Understanding Your Sample Results

Explanation of Terms

Analyte — The chemical analyzed in the sample

MDL — *Method Detection Limit*
The lowest concentration that can be measured and reported with 99% confidence that the value is above zero

RL — *Reporting Limit*
The lowest concentration that can be reliably quantified in a sample with a known degree of confidence and accuracy. Values detected less than the RL but greater than or equal to the MDL are qualified with "J"

ND — *Not Detected*
Indicates the analyte was not detected in the sample

ug/l — *Concentration in micrograms per liter*
The amount of an analyte determined to be present in the sample. Equivalent to 0.000001 grams per liter or 1 part per billion (ppb). Also listed as µg/L

mg/l — *Concentration in milligrams per liter*
The amount of an analyte determined to be present in the sample. Equivalent to 0.001 grams per liter or 1 part per million (ppm). Also listed as mg/L

Qualifier — A notation added to a laboratory result to give further details about the result

- **J** — The result is an approximate value less than the RL but greater than or equal to the MDL
- **E** — The result is an approximate value greater than the range of the laboratory instrument's calibration curve and/or linear range. If a result is qualified with "E", the sample may be diluted and reanalyzed
- **Q** — A qualifier for a quality control analysis such as a laboratory control sample. Indicates that the quality control sample result is not within the acceptance criteria

Surrogate — A quality control analysis conducted by the laboratory. A substance similar to the analyte of interest is intentionally added to the sample at a known concentration to assess the efficiency of the extraction and analytical method (% Recovery) against the acceptance criteria. Also listed as Surr. Does not indicate that the substance was detected in your water sample

Method Blank — A quality control analysis conducted by the laboratory. An analyte-free "blank" is prepared, processed, and analyzed at the same time as the sample batch to evaluate potential contamination or interference from the analytical method. Does not indicate that the analyte was detected in your water sample

Laboratory Control Sample — A quality control analysis conducted by the laboratory. A laboratory control sample is prepared, processed, and analyzed at the same time as the sample batch to assess the efficiency of the analytical method and instrument performance (% Recovery) against the % Recovery limits. Also listed as Lab Control Sample. Does not indicate that the analyte was detected in your water sample

Explanation of Methods

US EPA Method 524.2: United States Environmental Protection Agency (US EPA) method for analyzing select volatile organic compounds (VOCs) in water

US EPA Method 504.1: US EPA method for analyzing select compounds such as 1,2-dibromoethane in water

US EPA Method 200.8: US EPA method for analyzing select metals such as lead in water

Pennsylvania Statewide Health Standards

Water sampling results are being compared to the Pennsylvania Statewide health standards for groundwater, as established in Title 25 of the Pennsylvania Code (Chapter 250). These standards are called Medium-Specific Concentrations (MSC).

The MSCs for groundwater are largely based on the Maximum Contaminant Levels (MCL) established by the United States Environmental Protection Agency (US EPA). An MCL is defined as the highest level of an analyte that is allowed in drinking water, as established by the National Primary Drinking Water Regulations.

The Residential MSC for each analyte is shown in the table below.

Pennsylvania Statewide Health Standards

Analyte	Residential MSC (micrograms per liter; µg/L)
Benzene	5
Toluene	1,000
Ethylbenzene	700
Total xylenes[1]	10,000
Isopropylbenzene[2]	840
Methyl tert butyl ether[3]	20
Naphthalene	100
1,2,4-Trimethylbenzene	130
1,3,5-Trimethylbenzene	130
1,2-Dichloroethane	5
1,2-Dibromoethane[4]	0.05
Lead	5

[1] The sum of the concentrations of p/m-xylene and o-xylene
[2] Also known as cumene
[3] Also known as methyl tertiary butyl ether
[4] Also known as ethylene dibromide

Understanding Your Sample Results

SAMPLE RESULTS

Lab ID:	L2512185-01
Client ID:	SAMPLE ID
Sample Location:	LOCATION
Sample Depth:	
Matrix:	Dw
Analytical Method:	16,524.2
Analytical Date:	03/04/25 09:17
Analyst:	JKH

Date Collected:	03/02/25 14:00
Date Received:	03/02/25
Field Prep:	Refer to COC

Information about the sample, including ID, date, location, and matrix (e.g., drinking water)

Indicates that this page shows the results of your water sample

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	0.50	0.13	1
1,2-Dichloroethane	ND		ug/l	0.50	0.15	1
Benzene	ND		ug/l	0.50	0.19	1
Toluene	ND		ug/l	0.50	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.13	1
p/m-Xylene	ND		ug/l	0.50	0.30	1
o-Xylene	ND		ug/l	0.50	0.19	1
Isopropylbenzene	ND		ug/l	0.50	0.13	1
1,3,5-Trimethylbenzene	ND		ug/l	0.50	0.15	1
1,2,4-Trimethylbenzene	0.23	J	ug/l	0.50	0.13	1
Naphthalene	ND		ug/l	0.50	0.14	1
Xylenes, Total[1]	ND		ug/l	0.50	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	111		80-120
4-Bromofluorobenzene	80		80-120

The analyte was detected in the sample

The J qualifier indicates that the result is an estimate between the MDL and the RL

ug/l = micrograms per liter

The analyte was not detected in the sample

Surrogate: A substance intentionally added to the sample at a known concentration to assess the efficiency of the extraction and analytical method (% Recovery) against the acceptance criteria

Does **not** indicate that the substance was detected in your water sample

Method Detection Limit (MDL): The lowest concentration that can be measured and reported with 99% confidence that the value is above zero

Reporting Limit (RL): The lowest concentration that can be reliably quantified in a sample with a known degree of confidence and accuracy

Values detected less than the RL but greater than or equal to the MDL are qualified with J

Understanding Quality Control Samples

Method Blank: An analyte-free "blank" that is prepared, processed, and analyzed at the same time as the sample batch to evaluate potential contamination or interferences from the analytical method

Method Blank Analysis
Batch Quality Control

Analytical Method: 16,524.2
Analytical Date: 03/04/25 08:30
Analyst: JKH

Indicates that this page shows the results of a quality control analysis (i.e., method blank)

This page does not show the results of your water sample

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG2036556-4					
Methyl tert butyl ether	ND		ug/l	0.50	0.13
1,2-Dichloroethane	ND		ug/l	0.50	0.15
Benzene	ND		ug/l	0.50	0.19
Toluene	ND		ug/l	0.50	0.19
Ethylbenzene	ND		ug/l	0.50	0.13
p/m-Xylene	ND		ug/l	0.50	0.30
o-Xylene	ND		ug/l	0.50	0.19
Isopropylbenzene	ND		ug/l	0.50	0.13
Xylenes, Total[1]	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	0.50	0.15
1,2,4-Trimethylbenzene	ND		ug/l	0.50	0.13
Naphthalene	0.32	J	ug/l	0.50	0.14

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	104		80-120
4-Bromofluorobenzene	85		80-120

The analyte was detected in the method blank

The J qualifier indicates that the method blank result is an estimate between the MDL and the RL

Does **not** indicate that the analyte was detected in your water sample

The analyte was not detected in the method blank

Understanding Quality Control Samples

Laboratory Control Sample: A quality control sample that is prepared, processed, and analyzed at the same time as the sample batch to assess the efficiency of the analytical method and instrument performance (% Recovery) against the % Recovery Limits

Lab Control Sample Analysis
Batch Quality Control

Indicates that this page shows the results of a quality control analysis (i.e., laboratory control sample)

This page does not show the results of your water sample

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG2036556-3								
Methyl tert butyl ether	92		-		70-130	-		20
1,2-Dichloroethane	139	Q	-		70-130	-		20
Benzene	88		-		70-130	-		20
Toluene	88		-		70-130	-		20
Ethylbenzene	85		-		70-130	-		20
p/m-Xylene	91		-		70-130	-		20
o-Xylene	90		-		70-130	-		20
Isopropylbenzene	80		-		70-130	-		20
1,3,5-Trimethylbenzene	88		-		70-130	-		20
1,2,4-Trimethylbenzene	85		-		70-130	-		20
Naphthalene	80		-		70-130	-		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichlorobenzene-d4	102				80-120
4-Bromofluorobenzene	95				80-120

The % Recovery for this analyte in the laboratory control sample is 139%

The Q qualifier indicates that the % Recovery for this analyte in the laboratory control sample is not within the % Recovery Limits

Does **not** indicate that the analyte was detected in your water sample

% Recovery Limits: Establishes the acceptable recovery range for the analyte in the laboratory control sample