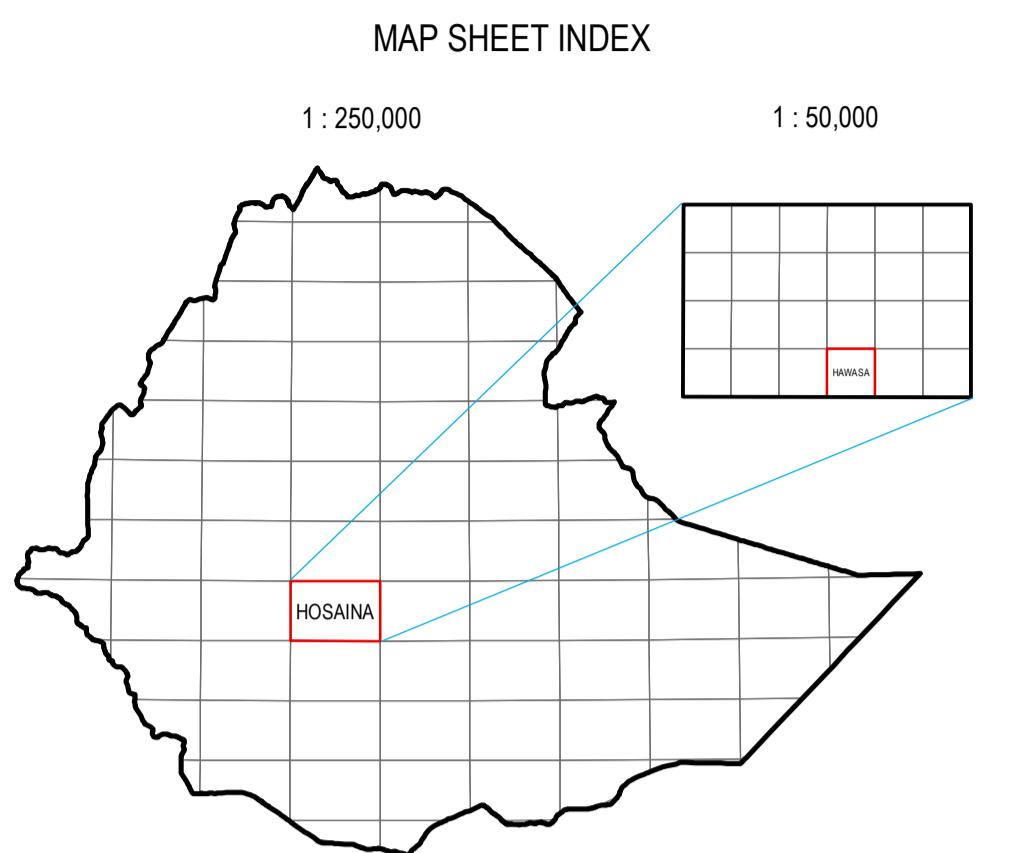


# SET OF GEOSCIENCE MAPS OF ETHIOPIA AT SCALE 1 : 50,000

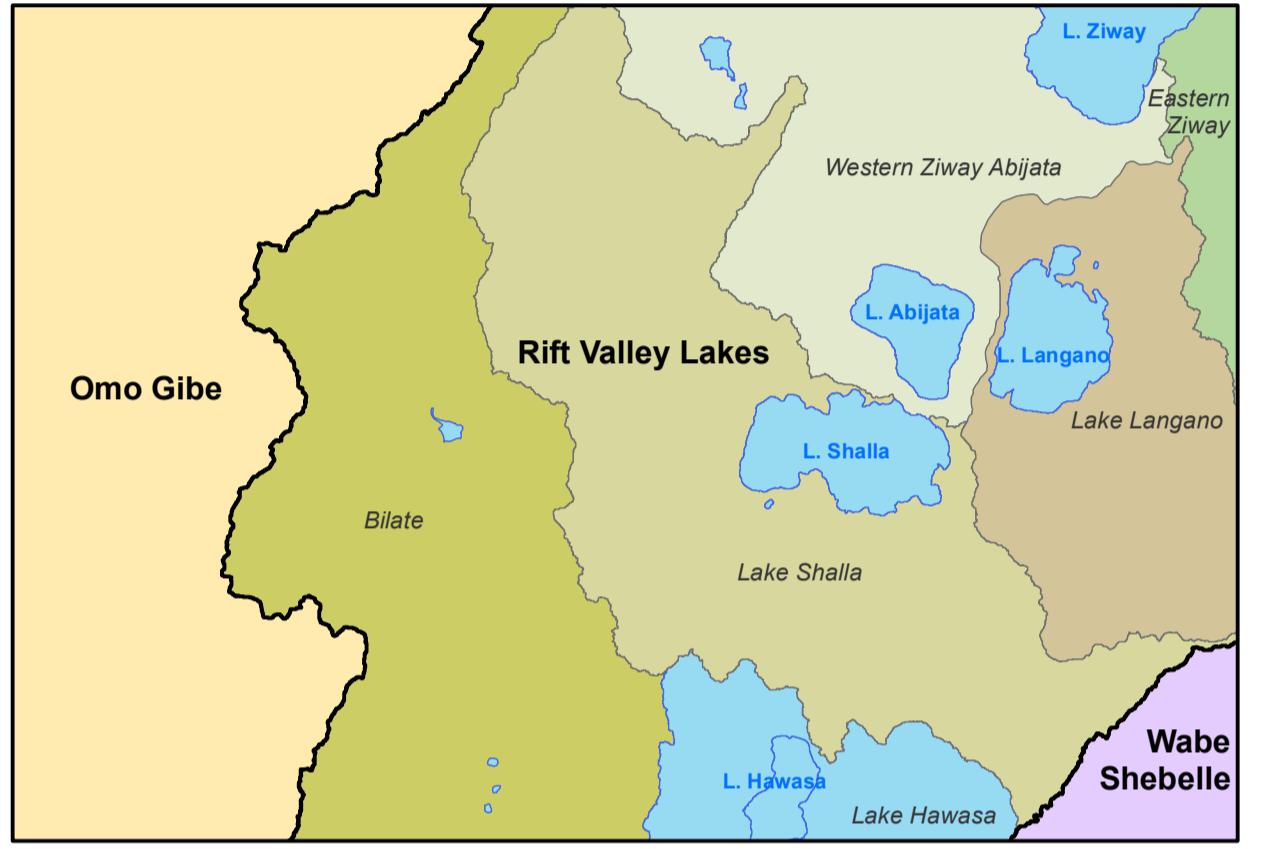
## HYDROGEOLOGICAL MAP

Editor: Jiří Šíma

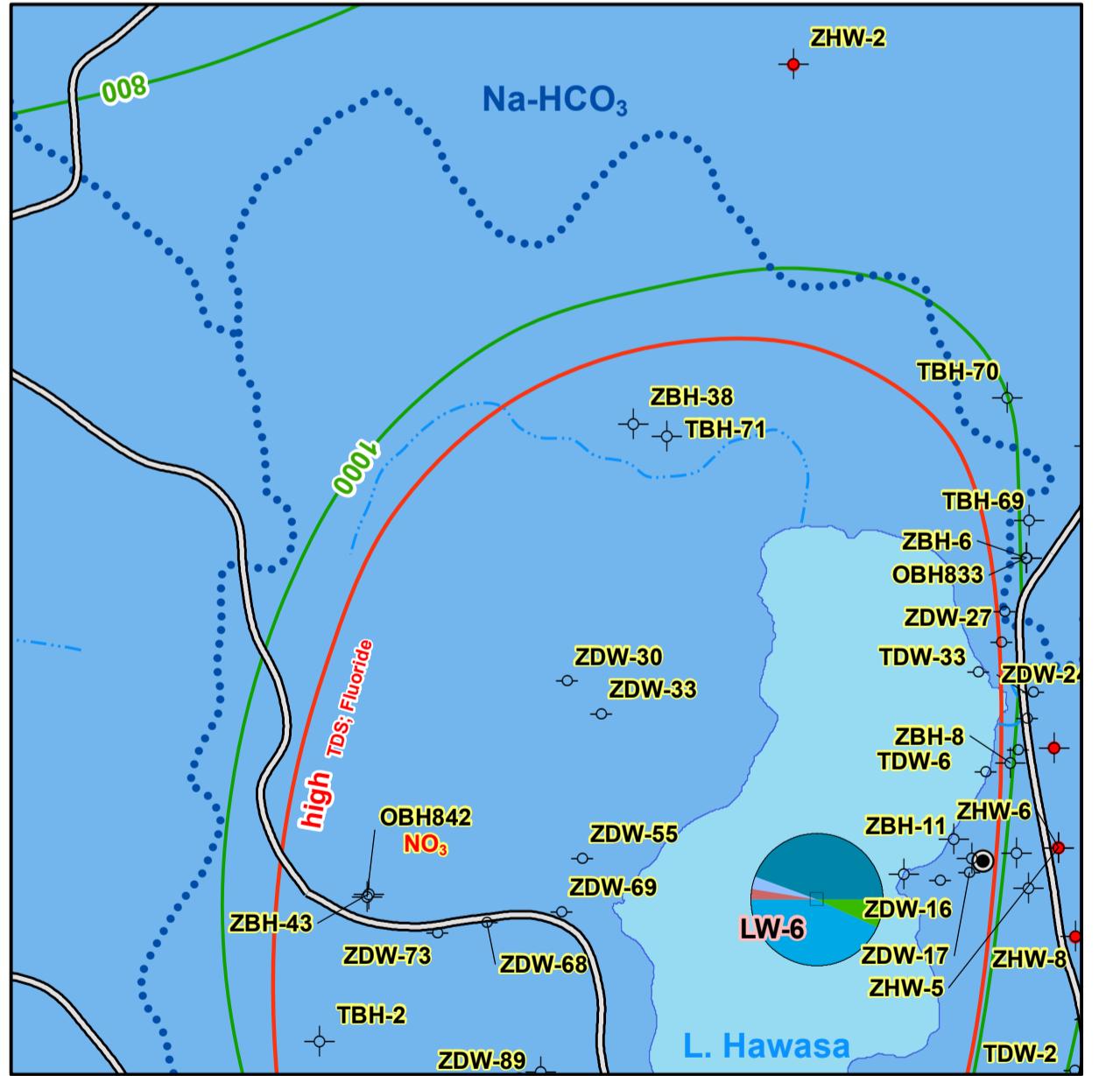
Subsheet 0738-C4 Hawasa



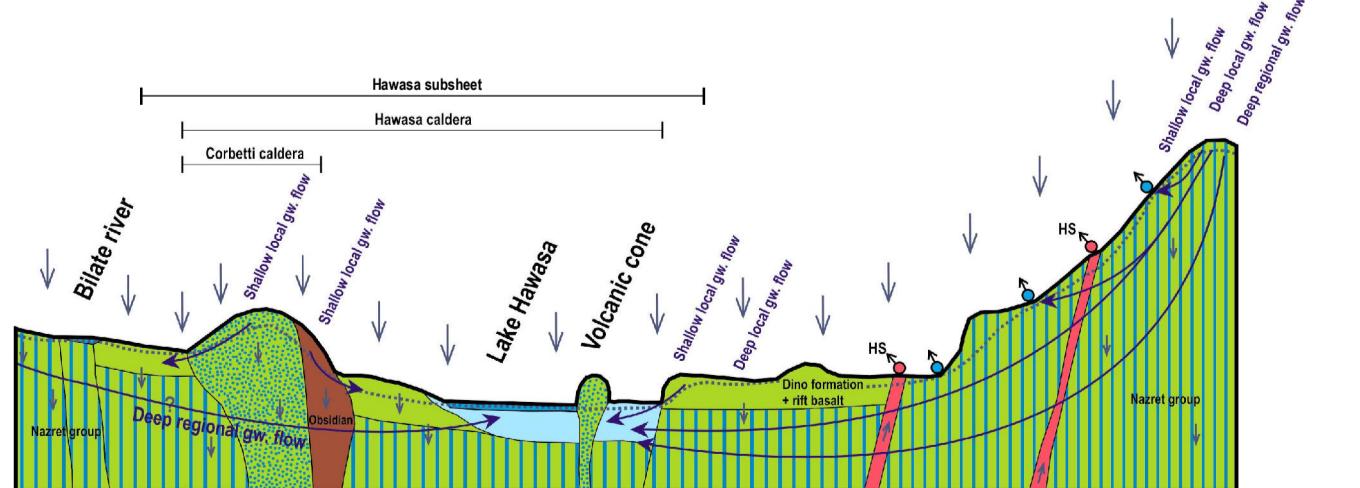
SCHEME OF BASINS AND SUB-BASINS



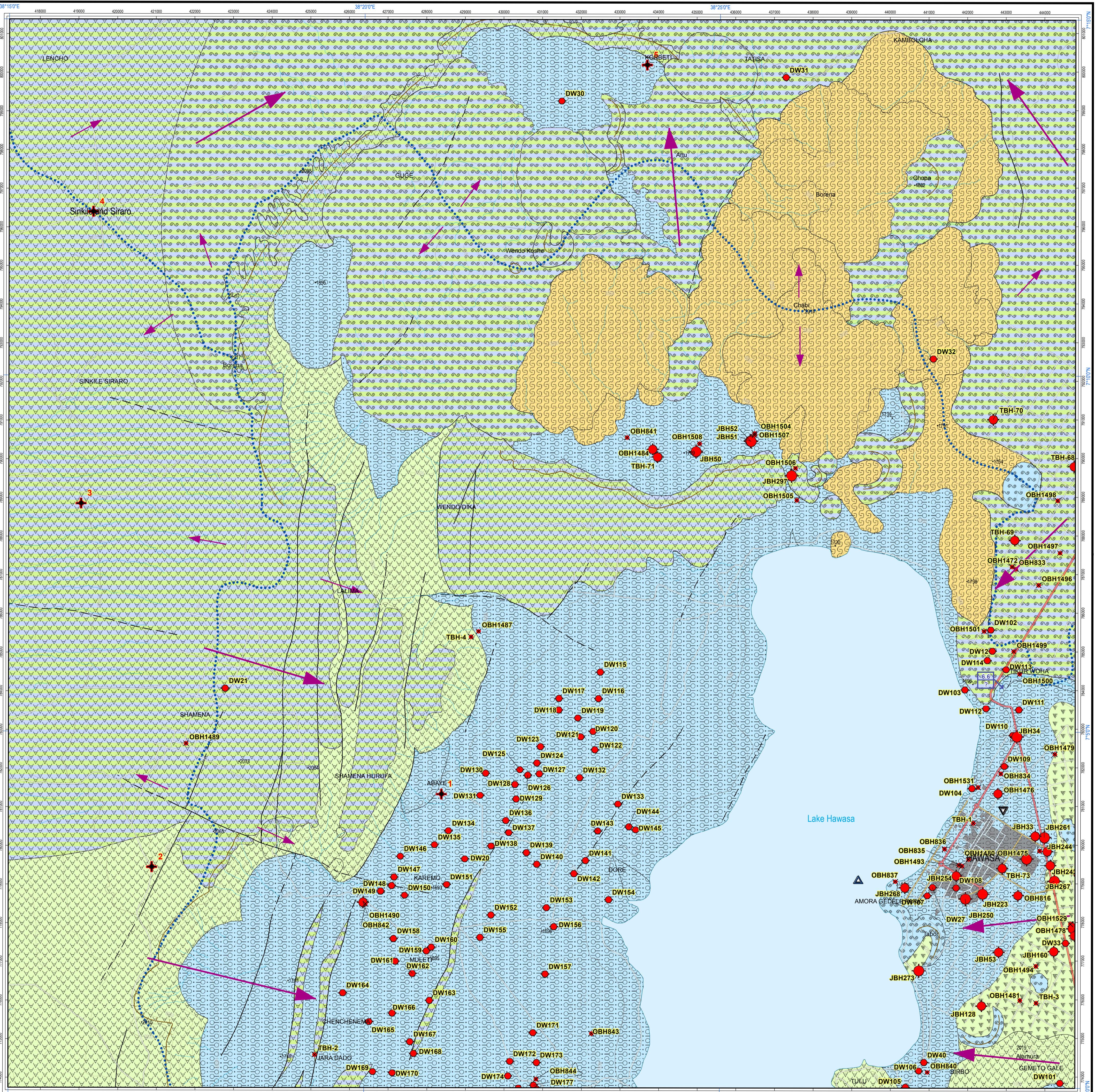
HYDROCHEMICAL MAP



HYDROGEOLOGY SCHEME



Editor: Jiří Šíma



### LEGEND

#### GROUNDWATER AND ROCKS

- 1 Extensive and moderately productive fissured aquifer ( $T = 1.1\text{--}10 \text{ m}^3/\text{s}$ ,  $q = 0.01\text{--}0.1 \text{ l/s}$ ). The aquifers consist of Quaternary lacustrine and fluvial sediments.
- 2 Extensive and moderately or locally developed and highly productive mixed porous and fissured aquifers ( $T = 1.1\text{--}10 \text{ m}^3/\text{s}$ ,  $q = 0.01\text{--}0.1 \text{ l/s}$ ). The aquifers consist of ignimbrite – Hawasa mylonite ignimbrite and Hawasa basalt, tuff and scoria cones.
- 3 The aquifers consist of sequences of sedimentary, coherent volcanic rocks, pyroclastic rocks of the post-caldera Central volcanic complex, and pumiceous pyroclastics related to the Corbett ignimbrites.
- 4 Formation consisting of a minor fissured aquifer with local and limited groundwater resources – Aquiclude. The formation consists of the obsidian and pitchstone.
- 5 Shallow groundwater flow direction
- 6 Deep groundwater flow direction

#### SURFACE WATER AND HYDROGRAPHY

- 7 ▼ Climatic station
- 8 ▲ Lake staff gauge
- 9 ..... Sub-basin surface water divide 1<sup>st</sup> order
- 10 — Watercourse
- 11 - Indefinite stream
- 12 □ Flow gauging station (mean runoff in m<sup>3</sup>/s  
basin area in km<sup>2</sup> × 1000)

#### MANMADE HYDROGEOLOGICAL FEATURES

- 13 ● Borehole with yield 0.05 - 0.5 l/s
- 14 ● Borehole with yield 0.5 - 5 l/s
- 15 ● Borehole with yield greater than 5 l/s
- 16 ✕ Borehole not tested / yield not known
- 17 ○ Dug well
- 18 ✕ Proposed drilling sites

#### LITHOLOGY

- 19 ○○○ Polygenetic sediments (resedimented pyroclastics, alluvial sediments, lacustrine sediments)
- 20 △△△ Basaltic volcanic rocks
- 21 ▲▲▲ Ignimbrite
- 22 ○○○ Pumice and unwelded tuff
- 23 ○○○ Obsidian and pitchstone

#### GEOLOGICAL INFORMATION

- 24 — Normal fault observed
- 25 — Normal fault inferred
- 26 — Caldera ring-fault, crater
- 27 — Lithological boundary observed
- 28 - - - Lithological boundary inferred
- 29 ..... Lithological boundary, drift