ALS LABORATORY GROUP

5.4 TEST METHODS AND METHOD VALIDATION

5.4.1 General

All ALS locations use appropriate methods for all tests performed, including those for estimating uncertainty and statistical techniques for analyzing data. Test methods are documented and include all instructions needed to operate equipment and protect the integrity of samples and analytical results. Test method instructions and support information is kept current and accessible where needed.

Deviations from test methods occur only if the deviation has been documented, technically justified, authorized, and accepted by the customer where applicable. Analytical department supervisors and managers have the authority to approve method deviations for the analysis of samples and to impose appropriate quality control into the analysis. If the deviation is judged to alter the outcome of a test, client acceptance of the deviation will be obtained prior to approval. Documentation follows the same requirements as for data quality and method objective -refer to section 4.9

5.4.2 Selection of Methods

Customers rely on ALS to select test methods that are appropriate to meet their needs and are appropriate for the tests performed. ALS uses the latest versions of published standard methods developed by organizations such as American Public Health Association, United States Environmental Protection Agency, NIOSH, Environment Canada, and other international, regional or regulatory organizations or equipment manufacturers whenever possible. When needed, the standard method will be supplemented with additional instructions to ensure consistency of application and performance. Where an appropriate standard method is not available ALS may develop and validate an in-house test method, or adopt a third party validated method. ALS provides method information to clients upon request and on test reports.

For published reference methods, each ALS location confirms it can properly operate the standard method before introducing the test into the laboratory. If the standard method changes in a manner that may affect test results, the confirmation is repeated.

Unique circumstances may occur where a customer specifies the methodology to be used. The customer will be notified if ALS deems the recommended method is inappropriate or out of date.

5.4.3 Laboratory Developed Methods

When in-house development of a test procedure is needed, qualified individuals are assigned to the planning and development stages of the project. The plan is updated as development progresses and all changes are effectively communicated among all involved.

5.4.4 Non-standard Methods

If it is necessary to use methods not covered by standard methods, customer agreement will be obtained and will include clear specification of their requirements and the purpose of the test. The developed method will be appropriately validated before use.

5.4.5 Validation of Methods

Method validations are conducted to confirm that the methods are fit for their intended use. The validations are as extensive as necessary to meet the needs of the given application. The extent depends on the source of the method. For example, standard methods used for their intended application require a less extensive validation than non-standard methods or standard methods used outside of their intended scope.

All results relating to the validation of a given method, including the procedure used for validation and a statement of whether the method is fit for the intended use are retained in method validation records.

As appropriate, the validation studies performed will verify the range and accuracy of the results obtained, including uncertainty, detection limit, selectivity of the method, linearity, repeatability and/or reproducibility, robustness and/or sensitivity to interference. Measurement uncertainty values are reviewed to ensure they are sufficient to meet customers needs.

5.4.6 Estimation of Measurement Uncertainty

ALS has procedures for estimating measurement uncertainty. The procedures are based on accepted practices of identifying components contributing to uncertainty, compiling data that represents or includes these components, evaluating the data using appropriate statistical calculations, and reporting in a manner that prevents misunderstanding of the result. In those cases where the nature of the test precludes calculation of uncertainty, ALS will at minimum identify the components of uncertainty and make a reasonable estimation where needed. This estimation will be based on knowledge of the performance of the method and validation data.

5.4.7 Control of Data

Automated calculations and data transfer systems are checked in a systematic manner when first programmed and re-verified appropriately when changes are made.

When computers and automated equipment are used for the acquisition, processing, recording, reporting, storage or retrieval of test data, ALS ensures:

- in-house developed software is sufficiently documented and validated
- procedures are implemented for protecting data, including integrity and confidentiality of entry, collection, storage transmission and processing – refer to sections 4.13, 5.1 and 5.10
- computers and automated equipment are maintained to ensure proper functioning and adequate environmental conditions – refer to section 5.1

Refer to:

- Local Master List: METHOD VALIDATION
- Local Master List: LIMS CALCULATIONS AND DATA TRANSFERS
- Local Master List: SOFTWARE DEVELOPED IN-HOUSE

EXOVA ACCUTEST LABORATORY

48h-Single Conc.-Daphnia

ANALYTE	METHOD REFERENCE	MDL	UNITS
hold sample	HOLD C HOLD	0	ug/L

96h-Single Conc-RainTrout

ANALYTE	METHOD REFERENCE	MDL	UNITS
hold sample	HOLD C HOLD	0	ug/L

BIM - BTE - water

ANALYTE	METHOD REFERENCE	MDL	UNITS
Benzene	BTEX in water EPA 8260B	0.5	ug/L
Toluene	BTEX in water EPA 8260B	0.5	ug/L
Ethylbenzene	BTEX in water EPA 8260B	0.5	ug/L
Toluene-d8	surrogates - organics V 8260/8270	1	%

BIM DW Chem

ANALYTE	METHOD REFERENCE	MDL	UNITS
Turbidity	Turbidity - AMTURBE1 C SM2130B	0.1	NTU
Alkalinity as CaCO3	Alkalinity : Auto - AMAPCAE1 SM 2320B	5	mg/L
Cl	Anions by IC - DX-100 SM 4110C	1	mg/L
Colour	Colour - AMCOLSE1 C SM2120C	2	TCU
Cyanide (free)	Cyanide - AMCNTFE8 C SM4500-CNC	0.005	mg/L
F	F Autotitrator C SM4500-FC	0.1	mg/L
N-NO3	NO2/NO3 SKALAR - AMNOXSE1 C SM4500-NO3-F	0.1	mg/L
pH	pH in water : Auto - AMAPCAE1 C SM4500-H+B	1	
SO4	Anions by IC - DX-100 SM 4110C	1	mg/L
TDS (COND - CALC)	solids in water - AMSOLWE1 C SM2540	5	mg/L
Conductivity	Conductivity : Auto - AMAPCAE1 C SM2510B	5	uS/cm
TOC	TOC in water - AMDTOCE1 C SM5310C	0.5	mg/L
DOC	TOC in water - AMDTOCE1 C SM5310C	0.5	mg/L
Total Suspended Solids	solids in water - AMSOLWE1 C SM2540	2	mg/L

BIM DW Metals

ANALYTE	METHOD REFERENCE	MDL	UNITS
Al	ICP-MS PE6100 EPA 200.8	0.01	mg/L
As	ICP-MS PE6100 EPA 200.8	0.001	mg/L
Ba	ICP-MS PE6100 EPA 200.8	0.01	mg/L
Cd	ICP-MS PE6100 EPA 200.8	0.0001	mg/L
Cr	ICP-MS PE6100 EPA 200.8	0.001	mg/L
Cu	ICP-MS PE6100 EPA 200.8	0.001	mg/L
Fe	ICP-MS PE6100 EPA 200.8	0.03	mg/L
Pb	ICP-MS PE6100 EPA 200.8	0.001	mg/L
Mn	ICP-MS PE6100 EPA 200.8	0.01	mg/L
Hg	Hg in water - AMHGCTE1 M SM3112B-3500B	0.0001	mg/L
Se	ICP-MS PE6100 EPA 200.8	0.001	mg/L
Na	ICP metals - AMMICPE8 M SM3120B-3500C	2	mg/L