M.J. Reider Associates
Preservation and Holding Times Chart

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NOTE: All Drinking Water compliance samples in which the method does not specify an acceptable pH range and the analysis requires no chemical preservation, an acceptable pH would be 5-9su.

Parameter/ Method	Preservative	Extraction Holding Time (Organics Only)	Sample/ Analysis Holding Time	Container Size	Container Type
EPA 504.1 EDB, DBCP, 123 TCP	Cool to ≤6°C * 3 mg Sodium Thiosulfate/40 mL	14 Days	< 24 Hours after extraction	4 x 40 mL vials plus duplicate Field Reagent Blanks	Glass
EPA 505 DW Pesticides/ PCBs	Cool to ≤6°C * 3 mg Sodium Thiosulfate/40 mL	14 Days (Exception: Heptachlor 7 Days)	as soon as possible	4 x 40 mL vials plus a Field Reagent Blank	Glass
EPA 515.3 DW Herbicides	Cool to ≤6°C * (Chlorinated source, add 20 mg Sodium Thiosulfate /250 mL)	14 Days	14 Days	250 mL	Amber Glass with Teflon lined lid
EPA 524.2 DW Volatiles	Cool to ≤6°C * (Chlorinated source, add 25 mg Ascorbic Acid /40 mL), pH to <2 w/1:1 HCl	NA	14 Days	4 x 40 mL vials with zero headspace plus duplicate Field Reagent Blanks	Glass
EPA 524.2 All DW Volatiles except TTHMs***	Cool to ≤6°C * Samples that are not acidified	NA	24 hours	4 x 40 mL vials with zero headspace plus a Field Reagent Blank	Glass

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EPA 524.2 DW TTHMs only	Cool to ≤6°C * 3 mg Sodium Thiosulfate /40 mL **NO Acid necessary** (NA if Ascorbic used for dechlorinating)	NA	14 Days	4 x 40 mL vials with zero headspace	Glass
EPA 525.2 DW Semi-Volatiles	Cool to ≤6°C * (Chlorinated source, add 40-50 mg/L Sodium Sulfite), pH <2 w/HCl	14 Days	30 Days	2 x 1 Liter plus 1 Liter Field Reagent Blank	Amber Glass
EPA 531.1 Carbamates	Cool to ≤6°C* (Chlorinated source, add 4 mg Sodium Thiosulfate), 1.2 ml of 2.5M Monochloroacetic Acid Buffer to pH 3	NA	28 Days	40 mL vial	Glass
EPA 547 Glyphosate	Cool to ≤6°C * (Chlorinated source, add 4 mg Sodium Thiosulfate/40 mL)	NA	14 Days	2 x 40 mL vials plus a Field Reagent Blank	Glass
EPA 548.1 Endothall	Cool to ≤6°C * (Chlorinated source, add 80 mg Sodium Thiosulfate)	7 Days	14 Days	1 Liter	Amber Glass

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EPA 549.2 Diquat	Cool to ≤6°C * (Chlorinated source, add 100 mg Sodium Thiosulfate) (Biologically active, add H2SO4 to pH2) **pH may be adjusted at Lab**	7 Days	21 Days	1 Liter	Amber PVC High Density or silanized amber glass
EPA 552.2 Haloacetic Acids – HAA5	Cool to ≤6°C * 25 mg Ammonium Chloride/250mL	14 Days	7 Days at 4°C or 14 Days at –10°C or less	250 mL	Amber Glass
EPA 608 SW846 8081 NPW Pesticides/ PCBs	Cool to ≤6°C * if pH 5-9. **For EPA 608**: If not 5-9, adjust pH or extract within 72hrs (Aldrin: Chlorinated source add 80 mg Sodium Thiosulfate) **Adjust at Lab**	7 Days	40 Days	2 x 1 Liter	Amber Glass
EPA 624 /SW846 8260 NPW Purgeable Aromatic Hydrocarbons	Cool to ≤6°C * (Chlorinated source, add10mg Sodium Thiosulfate/40mL) pH 2 w/ HCl	NA	14 Days	4 x 40 mL vials with zero headspace Field Reagent Blank	Glass
EPA 624 NPW Purgeable Aromatic Hydrocarbons	Cool to ≤6°C * (Chlorinated source, add10mg Sodium Thiosulfate/40mL) **NOT** pH adjusted to pH 2	NA	7 Days **without pH adjustment**	4 x 40 mL vials with zero headspace	Glass

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EPA 624 NPW Purgeable Halocarbons	Cool to ≤6°C * (Chlorinated source, add10mg Sodium Thiosulfate/40mL)	NA	14 days	4 x 40 mL vials with zero headspace	Glass
EPA 624 NPW Acrolein & Acrylonitrile	Cool to ≤6°C * (Chlorinated source, add 10mg Sodium Thiosulfate/40mL) **pH 4-5 w/HCl ********	NA	14 days	2 x 40 mL vials with zero headspace	Glass
EPA 624 NPW Acrolein & Acrylonitrile	Cool to ≤6°C * (Chlorinated source, add 10mg Sodium Thiosulfate/40mL)	NA	3 days ******	2 x 40 mL vials with zero headspace	Glass
EPA 625 / SW846 8270 NPW Semivolatiles	Cool to ≤6°C * (Chlorinated source, add 80 mg Sodium Thiosulfate/L)	7 Days	40 Days	2 x 1 Liter with Teflon lined lid	Amber Glass
EPA 625 / SW846 8270 NPW Benzidine analysis	Cool to ≤6°C * (Chlorinated source, add 80 mg Sodium Thiosulfate/L). If 1,2DPH likely to be present, adjust pH to 4.0 +/_0.2	7 Days	30 days if stored at <0°C	2 x 1 Liter with Teflon lined lid	Amber Glass
EPA 1666 Pharmaceuticals by GC/MS	Cool to ≤6°C * (Chlorinated source, add 10mg Na Thiosulfate/40 mL vial), pH ≤2 w/ HCl	NA	14 Days	4 x 40 mL vials Field Reagent Blank	Glass

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EPA 1671 Pharmaceuticals by GC (Subcontract)	Cool to ≤6°C * (Chlorinated source, add 10mg Na Thiosulfate/40 mL vial), pH ≤2 w/ HCl	NA	14 Days	2 x 40 mL vials Field Reagent Blank	Glass
SM 6640B NPW Herbicides	Cool to ≤6°C * (Chlorinated source, add 2 mg Sodium Sulfite /40mL)	14 Days	21 Days	3 x 40 mL vials	Glass
SM 6640B (24D, 245T, Silvex & Dicamba) Compliance samples	Cool to ≤6°C * pH 5-9 w/HCl ********	7 Days	40 Days		
SW846 8015 NPW Diesel Range Organics DRO, (Subcontract)	Cool to ≤6°C *	7 Days	40 Days	2 x 1 Liter	Amber glass
SW846 8015 SOLID Diesel Range Organics (Subcontract)	Cool to ≤6°C *	14 Days	40 Days	8 oz Jar with Teflon lined lid	Glass
SW846 8081 SW846 8082 SOLID Pest/ PCBs	Cool to ≤6°C *	14 Days	40 Days	4 oz Jar with Teflon lined lid	Glass
SW846 8082 NPW PCBs	Cool to ≤6°C * (Chlorinated source, add 80 mg Sodium Thiosulfate/L)	7 Days	40 Days	2 x 1 Liter	Amber glass

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Parameter/ Method	**Preservative**	**Extraction Holding Time (Organics Only)**	**Sample/ Analysis Holding Time**	**Container Size**	**Container Type**
SW846 8141 NPW Organo-phosphate Pesticides (Subcontract)	Cool to ≤6°C * Adjust pH between 5 and 8	7 Days	40 Days	2 x 1 Liter	Amber glass
SW846 8141 SOLID Organo-phosphate Pesticides (Subcontract)	Cool to ≤6°C *	14 Days	40 Days	4 oz Jar with Teflon lined lid	Glass
SW846 8151 SOLID (Subcontract)	Cool to ≤6°C *	14 Days	40 Days	4 oz Jar with Teflon lined lid	Glass
SW846 8260 NPW Volatiles	Cool to ≤6°C * (Chlorinated source, add10mg Sodium Thiosulfate/40mL) pH <2 w/ HCl	NA	14 Days	4 x 40 mL vials with zero headspace Trip blank	Glass
SW846 8260 NPW Volatiles: Required for Styrene, Vinyl Chloride and 2CEVE	Cool to ≤6°C * (Chlorinated source, add10mg Sodium Thiosulfate/40mL) **pH NOT adjusted to pH<2**	NA	7 Days	4 x 40 mL vials with zero headspace	Glass
SW846 8260 NPW Acrolein & Acrylonitrile	Cool to ≤6°C * (Chlorinated source, add10mg Sodium Thiosulfate/40mL) **pH 4-5 w/HCl**	NA	7 days	2 x 40 mL vials with zero headspace	Glass

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SW846 8260 SOLID Volatiles	Cool to ≤6°C *	NA	14 Days	Soil Kit or 4 oz Jar with Teflon lined lid	Glass
SW846 8260 SOLID Volatiles	Cool to ≤6°C *	NA	14 Days	Encores or 4 oz Jar with Teflon lined lid *******	Glass
SW846 8260 SOLID Styrene, Vinyl Chloride and 2CEVE	Cool to ≤6°C *	NA	7 Days	Encores or 4 oz Jar with Teflon lined lid	Glass
SW846 8270 NPW Semivolatiles	Cool to ≤6°C * (Chlorinated source, add 80 mg Sodium Thiosulfate)	7 Days	40 Days	2 x 1 Liter with Teflon lined lid	Amber Glass
SW846 8270 SOLID Semivolatiles	Cool to ≤6°C *	14 Days	40 Days	4 oz Jar with Teflon lined lid	Glass
Acidity	Cool to ≤6°C *	NA	14 Days	500 mL	Plastic or Glass
Alkalinity Alk	Cool to ≤6°C * Minimal Head Space	NA	14 Days	500 mL	Plastic or Glass
Ammonia NH3-N	Cool to ≤6°C * pH <2 w/H2SO4	NA	28 Days	500 mL	Plastic
Asbestos (Subcontract)	Cool to ≤6°C *		48 Hours or (if 20 mg/L Hg as HgCl2 added - 6 months)		Plastic

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Parameter/ Method	Preservative	Extraction Holding Time (Organics Only)	Sample/ Analysis Holding Time	Container Size	Container Type
Biochemical Oxygen Demand BOD	Cool to ≤6°C *	NA	48 Hours	1 Liter	Plastic or Glass
Bromate **** BrO3-	Typically, Cool to ≤6°C *, but not required. 50 mg/L EDA	NA	28 Days	250 mL	Plastic or Glass
Bromide **** Br-	Typically, Cool to ≤6°C *, but not required. (Addition of 50 mg/L EDA permitted)	NA	28 Days	250 mL	Plastic or Glass
Calcium Hardness, CaCO3	Cool to ≤6°C * pH <2 with HNO3	NA	6 months		Plastic or Glass
Carbonaceous Biochemical Oxygen Demand CBOD	Cool to ≤6°C *	NA	48 Hours	1 Liter	Plastic or Glass
Chemical Oxygen Demand COD	Cool to ≤6°C * pH to <2 with H2SO4	NA	28 Days	250 mL	Plastic or Glass
Chloramines (Subcontract)	Typically, Cool to ≤6°C *, but not required. Zero Head Space	NA	15 minutes	250 mL	Plastic or Glass
Chlorate **** ClO3-	Typically, Cool to ≤6°C *, but not required. 50 mg/L EDA	NA	28 Days	250 mL	Plastic or Glass
Chloride Cl-	Typically, Cool to ≤6°C *, but not required	NA	28 Days	500 mL	Plastic or Glass

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Chlorine, Residual Res Cl2	Typically, Cool to ≤6°C *, but not required. Zero Head Space	NA	15 minutes	250 mL	Plastic or Glass
Chlorine Demand Cl2 Dem	Do Not Store – minimal light and agitation	NA	Immediately	Liter	Glass
Chlorine Dioxide Cl Diox	Cool to ≤6°C *, but not required	NA	Immediately	500 mL	Plastic or Glass
Chlorite **** ClO2-	Cool to ≤6°C * 50 mg/L EDA	NA	14 Days	250 mL	Opaque Plastic or Amber Glass
Coliform, Fecal (FC) NPW (CWA) 9222D-MF Colilert 18	Cool to <10°C 0.0008% Sodium Thiosulfate	NA **SWTR**= Surface Water Treatment Rule	8 Hours ***** **CWA** = Clean Water Act	120 mL Sterile	Plastic or Glass
Coliform, Fecal (FC) Sludge-Biosolids 9221E-MPN	Cool to <10°C	NA	8 Hours *****	8 oz Jar Sterile	Glass
Coliform, Fecal (FC) Colilert 18/ Quantitray	Cool to <10°C 0.0008% Sodium Thiosulfate	NA	8 Hours *****	120 mL Sterile	Plastic or Glass
Coliform, Total (TC) DW (TCR) 9223B-Colilert P/A	Cool to <10°C 0.0008% Sodium Thiosulfate	NA **TCR** = Total Coliform Rule	30 Hours	120 mL Sterile	Plastic or Glass

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Coliform:TC, FC and HPC for SWTR (DW)	Cool to <10°C 0.0008% Sodium Thiosulfate	NA	8 Hours	120 mL Sterile	Plastic or Glass
Coliform, E. Coli (EC) Enumeration for SWTR 9223B-Colilert	Cool to <10°C 0.0008% Sodium Thiosulfate	NA	30 Hours	120 mL Sterile	Plastic or Glass
Coliform, E. Coli (EC) P/A for GWR – PWS not homeowners	Cool to <10°C 0.0008% Sodium Thiosulfate	NA **GWR =** Ground Water Rule	30 hours	120 mL Sterile	Plastic or Glass
Color	Cool to ≤6°C *	NA	48 Hours	500 mL	Plastic or Glass
Cyanide, Total and Free Cn Tot Cn-f	Cool to ≤6°C * (Chlorinated source, add 4 mL of Sodium Arsenite), DW: pH >12, WW: pH >10 w/NaOH	NA	14 Days	500 mL	Plastic or Glass
Cyanide, Total **SOLID**	Cool to ≤6°C *		14 Days	8 oz Jar	Plastic or Glass
Dioxin in DW- method 1613 (Subcontract)	Cool to ≤6°C * 80 mg Na2S2O3. If pH > 9 adjust to pH 7-9 with H2SO4	1 year	1 year	Liter Amber	Glass
Dissolved Oxygen, DO	Typically, Cool to ≤6°C *, but not required	NA	Immediately	300 mL	Disposable BOD Bottles

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Fluoride F-	Typically, Cool to ≤6°C *, but not required.	NA	28 Days	500 mL	Plastic
Glyphosate Gly	Cool to ≤6°C *. 4 mg Sodium Thiosulfate/40 mL	NA	14 Days	2 x 40 mL vials	Glass
Hardness Hardness	Typically, Cool to ≤6°C *, but not required. pH <2 with HNO3	NA	6 Months	500 mL	Plastic or Glass
Heterotrophic Plate Count HPC, Standard Plate Count. SWTR, BWR, NPDES	Cool to <10°C Sodium Thiosulfate	NA	8 Hours *****	120 mL Sterile	Plastic or Glass
Hexavalent Chromium NPW Cr+6 EPA 218.6	Cool to ≤6°C * Filter then adjust pH to 9.3 - 9.7 with 1mL of NH4OH/(NH4)2 SO4 per 100 mL **or Lab filter and preserve**	NA	28 days when preserved, 24 hrs if not preserved	500 mL	Plastic or Glass
Hexavalent Chromium DW Cr+6 EPA 218.7	Cool to ≤6°C * 1 ml of NH4OH/(NH4)2 SO4 /100ml	NA	14 days	500 ml	Plastic or Glass
Hexavalent Chromium NPW Cr+6 SM 3500 Cr-B	Cool to ≤6°C * Adjust pH to 9.3 - 9.7 with Ammonium Sulfate Buffer Solution (NH4)2SO4 **or Lab preserve**	NA	28 days when preserved, 24 hrs if not preserved	500 mL	Plastic or Glass

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Hexavalent Chromium Cr+6 **SOLID** SM 3500 Cr-B	Cool to ≤6°C *	30 days until digestion	7 days after digested, if properly preserved	8 oz Jar	Glass
Ignitability SW846-1010A-liquid 1030-solid	Cool to ≤6°C * unless refrigeration would adversely affect the sample. Minimal Headspace				Glass or Plastic
Lead/Copper, First Draw Pb/Cu	Water must not be used for 6hrs. Aerator on. pH <2 with HNO3	NA	6 months	1 Liter	Plastic
Lead/Copper, First Draw Pb/Cu	Cool to ≤6°C until preserved. If not preserved immediately must add acid within 14 days	NA	6 months	1 Liter	Plastic
Mercury Hg	pH <2 with HNO3	NA	28 Days	500 mL	Plastic or Glass
Mercury, Low Level EPA1631 EPA 1669 (Subcontract)	HCl – refer to method for special instructions			2-40 mL vials and 1-250 mL Glass **FB**	Glass
Mercury SOLID	Cool to ≤6°C *	NA	28 Days	4 oz Jar with Teflon lined lid	Plastic or Glass

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Metals (except Hg)	pH <2 with HNO3 at least 24 hrs prior to analysis. To analyze immediately, add the acid within 15 min of collection. If not preserved immediately, must add acid within 14 days	NA	6 Months	1 Liter	Plastic or Glass (Boron and Silica must be in Plastic)
Metals (except Hg) **SOLID**	Cool to ≤6°C *	NA	6 Months	4 oz Jar with Teflon lined lid	Glass
Metals, Dissolved (except Hg)	Filter within 15 min of collection and before adding acid. pH <2 with HNO3	NA	6 Months	1 Liter	Plastic or Glass (Boron and Silica must be in Plastic)
Nitrate NO3-N	Cool to ≤6°C *	NA	48 Hours	500 mL	Plastic or Glass
Nitrate/ Nitrite, combined NO3-NO2	Cool to ≤6°C * pH <2 with H2SO4	NA	28 Days	500 mL	Plastic or Glass
Nitrate/ Nitrite, combined	Cool to ≤6°C *	NA	48 Hours	500 mL	Plastic or Glass
Nitrite NO2-N	Cool to ≤6°C *	NA	48 Hours	500 mL	Plastic or Glass
Nitrogen, Total Kjeldahl TKN	Cool to ≤6°C * pH to <2 with H2SO4	NA	28 Days	500 mL	Plastic or Glass
Odor	Cool to ≤6°C * Fill completely	NA	24 Hours	250 mL	Glass

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Oil and Grease O&G HEM	Cool to ≤6°C * pH <2 with HCl (or H2SO4)	NA	28 Days	2x1 Liter	Glass
Oil and Grease SOLID	Cool to ≤6°C *	NA	28 Days	4 oz Jar with Teflon lined lid	Glass
Organic Carbon, Total TOC	Cool to ≤6°C * pH <2 with H3PO4	NA	28 Days	250 mL or 4 x 40ml vials with Field Blank	Amber Glass
Organic Carbon, Total **SOLID** TOC	Cool to ≤6°C. *	NA	28 Days	8 oz jar	Plastic or Glass
Organic Carbon, Dissolved ** DOC	Cool to ≤6°C * Filter sample and pH<2 with H3PO4	NA	28 Days	250 mL or 4 x 40 mL vials with Field Blank	Amber Glass
Organic Halogens, Total TOX	Cool to ≤6°C * pH <2 with HNO3 (Chlorinated source, add Na Thiosulfate to reduce Free Chlorine)	NA	6 months	500 mL	Amber Glass with Teflon-lined lid
Ortho-Phosphate as P o-PO4	Cool to ≤6°C * Filter within 15 min of collection	NA	48 Hours	500 mL	Plastic or Glass
Osmotic Pressure OP	Cool to ≤6°C *	NA	48 Hours	500 mL	Plastic or Glass

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Paint	Cool to ≤6°C * unless refrigeration would adversely affect the sample. Minimal Headspace				Glass or Plastic
Perchlorate (Subcontract)	Typically, Cool to ≤6°C *, but not required	NA	28 Days	500 mL	Plastic or Glass
pH	Typically, Cool to ≤6°C *, but not required.	NA	15 minutes	500 mL	Plastic or Glass
Phenols	Cool to ≤6°C * pH <2 with H2SO4	NA	28 Days	500 mL	Glass
Phosphorus, Total PO4-P	Cool to ≤6°C * pH <2 with H2SO4	NA	28 Days	500 mL	Plastic or Glass
Rads (Subcontract)	pH <2 with HCl or HNO3	NA	6 months	½ Gallon	Plastic or Glass
Silica as SIO2 Silica	pH <2 with HNO3	NA	28 Days	500 mL	Plastic
Solids, Settleable Set Sol	Cool to ≤6°C *	NA	48 Hours	1 Liter	Plastic or Glass
Solids TS, TSS, TDS, TVS, VSS	Cool to ≤6°C *	NA	7 Days	500 mL	Plastic or Glass
Specific Conductance Sp Cond	Cool to ≤6°C *	NA	28 Days	500 mL	Plastic or Glass
Sulfate SO4	Cool to ≤6°C *	NA	28 Days	500 mL	Plastic or Glass

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Sulfide S-2	Cool to ≤6°C * 1 mL 2N Zinc Acetate, pH > 9 with NaOH. Fill bottle completely	NA	7 Days	500 mL	Plastic or Glass
Sulfide SOLID S-2	Cool to ≤6°C * Add 2N Zinc Acetate until moistened	NA	7 Days	8 oz Jar	Plastic or Glass
Sulfite SO3	Typically, Cool to ≤6°C *, but not required. Required:<50°C. Add 2.5 mL EDTA, Zero-Head Space	NA	15 minutes	250 mL	Glass
Surfactants MBAS	Cool to ≤6°C *	NA	48 Hours	1 Liter	Plastic or Glass
Suitability Suitable	Cool to <10°C	NA	None listed	500 mL	Glass- Dry Heat Sterilized
Temperature Temp	NA	NA	15 minutes	NA	NA
Total Kjeldahl Nitrogen TKN	Cool to ≤6°C * pH <2 with H2SO4	NA	28 Days	500 mL	Plastic or Glass
Total Organic Carbon TOC	Cool to ≤6°C * pH <2 with H3PO4	NA	28 Days	250 mL or 4 x 40mL vials with Field Blank	Amber Glass
Total Organic Carbon SOLID TOC	Cool to ≤6°C. *	NA	28 Days	8 oz Jar	Plastic or Glass

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Total Organic Halogens TOX	Cool to ≤6°C * pH <2 with HNO3 (Chlorinated source, add Na Thiosulfate to reduce Free Chlorine)	NA	6 months	500 mL	Glass with Teflon-lined lid
Total Petroleum Hydrocarbon TPH SGT-HEM	Cool to ≤6°C * pH <2 with HCl	NA	28 Days	2 x 1 Liter	Glass
Turbidity Turbid	Cool to ≤6°C *	NA	48 Hours	500 mL	Plastic or Glass
UV254	Cool to ≤6°C *	NA	48 Hours	250 mL	Amber Glass

* Aqueous samples must be preserved at ≤6 ° C and should not be frozen unless there is data demonstrating that sample freezing does not affect the sample integrity.

** Within 48 hours of sampling, the samples to be analyzed are filtered through a 0.45 um filter and analyzed immediately or preserved to pH <2 with Phosphoric Acid.

*** If the analysis is for TTHMs only and Sodium Thiosulfate was used to dechlorinate, acidification may be omitted and the holding time still be 14 days.

**** When collecting a sample for EPA 300.1 from a treatment plant employing Chlorine Dioxide, the sample must be sparged with an inert gas prior to the addition of the EDA at the time of sampling.

***** Sample analysis should begin as soon as possible after receipt; sample incubation must be started no later than 8 hours from the time of collection.

****** The pH adjustment is only required if Acrolein is being analyzed. Samples for Acrolein that receive no pH adjustment must be analyzed within 3 days of sampling. MJRA prefers to collect both preserved and unpreserved samples for Acrolein and Acrylonitrile in the event a 3-day analysis is not feasible.

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******* If no soil kit is available, encores may be used, however, the sample must be transferred to soil vials within 48 hours of collection.

******** The pH adjustment for SM 6640B may be performed upon receipt at the laboratory and may be omitted if the samples are extracted within 72 hours of collection.

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