

**BEST MANAGEMENT PRACTICES
FOR PRE-DRILLING WATER SAMPLING**



April 28, 2005

Groundwater Sampling

Oil and gas wells are drilled through shallow freshwater aquifers. In order to protect freshwater from contamination, State permitting geologists carefully review oil and gas company applications for permits to drill. The State permitting geologists place requirements on permits to ensure groundwater aquifer protection. The permit requirements are enforced through the Division of Mineral Resources Management (DMRM) Regulatory [Enforcement Program](#). State inspectors witness and document drilling operations for environmental safety to protect natural resources, including fresh water.

As an added measure of verification, the State may require oil and gas companies to sample water wells before a crude oil or natural gas well is drilled. Oil and gas companies are required to submit water well sampling data to the [Ohio Department of Natural Resources, Division of Mineral Resources Management \(DMRM\)](#). DMRM will maintain the sampling data. The sampling data will serve as background or historic groundwater quality information. Should the need arise, the background information will be used by the DMRM Technical Section to conduct hydrologic investigations of domestic water supplies. If a private water supply is impacted by oil and gas operations, the DMRM Technical and Enforcement Sections work with the property owner and the oil and gas company to resolve the problem. This State service is provided without cost to the property owner.

The following sections summarize procedures and protocol to ensure water well samples are collected and tested to provide useful background information. Links to [USEPA](#) and [OEPA](#) websites are provided for more detailed discussions of each topic.

Water Sampling

Water samples must be collected and analyzed utilizing proper sampling and laboratory protocol, including the use of proper sample containers, preservation methods, observing holding times, use of chain of custody, analysis by appropriate test methods, laboratory certification, and laboratory QA/QC. Without attention to these and other details, water analyses may be of little or no value.

The Plan

Water sampling should begin with the design of a water-sampling plan. The plan may be simple. The State may require an oil and gas company to sample all domestic wells in a given area. The plan may be more involved. An oil and gas company may choose to sample beyond the area required by the State. Sampling may be based on hydrology, geology, aquifer characteristics, or any number of other factors.

Step 1 – Define the limits of the water well sampling area.

Step 2 – Develop a list of property owners, addresses, and telephone numbers.

Property owner information may be obtained at the county courthouse or through [county auditors websites](#). [Water well records](#) may be researched through the Ohio Department of Natural Resources, [Division of Water](#) or [county health department](#).

Step 3 – Contact the property owner to obtain permission to sample each domestic water well. If a property owner refuses access to a domestic water well,

DMRM will require proof of refusal if the well is within the limits of a required sampling area (information to include; was the refusal in person or over the phone, date of attempted sample, who refused and why, were there secondary direct or phone contacts to attempt to obtain an sample). The documentation of “refusal” can be submitted along with the laboratory results that are submitted to DMRM (Step 10).

Step 4 – Determine which chemical and physical parameters are to be analyzed. The State will require certain parameters to characterize pre-drilling water quality.

Water Sampling Testing Parameters		
Barium	Dissolved Ba	ug/l
Calcium	Total Ca	mg/l
Iron	Dissolved Fe	ug/l
Magnesium	Total Mg	mg/l
Potassium	Total K	mg/l
Sodium	Total Na	mg/l
Chloride	Cl	mg/l
Conductivity	at 25° C	umohs/cm
pH	SU	
Sulfate	SO ₄	mg/l
Alkalinity	Total CaCC ₃	mg/l
Total dissolved solids		mg/l

Step 5 – Contact an [Ohio EPA certified laboratory](#). The laboratory should be Ohio EPA certified for each parameter to be tested. This provides certain quality assurances that the laboratory results will be accurate. The laboratory should follow generally accepted [Laboratory Test Methods](#) for each parameter being tested. The laboratory you select should be willing to provide quality assurance, quality control information for your samples.

Step 6 – With [test parameters](#) identified and a laboratory selected, review [sampling protocol](#), [preservation methods](#), sample holding times, and chain of custody with the laboratory manager. The laboratory can provide [sample](#)

[containers](#), preservatives, and chain of custody and laboratory report forms.

Review sample [delivery methods and procedures](#) with the laboratory manager.

Step 7 – Schedule sample collection with each property owner. It is important to verify treatment equipment and that filters have been by-passed before a sample is collected. Failure to do so may lead to water sample results that are not representative of true aquifer water quality. Property owners should be present when a sample is collected.

Step 8 – Before samples are collected, each container should be labeled. Your laboratory may specify label information. General [labeling](#) information is listed on the DMRM website. It is important to label and identify sample containers that contain acid preservatives. It is important to document the sampling event. A [chain-of-custody form](#) should accompany each sample. Generic chain of custody forms are available on the Division of Mineral Resources Management website; see [Best Management Practices for Pre-Drilling Water Sampling, Water Sampling Collection Form](#) (pdf).

Step 9 – Water samples must be representative of the aquifer(s) being produced. The water well should be pumped a sufficient length of time necessary to purge the volume of the water well at least three times. Certain parameters are most accurate if measured at the time of sample collection. Procedures for the [field measurement](#) of these parameters may be reviewed in the U.S. Geological Survey (USGS) [National Field Manual for the Collection of Water-Quality Data](#). These parameters are identified at: Division of Mineral Resources Management [Best Management Practices \(BMPs\) for Pre-Drilling Water Sampling](#), Step 4 - Water Sampling Testing Parameters.

Step 10 – Laboratory reports should be forwarded to the [Division of Mineral Resources Management](#), the property owner, and local government (if requested).

LINKS & REFERENCE OUTLINE

OHIO DEPARTMENT OF NATURAL RESOURCES

www.dnr.state.oh.us/

ODNR - DIVISION OF MINERAL RESOURCES MANAGEMENT

www.dnr.state.oh.us/mineral/tabid/10352/Default.aspx

- [STAFF DIRECTORY](http://www.dnr.state.oh.us/tabid/10360/Default.aspx)
- [PERMITTING SECTION](http://www.dnr.state.oh.us/tabid/17942/Default.aspx)
- [ENFORCEMENT SECTION](http://www.dnr.state.oh.us/tabid/17872/Default.aspx)
- [INSPECTORS](http://www.dnr.state.oh.us/tabid/10355/Default.aspx)

ODNR - DIVISION OF WATER

www.dnr.state.oh.us/water/tabid/3252/Default.aspx

- [WATER WELL LOG ON-LINE SEARCH](http://www.dnr.state.oh.us/water/maptechs/wellogs/appNEW/Default.aspx)

FORMS

- GROUNDWATER SAMPLING RECORD
- CHAIN-OF-CUSTODY
- CHEMISTRY LABORATORY REPORT
- LABELS

TEST PARAMETERS

- INORGANIC
- ORGANIC
- PHYSICAL
- TRIP BLANKS
- DUPLICATE SAMPLES
- SPLIT SAMPLES
- PDWS
- SDWS

LABORATORY TEST METHODS

- [ASTM \(www.astm.org/\)](http://www.astm.org/)
- [USEPA \(www.epa.gov/epahome/index\)](http://www.epa.gov/epahome/index)
- [USGS \(www.usgs.gov/\)](http://www.usgs.gov/)
 - [NATIONAL FIELD MANUAL FOR THE COLLECTION OF WATER-QUALITY DATA \(http://water.usgs.gov/owq/FieldManual/\)](http://water.usgs.gov/owq/FieldManual/)

LABORATORIES, CERTIFIED

- [LABORATORY CERTIFICATION \(www.epa.ohio.gov/ddagw/labs.aspx\)](http://www.epa.ohio.gov/ddagw/labs.aspx)
- [COMMERCIAL LABORATORIES CERTIFIED TO PERFORM CHEMICAL ANALYSES ON PUBLIC DRINKING WATER \(www.epa.ohio.gov/ddagw/labs.aspx\)](http://www.epa.ohio.gov/ddagw/labs.aspx)
- [QUALITY ASSURANCE/QUALITY CONTROL \(http://www.epa.ohio.gov/portals/28/documents/labcert/chemman.pdf\)](http://www.epa.ohio.gov/portals/28/documents/labcert/chemman.pdf)

[OHIO ENVIRONMENTAL PROTECTION AGENCY WEBSITE \(www.epa.state.oh.us/\)](http://www.epa.state.oh.us/)

[UNITED STATES ENVIRONMENTAL PROTECTION AGENCY \(www.epa.gov/\)](http://www.epa.gov/)

- [PUBLIC DRINKING WATER STANDARDS FOR OHIO \(www.epa.ohio.gov/portals/28/documents/StandardsList.pdf\)](http://www.epa.ohio.gov/portals/28/documents/StandardsList.pdf)
- [USEPA DRINKING WATER STANDARDS \(www.epa.gov/safewater/standards.html\)](http://www.epa.gov/safewater/standards.html)
- [CONTAMINENTS LIST & MCLS \(www.epa.gov/safewater/mcl.html\)](http://www.epa.gov/safewater/mcl.html)
- [NATIONAL CONTAMINANT OCCURRENCE DATABASE \(www.epa.gov/safewater/data/ncod.html\)](http://www.epa.gov/safewater/data/ncod.html)
- [ANALYTICAL METHODS FOR DRINKING WATER - INORGANIC CHEMICALS \(www.epa.ohio.gov/portals/28/documents/StandardsList.pdf\)](http://www.epa.ohio.gov/portals/28/documents/StandardsList.pdf)
- [ANALYTICAL METHODS FOR DRINKING WATER – ORGANIC CHEMICALS \(www.epa.gov/safewater/methods/pdfs/methods/organic_080521b.pdf\)](http://www.epa.gov/safewater/methods/pdfs/methods/organic_080521b.pdf)

SAMPLING PROTOCOL

- [LINK TO USEPA WEBSITE \(www.epa.gov/safewater/standards.html\)](http://www.epa.gov/safewater/standards.html)
 - [COMPENDIUM OF ERT GROUNDWATER SAMPLING PROCEDURES \(http://www.epa.gov/region09/qa/pdfs/fieldsamp-ertsops.pdf\)](http://www.epa.gov/region09/qa/pdfs/fieldsamp-ertsops.pdf)
- [LINK TO USGS WEBSITE \(http://www.usgs.gov/\)](http://www.usgs.gov/)

- [NATIONAL FIELD MANUAL FOR THE COLLECTION OF WATER-QUALITY DATA \(http://water.usgs.gov/owq/FieldManual/\)](http://water.usgs.gov/owq/FieldManual/)
- [PREPARATIONS FOR WATER SAMPLING \(http://water.usgs.gov/owq/FieldManual/chapter1/Ch1_contents.html\)](http://water.usgs.gov/owq/FieldManual/chapter1/Ch1_contents.html)
- [SELECTION OF EQUIPMENT FOR WATER SAMPLING \(http://water.usgs.gov/owq/FieldManual/Chapter2/Ch2_contents.html\)](http://water.usgs.gov/owq/FieldManual/Chapter2/Ch2_contents.html)
- [COLLECTION OF WATER SAMPLES \(http://water.usgs.gov/owq/FieldManual/chapter4/html/Ch4_contents.html\)](http://water.usgs.gov/owq/FieldManual/chapter4/html/Ch4_contents.html)
- [PROCESSING OF WATER SAMPLES \(http://water.usgs.gov/owq/FieldManual/chapter5/html/Ch5_contents.html\)](http://water.usgs.gov/owq/FieldManual/chapter5/html/Ch5_contents.html)
- [FIELD MEASUREMENTS \(http://water.usgs.gov/owq/FieldManual/Chapter6/Ch6_contents.html\)](http://water.usgs.gov/owq/FieldManual/Chapter6/Ch6_contents.html)

SUPPLIES

- LINKS TO SUPPLIERS OF TEST EQUIPMENT, SAMPLE CONTAINERS, PRESERVATIVES, ETC.



Recommendations for Water Well Sampling Before Oil and Gas Drilling

June 2011

Introduction

This fact sheet provides a basic overview for private and/or public well owners who are considering collecting samples prior to oil and gas drilling (including the Marcellus and Utica shale deposits) in areas near their properties. If you are collecting water data to document water quality, you should follow a few important steps as outlined in this fact sheet. These include obtaining information on your well, such as when and how it was constructed; conducting research on certified laboratories in your area and sampling costs; and ensuring labs follow proper procedures and sample collection methods.

Who regulates oil and gas well drilling in Ohio?

The Ohio Department of Natural Resources, Division of Mineral Resources Management (ODNR–DMRM) regulates and monitors oil and gas drilling in Ohio. More information is located at: http://www.ohiodnr.com/portals/11/publications/pdf/Marcellus_Shale_Fact_Sheet.pdf.

Will oil and gas well drilling really affect my water well quality or quantity?

Modern oil and gas well drilling is a highly technical and closely monitored process with regulations in place to protect underground sources of drinking water during and after the drilling process. The chance of ground water contamination or loss of water due to oil and gas well drilling is very small. If ground water quality impacts from drilling activities occur, they most often are within a few hundred feet of the drill site.

What information should I obtain prior to collecting a water sample from my well?

Ohio laws require that a water well record known as a well log be filed for all wells drilled since 1945 and some well logs were filed prior to that time. Well log records can be found on ODNR's website at: <http://www.dnr.state.oh.us/water/maptechs/wellogs/appNEW/> or call ODNR at (614) 265-6740 for assistance.

Well logs show how deep a water well is drilled and how it is constructed. Knowing the depth of your well and the type of geologic materials (i.e. sandstone, shale, limestone, sand and gravel) that are producing the ground water is important information in the event of water quality impacts.

What else do I need to know before sampling?

Conduct research on the laboratories in your area and the services they offer. Be an informed consumer and get the most for your money. Water samples must be collected and analyzed using proper sampling and laboratory protocols and methods and careful documentation of sample chain of custody. Some labs will come and collect the sample for you, others will only provide the sample containers. Some local health districts or soil and water conservation offices offer sample collection and coordinate with labs for sample analysis. The State of Ohio highly recommends using a qualified professional to ensure proper collection your water sample. Improper sampling can result in unreliable data and waste your financial resources.

Recommendations for Water Well Sampling Before Oil and Gas Drilling

Are there special water sampling and analysis procedures?

Water sampling should be done only by a professional who is familiar with all sampling and laboratory protocols. Samples should be submitted to an Ohio Environmental Protection Agency (Ohio EPA) certified drinking water laboratory. The laboratory should be certified for each chemical parameter to be tested. Without attention to these details, water analyses will be of little or no value in an oil and gas water contamination investigation or a legal proceeding. A list of Ohio EPA-certified laboratories for drinking water analysis is available on the Agency's website at <http://www.epa.ohio.gov/ddagw/labs.aspx>.



What procedures should occur during water sampling?

The water sample should be collected before any treatment devices (bypassing these devices) such as water softeners or disinfection units as they can affect water quality. This sample location will likely be a spigot or drain at or near the pressure tank before any treatment units. The water sample collected should be representative of water in the well; therefore, it is important to run the water for at least 5-10 minutes to flush out all the water in the well to ensure a sample of fresh ground water is obtained. The water sampling professional will document the sample location, date and time, and will collect the water in containers designed for the specific parameters to be analyzed. Preservatives may also be added to the sample container to stabilize the sample on site before transport to the lab. Parameters such as pH and conductivity may be measured with equipment during sample collection.

What should the water well sample be analyzed for?

The following sample parameter sets are recommended for establishing background water quality and are grouped in order of importance. The more parameters analyzed, the higher the cost of the water analysis. If funds are limited, start with the Tier 1 sample set.

Tier 1 Water Sample Parameters	Tier 2 Water Sample Parameters	Tier 3 Water Sample Parameters
Barium Chloride Magnesium Potassium Sodium Strontium Sulfate Total dissolved solids Specific Conductivity	Tier 1 sample parameters+ Calcium Hardness Total Alkalinity pH Iron Manganese Total suspended solids Bromide	Tier 1 and 2 sample parameters+ BTEX (benzene, toluene, xylene, ethylbenzene)Methane (dissolved)

Tier 1 water sample parameters are recommended for homeowners who have basic concerns and would like to establish background water quality. If chloride levels are greater than 250 parts per million (mg/l), then Tier 2 sampling is recommended. Background water quality data for chloride and bromide is useful for identifying potential sources of chloride contamination. Ideally, two or three samples should be collected in different seasons to allow you to establish the normal variability in ground water quality over time due to rainfall and other factors.

Recommendations for Water Well Sampling Before Oil and Gas Drilling

What do my sample results mean?

Ground water quality can vary over time and the seasons, and is influenced by the type of geologic materials the ground water is moving through, natural replenishment from rainfall and flooding (recharge), and chemicals used or applied on the ground surface that are transported by recharge moving to the ground water. Subsequently, your water sample is a snapshot in time of the water quality in your well. The Ohio EPA and other state agencies have collected background water quality data across the state as part of an ambient ground water quality monitoring program. Data on natural ground water quality can be found at: http://www.epa.state.oh.us/ddagw/gwqcp_ambient.aspx.

Are there health-based standards that apply to private wells?

The Ohio Department of Health (ODH) has established health-based standards for private water systems that are the same as the standards for public water supply systems established by the Ohio EPA and U.S. EPA. They can be found on the Ohio EPA website at <http://www.epa.state.oh.us/portals/28/documents/DWStandardsList.pdf>.

Information on health risks associated with each water quality standard can be found at the ODH website at: <http://www.odh.ohio.gov/odhPrograms/eh/water/PWShminfo.aspx> and at the U.S. EPA website at: <http://water.epa.gov/drink/contaminants/basicinformation/index.cfm>.

What type of ground water investigations does ODNR – DMRM conduct related to oil and gas drilling?

Since 1983, ODNR – DMRM has conducted ground water investigations in Ohio when complaints alleging ground water contamination by oil and gas drilling are received. ODNR – DMRM technical staff respond within 24 hours and use advanced equipment that allows for a complete groundwater investigation. Since regulations were strengthened in 1985, ground water contamination cases caused by oil and gas operations have dramatically decreased.



Are there regulations to provide for the replacement of my well if it is impacted by oil and gas drilling?

Section 1509.22 (F) of the Ohio Revised Code gives the authority to ODNR – DMRM to require an owner/operator of an oil and gas well to replace the water supply of the holder of interest in real property whose water supply has been substantially disrupted by contamination, diminution, or interruption resulting from the owner's oil and gas operation. This includes supplies of water for domestic, agricultural, industrial, or other legitimate use from an underground or surface source.

Where can I get more information on Marcellus and Utica Shale drilling?

- **Ohio Department of Natural Resources**, Division of Mineral Resources Management, Oil and Gas website: www.ohiodnr.com/mineral/oil/tabid/10371/default.aspx.
- **Ohio Environmental Protection Agency**, Shale gas drilling website: www.epa.state.oh.us/dsw/pretreatment/marcellus_shale/index.aspx.

Recommendations for Water Well Sampling Before Oil and Gas Drilling

Who should I contact with more questions?

Ohio Department of Natural Resources
Division of Mineral Resources Management
2045 Morse Rd.
Building H-3
Columbus, OH 43229-6693
(614) 265-6633
Email questions to: minerals@dnr.state.oh.us
<http://www.ohiodnr.com/mineral/oil/tabid/10371/Default.aspx>

Ohio EPA
Division of Drinking and Ground Waters
P.O. Box 1049
Columbus, OH 43216-1049
(614) 644-2752
Email questions to: ddagw@epa.state.oh.us
www.epa.ohio.gov/ddagw/

Ohio Department of Health
Bureau of Environmental Health
246 N. High St.
Columbus, Ohio 43215
Email questions to: BEH@odh.ohio.gov
<http://www.odh.ohio.gov/odhPrograms/eh/water/water1.aspx>

Directory of Local Health District in Ohio:
<http://www.odh.ohio.gov/localHealthDistricts/lhdmain.aspx>

OHIO ENVIRONMENTAL PROTECTION AGENCY

DIVISION OF DRINKING AND GROUND WATERS

COMMERCIAL LABORATORIES CERTIFIED TO PERFORM CHEMICAL ANALYSES ON PUBLIC DRINKING WATER

December 2011

Laboratory	Inorganics	Volatile Organics	Pesticides and Other Synthetic Organics		Radiological	Secondary	Other
Adams Water Laboratory, Inc. 912 East Tallmadge Avenue Akron, OH 44310-3514 (330) 633-3991 FAX: (330) 633-3827	Copper Lead Nitrate Nitrite						
Advanced Analytics Laboratory 1025 Concord Avenue Columbus, OH 43212-2202 (614) 299-9922 FAX: (614) 299-4002		Haloacetic Acids [5] Trihalomethanes Vinyl Chloride Volatile Organic Chemicals					
Alloway Marion Laboratory 1776 Marion-Waldo Road Marion, OH 43302 (740) 389-5991 or (800) 783-5991 FAX: (740) 389-1481	Cyanide Fluoride Nitrate Nitrite Sulfate Trace Metals [12] TOC/DOC UV 254 Bromide Chlorate Chlorite Bromate	Haloacetic Acids [5] Trihalomethanes Vinyl Chloride Volatile Organic Chemicals	Carbamates Chlorinated Acids EDB /DBCP Diquat Endothall	Glyphosate N/P Pesticides Organohalides PAHs- Benzo(A)Pyrene PCBs Pht/Adi Esters		Aluminum Chloride Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Hardness Magnesium Phosphate Residual Chlorine Silica Sodium Stability Turbidity Perchlorate

Laboratory	Inorganics	Volatile Organics	Pesticides and Other Synthetic Organics		Radiological	Secondary	Other
American Analytical Labs - Akron 840 South Main Street Akron, OH 44311 (330) 535-1300 FAX: (330) 535-7246	Cyanide Fluoride Nitrate Nitrite Sulfate TOC/DOC UV 254 Trace Metals [12]					Chloride Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Hardness Magnesium Phosphate Potassium Residual Chlorine Sodium Stability Turbidity
American Analytical Labs - Columbus 5777 Franz Road Dublin, OH 43017 (614) 791-1136 FAX: (614) 791-1287						Aluminum Iron Manganese Silver Zinc	Calcium Magnesium Silica Sodium
Belmont Laboratories 25 Holiday Drive Englewood, OH 45322 (800) 723-5227 FAX: (937) 837-1071	Cyanide Fluoride Nitrate Nitrite Sulfate Trace Metals [12] TOC/DOC	Haloacetic Acids [5] Trihalomethanes Vinyl Chloride Volatile Organic Chemicals				Aluminum Chloride Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Hardness Magnesium Phosphate Turbidity Residual Chlorine Sodium
Biosolutions, LLC 10180 Queens Way #6 Chagrin Falls, OH 44023 (440) 708-2999 FAX: (440) 708-2988	Cyanide Fluoride Nitrate Nitrite Sulfate Trace Metals [12]					Aluminum Chloride Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Hardness Magnesium Phosphate Residual Chlorine Sodium Stability Turbidity

Laboratory	Inorganics	Volatile Organics	Pesticides and Other Synthetic Organics		Radiological	Secondary	Other
Brookside Laboratories, Inc. 308 South Main Street P.O. Box 456 New Knoxville, OH 45871 (419) 753-2448 FAX: (419) 753-2949	Cyanide Fluoride Nitrate Nitrite Sulfate Trace Metals [12]	Haloacetic Acids [5] Trihalomethanes Vinyl Chloride Volatile Organic Chemicals	Carbamates Chlorinated Acids DBCP/EDB Diquat Endothall Glyphosate	N/P Pesticides Organohalides PAHs- Benzo(A)Pyrene PCBs Pht/Adi Esters		Chloride pH TDS Aluminum Iron Manganese Silver Zinc	Alkalinity Hardness Phosphate Stability Turbidity Calcium Cobalt Magnesium Sodium Vanadium Potassium
Canton Water Laboratory 2664 Harrisburg Road, N.E. Canton, OH 44705 (330) 489-3035 FAX: (330) 489-3335	Nitrate Nitrite						Alkalinity Hardness Phosphate Sodium Stability Turbidity
Cardinal Environmental Lab., LLC 2870 Salt Springs Road Youngstown, OH 44509 (330) 797-8844 or (800) 523-0347 FAX: (330) 797-3264	Nitrate Nitrite					pH	Phosphate
Coshocton Environmental Testing, Inc 709 Main Street Coshocton, OH 43812 (740) 622-3328 FAX: (740) 622-3368	Cyanide Fluoride Nitrate Nitrite Sulfate Trace Metals [12]	Trihalomethanes Vinyl Chloride Volatile Organic Chemicals				Aluminum Chloride Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Hardness Magnesium Phosphate Sodium Stability
ALS Laboratory Group, Environmental Division, (Cincinnati) Formerly Data Chem Laboratories 4388 Glendale-Milford Road Cincinnati, OH 45242-3706 (513) 733-5336	Asbestos						

Laboratory	Inorganics	Volatile Organics	Pesticides and Other Synthetic Organics		Radiological	Secondary	Other
Geauga Co. Dept. of Water Resources 470 Center Street, Bldg. 3 Chardon, OH 44024-1068 (440)279-1975 FAX (440) 285-2864	Nitrate Nitrite					Iron Manganese pH TDS	Alkalinity Hardness Phosphate Residual Chlorine Stability
Greene Co. Sanitary Engineering Lab. 422 Factory Road Beavercreek, OH 45434-6214 (937) 426-6617 FAX (937) 426-6198	Fluoride Nitrate Nitrite						
Jones & Henry Laboratories 2567 Tracy Road Northwood, OH 43619 (419) 666-0411 FAX: (419) 666-1657	Cyanide Fluoride Nitrate Nitrite Sulfate TOC/DOC UV 254 Trace Metals [12]	Haloacetic Acids [5] Trihalomethanes Vinyl Chloride Volatile Organic Chemicals				Aluminum Chloride Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Magnesium Phosphate Sodium Stability
Mahoning County Health Laboratory 50 Westchester Drive Austintown, OH 44515 (330) 270-2841 Non-Profit Work FAX: (330) 740-2309	Copper Lead Nitrate Nitrite					Iron Manganese	Calcium Hardness Magnesium Sodium
MASI Laboratory P.O. Box 1440 Dublin, OH 43017 (614) 873-4654 FAX: (614) 873-3809	Cyanide Fluoride Nitrate Nitrite Sulfate Trace Metals [12] TOC/DOC UV 254	Haloacetic Acids [5] Trihalomethanes Vinyl Chloride Volatile Organic Chemicals	Carbamates Chlorinated Acids EDB/DBCP Diquat Endothall Glyphosate	N/P Pesticides Organohalides PAHs-Benzo-A- Pyrene PCBs Pht/Adi Esters		Aluminum Chloride Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Hardness Magnesium Phosphate Residual Chlorine Sodium Stability Turbidity

Laboratory	Inorganics	Volatile Organics	Pesticides and Other Synthetic Organics		Radiological	Secondary	Other
Montgomery County Environmental 4257 Dryden Road Dayton, OH 45439 (937) 781-3016 FAX: (937) 299-9042	Cyanide Fluoride Nitrate Nitrite Sulfate Trace Metals [12]					Aluminum Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Hardness Magnesium Phosphate Potassium Residual Chlorine Sodium Stability Turbidity
NEORS Analytical Services 4747 East 49 th Street Cuyahoga Heights, OH 44125 (216) 641-6000 Fax: (216) 641-8118	Fluoride Nitrate Nitrite Sulfate Beryllium Cadmium Chromium Copper Mercury					Aluminum Iron Manganese pH Silver TDS Zinc	Calcium Hardness Magnesium Ortho Phosphate Phosphate Residual Chlorine Sodium
NovaChem Laboratories, Inc. 5172 College Corner Pike P.O. Box 638 Oxford, OH 45056 (513) 523-3605 FAX: (513) 523-4025	Bromate Bromide Chlorate Chlorite						
Pace Analytical Laboratory 1233 Dublin Road Columbus, OH 43215 (614) 486-5421 FAX: 614-486-5478	Fluoride Nitrate Nitrite TOC/DOC Sulfate Trace Metals [12]	Haloacetic Acids [5] Trihalomethanes Vinyl Chloride Volatile Organic Chemicals				Aluminum Chloride Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Magnesium Phosphate Sodium Turbidity Cobalt Molybdenum Strontium Titanium Vanadium

Laboratory	Inorganics	Volatile Organics	Pesticides and Other Synthetic Organics		Radiological	Secondary	Other
Precision Analytical, Inc 4450 Johnston Parkway, Unit B Cleveland, OH 44128 (216) 663-0808 FAX: (216) 663-0656	Cyanide Fluoride Nitrate Nitrite Sulfate Arsenic Barium Beryllium Cadmium Chromium Mercury Copper Lead	Haloacetic Acids [5] Trihalomethanes Vinyl Chloride Volatile Organic Chemicals				Aluminum Chloride Iron Manganese pH Silver Zinc TDS	Alkalinity Boron Calcium Hardness Magnesium Ortho Phosphate Phosphate Potassium Silica Sodium Turbidity
Ream & Haager Laboratories, Inc. 1226 Kaderly Street, N.W. P.O. Box 746 New Philadelphia, OH 44663 (330) 343-3711 FAX: (330) 343-9858	Cyanide Fluoride Nitrate Nitrite Sulfate TOC/DOC UV 254 Trace Metals [12]						Alkalinity Calcium Hardness Magnesium Phosphate Residual Chlorine Sodium Stability Turbidity
Summit Environmental Technologies, Inc. 3310 Win Street Cuyahoga Falls, OH 44223 (330) 253-8211 FAX: (330) 253-4489	Trace Metals [12] Cyanide Fluoride Nitrate Nitrite Sulfate TOC/DOC Bromide Chlorate Chlorite Bromate	Haloacetic Acids [5] Trihalomethanes Vinyl Chloride Volatile Organic Chemicals	Carbamates Chlorinated Acids EDB/DBCP Diquat Endothall Glyphosate	N/P Pesticides Organohalides PAHs- PCBs Benzo-A-Pyrene Pht/Adi Esters	Gross Alpha Gross Beta Radium-226 Radium-228 Uranium	Aluminum Chloride Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Magnesium Perchlorate Residual Chlorine Silica Sodium Turbidity
TCCI Laboratories 120 West Broadway P.O. Box 643 New Lexington, OH 43764-0643 (740) 342-1110 FAX: (740) 342-4750	Fluoride Nitrate Nitrite Trace Metals [12]					Iron Manganese pH TDS Silver Zinc	Alkalinity Calcium Hardness Phosphate Potassium Sodium Stability

Laboratory	Inorganics	Volatile Organics	Pesticides and Other Synthetic Organics		Radiological	Secondary	Other
TestAmerica Laboratories, Inc. 4738 Gateway Circle Dayton, OH 45440 (937) 294-6856 FAX: (937) 499-1249	Cyanide Fluoride Nitrate Nitrite Sulfate TOC/DOC Trace Metals [12]	Haloacetic Acids [5] Trihalomethanes Vinyl Chloride Volatile Organic Chemicals				Aluminum Chloride Iron Manganese pH Silver TDS Zinc	Alkalinity Calcium Hardness Magnesium Phosphate Residual Chlorine Sodium Stability Turbidity
Underwriters Laboratories, Inc. 110 South Hill Street South Bend, IN 46617 (800) 332-4345					Gross Alpha Gross Beta Radium- 226 Radium- 228 Uranium Tritium Strontium-89 Strontium-90		
Wisconsin State Laboratory of Hygiene 2601 Agriculture Drive Madison, WI 53718 (608) 224-6227 FAX: (608) 224-6267					Gross Alpha Gross Beta Radium-226 Radium-228 Uranium Tritium Strontium-89 Strontium-90 Iodine-131		

Trace Metals (12):	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Thallium
Trace Metals (11):	All of the above except Thallium
Carbamates:	Aldicarb, Aldicarb Sulfone, Aldicarb Sulfoxide, Carbaryl, Carbofuran, 3-Hydroxycarbofuran, Methomyl, Oxamyl (Vydate)
Chlorinated Acids:	Dalapon, Dicamba, 2,4-D, Dinoseb, Pentachlorophenol, Picloram, 2,4,5-TP (Silvex)
N/P Pesticides:	Alachlor, Atrazine, Butachlor, Metolachlor, Metribuzin, Propachlor, Simazine
Organohalides:	Aldrin, Chlordane (Total), Dieldrin, Endrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Lindane, Methoxychlor, Toxaphene
Pht/Adi Esters:	Di(2-Ethylhexyl)Phthalate, Di(2-Ethylhexyl) Adipate

Dioxin Laboratories Receiving Certification by USEPA Region 5

Data/Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City, OH 43064 (614) 873-0710	Pace Analytical Services, Inc. 1700 Elm Street, Suite 200 Minneapolis, MN 55414 (612) 607-6383
SGS Environmental Services, Inc. 5500 Business Drive Wilmington, NC 28405 (910) 350-1903	Vista Analytical Laboratory, Inc. 1104 Winfield Way El Dorado Hills, CA 95762 (916) 933-1640
Summit Environmental Technologies, Inc. 3310 Win Street Cuyahoga Falls, OH 44223 (330) 253-8211	

Sample Collection Site _____															
Pumping Time Prior to Sample Collection _____															
Physical Description of the Sample: Color _____ Odor _____ Rust Staining _____															
Comments: _____										Water Well Log & Drilling Report <input type="checkbox"/> Yes <input type="checkbox"/> No		Laboratory Name _____			
												Address _____			
Sample Numbers _____ to _____			Sample Information					Analysis Requested				Sample Type <input type="checkbox"/> water well <input type="checkbox"/> spring		Report Analysis to: Name _____	
			No. of Containers	Filter (F) or Non - Filtered (N F)	Preservative Used: HNO3; HCR; H2SO4; other	Group I	Other	Other:	Other:	Other:	Other:	Water Softener <input type="checkbox"/> Yes <input type="checkbox"/> No		Address _____	
By-passed for sample collection <input type="checkbox"/> Yes <input type="checkbox"/> No		Sampler Signature _____													
Location _____ County _____ Twp. _____ City _____												Filter or other conditioning equip. <input type="checkbox"/> Yes <input type="checkbox"/> No		Sampled By (Print Name) _____	
Project Name _____														Witnessed By _____ (Optional)	
Property Owner _____															
Address _____															
Phone _____															
Sample No	Date :	Time: (Military)											Field Sample I.D.	Sample Comments / Special Instructions	
Transferred by :			Time :			Date :			Received By :			Time :		Date :	
Transferred by :			Time :			Date :			Received By :			Time :		Date :	
Transferred by :			Time :			Date :			Received By :			Time :		Date :	
Transferred by :			Time :			Date :			Received By :			Time :		Date :	
Transferred by :			Time :			Date :			Received By :			Time :		Date :	
Transferred by :			Time :			Date :			Received By :			Time :		Date :	

Group I : Barium, Dissolved Ba, ug/l; Calcium, Total Ca, mg/l; Iron, Diss, Fe, ug/l; Magnesium, Total Mg, mg/l; Potassium, Total K, mg/l; Sodium, Total Na, mg/l; Chloride, Cl, mg/l; Conductivity at 25° C umhos/cm; ph, SU; Residue, Total Filt., mg/l; Sulfate, SO4, mg/l