



KANSAS DEPARTMENT OF HEALTH & ENVIRONMENT

RECOMMENDED GROUNDWATER OBSERVATION WELL SAMPLING PROTOCOL FOR CHLORIDE AND OTHER MINERAL CONSTITUENTS AT A SALT SOLUTION MINING FACILITY

Narrative:

The importance of properly sampling a groundwater observation well cannot be overemphasized. Consistent sampling procedures must be followed to ensure that the sample taken from the well is representative of the groundwater at that location. The quality of the water within the casing and in close proximity to the well in most cases is not representative of the overall groundwater quality at that sampling site. In order to collect a representative groundwater sample, it is very important that a well be purged by pumping or bailing until it is thoroughly flushed of stagnant water and contains new water from the aquifer when sampled.

Recommended Protocol:

1. Check static fluid level and the depth in the well to calculate the total volume of water in the well. On the back is a table indicating various well diameter with respective gallons per foot volumes. If the well has sufficient water production, pump or bail three (3) volumes of water from the well and then collect the water sample. If the well does not produce enough water to purge three volumes, then pump or bail the well dry and collect a sample after the well has recovered sufficiently for sampling, preferably within 24 hours after pumping or bailing dry.
2. Rinse the sampling equipment with uncontaminated water before each sample is collected in order to help prevent cross-contamination.
3. The water purged from a groundwater observation well with a chloride concentration equal to or greater than 500 ppm chloride shall be collected in a tank and returned to KDHE approved brine storage pond, disposed into a KDHE approved Class I injection well, or used as make-up water in the salt solution mining or storage well operation.
4. The water sample must be analyzed by a laboratory certified by KDHE to conduct analysis for the constituent(s) of interest.

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TABLE FOR CALCULATING MONITOR WELL VOLUME

CASING SIZE NOMINAL DIAMETER (INCHES)	GALLONS OF WATER PER ONE FOOT OF CASING SIZE (GAL/FT/CASING SIZE)
1.25	0.06
1.50	0.09
2	0.16
2.5	0.25
3	0.37
3.5	0.50
4	0.65
5	1.02
6	1.50
8	2.60
10	4.08
12	5.87
14	8.00
16	10.44
18	13.21
24	23.50
30	36.70

FORMULA TO FIND HEIGHT OF WATER COLUMN: (Total depth of water well) - (Measured static water level) = (Height of water column).

WATER VOLUME IN WELL: (Height of water column) x (Gallons/one foot of casing size) = Water volume in well.

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