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LAB ID 11642
MR GREGORY MOHRMAN
USGS NATIONAL WATER LAB
POB 25046-MS 407-BLDG 95
DENVER CO 80225-0046

PLEASE BE SURE TO INDICATE THE DATE OF COMPLETION FOR EVERY
CORRECTIVE ACTION

<000055> QUALITY SYSTEM

<005429> The QA Officer does not arrange for or conduct internal audits on the entire technical operation annually and notify laboratory management of deficiencies in the quality system and monitor corrective actions. (Sec. 5.4.2g, 5.5.1d, 5.5.2s and 5.5.3.1 NELAC 1999)

CORRECTIVE ACTION

Although the National Water Quality Laboratory (NWQL) does have an internal audit plan in place, it is in need of revision. The NWQL will develop a more comprehensive scheme regarding internal audits. The Quality Assurance Officer (QAO) will develop a Project Plan to address this issue and revise the existing audit Standard Operating Procedure (SOP) # QX0084 – “In House Audits” – to reflect the necessary changes by November 30, 2001.

<000055> QUALITY SYSTEM

<000553> The quality documentation is not available to, understood by, or implemented by all laboratory personnel. (Sec. 5.5.1b,d NELAC 1999)

CORRECTIVE ACTION

The revised Quality Assurance Manual has been available to NWQL personnel since early August. It is in draft form and further revisions are being made. The manual will be distributed for NWQL review by September 20, 2001. The review period will be limited to one month. Revisions and publication are expected to take another 6 to 8 weeks. The final controlled version will be distributed to all laboratory personnel by December 20, 2001. Staff training will be scheduled for this winter that will address the contents and use of the Quality Assurance Manual.

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<000554> The quality manual title page does not list the following: (Sec. 5.5.2 NELAC 1999): name, signature, title address (if different from above) or telephone number of individual(s) responsible for the laboratory. (Sec. 5.5.2f NELAC 1999), name or signature of the quality assurance officer (however named) (Sec. 5.5.2f NELAC 1999), effective date of the version, (Sec. 5.5.2 NELAC 1999).

CORRECTIVE ACTION

The current draft of the Quality Assurance Manual mistakenly identifies the Cover page of the document as the Title page. The Title page is the second page of the document. The draft Quality Assurance Manual lists the names, signatures, titles, and telephone numbers of the Laboratory Director, Quality Assurance Officer, and Technical Directors on the title page. The effective date is now posted on the cover page and will be moved to the title page.

<005523> The internal audit is not conducted by personnel trained and qualified as auditors who, wherever possible, are independent of the activities being audited. (Sec. 5.5.3.1 NELAC 1999)

CORRECTIVE ACTION

The internal audits are led by two chemists, one with twenty plus years experience in inorganic chemistry and quality assurance, the other with twenty plus years experience in organic chemistry, information technology, radiochemistry, and quality assurance. The auditors are staff of the Quality Assurance Section and are independent of the activities being audited. Formal auditor training will be scheduled for these two individuals in the next few months.

<005527> There is no annual review of the quality system completed by management to evaluate its continuing suitability and effectiveness and make any necessary changes or improvements. (Sec. 5.5.3.2 NELAC 1999)

CORRECTIVE ACTION

The Quality Assurance Officer will summarize results and findings from Performance Testing Studies, internal and external audits, customer complaints and ongoing QA data collection projects. This summary will be presented to the NWQL Management Team in December 2001. The Management Team will use this information to make the first annual review of the NWQL Quality System. The presentation can be made as part of the annual Program Review that each Section of the laboratory presents each year.

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<000056> PERSONNEL (SEC 5.6 NELAC 1999)

<000566> The training records available for all technical staff do not include: (Sec. 5.6.2c NELAC 1999): evidence that the employee has read, understands and is using the latest version of the lab's in-house quality documentation (Sec. 5.6.2c1 NELAC 1999), training courses or workshops on specific equipment, analytical techniques or lab procedures (Sec. 5.6.2c2 NELAC 1999), training courses in ethical and legal responsibilities including the potential punishments & penalties for violations (Sec. 5.6.2c3, NELAC 1999), documentation certifying that the employee has read, understands and agrees to use the latest version of a test method used (Sec. 5.6.2c4 NELAC 1999).

CORRECTIVE ACTION

Training records indicating employees have read and understood the NWQL quality systems will be in place by January 20, 2002, one month after the distribution of the Quality Assurance Manual, and will be on file with the NWQL document specialist. Appendices C and D of the Manual document the above as well as a commitment to ethical behavior. Training records of courses, workshops, specific instrumentation, etc., do exist but are not centrally located. The NWQL document specialist will develop a system to have this information on file. Arrangements are being made at the present time by the Quality Assurance Officer to select a commercially available training course on ethical and legal responsibilities. The course will be presented this winter (November through February period). Documentation certifying that NWQL employees have read and understood their personal and legal responsibilities as well as the latest version of the applicable test methods will be signed at the conclusion of the training.

<000058> EQUIPMENT AND REFERENCE MATERIALS (SEC. 5.8 NELAC 1999)

<000585> Items of the equipment which have been subjected to overloading or mishandling or which gives suspect results or have been shown by verification or otherwise to be defective are not taken out of service, clearly identified, or wherever possible, stored at a specified place until they have been repaired or show calibration, verification or test to perform satisfactorily. (Sec. 5.8c NELAC 1999).

CORRECTIVE ACTION

An SOP for equipment maintenance, for use throughout the laboratory, will be developed and in place by November 30, 2001. Preparation of the SOP is the joint responsibility of the Quality Assurance Officer and the Analytical Services Section Chief. This SOP will address the procedure for marking defective equipment, taking the equipment out of service, and retesting equipment once repaired.

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<000587> Each item of equipment including reference materials are not labeled, marked or otherwise identified to indicate its calibration when appropriate. (Sec. 5.8d NELAC 1999).

COMMENT: THIS REFERS TO PIPETS

CORRECTIVE ACTION

An SOP on the calibration, labeling and marking of pipettes will be written based on the current SOP QX0326 (04/00) *Calibration of Volumetric Devices in the Quality Assurance Unit*. The Quality Assurance Officer and Analytical Services Section Chief are jointly responsible for preparation and implementation of this SOP and it will be completed by November 30, 2001. The Quality Assurance Section has plans to hire 2 additional staff persons and they will have oversight of this process as part of their duties.

<000588> Equipment records do not include the following: (Sec. 5.8e NELAC 1999): details of maintenance carried out to date and planned for the future. (Sec. 5.8e8 NELAC 1999), history of any damage, malfunction, modification or repair (Sec. 5.8e9 NELAC 1999), COMMENT: THESE REFER TO MERCURY TESTING.

CORRECTIVE ACTION

An SOP for equipment maintenance, for use throughout the laboratory, will be developed and in place by November 30, 2001. This is the same SOP mentioned in the corrective action for item <000585>. Preparation of the SOP is the joint responsibility of the Quality Assurance Officer and the Analytical Services Section Chief. This SOP will address the procedure for documenting the details of equipment maintenance, the history of damage, malfunction, modification, or repair and the process for establishing and documenting scheduled maintenance of equipment. The mercury analytical system already has been updated to document these issues.

<000059> MEASUREMENTS TRACEABILITY AND CALIBRATION (SEC. 5.9 NELAC 1999)

<000598> There is no program of calibration and verification for reference standards. (Sec. 5.9.3b NELAC 1999).

COMMENT: THIS REFERS TO CLASSWEIGHT VERIFICATIONS

CORRECTIVE ACTION

The NWQL program for the use of balances is documented in SOP # QX0029.2 "Guidelines for Calibrating, Operating, and Maintaining Balances" and sections 6.2 and 6.4 of the draft Quality Assurance Manual. The Quality Assurance Officer and Analytical Section Chief will work to ensure the program, especially the section on Class/weight verifications, identified in this SOP, is implemented by November 30, 2001. Staff training will be scheduled for this winter that will address the procedures listed in this SOP.

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<005911> All support equipment is not calibrated manually, using NIST traceable references when available, over the entire range in which the equipment is used. (Sec. 5.9.4.1b NELAC 1999).

COMMENT: THIS REFERS TO THERMOMETERS

CORRECTIVE ACTION

A program to annually calibrate or verify thermometers will be developed by the Quality Assurance Officer and Analytical Service Section Chief and implemented by November 30, 2001. Staff training will be scheduled for this winter that will address the procedures listed in this SOP.

<000510 TEST METHODS AND SOPs (SEC. 5.10 NELAC 1999)

<051021> The laboratory does not establish Standard Operating Procedures to ensure that the reported data is free from transcription and calculation errors. (Sec. 5.10.4a NELAC 1999).

CORRECTIVE ACTION

The Information Technology Section will develop an SOP to address transcription and calculation error issues by November 30, 2001. This SOP will be used where applicable throughout the laboratory.

<051022> The laboratory does not establish SOPs to ensure that all quality control measures are reviewed and evaluated before data is reported. (Sec. 5.10.4b NELAC 1999)

CORRECTIVE ACTION

By November 30, 2001, the Analytical Services Section will prepare SOPs to document data review procedures and evaluation of quality control measures. Separate SOPs will be required for Inorganic and Organic data review and quality control measures. Staff training will be scheduled for this winter that will address the procedures listed in these SOPs.

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<051027> Detailed records are not maintained on reagent and standard preparation. (Sec. 5.10.5c NELAC 1999).

CORRECTIVE ACTION

The Analytical Services Section will develop an SOP regarding reagent and standards preparation by November 30, 2001. This SOP will address the procedure for preparing detailed records on the preparation of reagents and standards. Staff training will be scheduled for this winter that will address the procedures listed in this SOP.

<051028> The records of reagent and standard preparation do not indicate traceability to purchased stocks or neat compounds and include the date of preparation and preparer's initials. (Sec. 5.10.5c NELAC 1999)

CORRECTIVE ACTION

Analytical Services will develop an SOP regarding reagent and standards preparation by November 30, 2001. This is the same SOP mentioned in the corrective action for item <051027>. This SOP will address traceability issues and logbook record keeping requirements for reagents and standards. Staff training will be scheduled for this winter that will address the procedures listed in this SOP.

<051029> The containers of prepared reagents and standards are not uniquely identified and/or do not include an expiration date and/or cannot be linked to the documentation of its preparation. (Sec. 5.10.5d NELAC 1999).

CORRECTIVE ACTION

Analytical Services will develop an SOP regarding reagent and standards preparation by November 30, 2001. This is the same SOP mentioned in the corrective action for items <051027> and <051028>. This SOP will address reagent and standard container identification and expiration date issues. Staff training will be scheduled for this winter that will address the procedures listed in this SOP.

<000511> SAMPLE HANDLING (SEC. 5.11 NELAC 1999)

<005113> The laboratory does not assign a unique identification (ID) code to each sample container received in the laboratory. (Sec. 5.11.1a NELAC 1999).
COMMENT: THIS REFERS TO TRIPLICATE VOA VIALS.

CORRECTIVE ACTION

Although the NWQL does assign unique identification codes to each sample, duplicate or triplicate sample containers of the same type are currently not distinguished from each other. The new Laboratory Information Management System (LIMS) will be programmed to assign a unique identifier for each container by November 30, 2001.

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<051118> The results of all sample acceptance and receipt checks are not recorded. (Sec. 5.11.3b NELAC 1999)

COMMENT: THIS REFERS TO NITRATE SAMPLES.

CORRECTIVE ACTION

Although the NWQL checks and records the temperature of the sample coolers during login, further preservation was not verified. Effective immediately, all nitrate drinking water samples will be checked for proper preservation by verification that the pH is < 2.

<051133> The laboratory has no SOPs for the disposal of samples, digestates, leachates and extracts or other sample preparation products. (Sec. 5.11.5 NELAC 1999).

CORRECTIVE ACTION

The Safety, Health, and Environment Section will develop an SOP for disposal of samples and their products by November 30, 2001.

<000512 RECORDS (SEC. 5.12 NELAC 1999)

<005129> All documented entries are not signed or initialed by responsible staff with the reason for the signature or initial clearly indicated in the records. (Ex. "Sampled by" "Prepared by" or "Reviewed by"). Sec. 5.12.1d NELAC 1999).

CORRECTIVE ACTION

Effective immediately, all documented entries will be signed or initialed by the responsible staff and the reason for the entry will be clearly identified. This process is documented in the Quality Assurance Manual. Staff training will be scheduled for this winter that will address the procedures for use of initials and assigning reasons on documented entries.

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<051212> All corrections to record-keeping are not made by one line marked through the error and the individual making the correction signing (or initialing) and dating the correction. (Sec. 5.12.1f NELAC 1999).

CORRECTIVE ACTION

It is NWQL policy that corrections are made in a manner so as not to obliterate original information. Below is a quote from the draft Quality Assurance Manual:

“Any documentation errors are corrected by drawing a single line through the error so that it remains legible and is initialed by the responsible individual, along with the date of change. Whiteout, erasures, and obliteration of information are prohibited. The correction is written adjacent to the error. The person (or the person’s supervisor) who performed the instrumental analysis signs the report printouts.”

Staff training will be scheduled for this winter on this procedure.

<051221> The laboratory does not retain records of the following procedures to which a sample is subjected while it is in the lab’s possession: (Sec. 5.12.3.1 NELAC 1999), Sample preparation including cleanup and separation protocols, ID codes, volumes, weights, instrument printouts, meter readings, calculations and reagents used. (Sec. 5.12.3.1d NELAC 1999), COMMENT: THIS REFERS TO METALS DIGESTION, Standard and reagent origin, receipt, preparation and use. (Sec. 5.12.31f NELAC 1999), COMMENT: THIS REFERS TO ICP AND RADON.

CORRECTIVE ACTION

NWQL procedures do involve these steps but they may not be adequately documented. A thorough investigation of these procedures and appropriate remedies will be instituted by September 30, 2001. A logbook will be kept in the ICP (Metals) laboratory to record sample digestion information. A certified standard has been obtained for the radon method and new calibration standards are now being prepared. Documentation for ICP standards origin, receipt, preparation, and use will be prepared in accordance with the SOP that is mentioned in the corrective action for items <051027>, <051028>, and <051029>. Staff training will be scheduled for this winter that will address the procedures listed in this SOP.

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<051223> The strip charts, tabular printouts, computer data files, analytical notebooks and run logs do not include: (Sec. 5.12.3.3 NELAC 1999): date of analysis (Sec. 5.12.3.3b NELAC 1999), COMMENT: THIS REFERS TO MERCURY, instrumentation identification and instrument operating conditions/parameters (or reference to such data), (Sec. 5.12.3.3c NELAC 1999), COMMENT: THIS REFERS TO MERCURY & GRAPHITE FURNACE, analysis type (Sec. 5.12.3.3d NELAC 1999), COMMENT: THIS REFERS TO MERCURY, analyst's or operator's initials/signature. (Sec. 5.12.3.3f NELAC 1999), COMMENT: THIS REFERS TO MERCURY, GRAPHITE FURNACE AND RADON.

CORRECTIVE ACTION

A thorough investigation of these procedures for the mercury, graphite furnace, and radon methods is currently being made. Appropriate remedies will be instituted by September 30, 2001. If widespread staff training is deemed necessary it will be included in the training session planned for this winter.

<000513> REPORTS (SEC. 5.13 NELAC 1999)

<051315> The laboratory does not certify that the test results meet all requirements of NELAC or provide reasons and/or justification if they do not. (Sec. 5.13g NELAC 1999).

CORRECTIVE ACTION

Based on the debriefing notes, this deficiency pointed out the fact that the NWQL did not post the "NELAP Certified" logo prominently on its web page. An electronic copy of the logo was provided by the NYSDOH ELAP office and has been posted on the NWQL page. In addition, copies of the NYSDOH Accreditation Certificates have been scanned and posted on the web page. Announcements of laboratory certification have been prepared for the next quarterly newsletter and have already been released through an agency-wide email distribution.

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<00000C> APPENDIX C-DEMONSTRATION OF CAPABILITY CERTIFICATE (SEC. 5 APP.C NELAC 1999)

The Quality Assurance Officer does not sign the DOC.

CORRECTIVE ACTION

The release of the Quality Assurance Manual in December 2001 will rectify this issue. Appendix D of this manual contains a signature page for DOC documentation, with one of the signatories being the QAO. All existing DOC documents will be updated to include the Quality Assurance Officer's review and signature.

<0000d1> CHEMICAL TESTING AND AIR TESTING DETAILED METHOD REVIEW (NELAC SEC. 5 APP. D.1).

<000d13> All essential quality control measures are not incorporated in the lab's method manual. (Sec. D NELAC).

CORRECTIVE ACTION

This comment refers to the lack of matrix spikes, matrix spike duplicates, and sample duplicates. Effective immediately, these sample types will be included for all methods for which the NWQL is certified. For those methods that require an additional sample to prepare the appropriate QC sample types the NWQL will advise its customers to submit additional sample containers. The Quality Assurance Officer and Analytical Services Section Chief will draft this message for agency-wide distribution by October 15, 2001.

<000d18> If there is contamination, the source of contamination is not investigated and corrective action taken to correct, minimize or eliminate the problem if the blank contamination exceeds a concentration greater than 1/10th of the measured concentration of any sample in the associated sample batch or exceeds the concentration present in the samples and greater than 1/10th of the regulatory limit. (Sec. D.1.1.a.1, D.1.1.a.1i, D.1.1a.1.ii NELAC)

CORRECTIVE ACTION

The data reporting procedures will be changed and documented in the Quality Assurance Manual. Blank control limits will be established and analysts will investigate if control limits are exceeded corrective action will then be taken. The Quality Assurance Officer and Analytical Services Section Chief need to investigate the operations of our new LIMS to see if it can effectively tag all samples with measured concentrations up to 10 times greater than the associated blank. Effective immediately, all instances of contamination will be investigated and corrective action taken to correct, minimize or eliminate the problem. Control limits for blank samples have been established using statistical assessment of blind blank data sets.

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<00d112> An LCS (a sample matrix free of analytes of interest spiked with a verified known amount of analyte) is not performed at a frequency of 1 per batch of 20 or less samples per matrix, per sample extraction or preparation method except for analytes for which spiking solutions are not available. (Sec. D.1.1.b1 NELAC)
COMMENT: THIS REFERS TO 515.1

CORRECTIVE ACTION

Based on the audit debriefing notes, this deficiency concerned the fact that method 515.1 Laboratory Control Standards were prepared using acid based standards rather than using methyl ester based standards. New LCS solutions have been prepared using the methyl esters.

<00d115> A matrix spike (sample prepared by adding a known mass of target analyte to a specific amount of matrix sample) is not performed at a frequency of 1 in 20 samples per matrix, per sample extraction or preparation method. (Sec. D.1.1.b2 NELAC).
COMMENT: THIS REFERS TO 524.2

CORRECTIVE ACTION

This comment refers to the lack of matrix spikes, specifically for method 524.5. Effective immediately, these sample types will be included for the method. This will require that field personnel submit an additional sample to prepare the matrix spike QC sample. The NWQL will advise its customers as to the need to submit the additional sample. The Quality Assurance Officer and Analytical Services Section Chief will draft this message for agency-wide distribution by October 15, 2001.

<00d124> A matrix spike duplicate (MSD) or a laboratory duplicate is not performed at a frequency of 1 in 20 samples per matrix, per sample extraction or preparation method. (Sec. D.1.2 NELAC).
COMMENT: THIS REFERS TO NITRATE.

CORRECTIVE ACTION

This comment refers to the lack of matrix spikes, specifically for the nitrate method. Effective immediately, these sample types will be included for the method. This may require that field personnel submit an additional sample to prepare the matrix spike QC sample. The NWQL will advise its customers as to the need to submit the additional sample. The Quality Assurance Officer and Analytical Services Section Chief will draft this message for agency-wide distribution by October 15, 2001.

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<00d132> Sufficient raw data records are not retained to permit reconstruction of the initial calibrations using as appropriate, but not limited to: (Sec. D.1.3.b, 5.9.4.2.1.b, 5.9.4.2.2.c NELAC): instrument,
COMMENT: THIS REFERS TO ICP, NITRATE.

CORRECTIVE ACTION

Based on the debriefing notes, this deficiency concerned the raw data record for the mercury, nitrate plus nitrite, and ICP methods. Reconstruction of initial calibration was not possible because the raw data didn't identify the Instrument, Test method, or each analyte name. Effective immediately, corrections will be made to include this information on the initial calibration records.

<00d135> If the results of samples are not bracketed by the initial calibration, the results are not reported as having less certainty (defined qualifiers, flags, or explanation in the case narrative). (Sec. D.1.3.b, 5.9.4.2.1.f NELAC)
COMMENT: THIS REFERS TO GFAAS

CORRECTIVE ACTION

For several methods a blank calibration standard has been used. Effective immediately, the lowest calibration standard will be above the detection limit, as stated in 5.9.4.2.1.f of the NELAC standards. As stated in the Quality Assurance Manual, "In the case of concentrations reported below the lowest calibrant, that data must be appropriately qualified." Data less than the detection limit are reported as "< the Reporting Level". For concentrations between the detection limit and reporting level the data are qualified as "e" estimated. Reported concentrations greater than the highest calibrant have been diluted as appropriate so the concentration falls within the analytical curve. Staff training will be scheduled for this winter and it will address calibration issues and data reporting policies.

<00d136> The lowest calibration standard of the initial calibration is not above the detection limit. (Sec. D.1.3.b, 5.9.4.2.1.f NELAC).
COMMENT: THIS REFERS TO NITRATE, ICP, MERCURY, DIQUAT USGS-1126-95.

CORRECTIVE ACTION

For several methods a blank calibration standard has been used. Effective immediately, the lowest calibration standard will be above the detection limit, as stated in 5.9.4.2.1.f of the NELAC standards. Data less than the detection limit are reported as "< the Reporting Level", concentrations between the detection limit and reporting level the data are qualified as "e" estimated, and for analytes with Mass Spectroscopy confirmation as a qualitative result with an "e" (estimated) qualifier. Reported concentrations greater than the highest calibrant have been diluted as appropriate so the concentration falls within the analytical curve. Staff training will be scheduled for this winter and it will address calibration issues and data reporting policies.

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<00d159> All sample processing steps of the analytical method are not included in the determination of the detection limit. (Sec. D.1.4.d NELAC).
COMMENT: THIS REFERS TO ICP, GFAAS, 515.1

CORRECTIVE ACTION

The MDL studies for ICP and GFAA will be rerun during the next quarter using samples that have been digested. Method 515.1 will rerun its MDL study during the next quarter using standards that have a methyl ester base rather than the acid based standards that had been used.

<00d160> All procedures used to determine detection limits are not documented including the matrix type and all supporting data is not retained. (Sec. D.1.4. NELAC)
COMMENT: THIS REFERS TO 507, USGS-1126-95

CORRECTIVE ACTION

Regarding method 507, the analyst did not have the required documentation on hand however, it does exist. The information is able to be reconstructed and will be compiled as required in the future. The supporting documentation for the method USGS-1126-95 MDL study will be obtained from the Method Research and Development Section staff. This supporting documentation will be kept in the method history file set up for each method. This will be completed by November 30, 2001.

<00d161> The laboratory does not have established procedures to tie detection limits with quantitation limits. (Sec. D.1.4.f NELAC).

CORRECTIVE ACTION

The NWQL has extensive procedures to tie detection limits with quantitation limits; all drinking water methods employ the directions as stated in 40 CFR 136 Appendix B, and all other analytical methods use the procedures to tie detection limits with quantitation limits as described in <http://www.nwql.cr.usgs.gov/Public/ltmdl/ltmdlplash.html>. Data reporting procedures will be summarized and included on the laboratory Quality Assurance Manual that is scheduled for release on December 20.

<00d62> Procedures for data reduction, such as use of linear regression, are not documented. (Sec. D.1.5 NELAC).
COMMENT: THIS REFERS TO NITRATE

CORRECTIVE ACTION

This observation appears to be a miscommunication – the procedure for data reduction is documented in SOP #ID0312.0 (Nitrogen, Nitrate/Nitrite analyzed by Auto. Colorimetry. EPA METHOD 353.2). This will be discussed with the analyst and training provided if needed. The Analytical Services Section chief will follow up and report to the Quality Assurance Officer by October 31, 2001.

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<00d167> The quality of water sources is not monitored and documented to meet method specified requirements. (Sec. D.1.6.b.2 NELAC).
COMMENT: THIS REFERS TO NITRATE, METALS.

CORRECTIVE ACTION

Water used for the preparation of standards and reagents throughout the NWQL is first put through an electronically monitored and documented lab-wide deionizing system as described in SOP # TX0039.0 (Management of the NWQL Deionizing and Distilled Water System) – the water is then processed through final polishing deionizing systems as described in SOP # IX0087.0 (Monitoring Purity of Reagent Water In Preparation of Reagent Blanks and Calibration Standards) to produce ASTM type I water, less than specific conductance of 1.0 uS/cm at 25⁰C. A logbook will be stationed next to each water polishing system to document the reading on the display each day the system is used. An annual preventative maintenance service will be contracted to have an external review of the instrumentation and check the output of the display against and external calibration.

<00d168> The laboratory does not develop and document acceptance criteria for retention time windows. Note: Absolute retention time and relative retention time aid in the identification of components in chromatographic analyses and to evaluate the effectiveness of a column to separate effectiveness. (Sec. D.1.7.a NELAC)
COMMENT: THIS REFERS TO 524.2

CORRECTIVE ACTION

The NWQL does have documented qualitative acceptance criteria for RT windows (OFR 97-829). In regard to quantitative acceptance criteria for RT windows, the SOP will be updated by October 31, 2001 to state that the RT window will be set at a minimum of +/- 0.5 min. for viewing each analyte.

<00d175> All cleaning and storage procedures that are not specified by the method are not documented in laboratory records and SOPs. (Sec. D.1.8.b NELAC)
COMMENT: THIS REFERS TO METALS.

CORRECTIVE ACTION

The Graphite Furnace Unit Chief will prepare an SOP for the cleaning and storage procedures used in the Unit. This SOP will be completed by December 31, 2001.

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<0000D4> RADIOCHEMICAL ANALYSIS DETAILED METHOD REVIEW

<000D43> All essential quality control measures are not incorporated in the lab's method manual.

CORRECTIVE ACTION

Use of CCVs already has been instituted for the Gross Alpha and Gross Beta methods. The Unit Chief is responsible for modifying the SOP and obtaining approval by December 31, 2001.

<000d49> Control limits and the required frequency of use for each type of QC sample are not defined in either the laboratory's QA Plan or the individual SOPs.

CORRECTIVE ACTION

Control limits and the frequency of use will be defined and incorporated into the appropriate SOP by November 30, 2001. The Unit Chief is responsible for ensuring this SOP is modified and approved by December 31, 2001. This is the same SOP as mentioned in <000D43>.

<00d415> Laboratory Control Samples (LCS) are not analyzed at a frequency of one per preparation batch.

COMMENT: THIS REFERS TO GA/GB.

CORRECTIVE ACTION

Effective immediately, the NWQL will alter its procedure and hold samples for analysis until such a time when enough samples are in the analytical queue to warrant the preparation and inclusion of a LCS (but samples will be held for no longer than three weeks). The SOP will be modified to reflect this change. The Unit Chief is responsible for ensuring this SOP is modified and approved by December 31, 2001. This is the same SOP as mentioned in <000D43> and <000d49>.

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<00d417> The laboratory control sample result is not assessed against the specific acceptance criteria specified in the laboratory method manual.

CORRECTIVE ACTION

Control limit criteria for the LCS will be evaluated and documented in the method SOP. The SOP will be modified by the Unit Chief to reflect this change and approved by December 31, 2001. This is the same SOP as mentioned in <000D43>, <000d49>, and <00d415>.

<00d420> A Matrix Spike is not analyzed at a frequency of one per preparation batch for those methods which do not utilize an internal standard or carrier and for which there is a physical or chemical separation process and where there is sufficient sample to do so.

CORRECTIVE ACTION

The Gross Alpha and Gross Beta methods instituted the use of Matrix Spike immediately after the audit, in August 2001. The SOP will be modified by the Unit Chief to reflect this change and approved by December 31, 2001. This is the same SOP as mentioned in <000D43>, <000d49>, <00d415>, and <00d417>.

<00d433> The replicate result is not assessed against the specific acceptance criteria specified in the laboratory method manual.

CORRECTIVE ACTION

The Gross Alpha and Gross Beta methods instituted the use of duplicate samples immediately after the audit, in August 2001. The SOP will be modified by the Unit Chief to reflect this change and approved by December 31, 2001. This is the same SOP as mentioned in <000D43>, <000d49>, <00d415>, <00d417>, and <00d420>.

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<00d449> For those radiochemical methods that may require multiple standards

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<00d473> The laboratory does not establish written procedures to minimize the possibility of cross-contamination between samples.

CORRECTIVE ACTION

Radiochemistry methods in general will be evaluated by November 30, 2001 to identify QA procedures to minimize the possibility of cross-contamination between samples. The Quality Assurance Officer is responsible to ensure audits of the radiochemistry methods are conducted by November 30, 2001 with specific attention toward cross-contamination issues. Staff training will be scheduled for this winter and it will address techniques to minimize cross-contamination.

LABORATORY DIRECTOR

SIGNATURE

DATE