

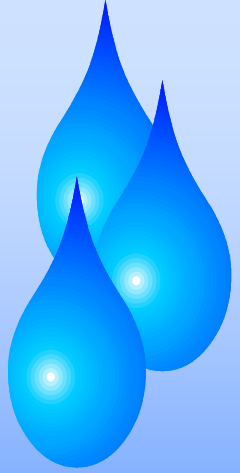
DACCAAR IDMS

and GIS

functionality

11 November, 2013

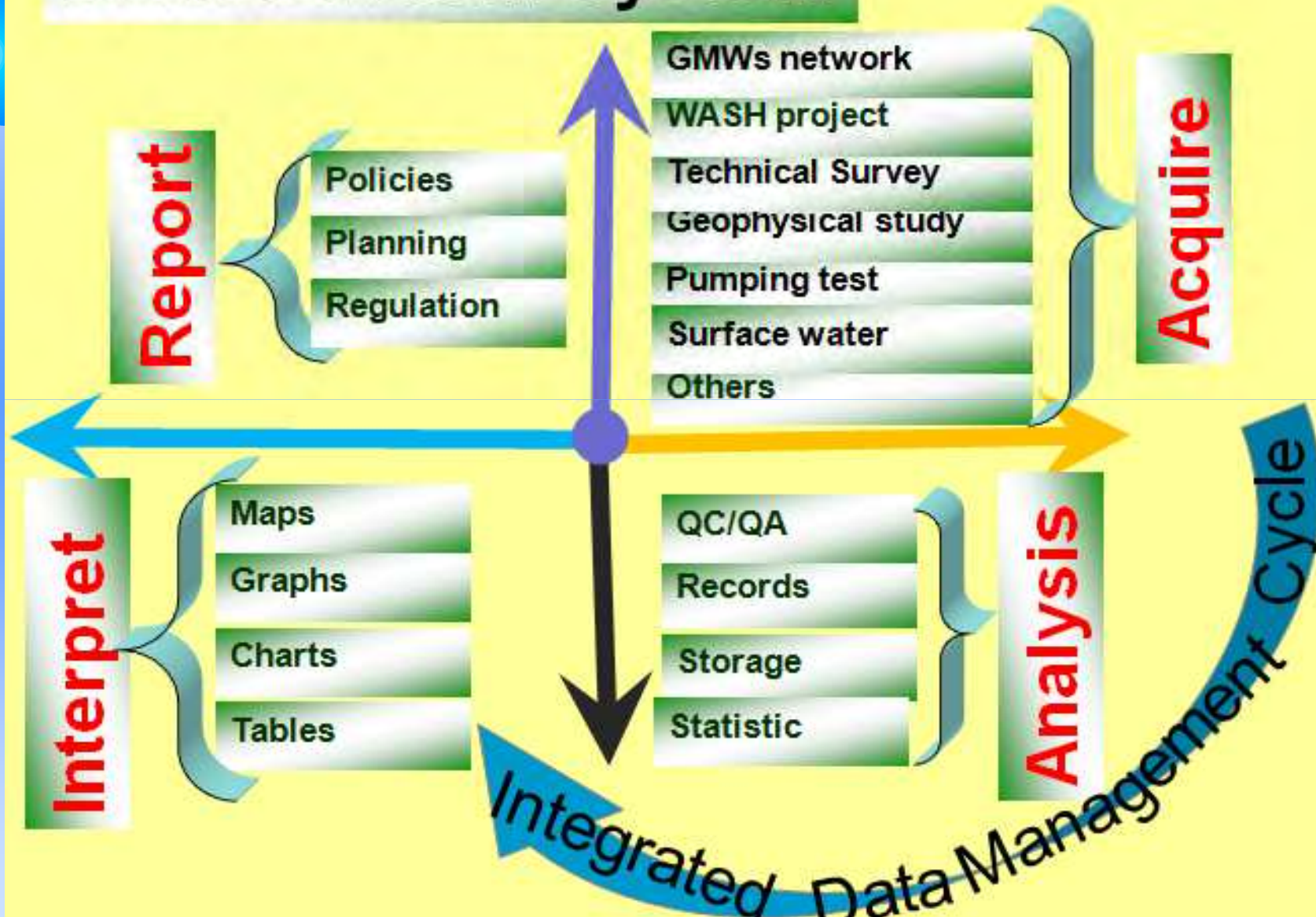
M.Hassan Saffi

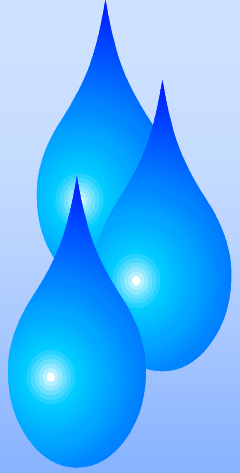


Presentation Overview

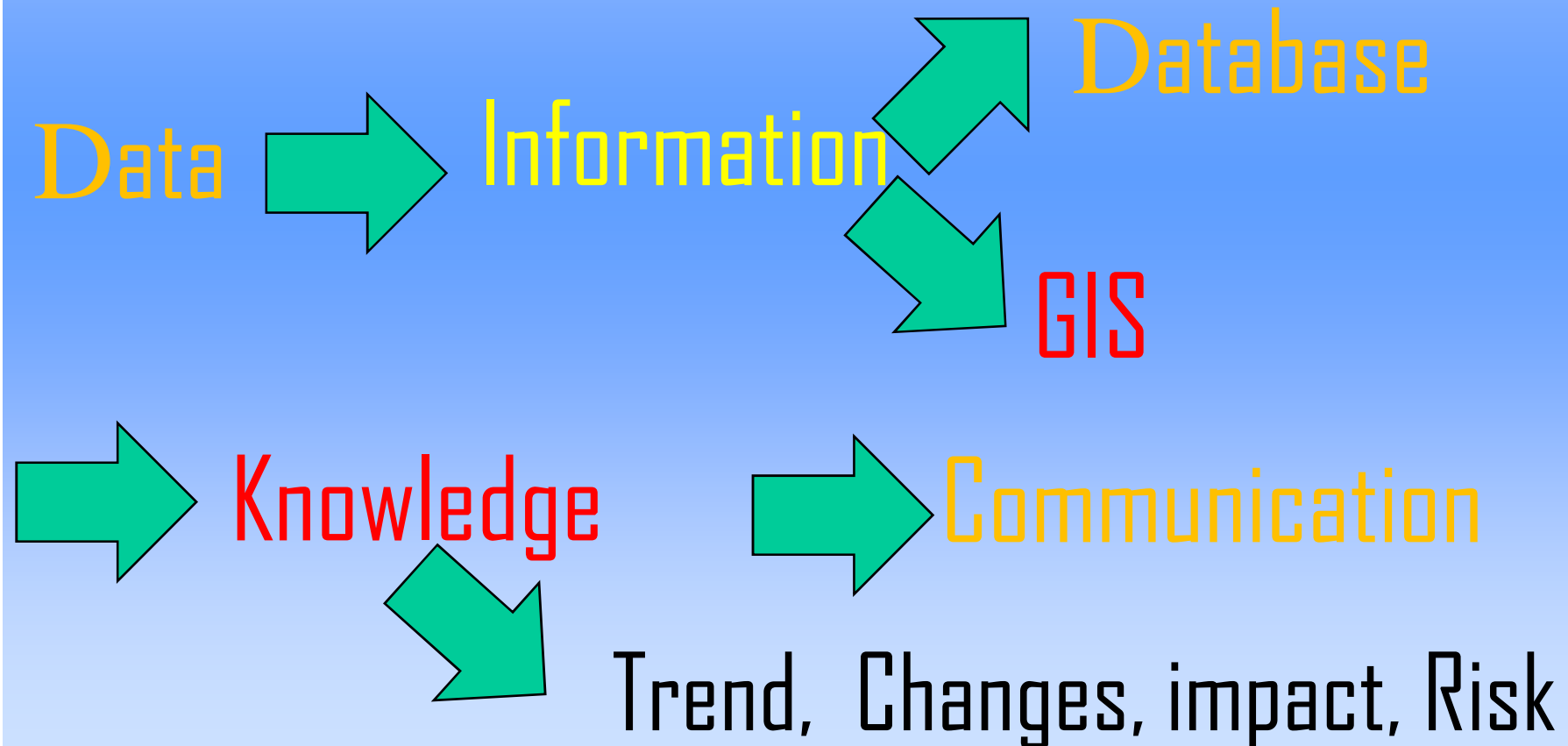
- DACCAAR Integrated Data Management System (IDMS)
- Main purpose of IDMS
- Data management and QC/QA
- Graphic data visualization and communication
- GIS functionality in hydrogeology using HydroGeo Analyst software

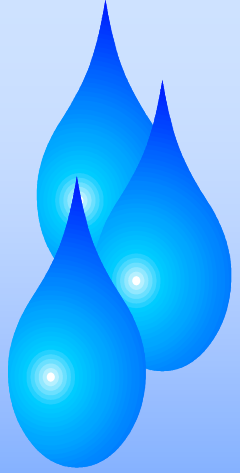
DACAAR IDM System





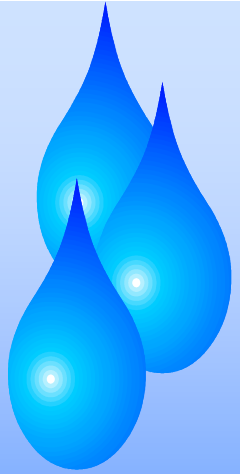
Main purpose of IDMS:





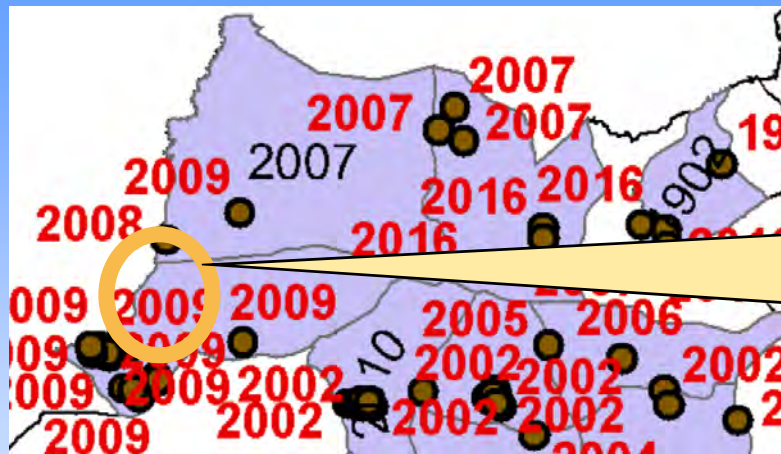
Data acquisition Focus:

- Location (GPS, Geocode, Village, District, Province)
- Needy information: Quantitative and Qualitative
- What kind of? Hand pumped Well, Motorized pipe scheme, Gravity system, Solar system
- What Source? Surface water, Groundwater
- For What?, Water Supply, Irrigation

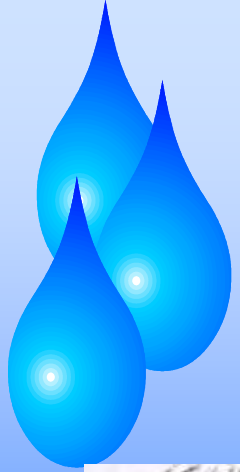


Data QC/QA

GIS use

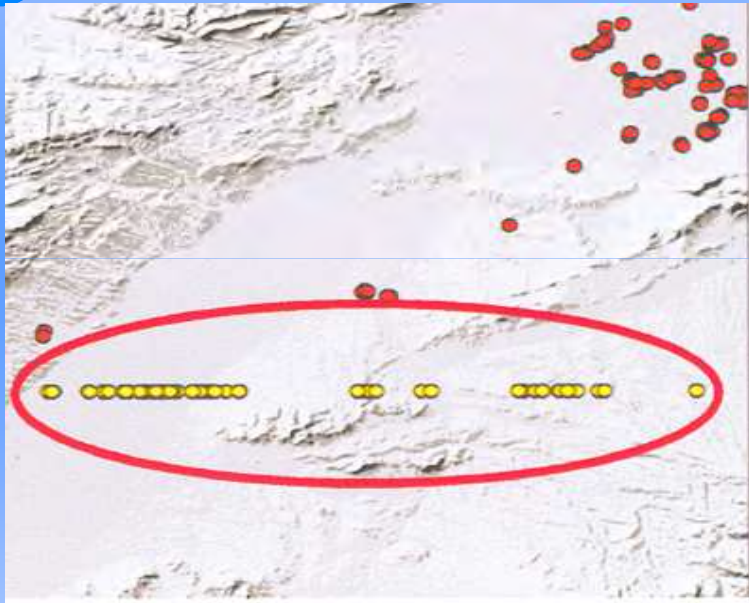


Wells along
the district
border having
wrong district
location



Data QC/QA

Do we have any special coordinates?

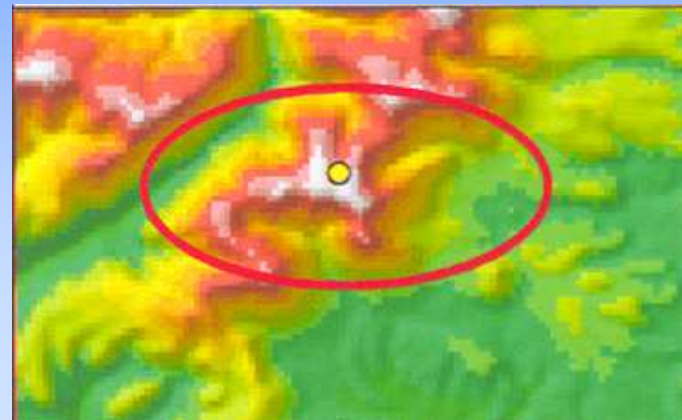


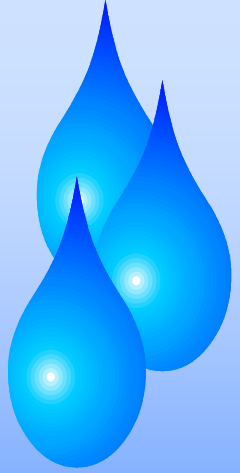
GIS use

A water point in the desert?



Is the water point on top of a mountain?

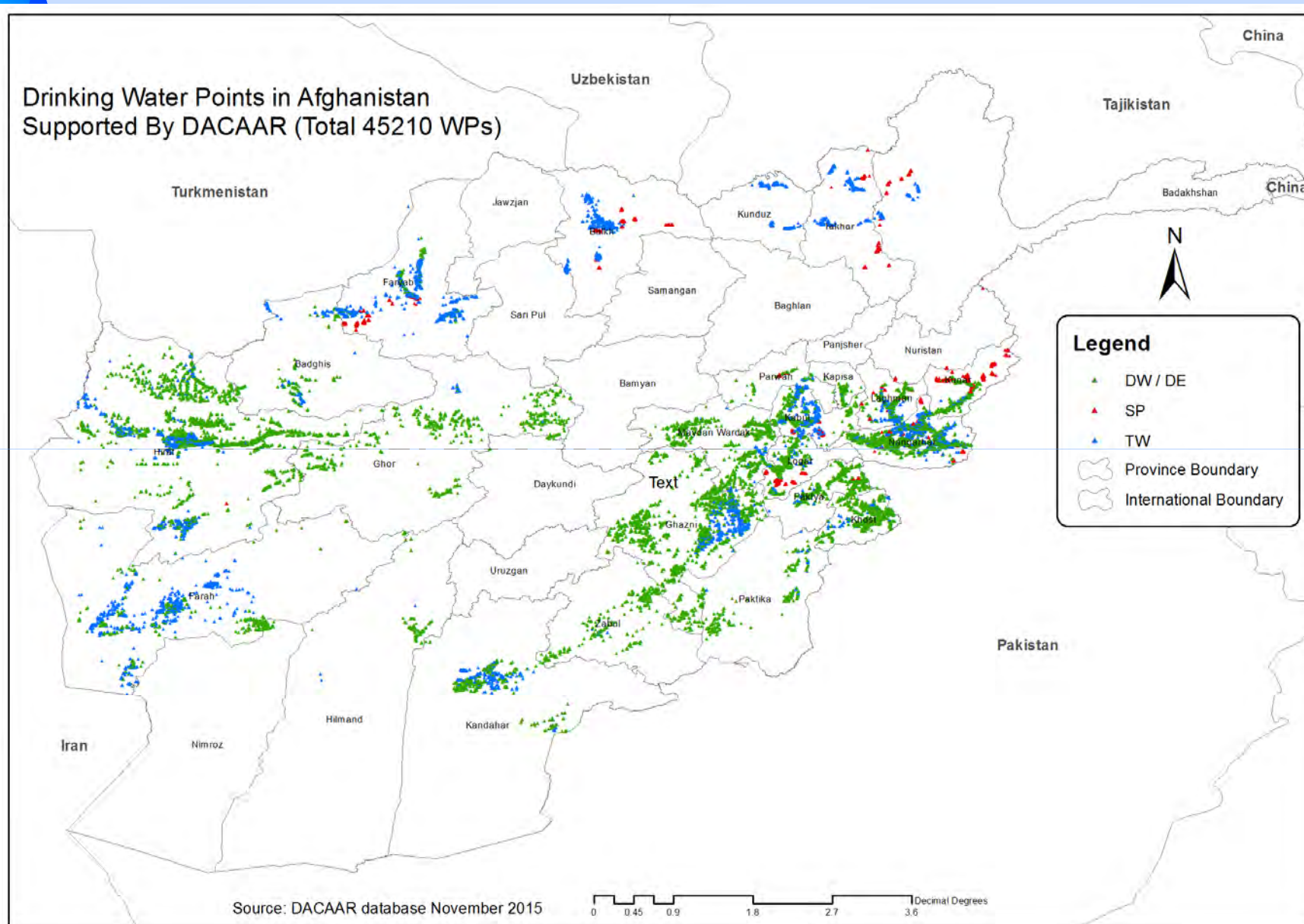




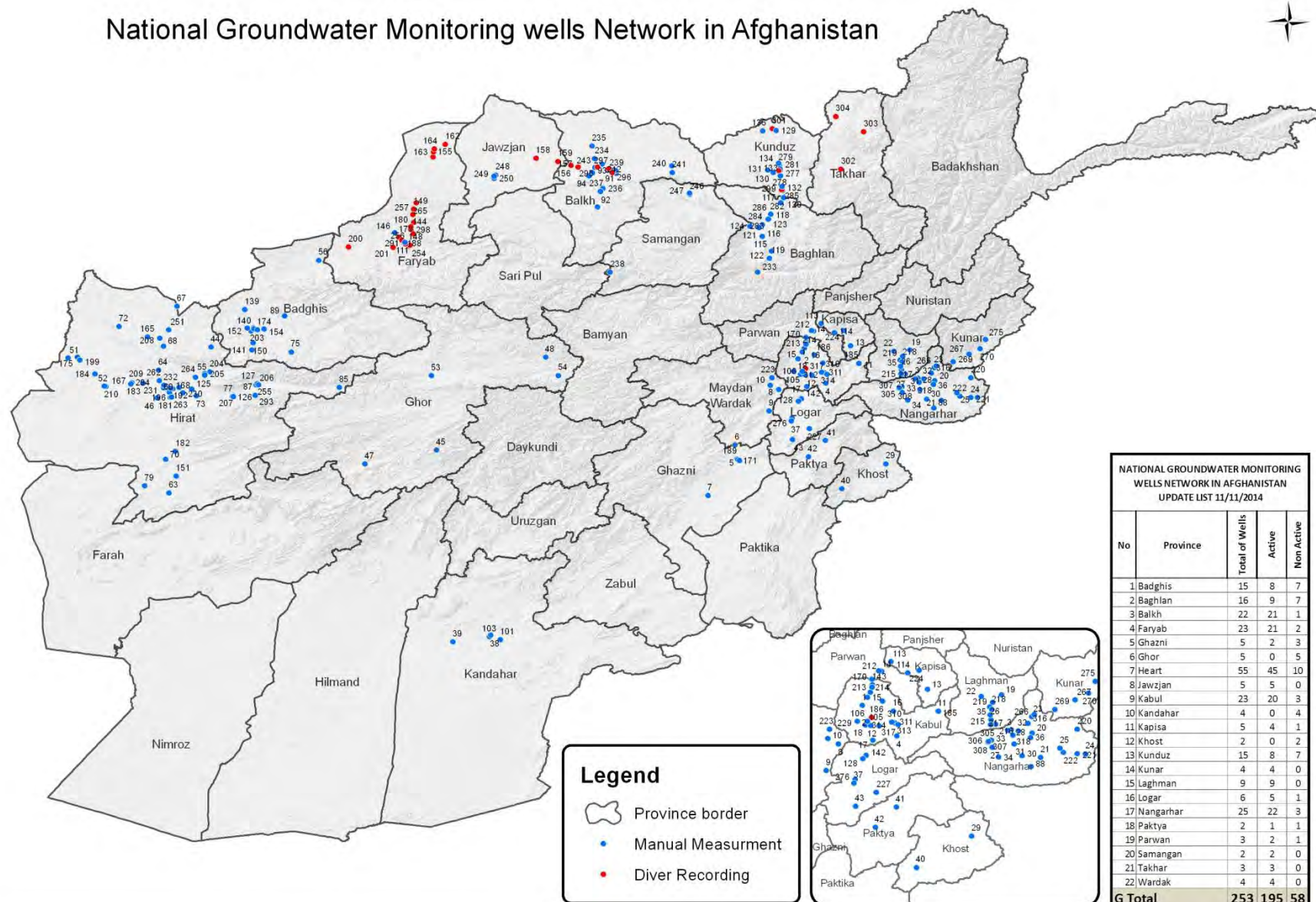
Graphic data visualization and communication:

- Trend
- Changes
- Impact
- Risk

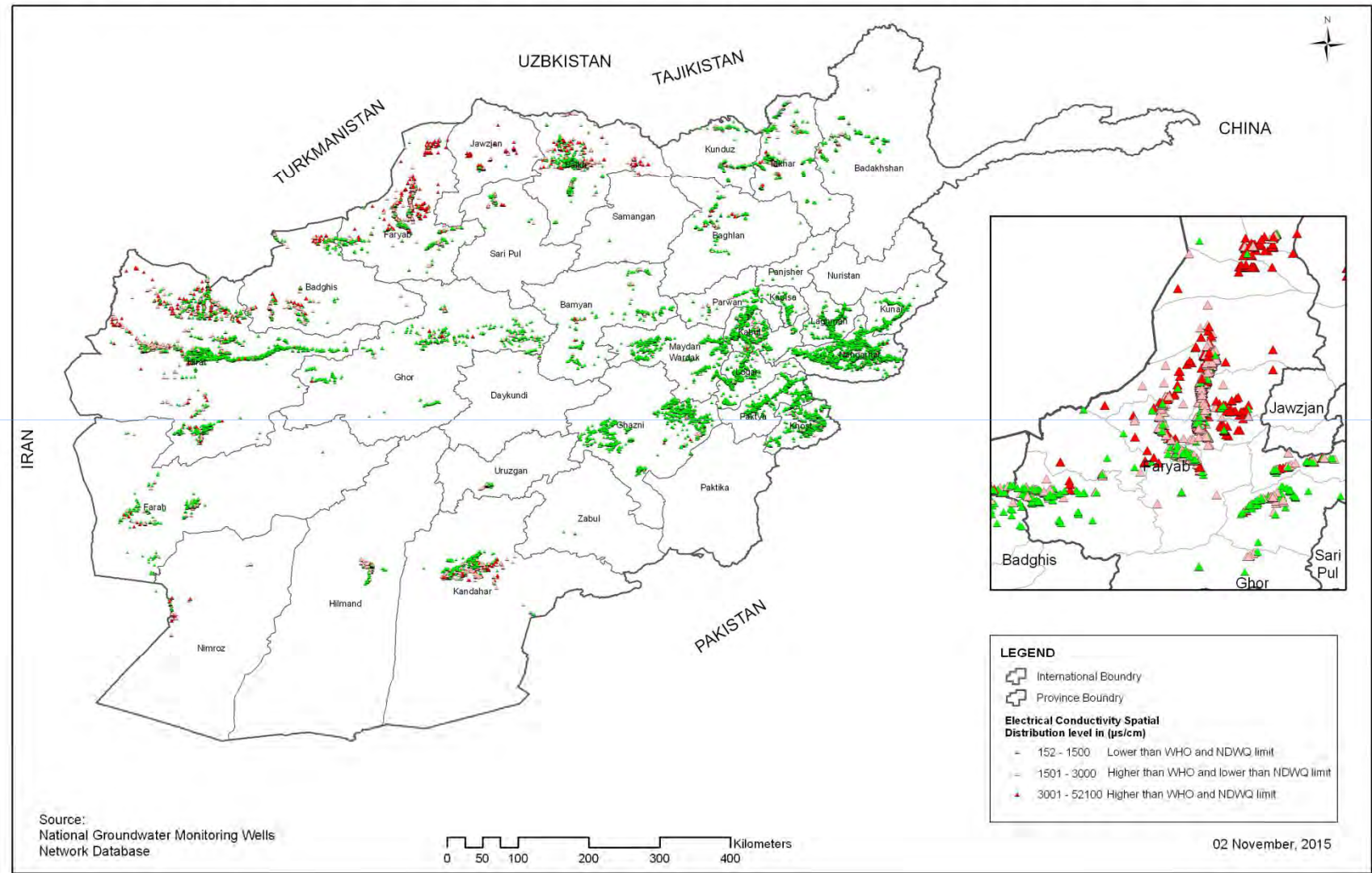
Drinking Water Points in Afghanistan Supported By DACAAR (Total 45210 WPs)



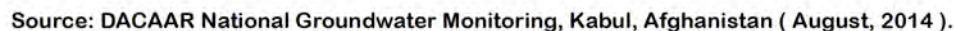
National Groundwater Monitoring wells Network in Afghanistan



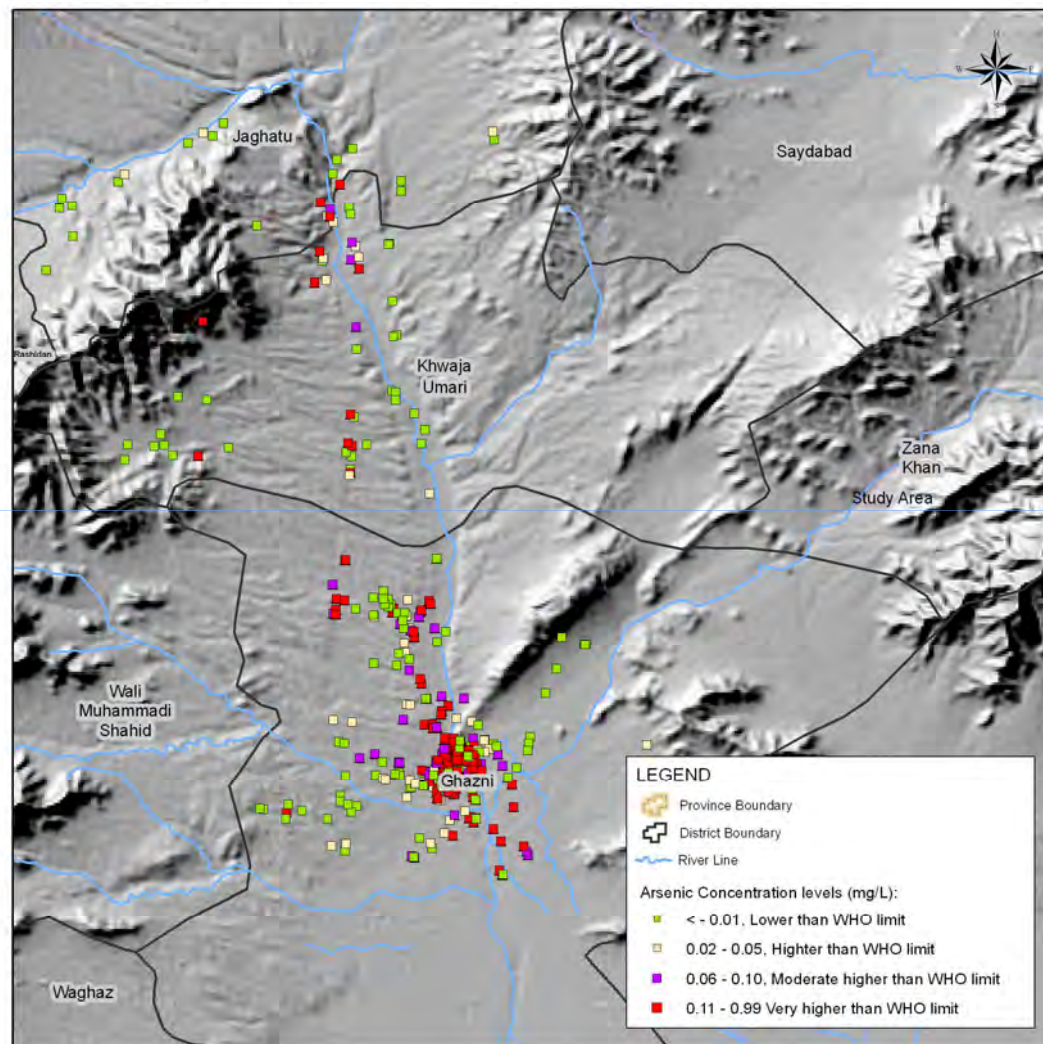
Electrical Conductivity (EC) Spatial Distribution Levels in the Groundwater of Afghanistan (36500 Water Points Tested Data)



DACAAR

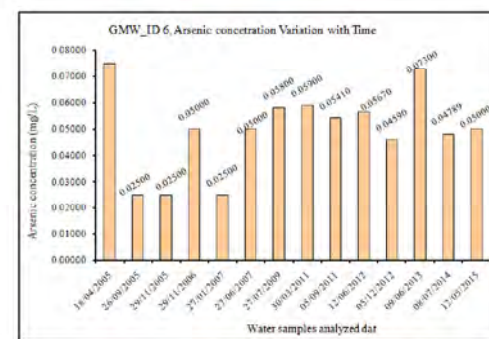
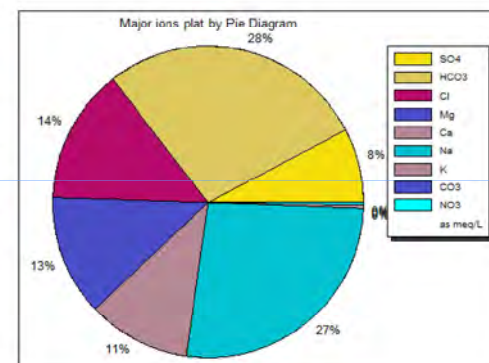
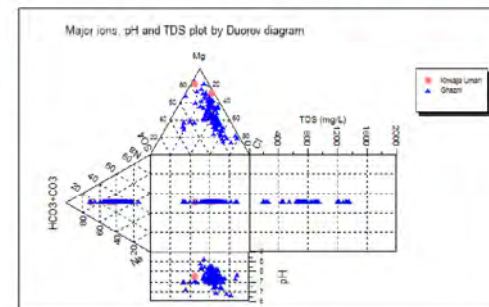


Arsenic Concentration level in Ghazni and Maydan Wardak Provinces of Afghanistan

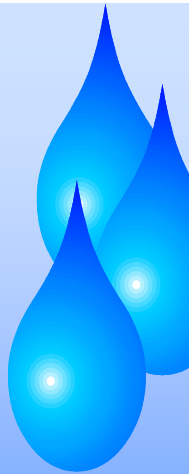


Source:
DACAAR/Hydrogeology Section
National Groundwater Monitoring Wells Network Database

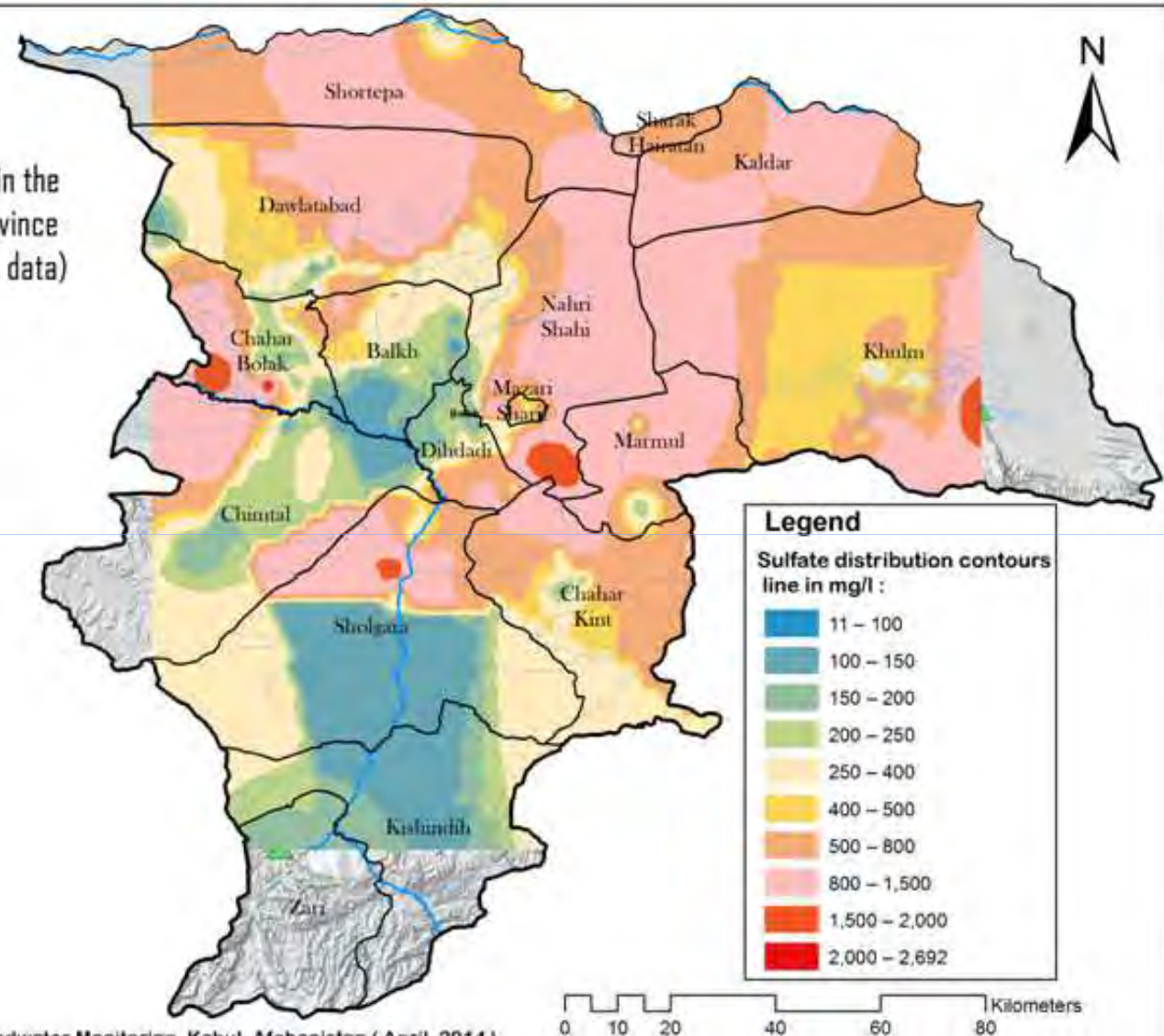
0 0.5 1 2 3 4 Kilometers



October 15, 2015

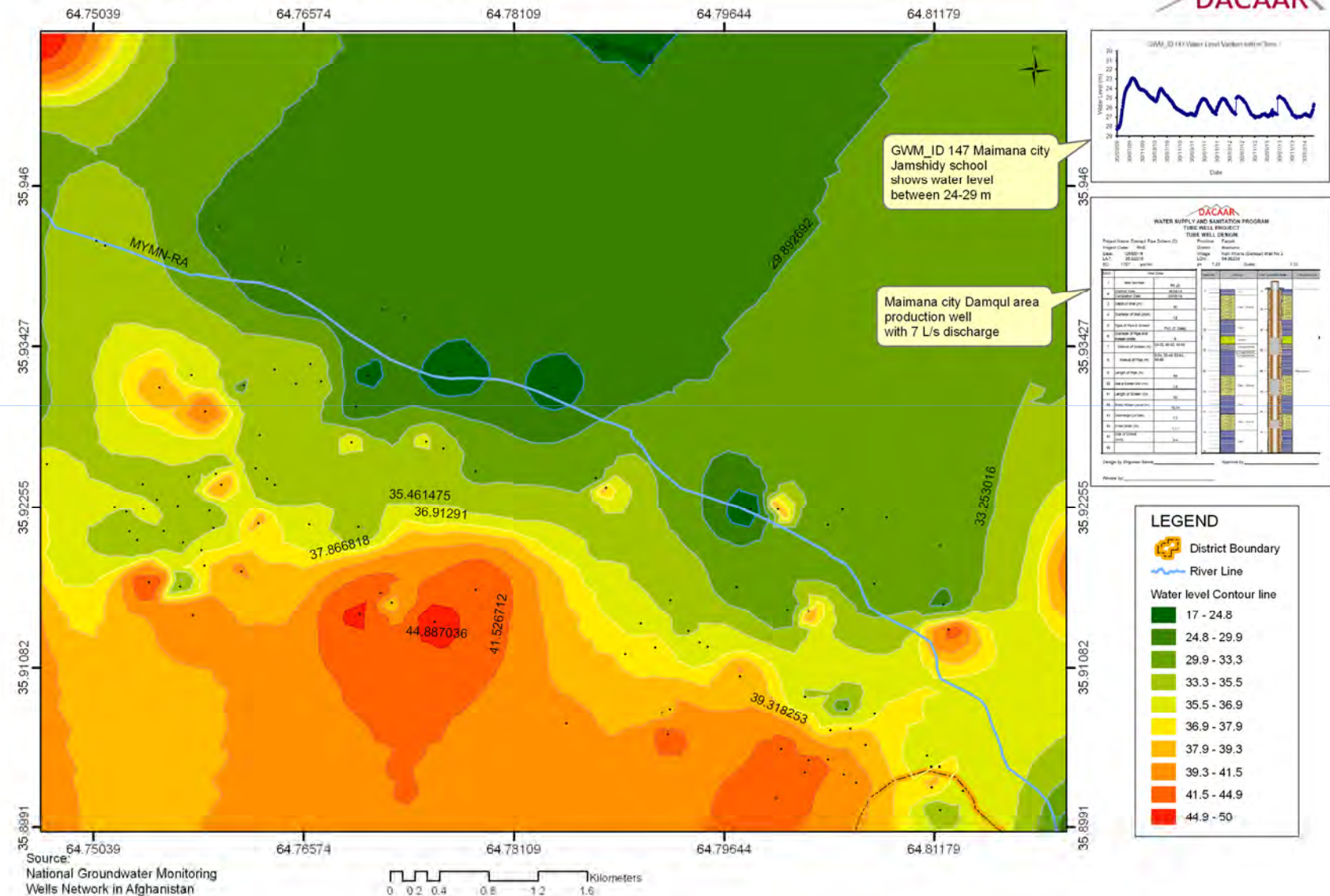


Sulphate concentration
interpolated contour lines in the
groundwater of Balkh province
(380 water points tested data)

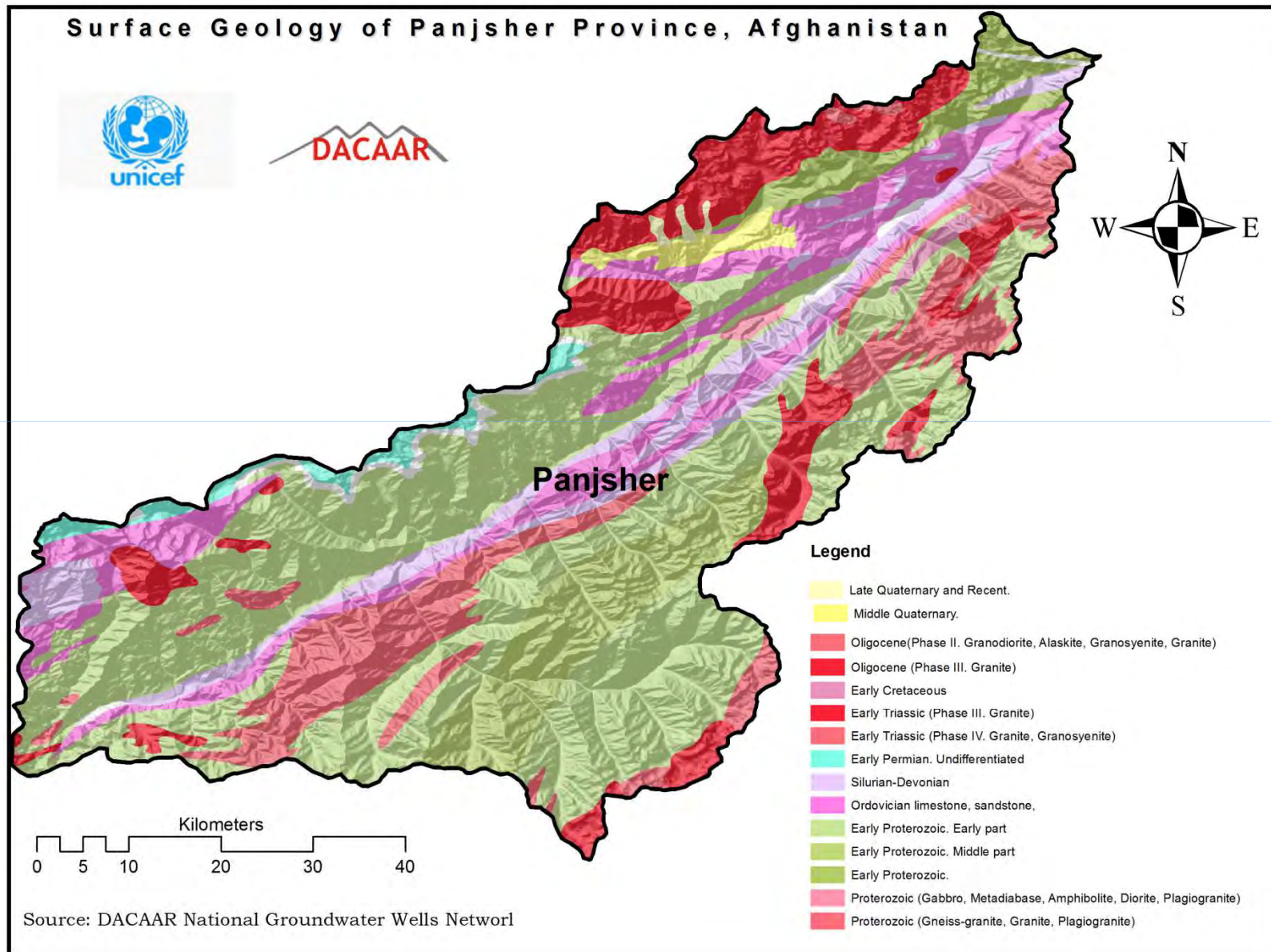


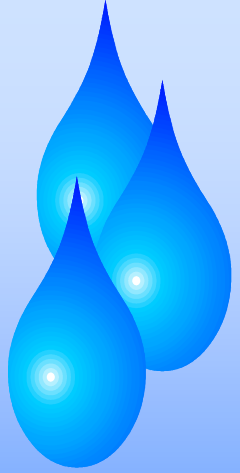
Source: DACAAR National Groundwater Monitoring, Kabul, Afghanistan (April, 2014)

Maimana City Water Level Contour Line



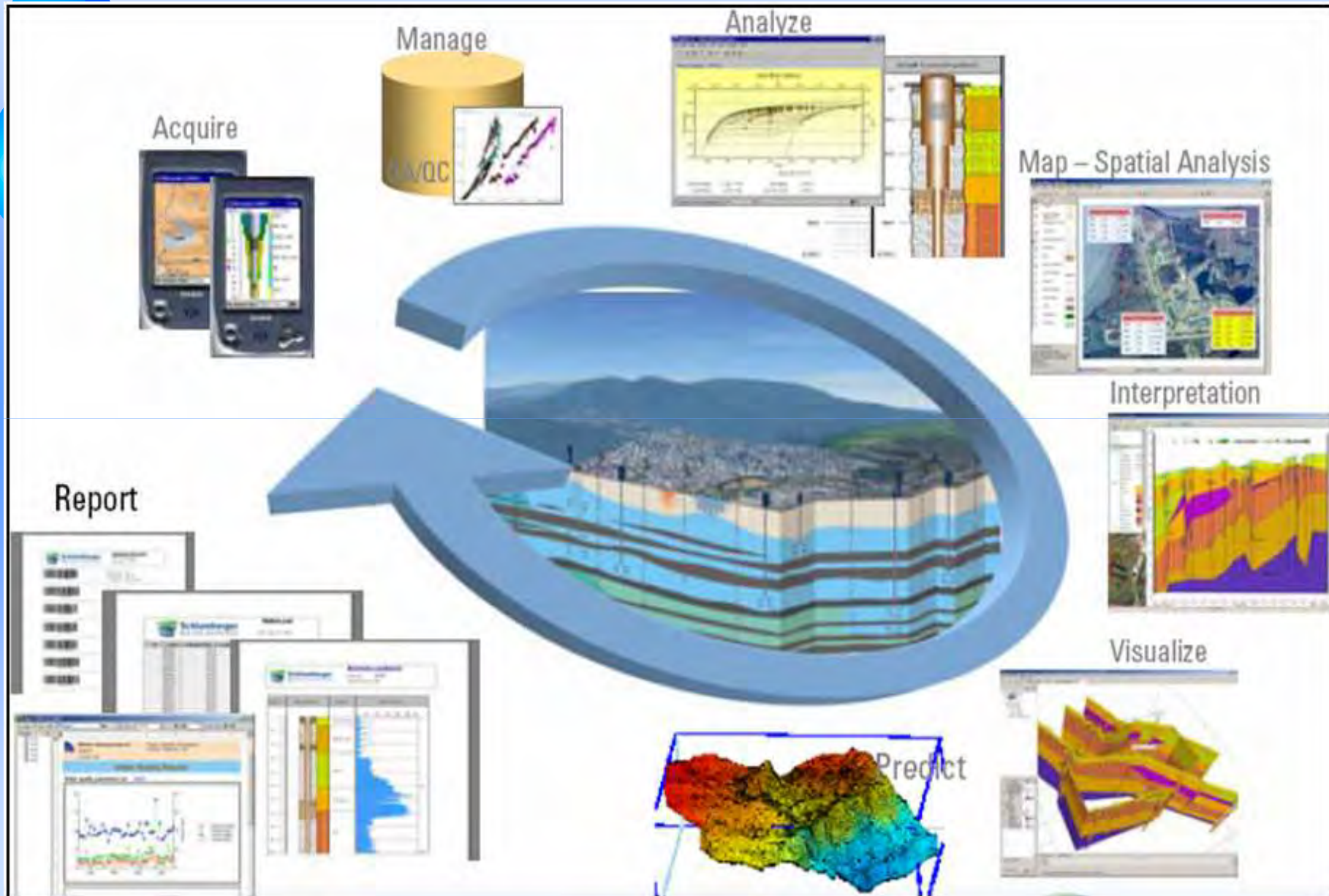
Making of Surface Geology using GIS

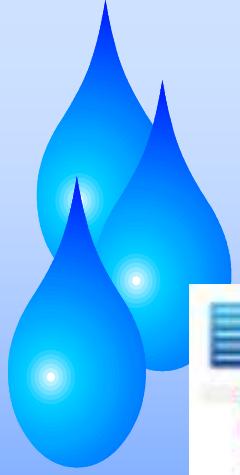




GIS functionality in
Hydrogeology
using
HydroGeo Analyst software

Integrated WRDM by Using HydroGeo Analyst





Toolbars



Template manager	Import data	Export data	Query builder	Material specification	List editor	Time series plotter	Borehole log plotter	Map Manager	Cross section editor	3D Explorer	Aquifer test	AquaChem

Project View Modules Database Help

Station List Station Data Data Query Data Filter Start Page

1 of 151

ID	Station Name	X(m)	Y(m)	Elevation(m)	TOC(m)	Station Type
1	MW-1	535250.19	4814315.00	332.100	331.80	Observation Well
2	MW-3	536668.13	4814036.00	334.800	332.10	Observation Well
3	OW-2	535535.50	4814905.00	333.900	330.90	Observation Well
4	OW-4	536720.69	4814826.00	335.400	331.60	Observation Well
5	W-05	535548.40	4814637.30	331.000	332.00	Observation Well
6	W-06	535459.40	4814704.90	330.800	331.80	Observation Well
7	W-07	535476.10	4814781.10	330.900	331.90	Observation Well
8	W-08	535469.50	4814652.70	330.600	331.60	Observation Well
9	W-09	535484.70	4814546.50	329.900	330.90	Observation Well
10	W-10	535626.80	4814652.90	329.500	330.50	Observation Well
11	W-11	535545.90	4814553.50	332.100	333.10	Observation Well
12	W-12	535637.70	4814582.90	330.200	331.20	Observation Well
13	W-13	535800.00	4814637.50	329.900	330.90	Observation Well
14	W-14	535674.60	4814800.00	330.400	331.40	Observation Well
15	W-15	535687.40	4814665.30	330.500	331.50	Observation Well
16	W-16	535390.00	4814741.90	329.900	330.90	Observation Well
17	W-17	535577.40	4814477.10	329.300	330.30	Observation Well
18	W-18	535677.10	4814416.20	330.500	331.50	Observation Well

Project Tree

- Station Groups
 - All Stations
 - Boreholes
 - Boreholes_with_plot_da
 - Lab_QC_Stations
 - Monitoring_Wells
 - QC_Monitoring_Wells
 - Soil_Borings
 - test
 - WQ_Stations
 - Clay_thicker_than_2m
 - Soil_Borings_with_TCE
- Queries
- Time Series Plots
- Crosstabs
- Borehole Logs
- Map Projects
- Cross-Sections
- 3D Views
- Reports

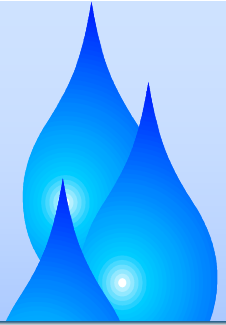
Template manager (Database structure)

Description

- ☒ Location
 - ☒ Station N
 - ☒ X
 - ☒ Y
 - ☒ Elevation
 - ☒ TOC
 - ☒ Station T
 - ☐ Total Deq
 - ☐ geo_poin
- ☒ description_addins
 - ☒ Photo
 - ☒ Purpose
 - ☒ Location Name
 - ☒ Location Description
 - ☒ Well Owner
 - ☒ Street Address
 - ☒ City or Town
 - ☒ County
 - ☒ State / Province
 - ☒ Zip / Postal Code
 - ☒ Installation Date
 - ☒ Depth to Bedrock
 - ☒ Status
 - ☒ Driller
 - ☒ Driller Comment
 - ☒ addins id

Geologic des.

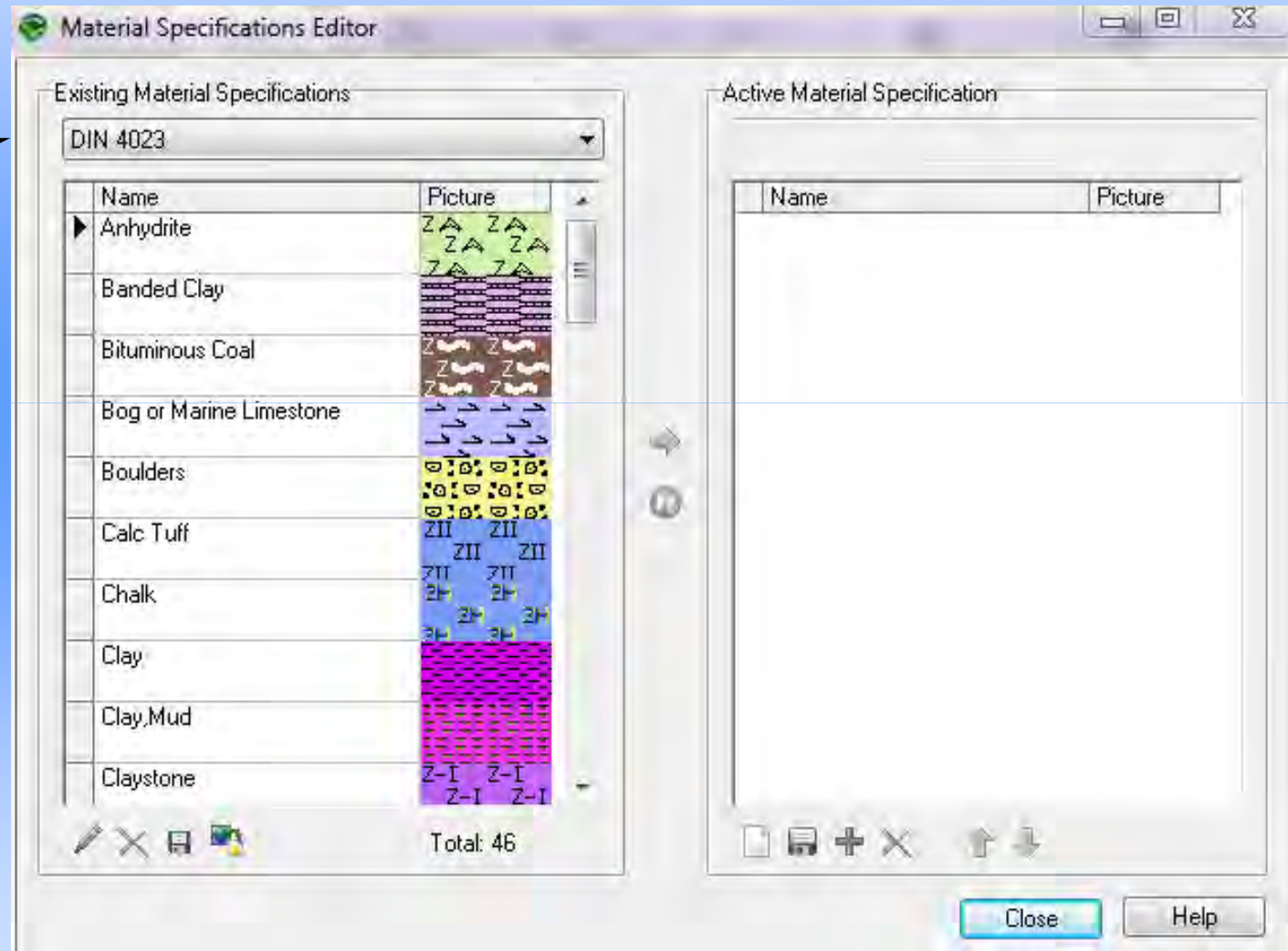
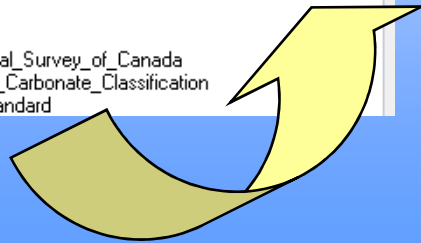
- ☒ Lithology
 - ☒ From
 - ☒ To
 - ☒ soil_type
 - ☒ Description
 - ☐ Consistency
 - ☐ Structure
 - ☐ ASTM Descrip
 - ☐ Color
 - ☐ Odor
 - ☐ Formation Narr
 - ☐ Formation Unit
 - ☐ Moisture
 - ☐ Comment
- ☒ Hydrogeology
 - ☒ From
 - ☒ To
 - ☒ Description
 - ☒ Formation Name
 - ☒ Transmissivity
 - ☒ Specific Storage
 - ☒ Kx
 - ☒ Ky
 - ☒ Kz
 - ☒ Porosity
 - ☒ Well Efficiency
 - ☒ Saturated Thicker
 - ☒ Storage Coefficient
- ☒ Modeling
 - ☒ From
 - ☒ To
 - ☒ Layer Name
 - ☒ Description
 - ☒ Transmissivity
 - ☒ Specific Storage
 - ☒ Kx
 - ☒ Ky
 - ☒ Kz
 - ☒ Porosity (%)
- ☒ Fractures
 - ☒ Depth
 - ☒ Angle
 - ☒ Openness
 - ☒ Infilling
 - ☒ Fault Evidence
 - ☒ Staining
 - ☒ Type
- ☒ Features
 - ☒ Depth
 - ☒ Feature
 - ☒ Comment
 - ☒ Description



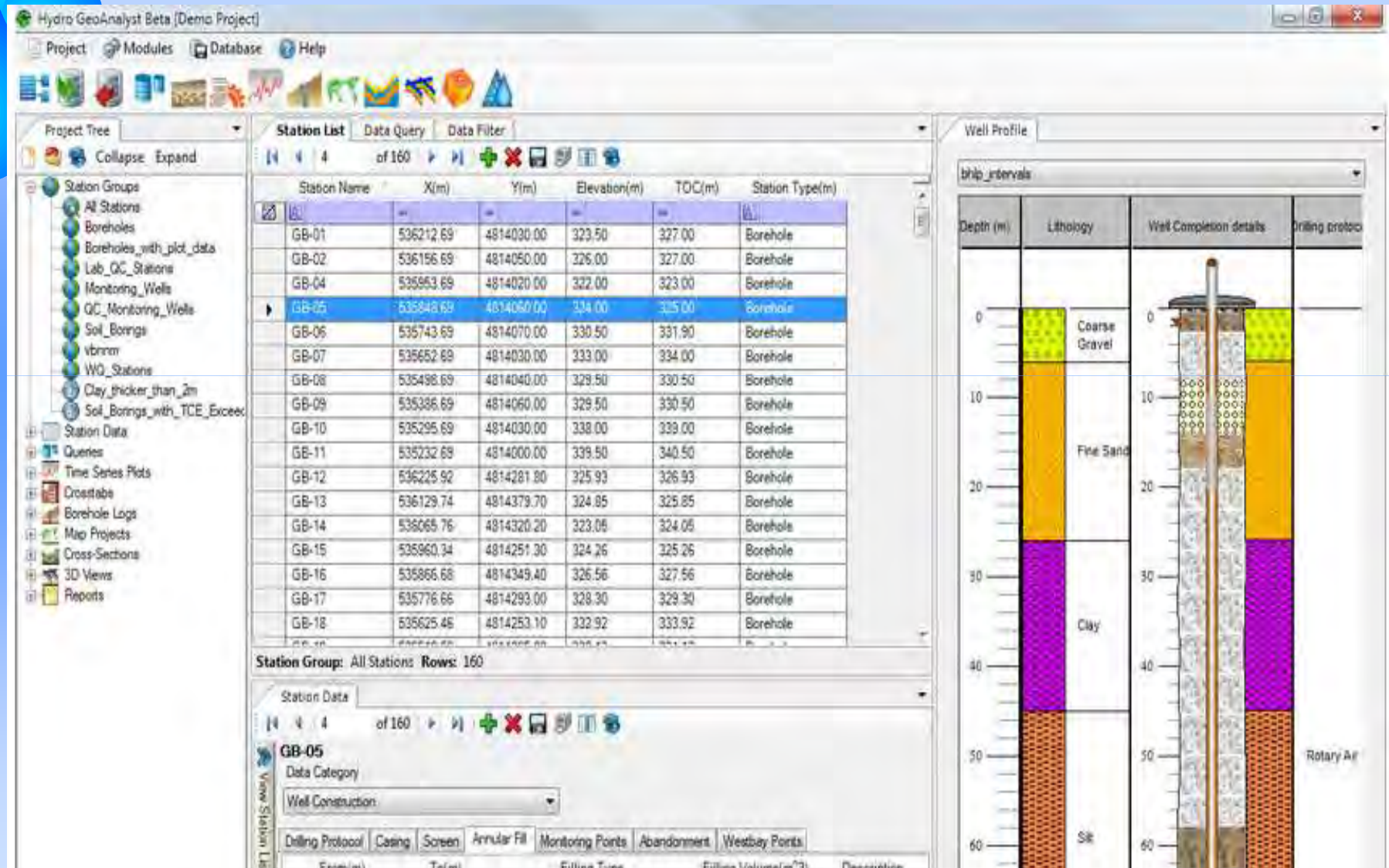
Material specification

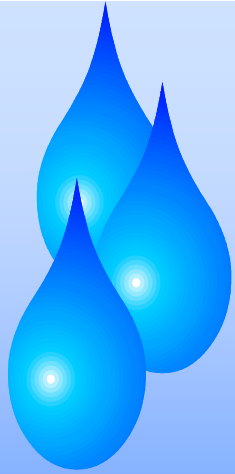


DIN 4023
USCS
USDA
DIN 4023
IAH
Compton
Geological_Survey_of_Canada
Dunham_Carbonate_Classification
Shell_Standard

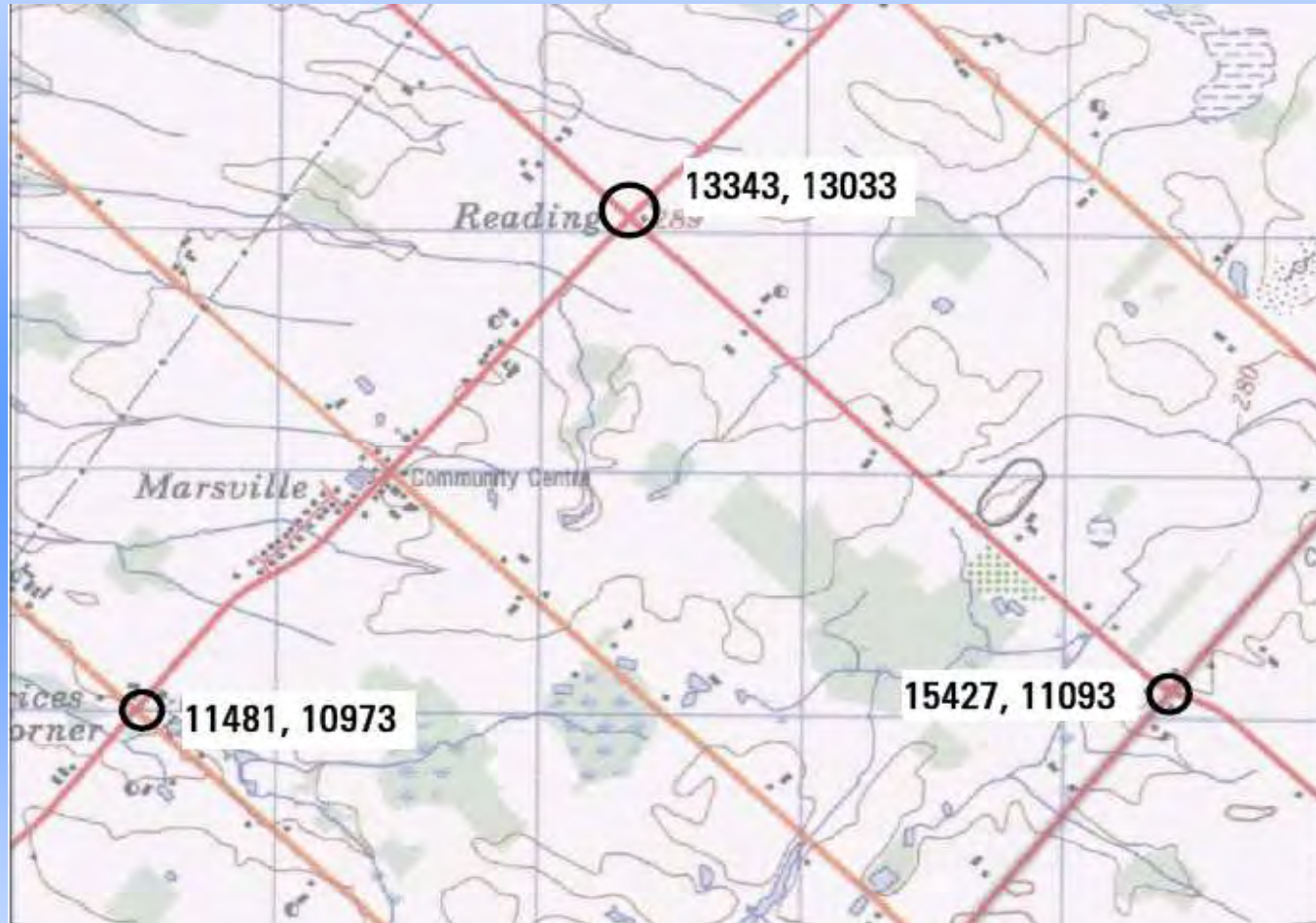


HydroGeo Analyst database and GIS functionality





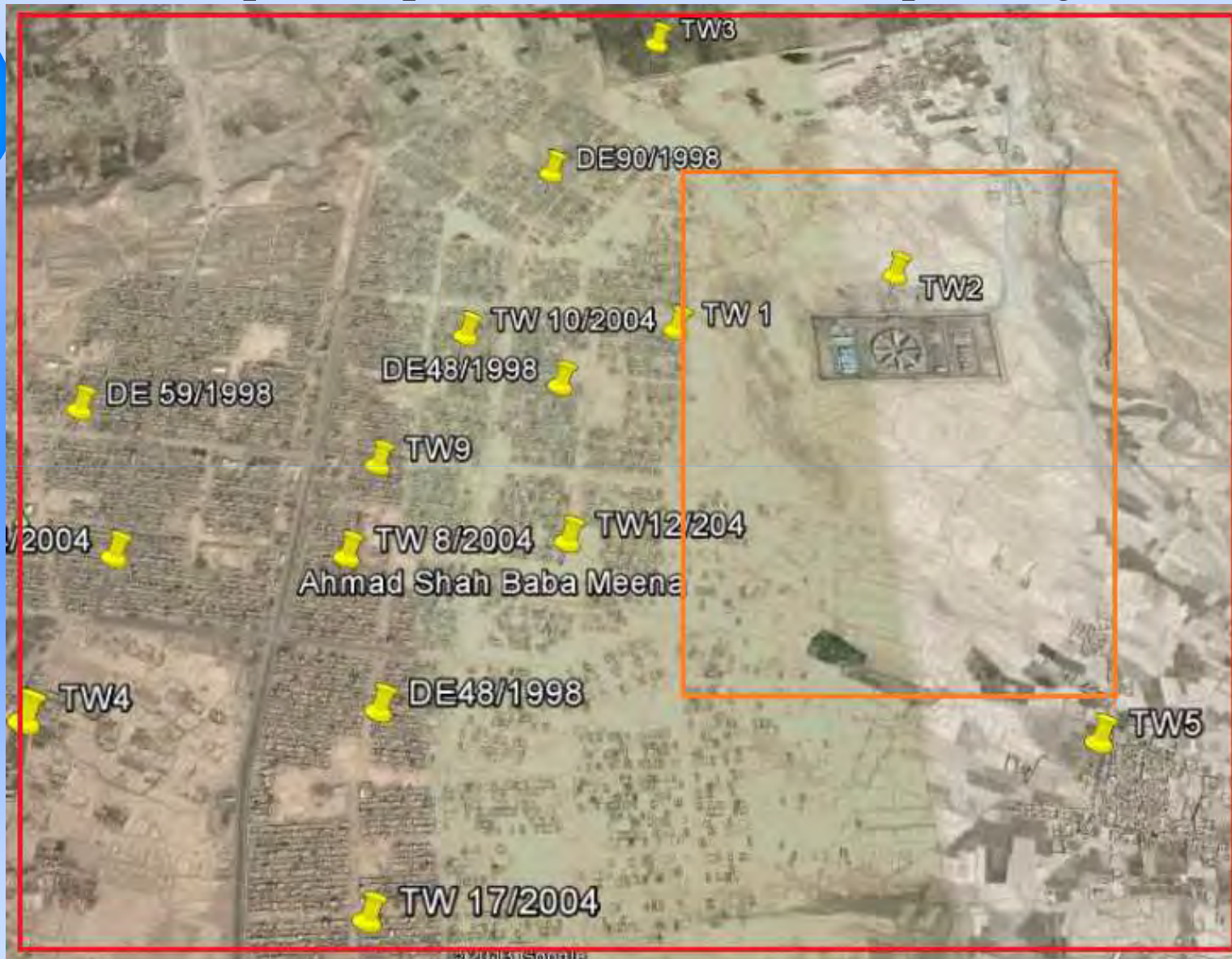
How to transfer map?

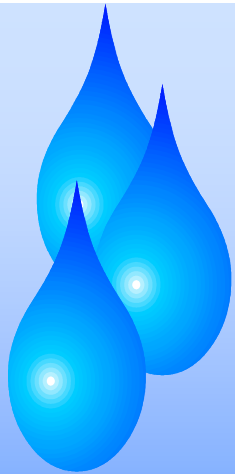


Artificial Recharge in Butkhak Village



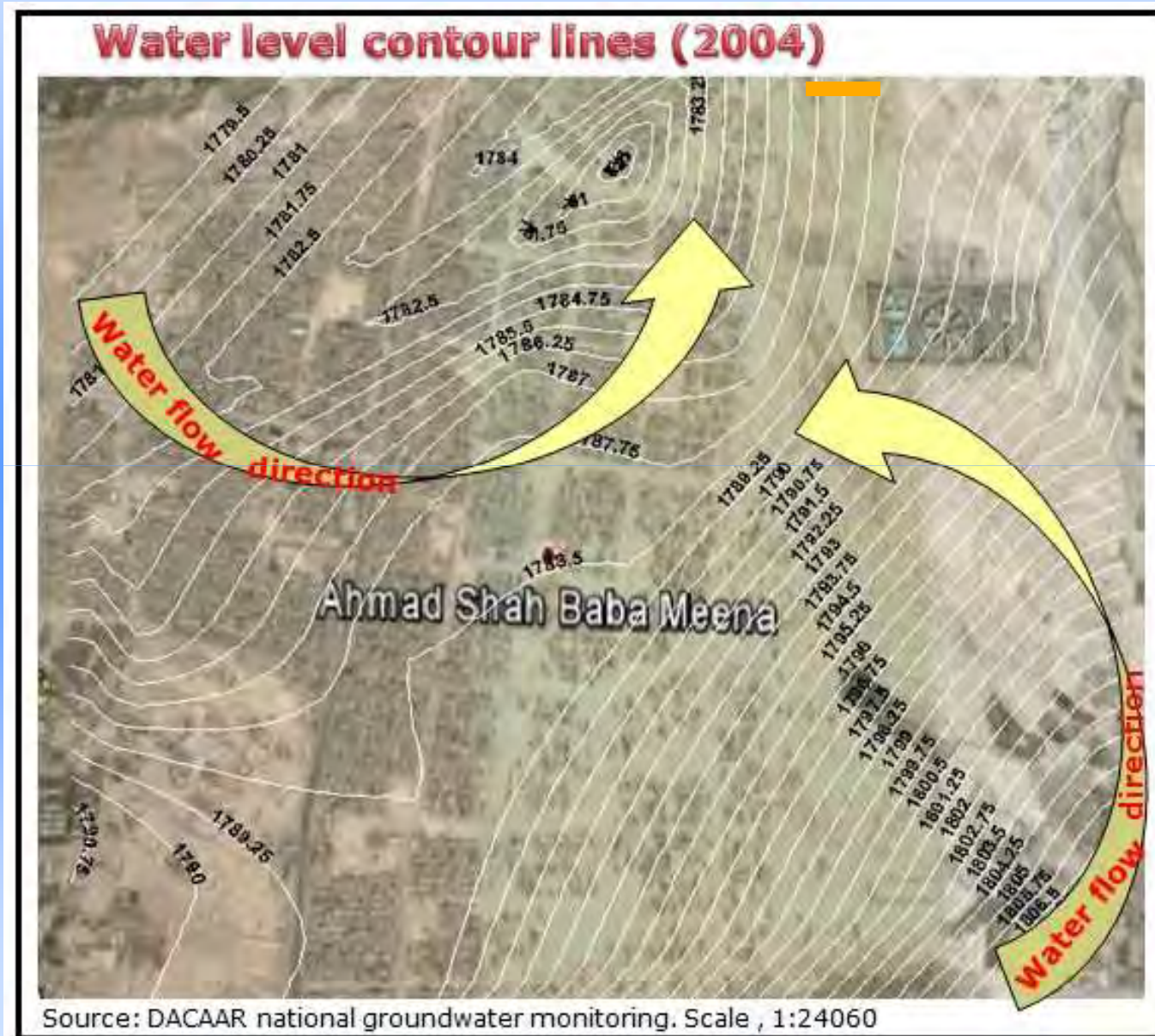
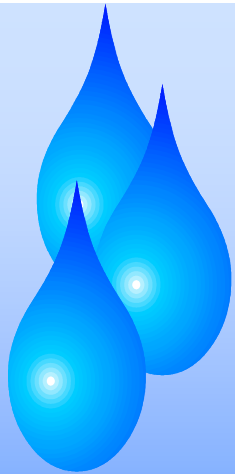
How to import map and station data to Map manager.

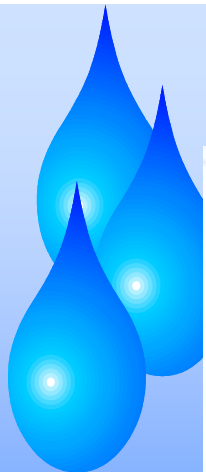




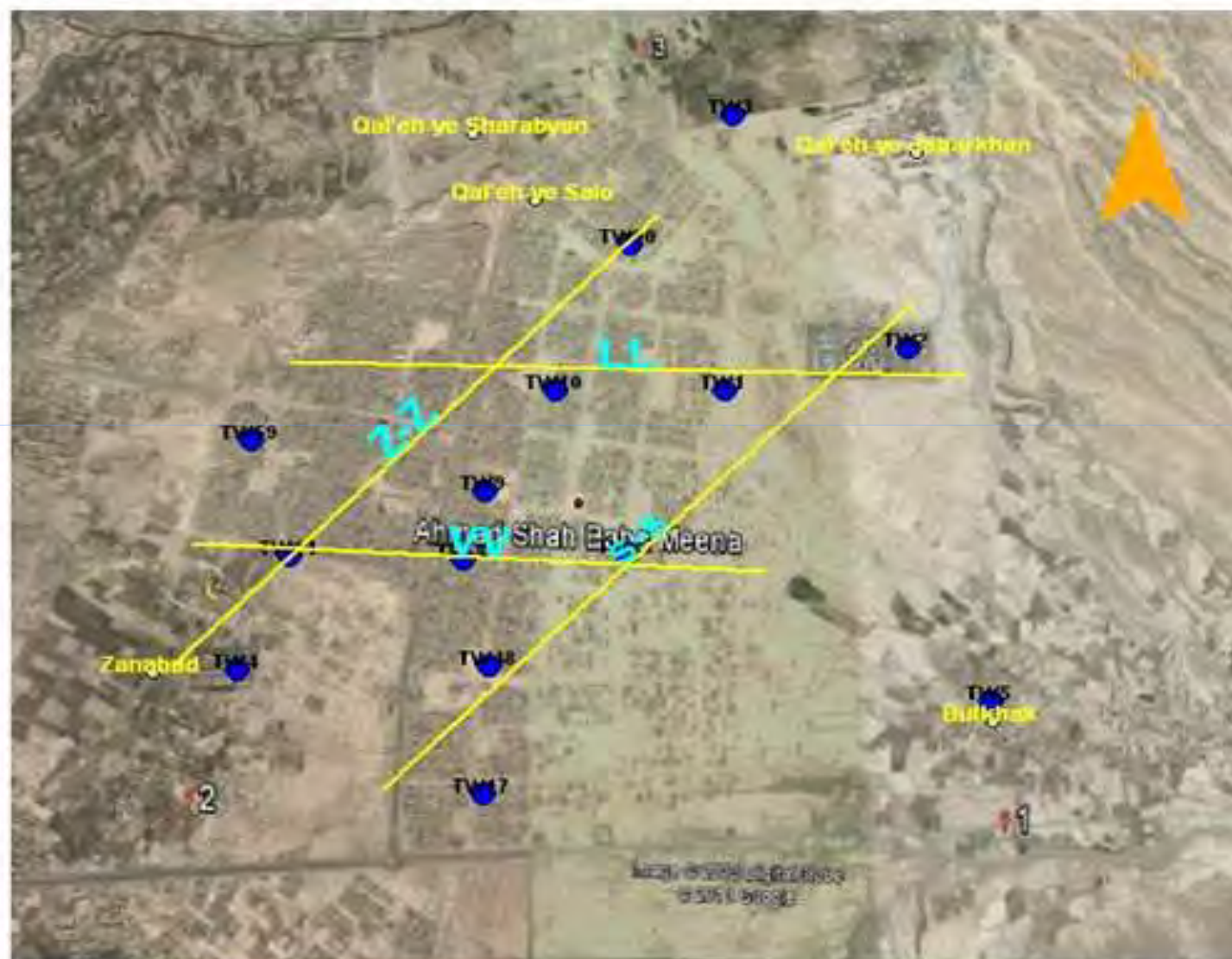
Elevation contour lines



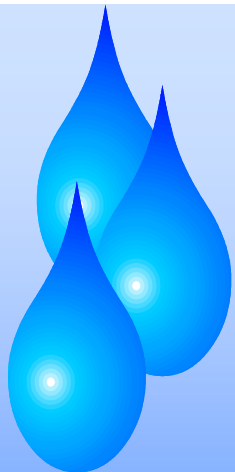




Cross-section lines



Source: DACAAR national groundwater monitoring. Scale , 1:24060



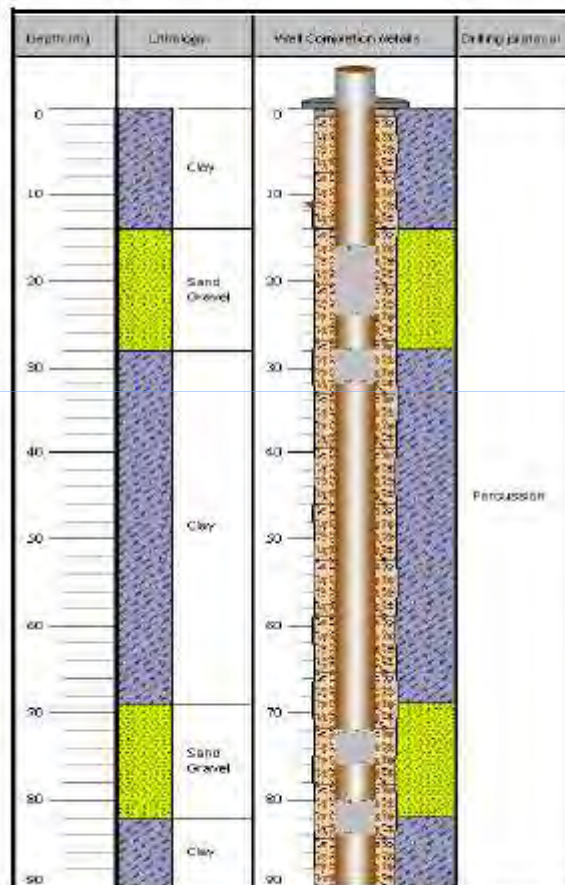
WATER SUPPLY AND SANITATION PROGRAM TUBE WELL PROJECT TUBE WELL DESIGN

Project Name: Qurbaqa Khana Pipe Scheme
Project Code: DANIDA ROI
Date: 13/03/15
LAT: 36.39888
EC: 886 $\mu\text{S/cm}$

Province: Blakh
District: Sholgara
Village: Qurbaqa Khana
LON: 66.88718
pH: 7.5

Scale: 1: 10

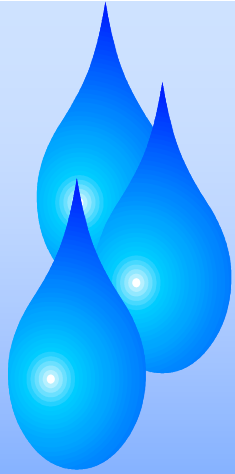
S/NO	Well Data	
1	Well Number	Production Well 2015
2	Starting Date	10/03/15
	Completion Date	13/03/15
3	Depth of Well (m)	90
4	Diameter of Well (Inch)	16
5	Type of Pipe & Screen	PVC Class E
6	Diameter of Pipe and Screen (Inch)	8
7	Interval of Pipe (m)	0-16, 24-28, 32-72, 76-80, 84-90
8	Interval of Screen (m)	16-24, 28-32, 72-76, 80-84
9	Length of Pipe (m)	70
10	Size of Screen Slot (mm)	1.5
11	Length of Screen (m)	20
12	Static Water Level (m)	11.5
13	Discharge (Lit/Sec)	6.5
14	Draw Down (m)	37.7
15	Size of Gravel (mm)	2-6
16	Elevation (m)	565



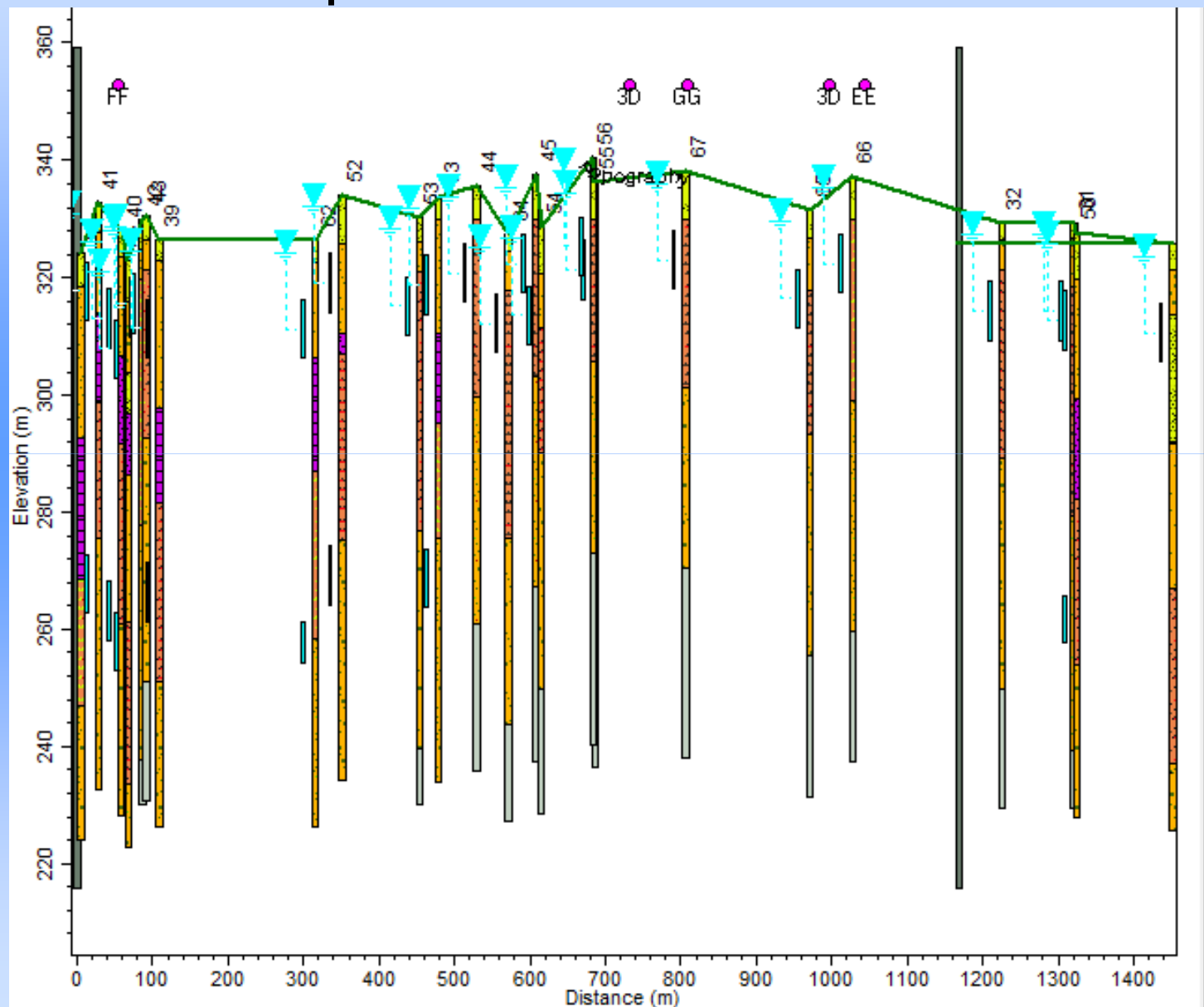
Designed by Engineer Name: M. Hassan

Reviewed by: M. Hassan

Approved by: _____



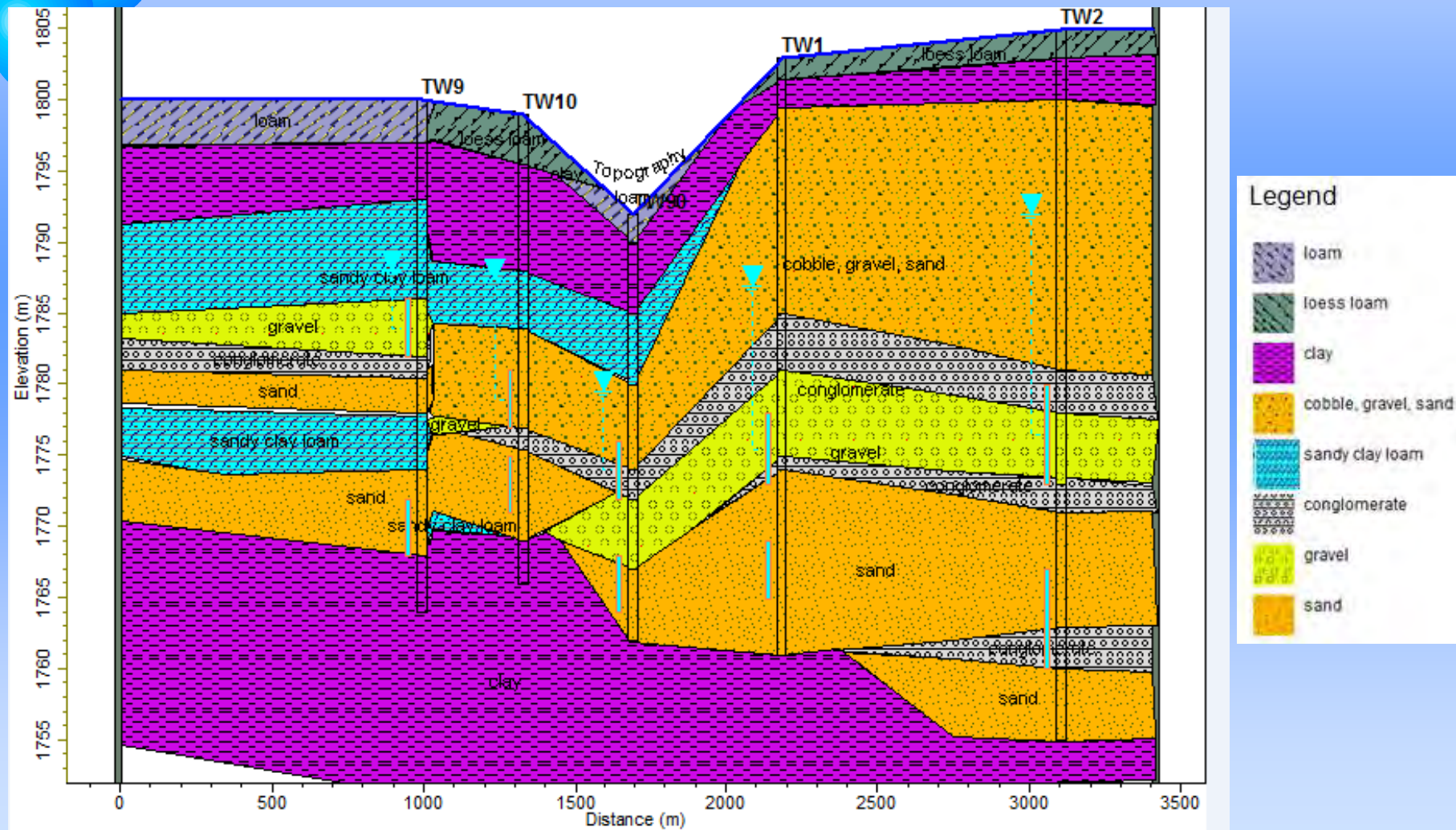
How to provide 2D section

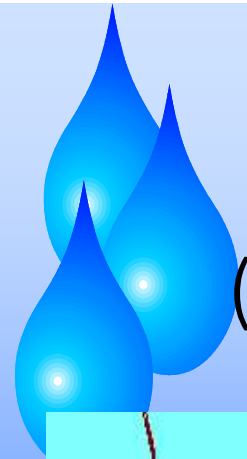


Cross section L-L



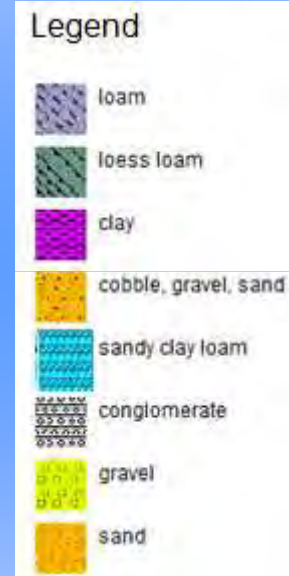
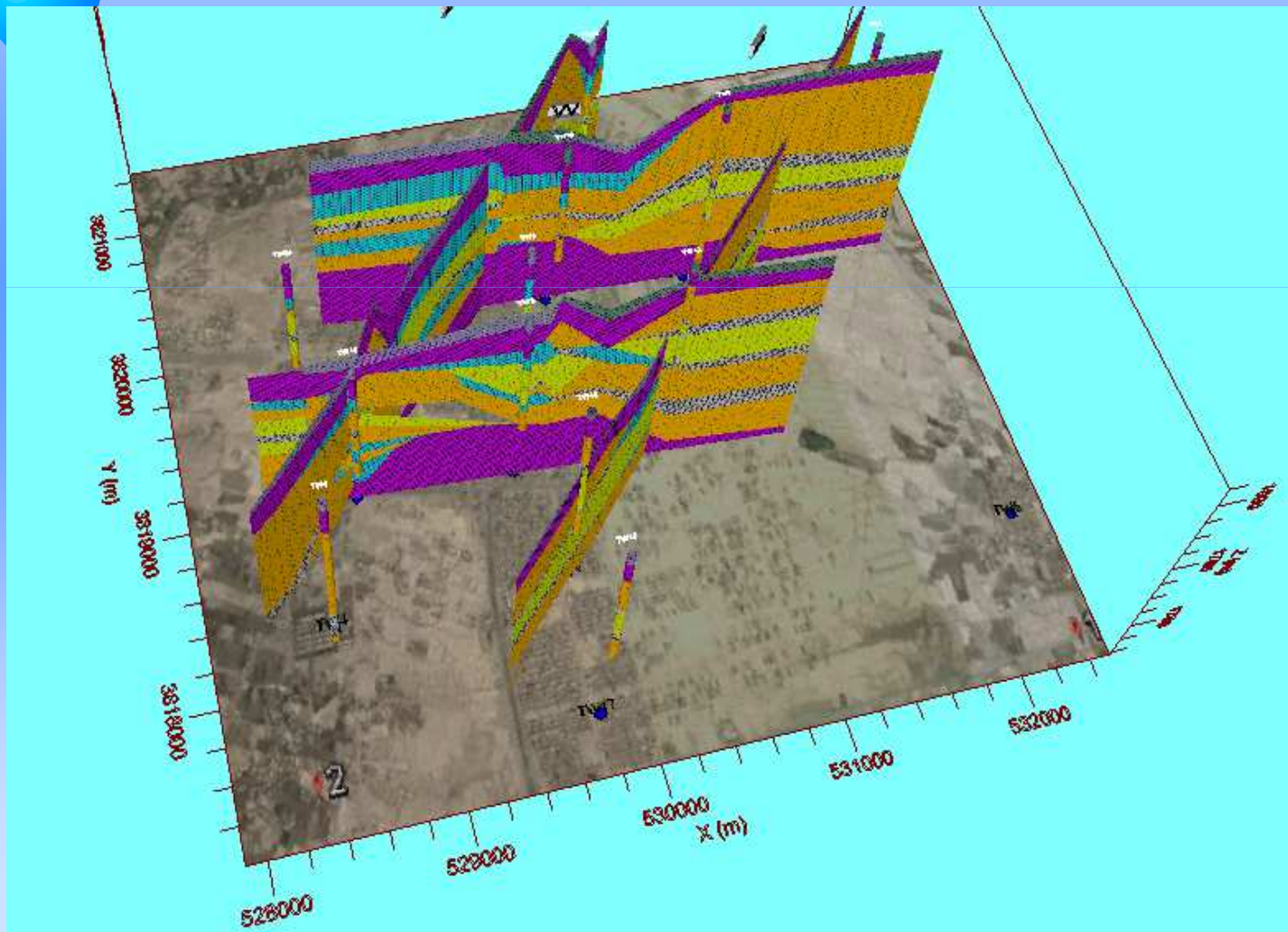
(Visualization of Litho logy, WL, Hydro geological boundaries)

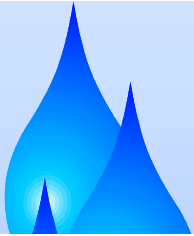




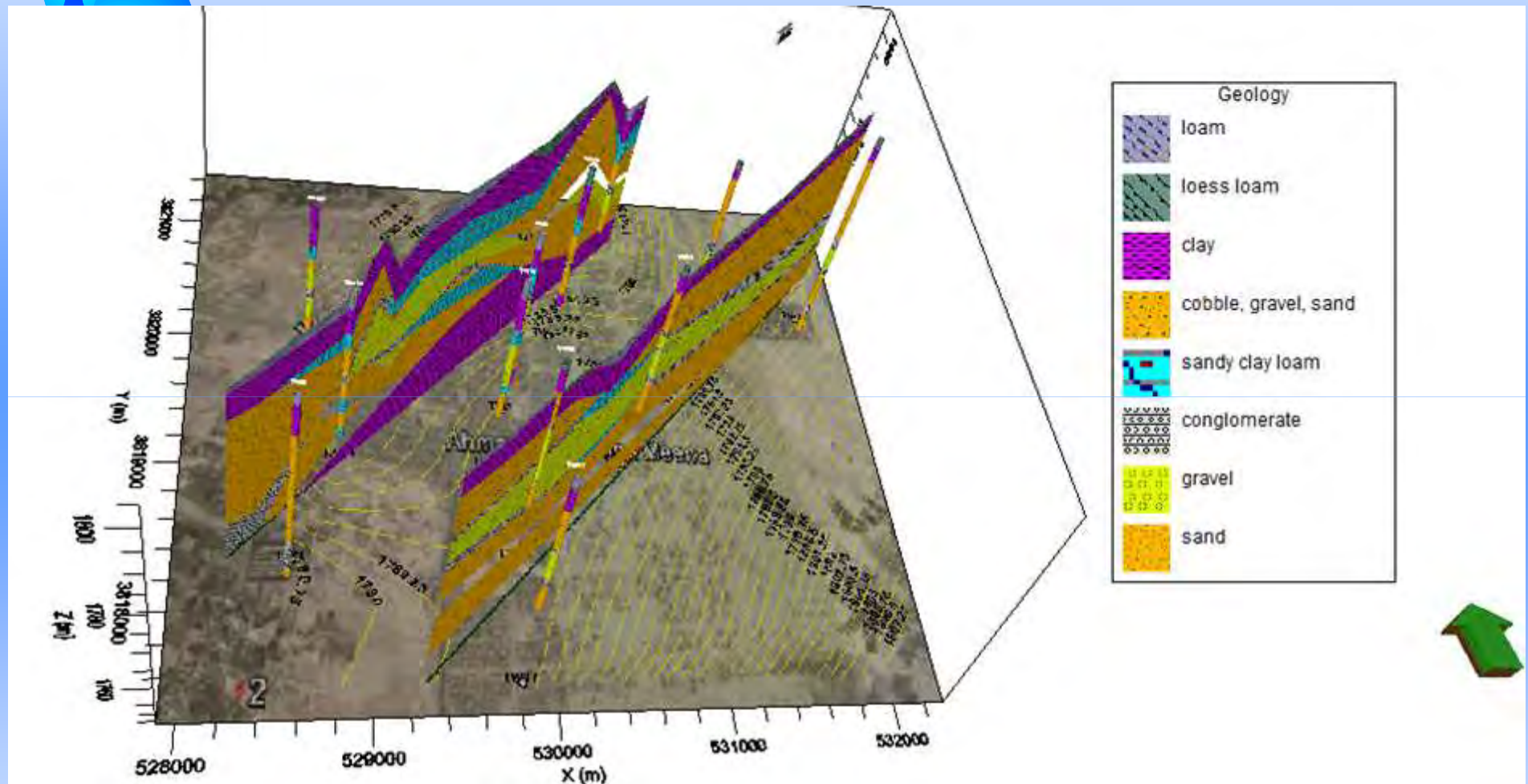
3D visualization (cross section S-S, ZZ, LL and VV)

(Visualization of Litho logy, WL, Hydro geological boundaries)

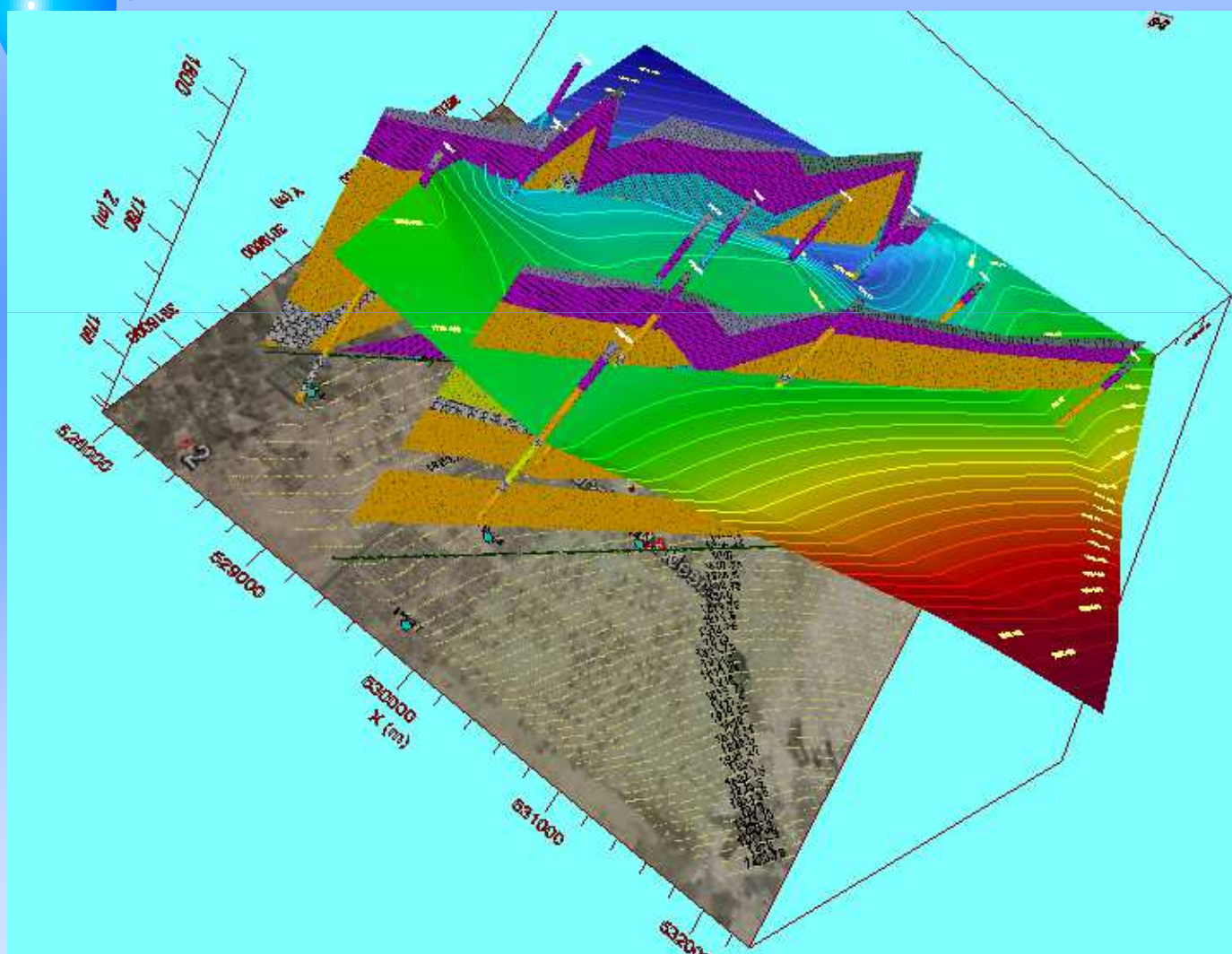




3D, Artificial Recharge of Butkhak ,



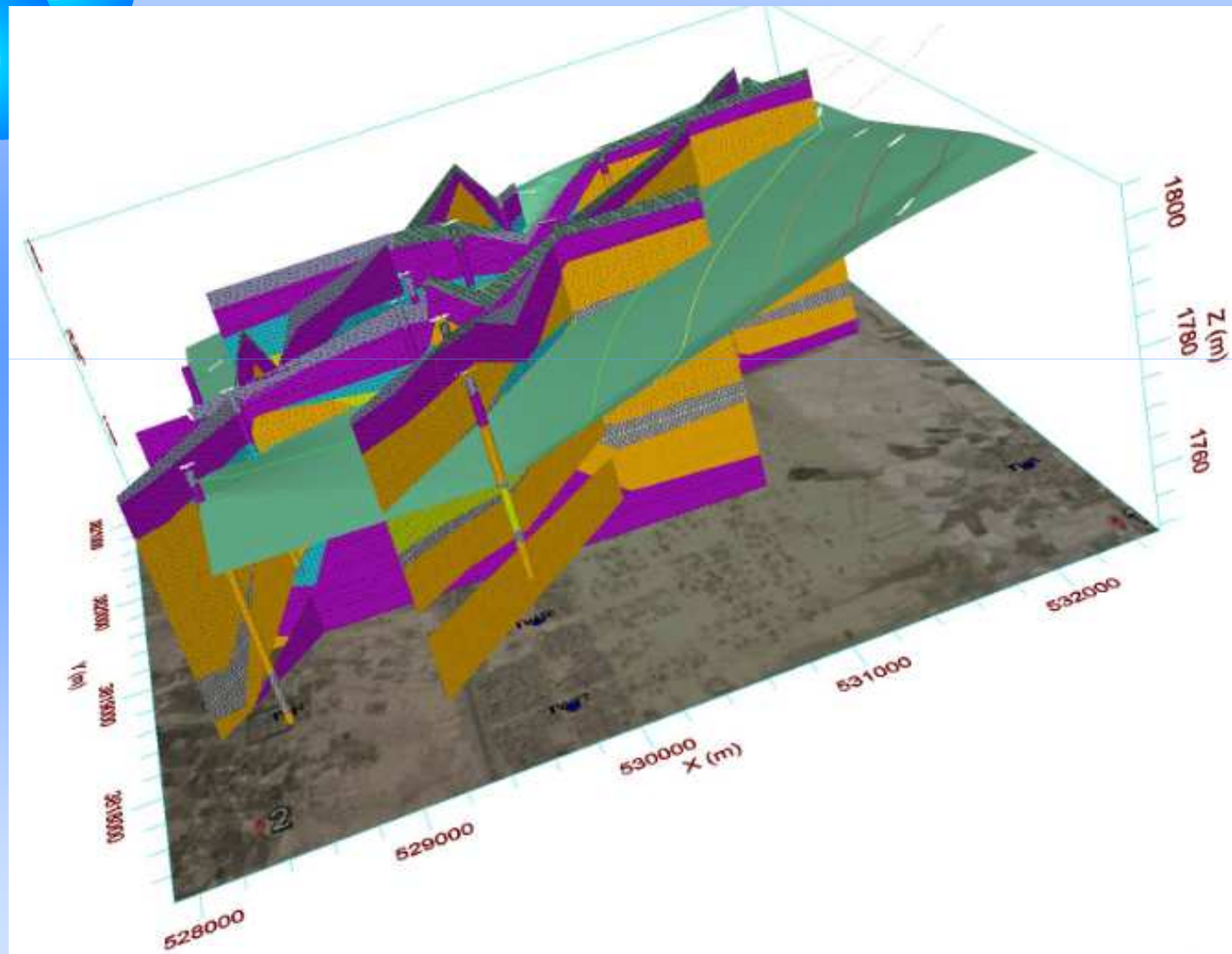
3D water level visualization Module (2004) in District 12, Kabul City











Legend

	loam
	loess loam
	clay
	cobble, gravel, sand
	sandy clay loam
	conglomerate
	gravel
	sand

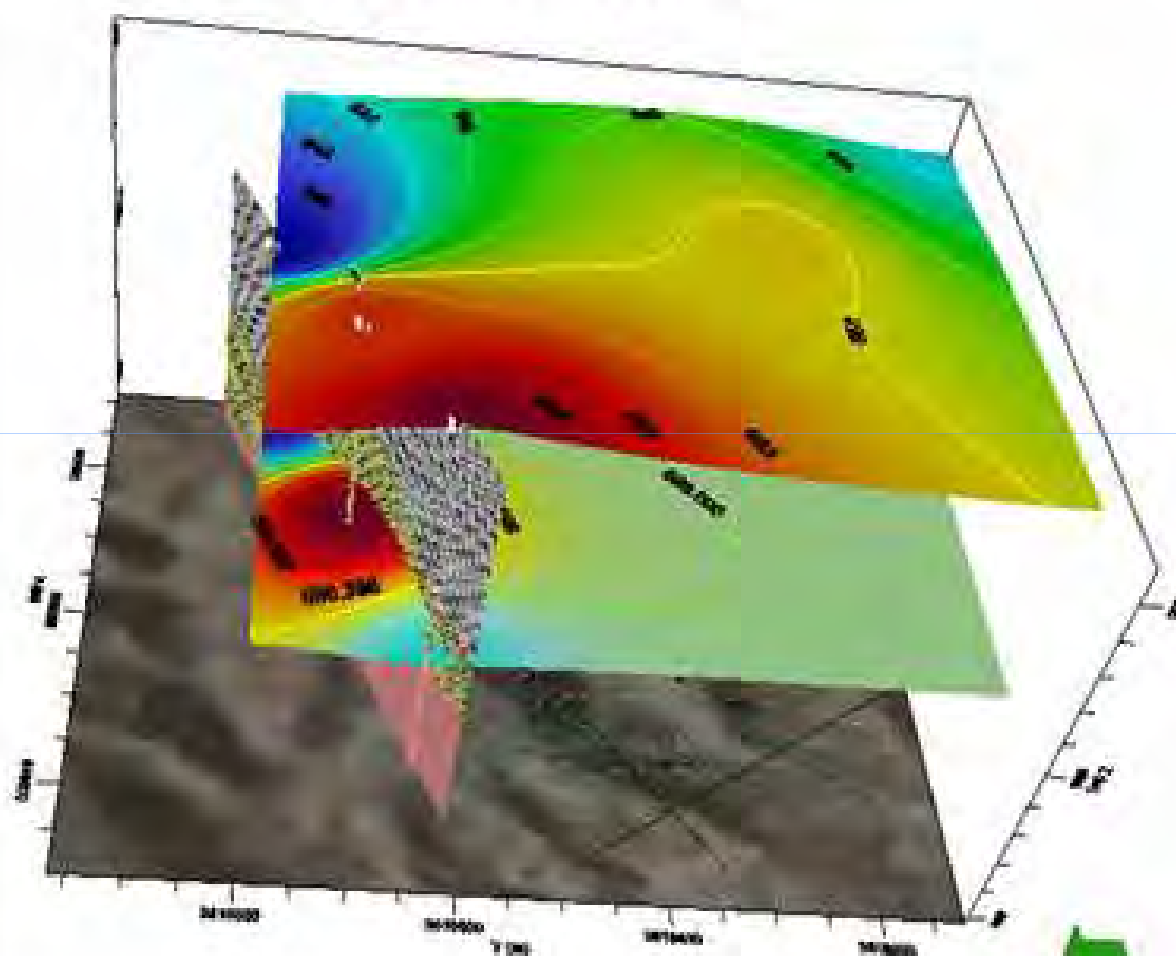
3D water level visualization Module (2012) in District 12, Kabul City



Legend

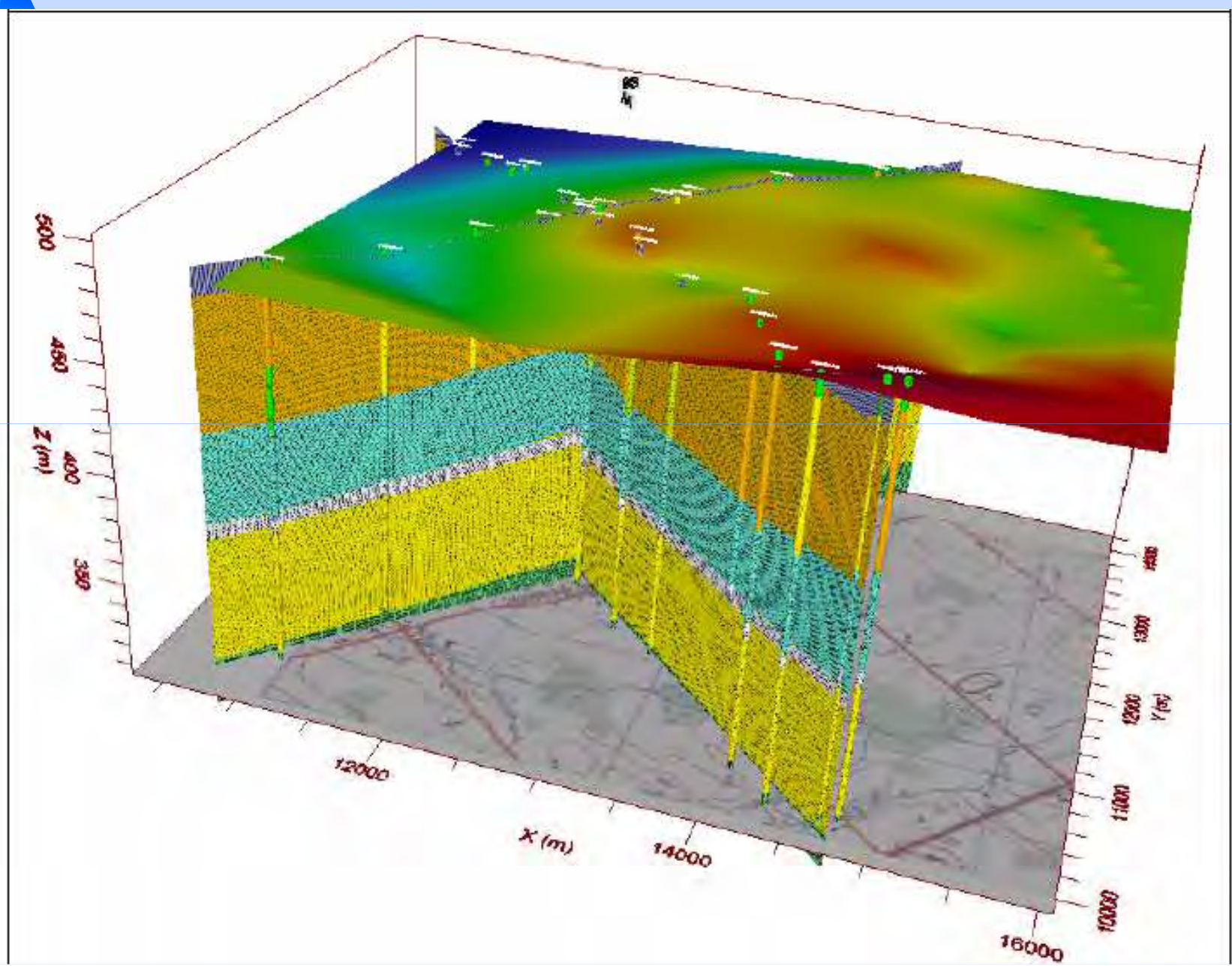
-  loam
-  loess loam
-  clay
-  cobble, gravel, sand
-  sandy clay loam
-  conglomerate
-  gravel
-  sand

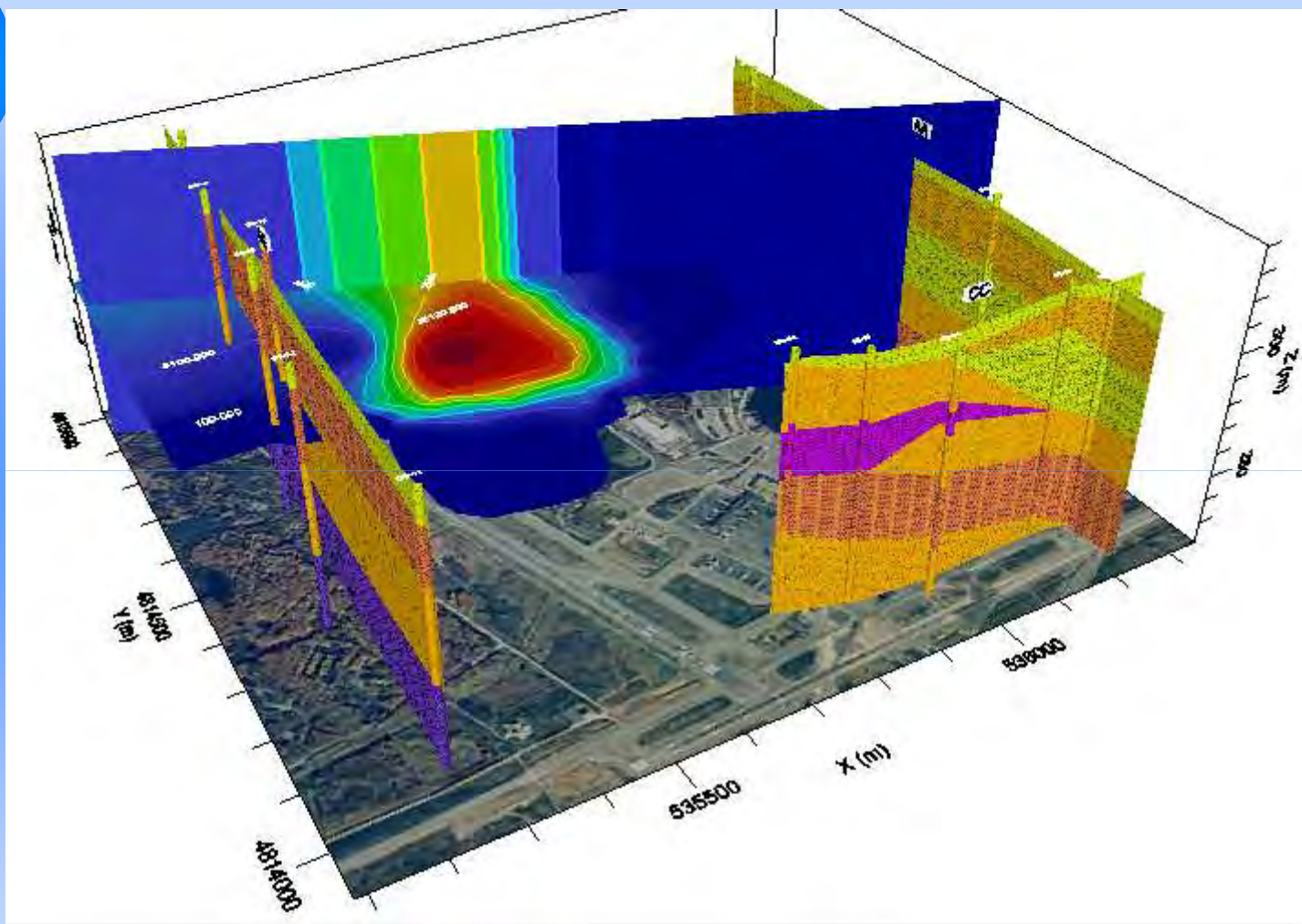
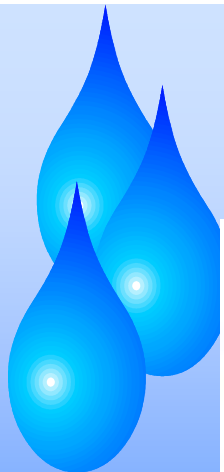
3D Geological cross section

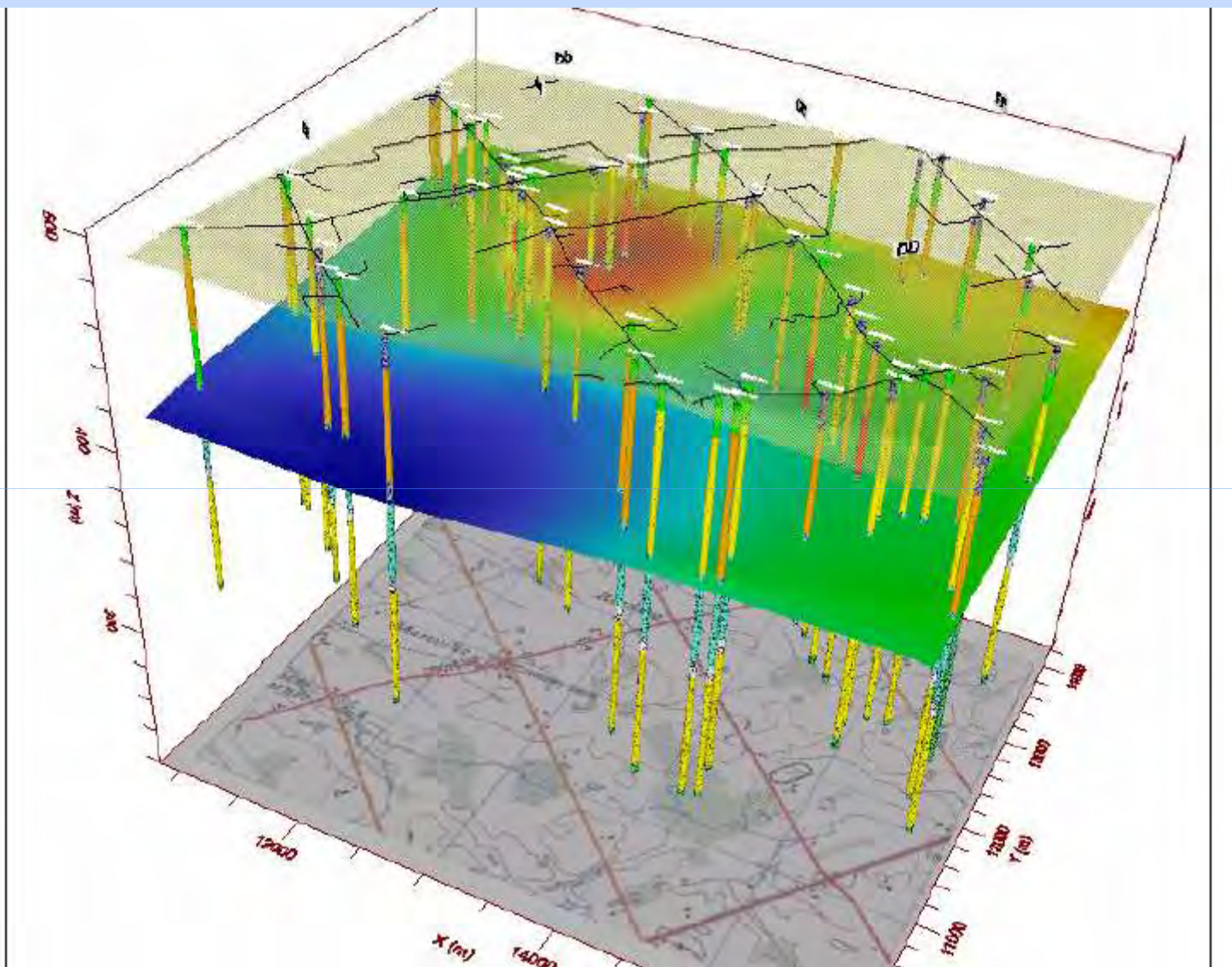
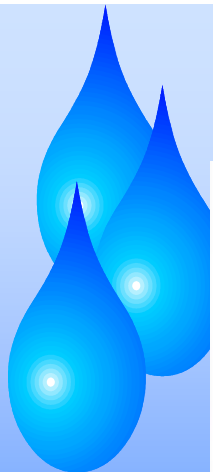


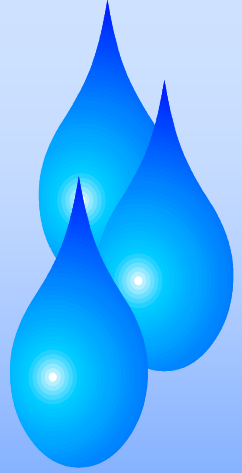
Legend:

-  Clay, Sand, Gravel
-  Clay, Gravel, Bolder
-  Metamorphic rocks









Thank your for
your attention

