Environmental Problems Related to Industries Near Cities

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Geological Survey of Lithuania

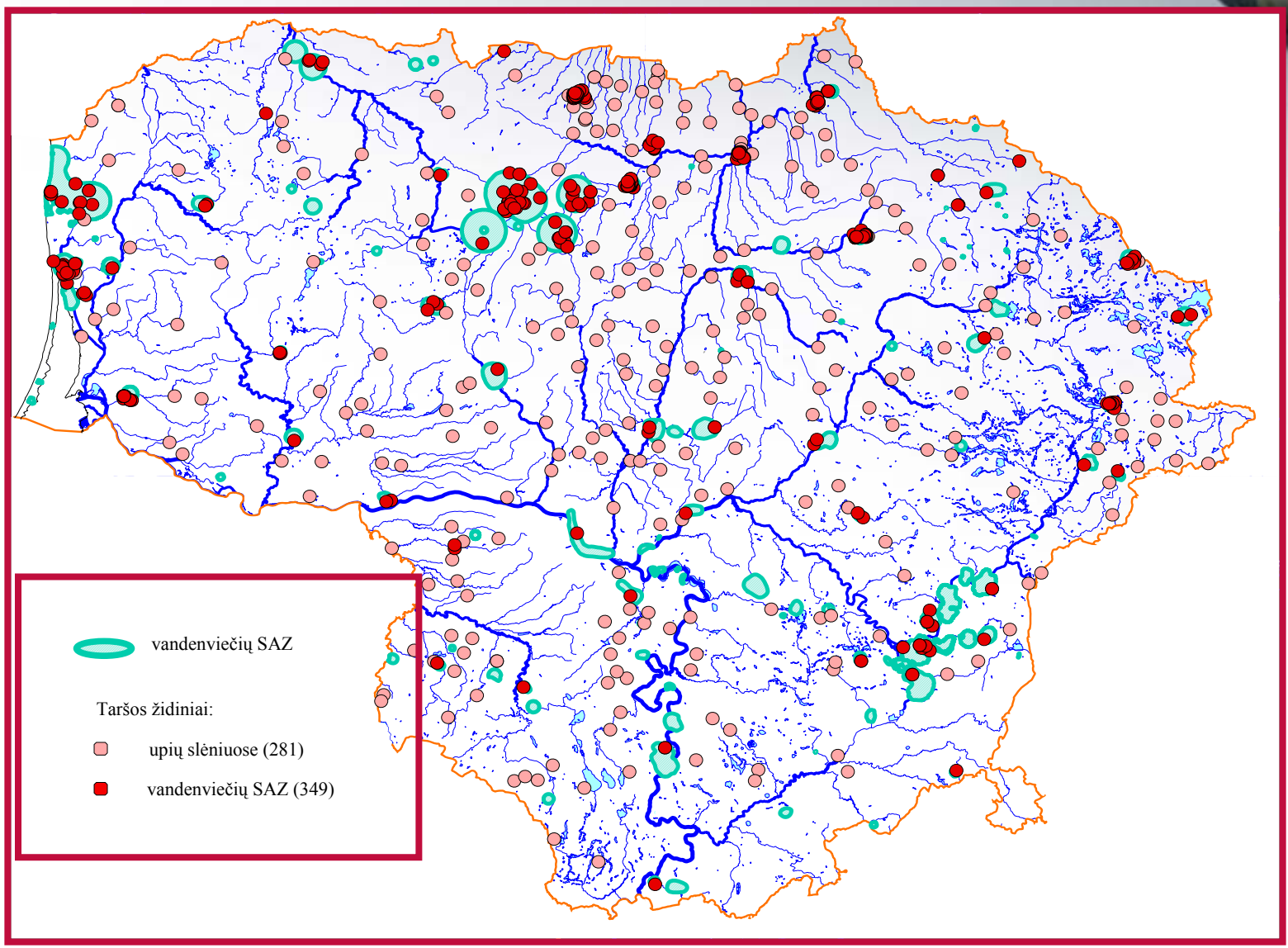
Legislation

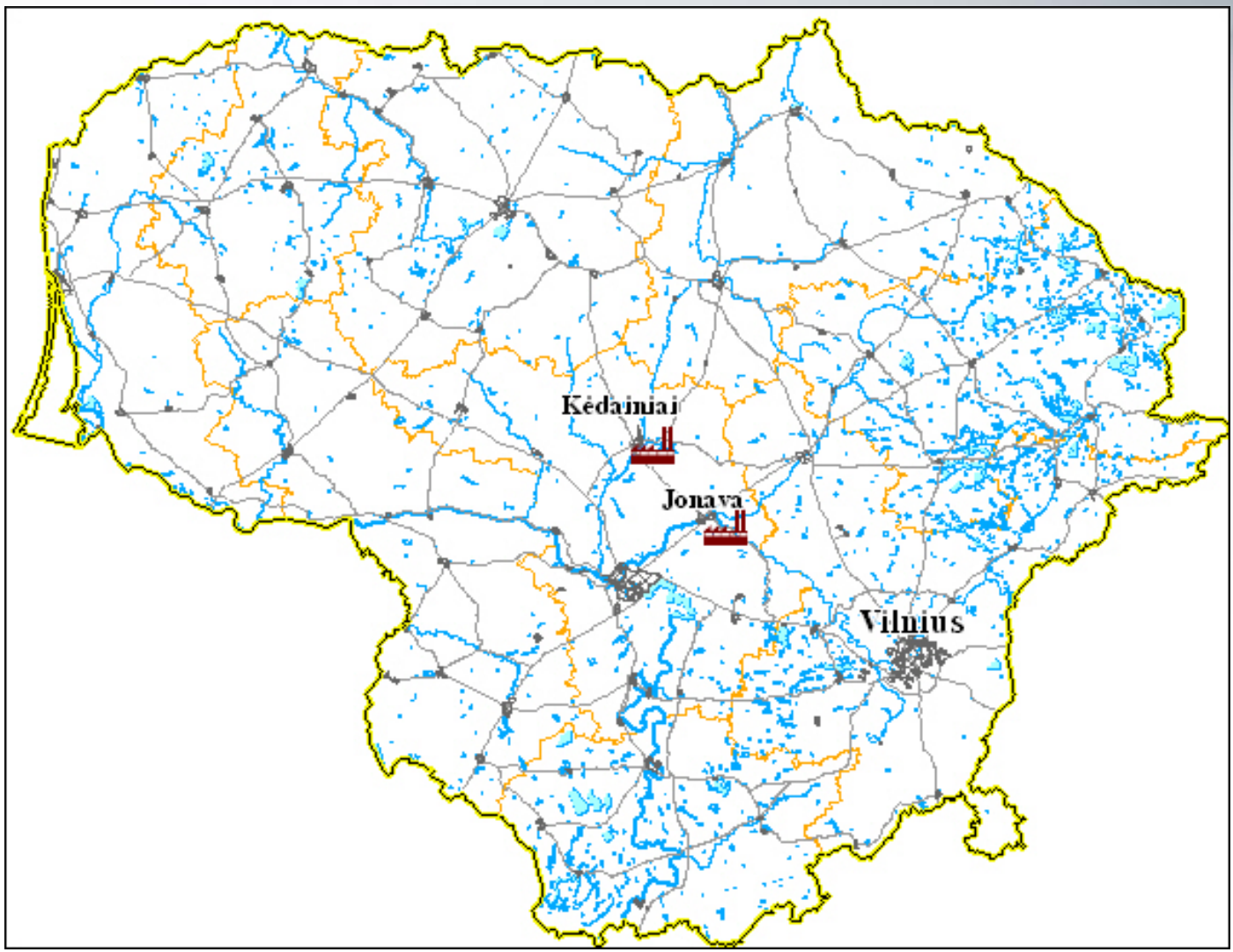
- Order of the Minister of Environment: Regarding the rules for groundwater protection from contamination by dangerous substancies, 21 September, 2001 No. 472;
- Order of the Director of Geological Survey regarding collection of information and inventory of discharge of dangerous substancies into groundwater, 3 February, 2003 No. 1-06. The substances described in the EC directives 80/68/EEC and 2000/60/EC Annexes VIII and X are transformed into the Order of GSL
- Order of groundwater monitoring of economical entities. Approved by the decree of the Director of Geological Survey.

Known point sources of pollution in Lithuania

Registered	Investigated	Important sources				
		Total	Landfills	Petroleum products	Industrial objects	Other
3519	**412**	**133**	**17**	**103**	**4**	**9**

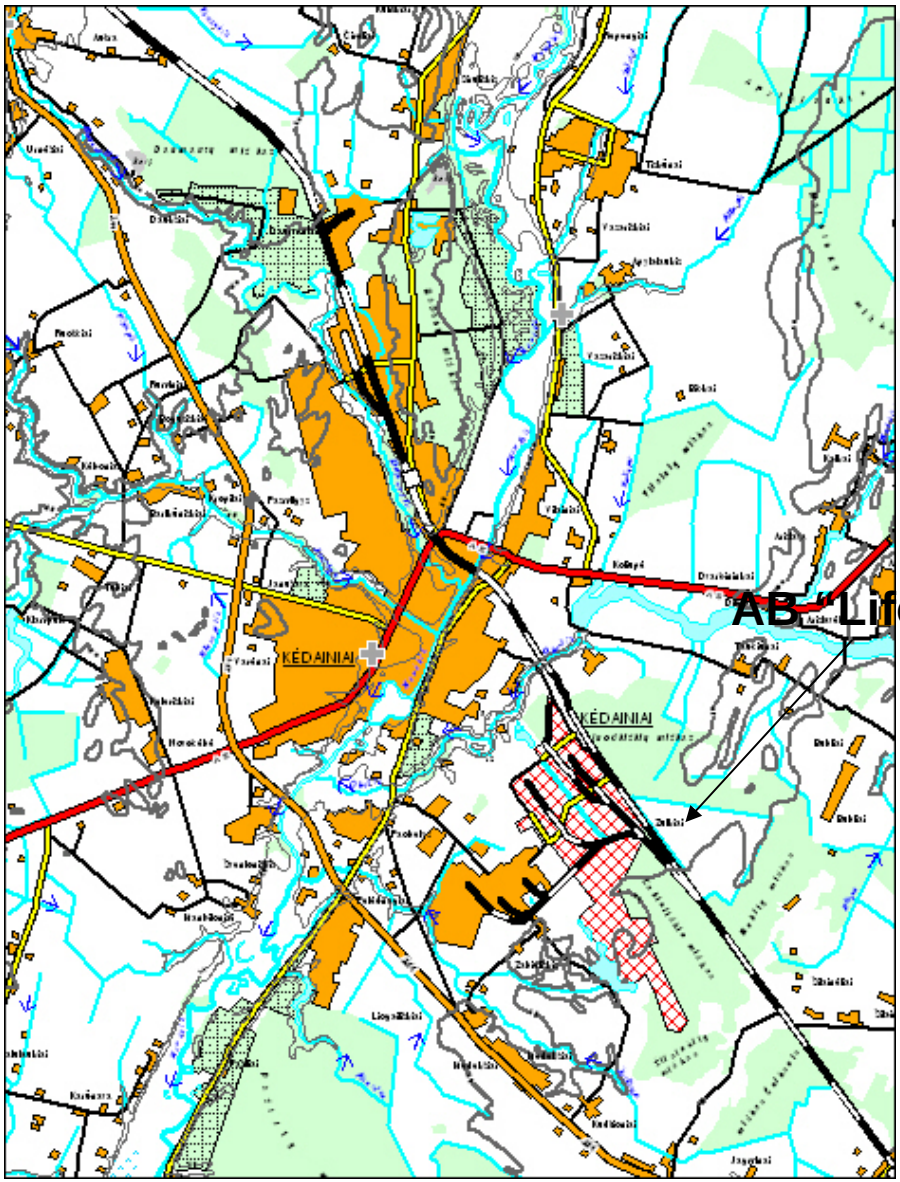
Point sources




Kėdainiai
Jonava
Vilnius

Production of phosphorus fertilizers

Factory in Kedainiai



AB "LIFOSA"

Raw material – fluoroapatit, Chloroapatit (Russia)

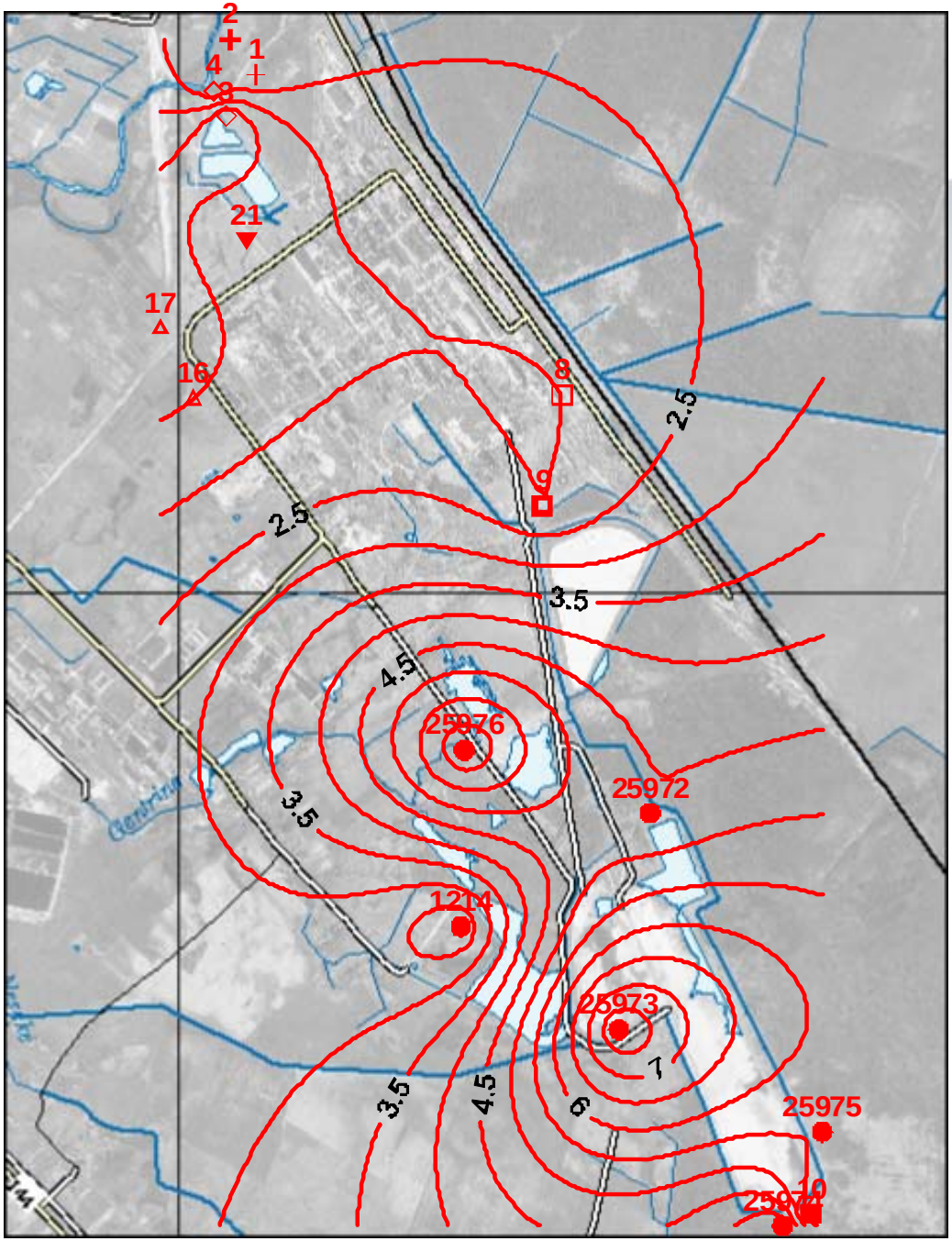
Output - diammonium phosphate
Feed additives – monocalcium phosphate and dicalcium phosphate

Wastes – phosphogypsum enriched By fluorine, acid, sulphate, etc. Deposited more 12 mil. T.

Environmental problems

- Air pollution by exhaust gases;
- Soil pollution by dust (transport of phosphogypsum)
- Groundwater pollution by specific substances, acidification,

Fluorine

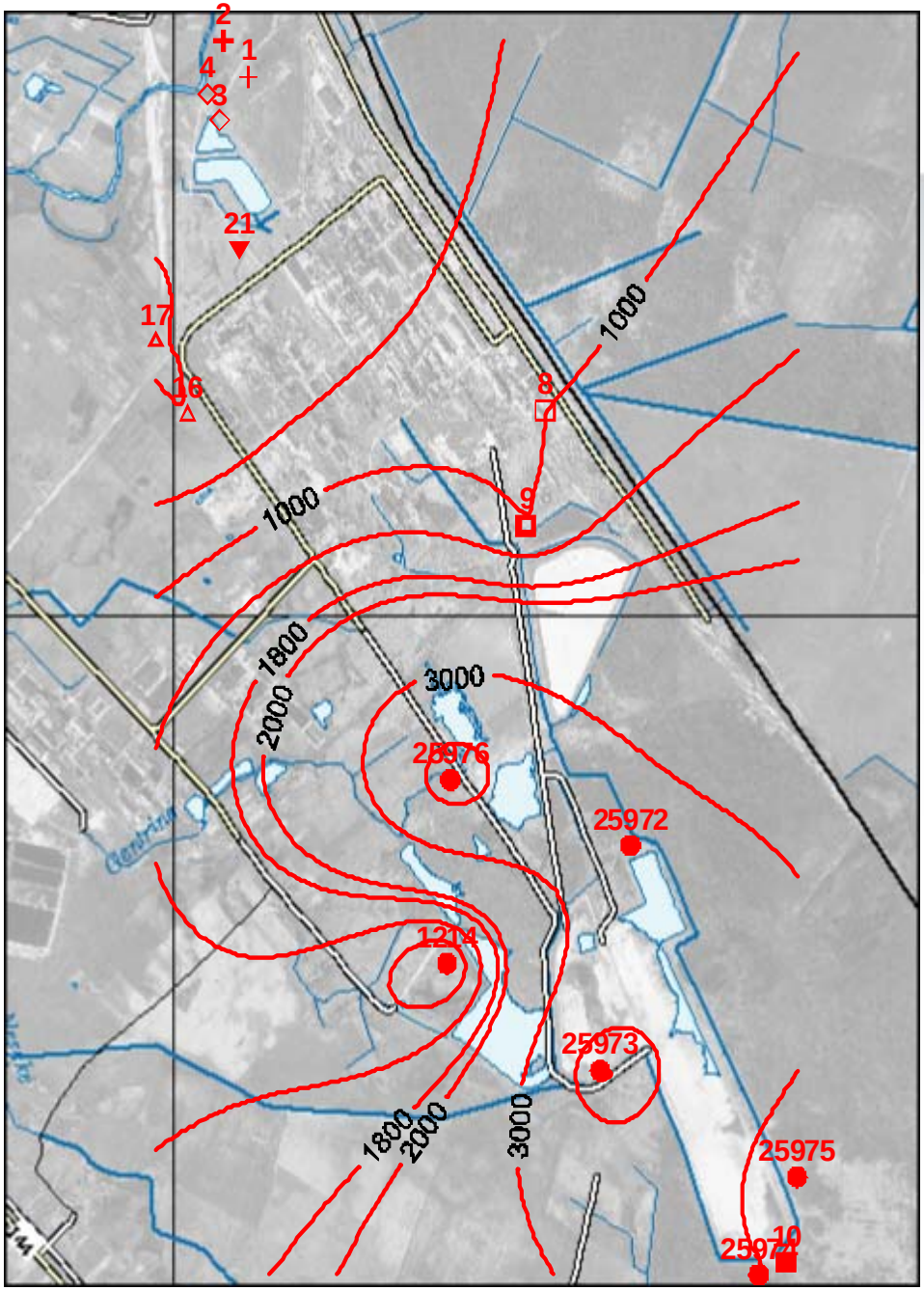


Fluorine concentration varies Between 0.5 – 8.0 mg/l

Highest concentration close to Phosphogypsum piles

Groundwater discharge – Surface water
drinking water (dug wells)

Public water supply - ???



Sulphate

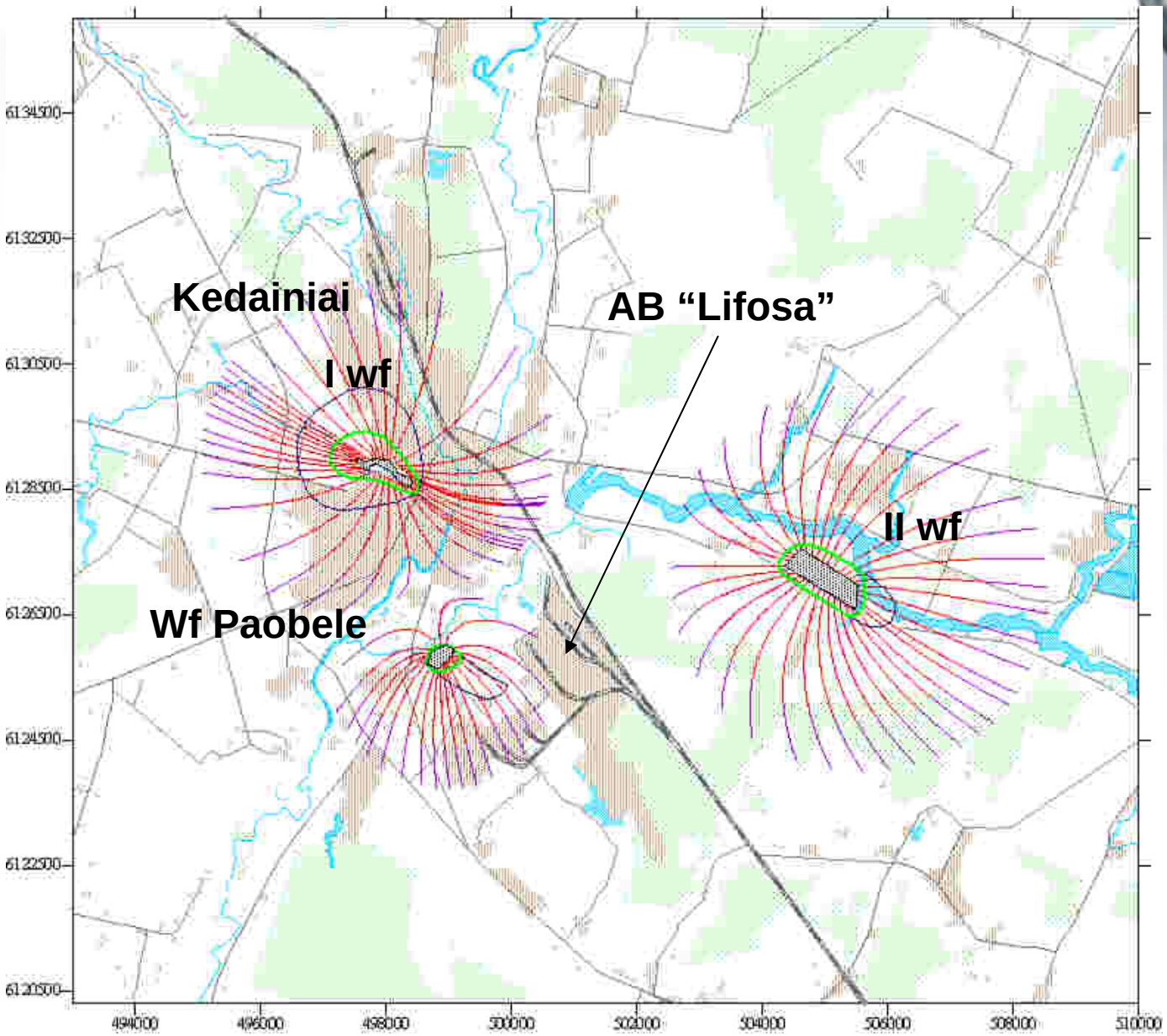
Sulphate concentration varies Between 0.5 – 4.5 g/l

Highest concentration close to Phosphogypsum piles

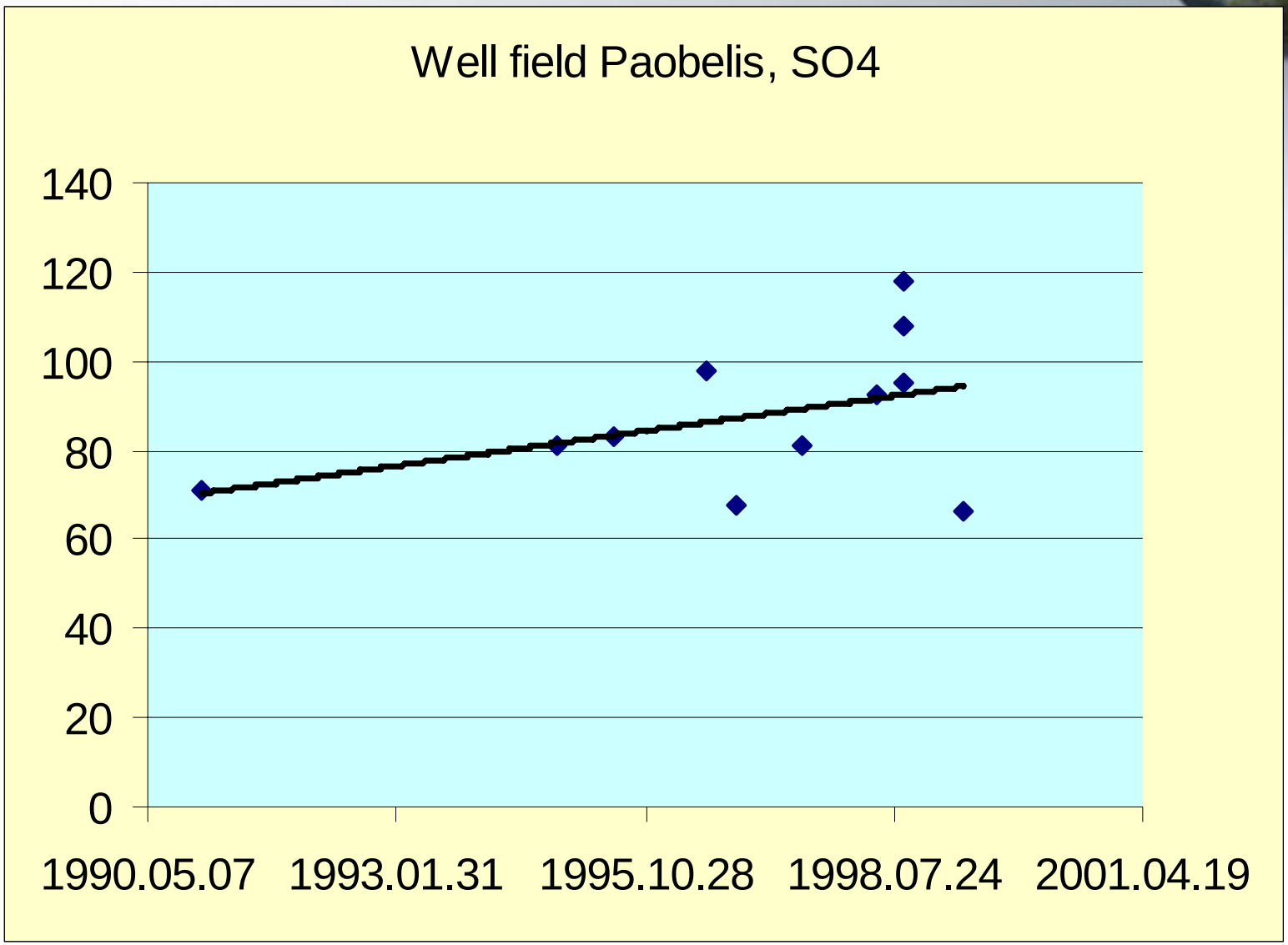
Groundwater discharge – Surface water
drinking water (dug wells)

Public water supply - ???

WHP zones


Kedainiai
I wf
AB “Lifosa”
II wf
Wf Paobele
6134500
6132500
6130500
6128500
6126500
6124500
6122500
6120500
494000
496000
498000
500000
502000
504000
506000
508000
510000

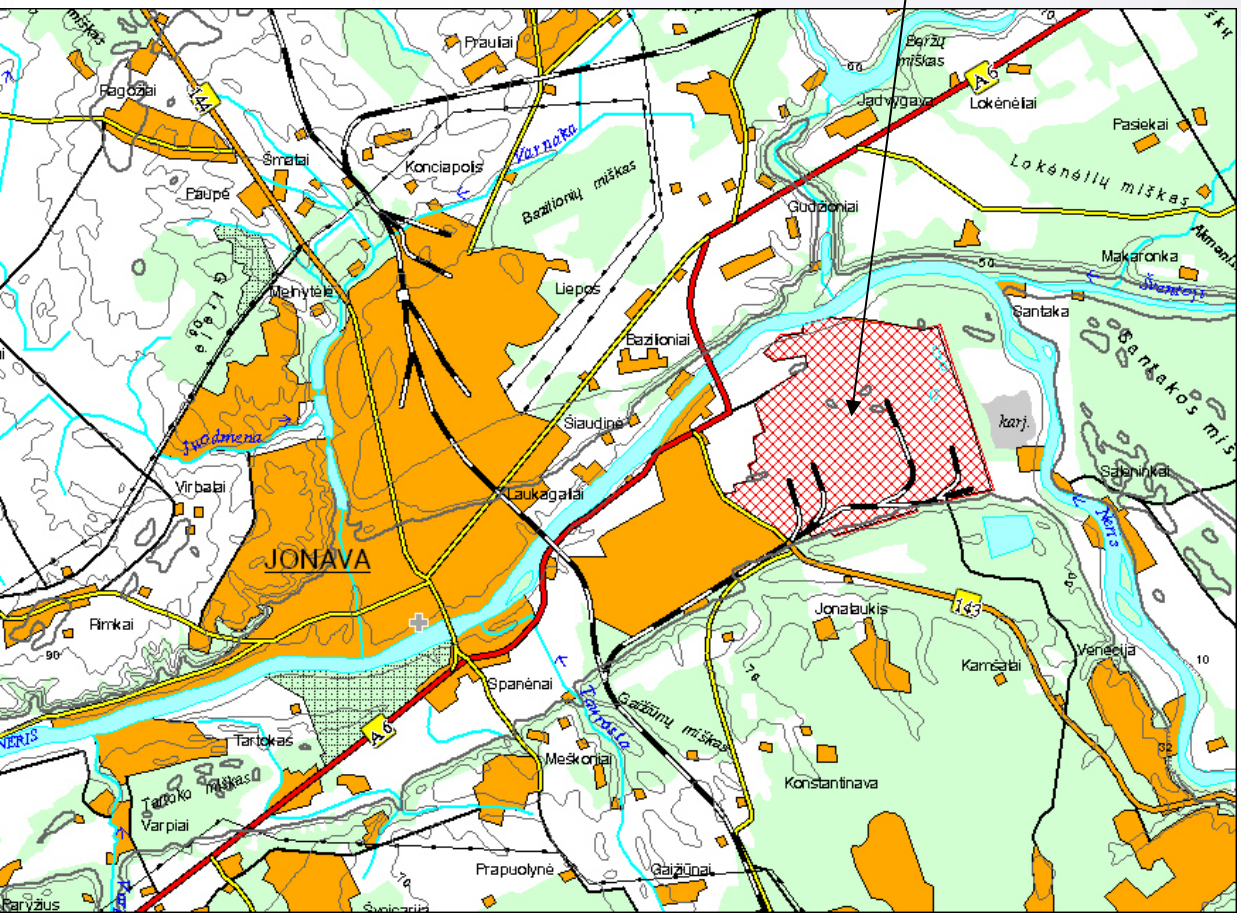
Trend of sulphate in drinking water



Production of nitrogen fertilizers

Factory in Jonava

AB “Achema”



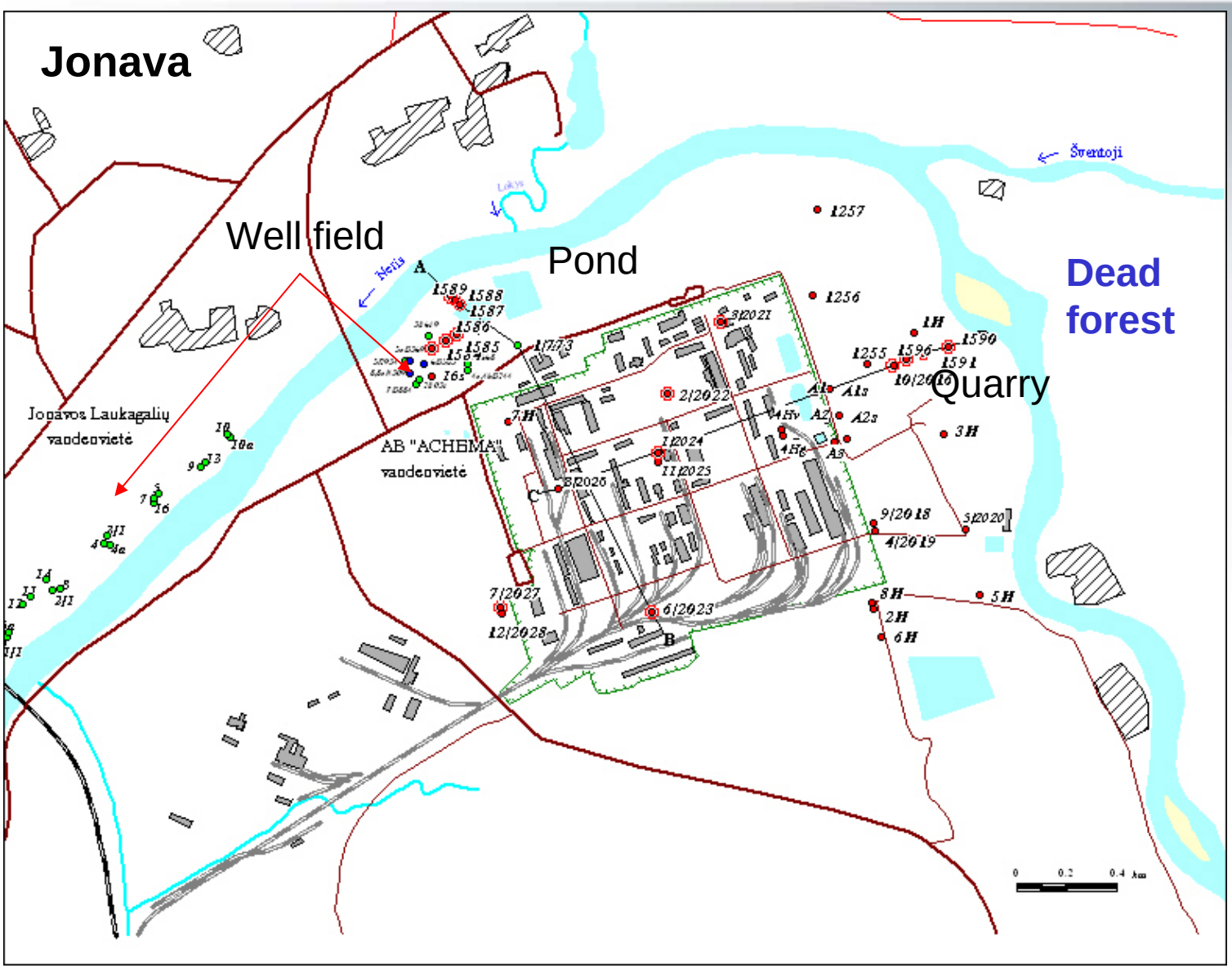
Output - urea formaldehyde resins (UFR) – 21 percent, methanol – 13 percent, industrial gases – 3 percent, polyvinyl acetate dispersion (PVAD) – 2 percent

Wastes – no specific, accidental spills

Environmental problems

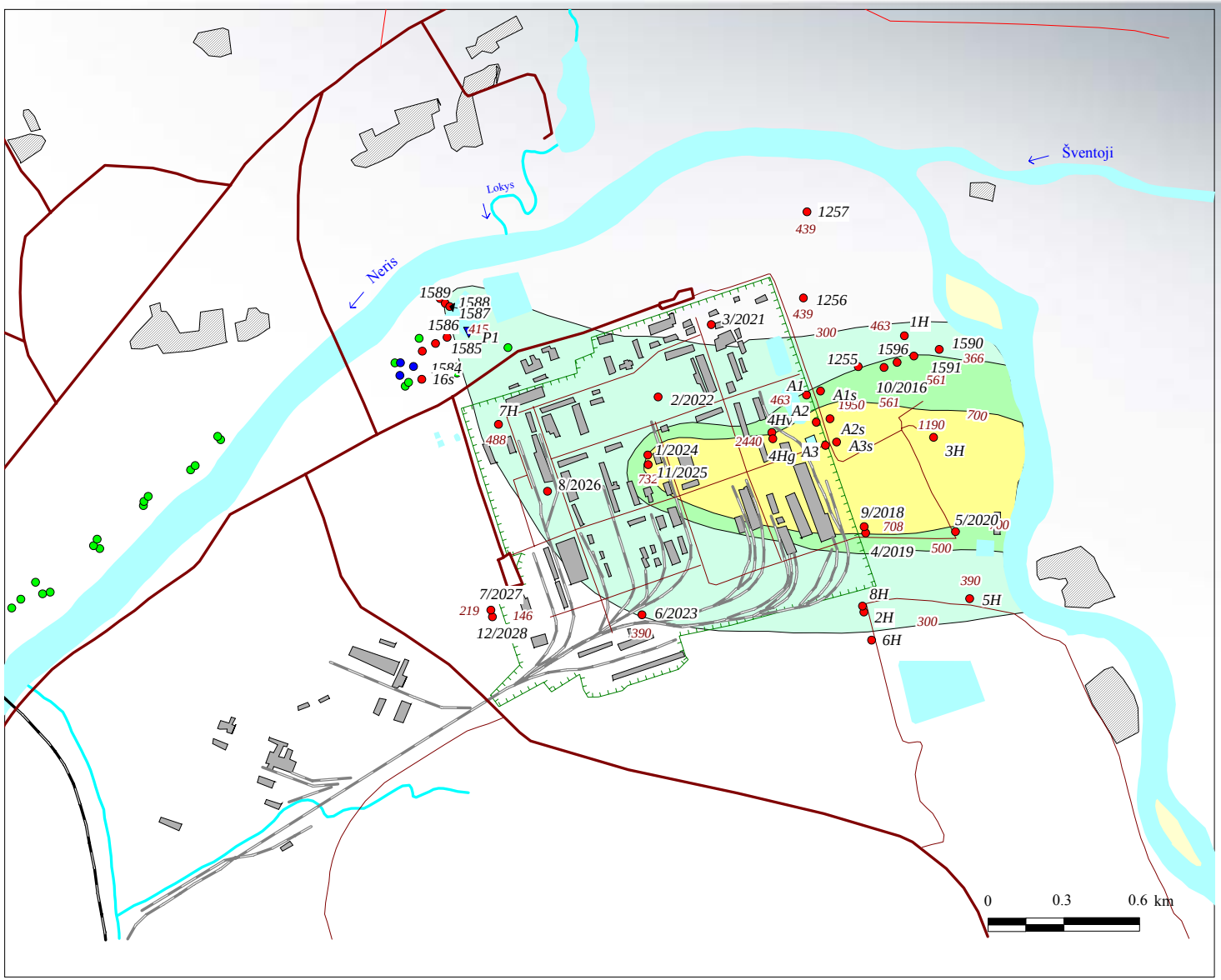
- Air pollution by nitrogen compounds (till 1990)
- Indirect discharges to groundwater
- Accident in 1986
- Discharges to surface water
- Threat to water supply

AB “Achema”

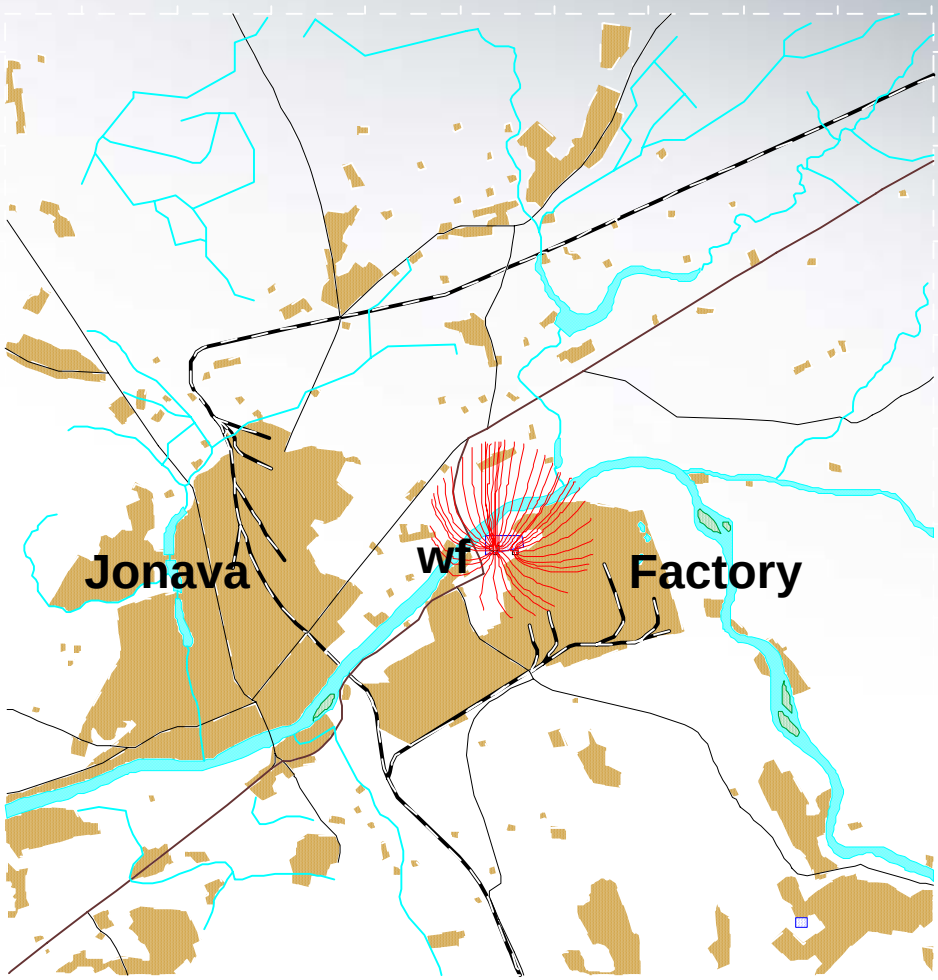

Jonava
Well field
Pond
Dead forest
Quarry
Šventoji
Neris
AB "ACHEMA"
vandenvietė
Jonavos Laukagalių
vandenvietė
0
0.2
0.4 km

Ammonia in groundwater

Bicarbonate in groundwater



WHP zone



Next steps

- Factories situated in rivers valleys
- Factories are in public water works WHP zones
- WFD 2000/60/EC require:
  - To review the impact of human activity on the status of surface water and on groundwater;
  - Evaluate available resources of public water supply sources with aim to reduce increasing trends of pollutants
  - For relevant pollutants in bodies of groundwater that are affected by point sources of pollution, including historical point sources, in order to verify that plumes from contaminated sites do not expand over a defined area and deteriorate the chemical status of the groundwater body (GWD daughter);
  - Monitoring of bodies “at risk”.
- Programme of measures (2009)

Tools

- Inventory and risk assessment of contaminated sites situated in river's valley's and protection zones of wellfields (applied for Structural fund)
- Modernization of National groundwater monitoring (State investment)
- Groundwater Risk Assessment methodology, integrated Data management system, and Upgraded monitoring data Acquisition network, for Lithuania (GRADUAL) (applied for PHARE)
- Methodology of prioritisation of contaminated sites and review of the impact of human activity on groundwaters (CO-OPERATION PROGRAMME BETWEEN FLANDERS AND LITHUANIA)