Voids

How to Manage

Water Well Drilling & Geothermal Borehole Hazards Series

Geologic setting and Potential hazards:

- Karst Terrain -
  - Sink holes
  - Solution channels,
  - Voids & crevices
- Mining – Coal or Pb/Zn Mines
  - Vertical Shafts
  - Horizontal Workings
- Protected potable aquifers:
  Devonian Limestone
  Silurian Dolomite
  Jordan Sandstone (Ordovician)
  Dakota Sandstone (Cretaceous)

Void Size & Classification

- Minor < 24 inches
- Intermediate > 24 inches – 5 feet
- Major > 5 feet

Void Management

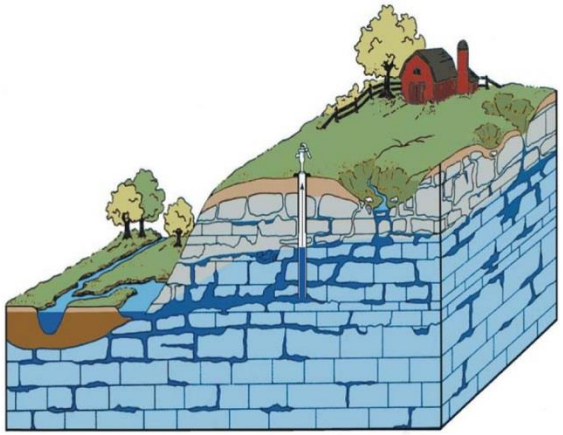
Minor - Backfilled with 3/8" clean limestone chips to 10' above void – grout to surface

Intermediate – Backfilled with 3/8" clean limestone chips or permanent well casing from 5' below void to 10' above void – grout to surface

Major - CEASE DRILLING & NOTIFY DNR, Engineer, City Engineer for prescribed method based on geologic formation. May include:

- Fill void with clean limestone chips
- Place permanent casing and walled to prevent vertical migration
- Other methods approved by DNR, City Engineer or reviewing authority

- Document - Any grout loss
- Report - Any borehole with uncontrolled loss of grout
- Never Use Hole-Plug style bentonite in a borehole with loop heat exchanger



Look for Potential Hazards:

- Gas stations, Fuel depots, Rail yards
- Landfills and Dump sites
- Industrial, Factory, Power Plant district
- Metal Foundries, Manufacturing, Plating
- Septic Systems, Wastewater Treatment Lagoons, Waste storage and Application areas
- Ag or industrial chemical manufacturing, mixing, storage and loading areas
- Dry cleaning sites, automotive service, repair and body shops, pesticide services

Separation Matters!

Formed Manure storage	Shallow well	Deep Well	Distance
	200	100	
Public Wells	400	200	
Earthen Manure Storage Structure			1000
Domestic Lagoons			400
Sanitary Landfill			1000
Hydro Carbon Fuel Tanks Chemical/Fertilizer Prep and Storage Areas			100
Drainage Wells			1000
Conforming Wells			10
Nonconforming Wells			100
Soil absorption field, sewage treatment			100
Septic Tank, concrete vault, sewer tightly joined tile, foundation drain, sewer under pressure			50
Sewer ○ Cast Iron with leaded or mechanical joints ○ Plastic pipe with glued/compressed joints ○ Independent clear water drains, cisterns, well pits or pump house			10
Hydrants, Frost pits			10
Ditches, streams, ponds, or lakes			25

Reference IAC 567- Table 49.6(1)

Why is it important?

- Protect your well
- Protect your neighbor's well
- Protect Iowa's Ground Water and Potable Aquifers

Call before your drill!

Contact:

Russell Tell, Environmental Specialist Senior
(515) 725-0462
Deborah R. Williams, Geologist III
(515) 725-0290
DNR - Spill Hotline
(515) 725-8694

Additional Resources for
Well Mapping Resources
Iowa Geological Survey - GEOSAM
https://geosam.iihr.uiowa.edu

DNR – Private Well Program
http://www.iowadnr.gov/Privatewells