

**Suggested Testing Parameters for Private Wells in Areas  
Undergoing Gas Drilling  
(April 2013)**

**Chemical Parameters**

**Reason for Testing**

Alkalinity	Changes in alkalinity levels can be used as a general indicator of possible contamination from gas drilling.
Arsenic	Sometimes found in produced water from gas wells and in biocides used in hydrofracturing. Can also be found naturally in local groundwater.
Barium *	Sometimes found in produced water from gas wells and in some drilling muds. Occasionally present at low levels in local groundwater.
Boron	Can be found in fluids used for hydraulic fracturing.
Bromide	Bromide salts are sometimes used as biocides during hydraulic fracturing.
BTEX Compounds (benzene, toluene, ethylbenzene, xylene)	Found in some produced waters and fuels used at drilling pads.
Calcium	Found in some produced waters, hydraulic fracturing fluids. Sometimes seen naturally in local aquifers.
Chloride*	Found in some produced waters, hydraulic fracturing fluids and naturally in local aquifers.
Dissolved Methane and Ethane*	Can be present naturally in shallow groundwater aquifers. Can also be released from deeper geologic units during drilling and hydraulic fracturing.
Hydrogen Sulfide (H <sub>2</sub> S)	H <sub>2</sub> S is a naturally occurring gas which is typically found at higher concentrations in deeper geologic units.
Iron	Found in some produced waters and some fluids used in hydraulic fracturing. Iron can also be present naturally in Broome County groundwater.
Magnesium	Found in some produced waters, hydraulic fracturing fluids and naturally in local aquifers.
Manganese	Sometimes present in produced water from gas wells. Manganese is another natural constituent in area bedrock aquifers.
MBAS (Surfactants and detergents)	These components are sometimes used in hydraulic fracturing.
Potassium*	Can be present at elevated concentrations in produced waters.

Sodium	A common constituent in produced waters generated during gas drilling.
Strontium	Can be present at elevated concentrations in produced waters.
Sulfate *	Found in some produced waters and hydraulic fracturing fluids. Less common locally in groundwater.

**Physical Parameters**

**Reason for Testing**

Coliform bacteria	Used as a general indicator of groundwater contamination from surface sources.
Color	Used as a general indicator of possible contamination from gas drilling.
Conductivity*	Used as a general indicator of possible contamination from gas drilling.
Gross Alpha and Gross Beta particle activity	Used to detect naturally occurring radioactive materials (NORMs) that might exist in produced waters.
pH*	Used as a general indicator of possible contamination from gas drilling.
Total Suspended Solids (TSS)	Used as a general indicator of possible contamination from gas drilling.
Total Hardness	Used as a general indicator of possible contamination from gas drilling.
Total Dissolved Solids*	Used as a general indicator of possible contamination from gas drilling.

- Note 1: Baseline sampling at private wells should not be done far in advance of drilling activity, so as to avoid questions about contamination not related to gas well construction and development during the intervening time period. It is suggested that water samples be collected no more than three months prior to the start of well construction in an area. Additionally, it is highly recommended that a third party, such as the laboratory, conduct the actual sampling and use chain-of-custody procedures so that results would be more admissible during potential legal proceedings.
- Note 2: Many of the chemical and physical parameters on this list occur naturally in the groundwater aquifers that are tapped by private wells, usually at low concentrations. Water testing before gas drilling takes place in an area establishes a baseline to which samples can be compared after drilling starts. Increases in the concentrations of one or more of these indicators over the baseline concentration may indicate that a drilling-related change in water quality has taken place.
- Note 3: Produced waters, also known as flowback waters, can enter drinking water aquifers from gas wells that have not been properly constructed, from surface spills at drilling pads and spills during transport to disposal facilities.
- Note 4: All sample analyses should be done by ELAP (NYS Environmental Laboratory Approval Program) certified laboratories. A list of these certified labs is available from the Health Department upon request and on the Health Department web page.
- Note 5: After collection of baseline samples is completed, parameters marked with an asterisk (\*) can be used to monitor water quality at potable wells as drilling progresses in an area. If increases in some or all of these constituents are seen, another full-scale sampling round using the entire list of indicator parameters might be warranted.