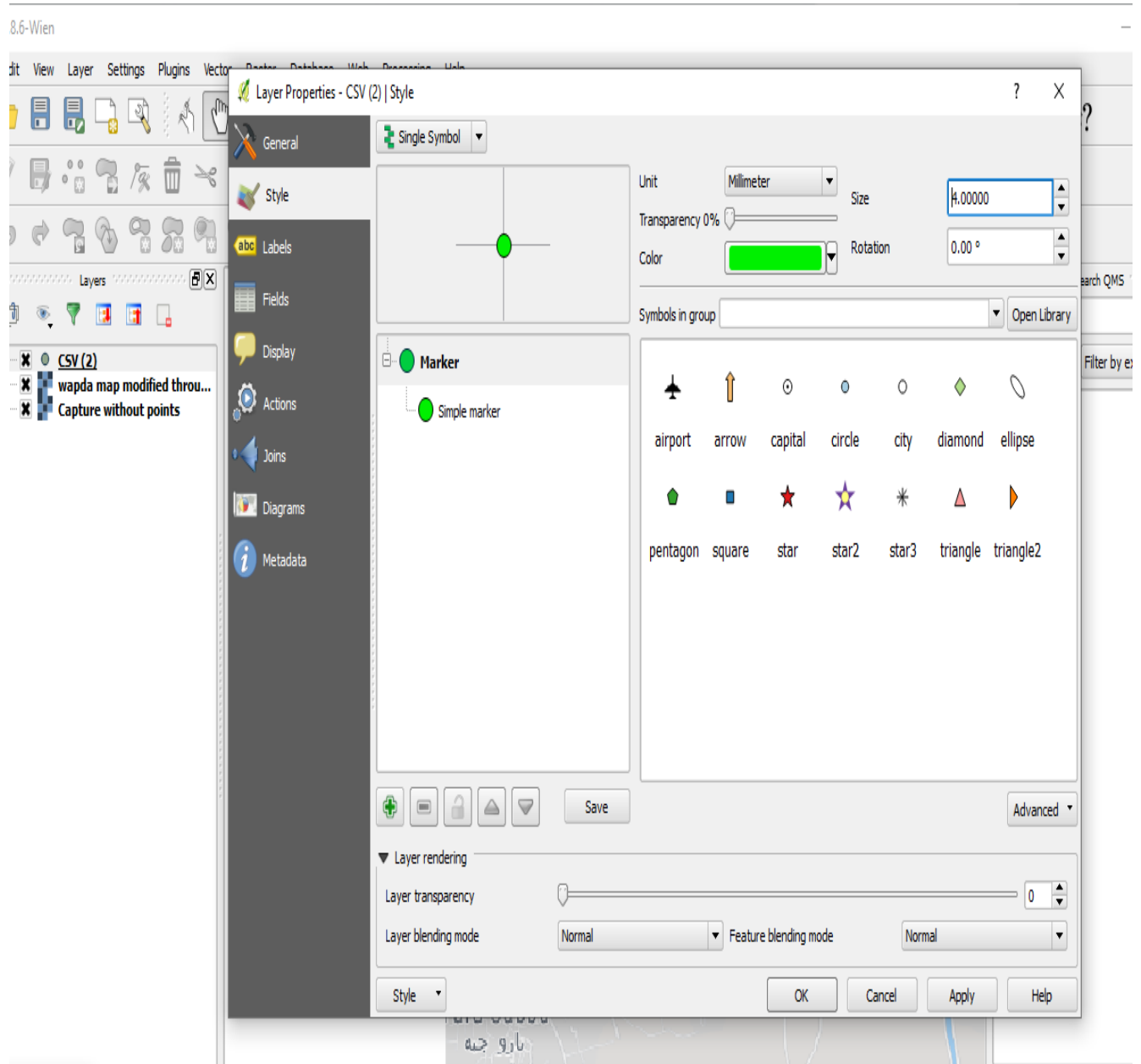


## 2.

QGIS



## ❖ STYLING:





## **Conclusion:**

- Different test were performed on soil to determine the engineering properties of soil of wapda colony's different phases, and mapped on qgis.