

LABORATORY SERVICES

QAPP APPENDIX A- DRINKING WATER LABORATORY ANALYSES, REPORTING LIMITS, AND TEST INFORMATION

Note: Analytes followed with a superscript “C” denote ones that are certified through the EPA Region 5 Certification Program in accordance with the National Primary Drinking Water Regulations.

Microbiology Analyses Offerings:

Analyte(s)	Reporting Limit	Reference Method	Unit Number / Test Code	Hold Time
Total Coliform and E. coli ^C	Presence or Absence	SM 9223B	30 / BPTC	30 hours from collection to incubation
Total Coliform and E. coli ^C	1 MPN/100mL	SM 9223B Quanti-Tray	30 / BLT2	
Heterotrophic Plate Count (HPC) ^C	2 MPN/mL	IDEXX SimPlate	30 / BSPC	8 hours
E. coli for Surface water (Counts 10 – 24196)	<10 MPN	SM 9223B Quanti-Tray	30 / NPEC-LO	8 hours from collection to incubation
E. coli for Surface water (Counts 10 – 24196)			30 / NPEC-HI	
E. coli for FSMA* (Counts <1 – 2419.6)			30 / BFSMA	

*Groundwater for Food Safety Modernization Act (FSMA)

Inorganic Metals Analyses Offerings:

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time	
Aluminum (Al)	0.050	EPA 200.8	36ME / CAL	14 days from collection to preservation	
Antimony (Sb) ^C	0.0006		36ME / CSB		
Arsenic (As) ^C	0.002		36ME / CAS		
Barium (Ba) ^C	0.01		36ME / CBA		
Beryllium (Be) ^C	0.0004		36ME / CBE		
Boron (B)	0.02		36ME / CB		
Cadmium (Cd) ^C	0.0003		36ME / CCD		
Chromium (Cr) ^C	0.01		36ME / CCR		
Cobalt (Co)	0.005		36ME / CCO		
Copper (Cu) ^C	0.050		36ME / CU		
Iron (Fe)	0.02		36ME / FE		
Iron (Fe)	0.1		EPA 200.7		36ME / FE2
Lead (Pb) ^C	0.001		EPA 200.8		36ME / CPB
Lithium (Li)	0.010	36ME / CLI			
Manganese (Mn)	0.01	36ME / MN			
Mercury (Hg) ^C	0.0001	36ME / CHG			
Mercury (Hg) ^C	0.0002	EPA 245.1	36ME / HG2	1 day from collection to preservation	
Molybdenum (Mo)	0.002	EPA 200.8	36ME / CMO	14 days from collection to preservation	
Nickel (Ni) ^C	0.01		36ME / CNI		
Potassium (K)	0.20	EPA 200.7	36ME / CK		
Selenium (Se) ^C	0.001	EPA 200.8	36ME / CSE		

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Silica as SiO ₂	0.6	EPA 200.7	36ME / CSI	
Strontium (Sr)	0.01	EPA 200.8	36ME / CSR	
Thallium (Tl) ^C	0.0002		36ME / CTL	
Titanium (Ti)	0.001		36ME / CTI	
Uranium (U)	0.0003		36ME / CU	
Vanadium (V)	0.002		36ME / CV	
Zinc (Zn)	0.01		36ME / ZN	
Packages				
Lead/Copper for corrosion control	See single analyte above	EPA 200.8	36CC / CCUB	14 days from collection to preservation
Iron/Manganese/Copper/Zinc			36ME / CPM1	
Complete Metals for Private Wells (As, Se, Ba, Cd, Cr, Hg, Pb, Fe, Mn, Cu, Zn)			36ME / CMET	
Complete Metals for Public Supplies (As, Ba, Be, Cd, Cr, Hg, Pb, Sb, Se, Ni, Tl)			36ME / CMET2	

Additional Inorganic Analyses Offerings:

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time
Ammonia as N	0.1	EPA 350.1	36AC / CNH3	28 days
Calcium (Ca)	0.6	EPA 200.7	36ME / CA	14 days from collection to preservation
Chloride (Cl)	4.0	SM 4500-Cl-E	32 / CL	28 days
Cyanide, Free ^C	0.02	ASTM D6888-04	36CN / CCN	14 days
Fluoride (F) ^C	0.1	QuikChem 10-109-12-2-A	32 / AF	28 days
Hardness as CaCO ₃	2.0	SM 2340C	36ME / HARD	14 days from collection to preservation
Magnesium (Mg)	0.1	EPA 200.7	36ME / MG	
Nitrate as N ^C	0.4	NECi Nitrate-Reductase 2016 and EPA 353.2	32 / NN	48 hours
Nitrate + Nitrite as N ^C	0.4			28 days
Nitrite as N ^C	0.05			48 hours
Ortho-Phosphate as P	0.1	EPA 365.1	32 / CPO4	
pH Determination	4	EPA 150.1	32 / CPH	15 minutes
Sulfate (SO ₄)	10	ASTM D516-16	32 / SO4	28 days
Sodium (Na) ^C	0.5	EPA 200.7	36ME / NA	14 days from collection to preservation
Specific Conductance	1 µmhos/cm	EPA 120.1	32 / CCON	28 days
Total Alkalinity	50	EPA 310.2	32 / CTALK	14 days
Total Organic Carbon (TOC)	0.5	SM 5310C	36TO / CTOC	28 days

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Packages				
Automated Partial Chemistry (F, Ca, Cl, Hardness, NO ₃ , NO ₂ , Mg, SO ₄ , Na, Fe)	See single analyte above	See single analyte above	32 / R	See single analyte info above
Calcium/Magnesium/Sodium		EPA 200.7	36ME / CPM2	14 days from collection to preservation
Corrosion (Cond, Alkalinity, OP, Ca, Mg, Na)		See single analyte above	32 and 36ME / CORR	See single analyte info above
Complete Minerals (Alkalinity, Cl, F, NO ₃ , NO ₂ , SO ₄ , SiO ₂ , Ca, Mg, Na, K, Cond, pH, Hardness)			32 and 36ME / CMIN	

Semi-Volatile Analyses Offerings:

Pesticide and Aromatic Compounds:

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time
Alachlor ^C	0.0002	EPA 525.3	36PT / CXPT3	14 days from collection to extraction; 28 days from extraction to analysis
Atrazine ^C	0.0002			
Benzo(a)pyrene ^C	0.00004			
Chlordane- Technical ^C	0.0014			
Di(2-ethylhexyl)adipate ^C	0.0013			
Di(2-ethylhexyl)phthalate ^C	0.0013			
Endrin ^C	0.00002			
Heptachlor ^C	0.00008			
Heptachlor epoxide ^C	0.00004			
Hexachlorobenzene ^C	0.0001			
Hexachlorocyclopentadiene ^C	0.0002			
Gamma-BHC (Lindane) ^C	0.00004			
Methoxychlor ^C	0.0001			
Trans-Nonachlor	0.0002			
Simazine ^C	0.00014			
Toxaphene ^C	0.001			
PCB (Aroclors) ^C	0.0001			

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Chlorinated Acid Herbicides:

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time
Acifluorfen	0.004	EPA 515.4	36HB / CXHB	14 days from collection to extraction; 21 days from extraction to analysis
Bentazon	0.002			
2,4- Dichlorophenoxyacetic Acid (2,4-D) ^c	0.0002			
Dacthal acid metabolites (DCPA)	0.001			
Dicamba	0.002			
Dinoseb ^c	0.0002			
Pentachlorophenol (PCP) ^c	0.00004			
Picloram ^c	0.0002			
2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T)	0.002			
2,4,5-TP (Silvex) ^c	0.0002			

Carbamates:

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time
Aldicarb	0.001	EPA 531.2	36LP / CXLP	28 days from collection to analysis
Aldicarb Sulfone	0.0006			
Aldicarb Sulfoxide	0.001			
Propoxur (Baygon)	0.001			
Carbaryl	0.001			
Carbofuran ^c	0.0009			
3-Hydroxycarbofuran	0.001			
Methiocarb	0.001			
Methomyl	0.001			
Oxamyl ^c	0.001			

Per and Polyfluorinated Alkyl Substances (PFAS): *Note: All PFAS analytes listed are certified in accordance with the TNI Environmental Laboratory Standard, Volume 1- 2016*

Analyte(s)	Reporting Limit (ng/L)	Reference Method	Unit Number / Test Code	Hold Time
Perfluorobutanoic acid (PFBA)	2	EPA 533	PFAS / CXPF533	28 days from collection to extraction; 28 days from extraction to analysis
Perfluoro-3-methoxypropanoic acid (PFMPA)	2			
Perfluoropentanoic acid (PFPeA)	2			
Perfluorobutanesulfonic acid (PFBS)	2			

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Perfluoro-4-methoxybutanoic acid (PFMBA)	2	EPA 533	PFAS / CXP533	28 days from collection to extraction; 28 days from extraction to analysis
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	2			
Perfluorohexanoic acid (PFHxA)	2			
Perfluoropentanesulfonic acid (PFPeS)	2			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	2			
Perfluoroheptanoic acid (PFHpA)	2			
Perfluorohexanesulfonic acid (PFHxS)	2			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	2			
Perfluorooctanoic acid (PFOA)	2			
Perfluoroheptanesulfonic acid (PFHpS)	2			
Perfluorononanoic acid (PFNA)	2			
Perfluorooctanesulfonic acid (PFOS)	2			
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	2			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	2			
Perfluorodecanoic acid (PFDA)	2			
Perfluoroundecanoic acid (PFUnA)	2			
11-Chloroicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2			
Perfluorododecanoic acid (PFDoA)	2			

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Per and Polyfluorinated Alkyl Substances (PFAS)- SPECIAL REQUESTS ONLY:

Analyte(s)	Reporting Limit (ng/L)	Reference Method	Unit Number / Test Code	Hold Time
Perfluorobutanesulfonic acid (PFBS)	2	EPA 537.1	PFAS / CXPFAS	14 days from collection to extraction; 28 days from extraction to analysis
Perfluorohexanoic acid (PFHxA)	2			
Perfluoroheptanoic acid (PFHpA)	2			
Perfluorohexanesulfonic acid (PFHxS)	2			
Perfluorooctanoic acid (PFOA)	2			
Perfluorononanoic acid (PFNA)	2			
Perfluorooctanesulfonic acid (PFOS)	2			
Perfluorodecanoic acid (PFDA)	2			
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2			
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2			
Perfluoroundecanoic acid (PFUnA)	2			
Perfluorododecanoic acid (PFDoA)	2			
Perfluorotridecanoic acid (PFTrDA)	2			
Perfluorotetradecanoic acid (PFTA)	2			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	2			
11-Chloroicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2			
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	2			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2			

Dalapon and Haloacetic acids:

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time
Monochloroacetic acid (MCAA) ^c	0.002	EPA 552.2	36HA / CXHA	14 days from collection to extraction; 14 days from extraction to analysis
Dichloroacetic acid (DCAA) ^c	0.001			
Trichloroacetic acid (TCAA) ^c	0.001			
Monobromoacetic acid (MBAA) ^c	0.001			

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Bromochloroacetic acid (BCAA)	0.001	EPA 552.2	36HA / CXHA	14 days from collection to extraction; 14 days from extraction to analysis
Dibromoacetic acid (DBAA) ^C	0.001			
Dalapon ^C	0.001			
Packages				
Disinfection Byproducts Rule (TTHM and Haloacetic Acids)	See analyte lists	EPA 524.2 and EPA 552.2	36VO/HA and CXTM/CXHA	See analysis lists

*Total Haloacetic Acids are also EPA Certified

EDB and DBCP Compounds:

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time
1,2-Dibromoethane (EDB) ^C	0.00001	EPA 504.1	36VO / CXEV	14 days from collection to analysis
1,2-Dibromo-3-Chloropropane (DBCP) ^C	0.00002			

Volatile Analyses Offerings:

Total Trihalomethanes (TTHM):

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time
Bromodichloromethane ^C	0.0005	EPA 524.2	36VO / CXTM	14 days from collection to analysis
Bromoform ^C	0.0005			
Chloroform ^C	0.0005			
Dibromochloromethane ^C	0.0005			
Total THMs ^C	0.0005			
Packages				
Disinfection Byproducts Rule (TTHM and Haloacetic Acids)	See analyte lists	EPA 524.2 and EPA 552.2	36VO/HA and CXTM/CXHA	See analysis lists

Volatile Organic Compounds (VOC):

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time
Benzene ^C	0.0005	EPA 524.2	36VO / CXVO	14 days from collection to analysis
Bromobenzene	0.0005			
Bromochloromethane	0.0005			
Bromodichloromethane*	0.0005			
Bromoform*	0.0005			
Bromomethane	0.001			
2-Butanone (MEK)	0.005			

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n-Butylbenzene	0.0005	EPA 524.2	36VO / CXVO	14 days from collection to analysis
sec-Butylbenzene	0.0005			
tert-Butylbenzene	0.0005			
Carbon tetrachloride ^C	0.0005			
Chlorobenzene ^C	0.0005			
Chloroethane	0.0005			
Chloroform*	0.0005			
Chloromethane	0.0005			
2-Chlorotoluene	0.0005			
4-Chlorotoluene	0.0005			
Dibromochloromethane*	0.0005			
Dibromomethane	0.0005			
1,2-Dichlorobenzene ^C	0.0005			
1,3-Dichlorobenzene	0.0005			
1,4-Dichlorobenzene ^C	0.0005			
Dichlorodifluoromethane	0.001			
1,1-Dichloroethane	0.0005			
1,2-Dichloroethane ^C	0.0005			
1,1-Dichloroethene ^C	0.0005			
cis-1,2-Dichloroethene ^C	0.0005			
trans-1,2-Dichloroethene ^C	0.0005			
1,2-Dichloropropane ^C	0.0005			
1,3-Dichloropropane	0.0005			
2,2-Dichloropropane	0.0005			
1,1-Dichloropropene	0.0005			
cis-1,3-Dichloropropene	0.0005			
trans-1,3-Dichloropropene	0.0005			
Ethylbenzene ^C	0.0005			
Hexachloro-1,2-Butadiene	0.0005			
Isopropylbenzene	0.0005			
4-Isopropyltoluene	0.0005			
Methylene chloride ^C	0.0005			
4-Methyl-2-pentanone (MIBK)	0.005			
Methyl-t-butyl ether (MTBE)	0.001			
Naphthalene	0.0005			
n-Propylbenzene	0.0005			
Styrene ^C	0.0005			
1,1,1,2-Tetrachloroethane	0.0005			
1,1,2,2- Tetrachloroethane	0.0005			
Tetrachloroethene ^C	0.0005			
Tetrahydrofuran (THF)	0.005			
Toluene ^C	0.0005			
1,2,3-Trichlorobenzene	0.0005			
1,2,4-Trichlorobenzene ^C	0.0005			
1,1,1-Trichlorethane ^C	0.0005			
1,1,2-Trichloroethane ^C	0.0005			
Trichloroethene ^C	0.0005			
Trichlorofluoromethane	0.001			

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1,2,3-Trichloropropane	0.0005	EPA 524.2	36VO / CXVO	14 days from collection to analysis
1,2,4-Trimethylbenzene	0.0005			
1,3,5-Trimethylbenzene	0.0005			
Vinyl chloride ^C	0.0005			
o-Xylene ^{C**}	0.0005			
m-Xylene ^{C**}	0.0005			
p-Xylene ^{C**}	0.0005			

*THM compounds

**EPA Certification is for Total Xylenes only

Dioxane:

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time
1,4-Dioxane	0.0005	EPA 8260 SIM	36VO-NP / CXPD	14 days from collection to analysis

Methane, Ethane, Ethylene:

Analyte(s)	Reporting Limit (mg/L)	Reference Method	Unit Number / Test Code	Hold Time
Methane	0.01	EPA 8015 Modified	36VO-MEE / CXMEE	14 days from collection to analysis
Ethane	0.10			
Ethylene	0.01			