

APPENDIX B

PERCHLORATE METHOD 314.0

**QUALITY CONTROL PROCEDURES, FREQUENCY OF
QC SAMPLE ANALYSIS AND ACCEPTANCE
CRITERIA AND LABORATORY CORRECTIVE
ACTION PROCEDURES**

TABLE B-1a

QUALITY CONTROL CRITERIA FOR LABORATORY DATA EVALUATION

Analytical Method^(a)	Spiking Compounds	Accuracy^(a) Percent Recovery (%)	Precision^(a) (RPD %)
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate^(b)			
EPA 314.0	Perchlorate	80-120	20
Laboratory Control Samples			
EPA 314.0	Perchlorate	80-120	20

(a) EPA 100-400 Series - Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600R-93/100, August 1999).

(b) RPD calculated between parent sample and matrix duplicate.

TABLE B-1b

**PERCHLORATE BY ION CHROMATOGRAPHY EPA314.0
CALIBRATION-SPECIFICATIONS AND CORRECTIVE ACTION SUMMARY
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Analytical Method(a)	Parameter	QC Element	Frequency	Acceptance Criteria	Corrective Action
EPA 314.0 Ion Chromatography (IC)	Perchlorate	Instrument performance check (IPC) standard	1 per preparation batch (≤ 20 samples) to confirm matrix conductivity threshold (MCT)	First tier criteria $\leq 25\%$ Second tier criteria $\pm 20\%$ Third tier criteria retention time less than 5% shift	- Repeat MCT - Reanalyze IPC
		Initial multipoint calibration (ICAL) (minimum of three, five are recommended by the method)	Initially and as required	$\leq 15\%$ relative standard deviation (RSD)	- Check calculations - Recalibrate
		Initial calibration verification (ICV)	Following the ICAL	$\pm 10\%$ of expected concentration	- Reanalyze ICV - Recalibrate if ICV still out
		Initial Calibration Check Standard (ICCS) lowest concentration in ICAL	Daily prior to analyzing samples	$\pm 25\%$ of expected concentration	- Reanalyze ICCS - Recalibrate if ICCS still out
		Continuing calibration check (CCCS)/end calibration check standards (ECCS), mid-range and high range alternately	Every 10 samples and at end of run	$\pm 15\%$ of expected concentration	- Reanalyze CCCS/ECCS - Reanalyze affected samples back to last acceptable CCCS/ECCS
		Method blank	1 per preparation batch (≤ 20 samples)	$\leq \frac{1}{2}$ Practical quantitation limit (PQL)	- Reanalyze blank - Reprep/reanalyze blank and all associated samples
		Pre-treated method blank	Required for any analytical batch for which samples have exceeded the MCT or been pretreated to reduce common anion levels.	$\leq \frac{1}{2}$ PQL	- Reanalyze blank - Reprep/reanalyze blank and all associated samples

TABLE B-1b

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Analytical Method(a)	Parameter	QC Element	Frequency	Acceptance Criteria	Corrective Action
		Laboratory control sample (LCS)	1 per preparation batch (≤ 20 samples) prepared from same standard used to prepare ICAL	% Recovery within QC acceptance criteria (Refer to Table A-1a)	- Reanalyze LCS - Reprep/reanalyze all associated samples
		Pre-treated LCS	Required for any analytical batch for which samples have exceeded the MCT or been pretreated to reduce common anion levels	% Recovery within QC acceptance criteria (Refer to Table A-1a)	- Reanalyze LCS - Reprep/reanalyze all associated samples
		Matrix spike (MS)	1 per preparation batch (≤ 20 samples)	% Recovery within QC acceptance criteria (Refer to Table A-1a)	- Reprep/reanalyze once - Narrate all outliers
		Pretreated MS	Required for any analytical batch for which samples have exceeded the MCT or been pretreated to reduce common anion levels	$\pm 20\%$	- Narrate all outliers
		Matrix spike duplicate (MSD)	1 per preparation batch (≤ 20 samples)	% Recovery and relative percent difference (RPD) within QC acceptance criteria (Refer to Table A-1a)	- Same as MS
		Laboratory duplicates	1 per preparation batch (≤ 20 samples)	RPD within $\pm 15\%$	- Narrate all outliers

QC quality control

(a) EPA 100-400 Series - Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600R-93/100, August 1999).

TABLE B-1c**PRACTICAL QUANTITATION LIMITS**

Analysis	Analytical Method^(a)	Analyte	<u>Practical Quantitation Limit^(a)</u>	
			Water (mg/l)	Soil (mg/kg)
Perchlorate	EPA 314.0	Perchlorate	4.0	20

(a) EPA 100-400 Series – Methods for the Determination of Inorganic Substances in Environmental Samples (EPA /600R – 93/100, August 1999)