

010001

**SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT**

CLIENT: Division 20

TASK ORDER: 061223-1

SRR: 30203

SDG: 291720

CASE: CNWRA

VTSR: December 22, 2006

PROJECT#: 06002.01.322

FINAL REPORT

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010002

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 12/22/06

Matrix: Liquid

Project No.: 06002.01.322

Task Order: 061223-1

SRR: 30203

Date Analyzed: 01/02/07

Method: SW846 6010B		
Client ID	Lab Sample ID	Sodium Result (mg/L)
Prep Blank	-----	<0.250
Lab Control	-----	19.4
True Value	-----	20.0
Recovery	-----	97.0%
Decomp Final # 1	291720	166000
Decomp Final # 2	291721	108000
Duplicate result	291721D	109000
RPD	-----	0.9%
Spike result	291721S	129000
Spike added	-----	20000
Recovery	-----	105.0%

Reporting Limit:

0.250 mg/L

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010003

Sample ID

Decomp Final #1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 12/22/06

Matrix: Liquid

Project No.: 06002.01.322

Lab System ID: 291720

SRR: 30203

Date Analyzed: 01/24/07

Task Order: 061223-1

Analysis	Sample Result	Reporting Limit	Units	Method
Bromide	<2000	2000	mg/L	EPA 300
Chloride	40600	2000	mg/L	EPA 300
Fluoride	<0.1	0.1	mg/L	EPA 300
Nitrate-N	183000	2000	mg/L	EPA 300
Nitrite-N	<2000	2000	mg/L	EPA 300
Phosphate-P	<2000	2000	mg/L	EPA 300
Sulfate	<2000	2000	mg/L	EPA 300

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010004

Sample ID
Decomp Final #2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 12/22/06

Matrix: Liquid

Project No.: 06002.01.322

Lab System ID: 291721

SRR: 30203

Date Analyzed: 01/24/07

Task Order: 061223-1

Analysis	Sample Result	Reporting Limit	Units	Method
Bromide	<2000	2000	mg/L	EPA 300
Chloride	96700	2000	mg/L	EPA 300
Fluoride	<2000	2000	mg/L	EPA 300
Nitrate-N	68400	2000	mg/L	EPA 300
Nitrite-N	<2000	2000	mg/L	EPA 300
Phosphate-P	<2000	2000	mg/L	EPA 300
Sulfate	<2000	2000	mg/L	EPA 300

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010005

Sample ID
Decomp Final #2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 12/22/06

Matrix: Liquid

Project No.: 06002.01.322

Lab System ID: 291721D

SRR: 30203

Task Order: 061223-1

Method: IC - EPA 300			
Analysis	Orig. Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Bromide	<2000	<2000	0.00%
Chloride	96700	97000	0.310%
Fluoride	<2000	<2000	0.00%
Nitrate-N	68400	68400	0.00%
Nitrite-N	<2000	<2000	0.00%
Phosphate-P	<2000	<2000	0.00%
Sulfate	<2000	<2000	0.00%

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010006

Sample ID

Decomp Final #2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 12/22/06

Matrix: Liquid

Project No.: 06002.01.322

Lab System ID: 291721S

SRR: 30203

Task Order: 061223-1

Method: IC - EPA 300				
Analysis	Orig. Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Bromide	<2000	77400	80000	96.8%
Chloride	96700	136000	40000	98.3%
Fluoride	<2000	19100	2000	95.5%
Nitrate-N	68400	84700	18080	90.2%
Nitrite-N	<2000	22700	23600	96.2%
Phosphate-P	<2000	35600	39200	90.8%
Sulfate	<2000	77900	80000	97.4%

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

010007

Sample ID

LCS

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 06002.01.322

Lab System ID: NA

SRR: 30203

Task Order: 061223-1

Analysis	Sample Result	True Value	Recovery	Units
Bromide	402	400	101%	mg/L
Chloride	204	200	102%	mg/L
Fluoride	101	100	101%	mg/L
Nitrate-N	90.8	90.4	100%	mg/L
Nitrite-N	120	118	102%	mg/L
Phosphate-P	192	196	98.0%	mg/L
Sulfate	404	400	101%	mg/L

NA- Not applicable

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

010008

Sample ID

PB

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 06002.01.322

Lab System ID: NA

SRR: 30203

Task Order: 061223-1

Analysis	Sample Result	Reporting Limit	Units
Bromide	<0.1	0.1	mg/L
Chloride	<0.1	0.1	mg/L
Fluoride	<0.1	0.1	mg/L
Nitrate-N	<0.1	0.1	mg/L
Nitrite-N	<0.1	0.1	mg/L
Phosphate-P	<0.1	0.1	mg/L
Sulfate	<0.1	0.1	mg/L

NA- Not applicable

010009

**SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
TASK ORDER: 061223-1
SRR: 30203
SDG: 291720
CASE: CNWRA
VTSR: December 22, 2006
PROJECT#: 06002.01.322**

Task Orders/01-QPP-015

Laboratory Task Order

010010

TO #: 061223-1 Revision: 0

Project(s): 06002.01.322
 Manager(s): SPIES, RADONNA
 To PM: 01/11/07
 To QA: 01/11/07
 To Client: 01/12/07

SDG: 291720
 VTSR: 12/22/06
 CASE: YANG

SRR #'s: 30203
 Client(s): Div. 20

Instructions

DIVISION 20 - CNWRA.
 TWO samples (2 containers) received overall on 12/22/06 for IC and ICP.
 SEE CHAIN OF CUSTODY TO VERIFY ACTUAL ANALYTES REQUIRED.
 Point of Contact is Lietai Yang, lietai.yang@swri.org, (x2483).
 Email excel and PDF forms to client. Send forms only, archive all.

Documents Related to this task order: 27530[COC for SRR 30203]

Deliverables --> Hard Copy: -YES- EDD: no PDF: no

Test: DIL-DILUTION Holding: 180 days from CED
 Section: METALPREP **Prep, Dilution**

Cnt: 2

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
291720		1	Liquid	Decomp Final #1	19 Dec 06	17 Jun 07
291721		1	Liquid	Decomp Final #2	19 Dec 06	17 Jun 07

Test: IC-300.0 Holding: 28 days from CED
 Section: WETCHEM **IC Method 300.0 anions**

Cnt: 2

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
291720		1	Liquid	Decomp Final #1	19 Dec 06	16 Jan 07
291721		1	Liquid	Decomp Final #2	19 Dec 06	16 Jan 07

Test: ICP-6010B Holding: 180 days from CED
 Section: METALS **ICP Method 6010B Total Metals**

Cnt: 2

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
291720		1	Liquid	Decomp Final #1	19 Dec 06	17 Jun 07
291721		1	Liquid	Decomp Final #2	19 Dec 06	17 Jun 07

~~Uncontrolled Copy~~

Dispose of by end of day on date printed

010011

01-QPP-015
Division 01
Revision 6
June 2006

Document No. _____



Division 01

Chemistry and Chemical
Engineering Division

QUALITY PROJECT PLAN FOR


**PERFORMANCE OF CHEMICAL ANALYSES
FOR COMMERCIAL NUCLEAR POWER PLANTS
WITHIN THE DEPARTMENT OF ANALYTICAL
AND ENVIRONMENTAL CHEMISTRY**

SOUTHWEST RESEARCH INSTITUTE
Chemistry and Chemical Engineering Division
6220 CULEBRA ROAD, SAN ANTONIO, TEXAS 78238

**QUALITY PROJECT PLAN FOR PERFORMANCE OF CHEMICAL ANALYSES
FOR COMMERCIAL NUCLEAR POWER PLANTS
WITHIN THE DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY**

SwRI AUTHORIZATION SIGNATORIES


This is to certify that this Quality Project Plan of Southwest Research Institute (SwRI) has been reviewed and approved by the following personnel:



JO ANN BOYD (210) 522-2169
Quality Assurance Manager

6/28/06


DATE



REZA KARIMI (210) 522-2412
Director, Department of Analytical and Environmental Chemistry

6/28/06


DATE



MICHAEL G. MACNAUGHTON (210) 522-5162
Vice President, Chemistry and Chemical Engineering Division

6/29/06

DATE



CHRISTOPHER HOBSON (210) 522-5838
Quality Assurance Engineer

7/6/2006

DATE

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**PERFORMANCE OF CHEMICAL ANALYSES
FOR COMMERCIAL NUCLEAR POWER PLANTS WITHIN THE
DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY**

1.0 INTRODUCTION

This Quality Project Plan (QPP) defines the Quality Assurance (QA) program requirements for personnel providing the chemical analyses for commercial nuclear power plants. Southwest Research Institute (SwRI) *Program Quality Plan (PQP-Nuclear), Nuclear Services* shall implement the QA requirements. Project activities controlled by the PQP-Nuclear shall be accomplished as specified by the appropriate sections of **01-QAP-004, Quality Assurance Plan for Analytical and Environmental Services** and/or nationally recognized testing methods as specified on individual purchase orders. This QPP shall be applied to all projects initiated for nuclear utilities in the Department of Analytical and Environmental Chemistry. If, as a result of complexity, duration, or other factors, it is determined that a unique, project-specific quality plan is required, the project QAE shall notify the Project Manager and a project-specific quality plan shall be generated in accordance with **SOP-01-4.2.1, Preparation and Revision of Documented Procedures**.

2.0 SCOPE

This Quality Project Plan shall be applied to the chemical analyses performed for commercial nuclear power plants by the Department of Analytical and Environmental Chemistry within the Chemistry and Chemical Engineering Division. Although the majority of the work performed for nuclear facilities resides within the Department of Analytical and Environmental Chemistry, other departments within the division may utilize this Quality Project Plan as deemed necessary when nuclear projects are conducted.

3.0 REFERENCES

- 3.1 *SwRI Quality System Manual – 2000*
- 3.2 *10 CFR 50, Appendix B, ASME NQA-1*
- 3.3 *SwRI Program Quality Plan (PQP-Nuclear), Nuclear Services*
- 3.4 *01-QAP-004, Quality Assurance Plan for Analytical and Environmental Services*

4.0 APPLICABLE SECTIONS OF SwRI PROGRAM QUALITY PLAN (PQP-NUCLEAR)

4.1 Indoctrination and Training

- 4.1.1 Personnel performing duties affecting quality shall receive quality training to the *SwRI Program Quality Plan (PQP-Nuclear), Nuclear Services* prior to performing any work on projects for nuclear utilities. This training will be conducted either by Institute Quality Systems (IQS) or Division 01 Quality Assurance personnel and documentation shall be evident in the personnel training files maintained in Division

01 Quality Assurance.

- 4.1.2 Indoctrination and training of personnel shall be conducted in accordance with **SOP-01-6.2.1, *Qualification and Training***.

4.2 Qualification of Personnel

- 4.2.1 Testing personnel shall be designated as qualified to perform applicable project activities as specified in **SOP-01-6.2.1, *Qualification and Training***.
- 4.2.2 During the performance of each testing process, testing personnel shall have access to the necessary documented procedures, i.e., QPP, QAP, Task Order, Division Quality System Standard Operating Procedures (SOPs), and applicable test/analytical procedures (TAPs) available for ready reference.
- 4.2.3 Any person who has not performed testing activities associated with any particular method being used for nuclear utilities projects for a period of one year shall be reevaluated prior to the conduct of the test.
- 4.2.4 Quality Assurance personnel witnessing the testing process for nuclear utilities shall have documented evidence of qualifications maintained by Institute Quality Systems or Division 01 Quality Assurance.

4.3 Design Control

Not applicable to activities conducted within the Department of Analytical and Environmental Chemistry.

4.4 Right of Access

- 4.4.1 Procurement documents shall provide for access to the suppliers' facilities and records for surveillance, inspection, or audit by SwRI and clients.
- 4.4.2 Where appropriate, quality clause **Q32** shall be noted on the procurement documents to indicate that right of access for inspection and surveillance of activities associated with the order shall be afforded to SwRI and clients.

4.5 Control of Supplier-Generated Documents

- 4.5.1 Client documents shall be controlled in accordance with **SOP-01-4.2.1, *Preparation and Revision of Documented Procedures***. These procedures provide the requirements for the preparation, review, approval, issue, distribution, and revision of documents controlled by the Chemistry and Chemical Engineering Division.
- 4.5.2 Documents may be controlled as Plans or Work Instructions and shall be accessible through the Division Intranet link, ***Contract Requirements*** as PDF files.
- 4.5.3 Nationally recognized test methods shall be of the most current issue or as specified in the purchase order. Task orders shall identify the applicable test methods to be used on the nuclear project.

4.6 Acceptance of Services Only

Not applicable to activities conducted within the Department of Analytical and Environmental Chemistry.

4.7 Commercial Grade Items

- 4.7.1 Where an item is to be incorporated into a test or deliverable to a client, and that item is not subject to design or specification requirements that are unique to nuclear facilities, used in applications other than nuclear facilities, and procured from the supplier on the specifications set forth in the manufacturers' published product and description, the item shall be considered "commercial grade".
- 4.7.2 Chemical reagents and standards used for testing purposes shall be ordered to specific chemical grades and certificates of analysis shall be required with each lot.
- 4.7.3 Controls for procurement planning, supplier selection, supplier performance evaluation, and acceptance of procured items and services other than chemical reagents and standards shall be as identified in **SOP-01-7.4.1**, *Purchasing*, and any referenced document within that procedure.
- 4.7.4 Receipt inspection of chemical reagents, standards, and test items for use on nuclear safety-related projects shall be performed by department personnel and documented on the *SwRI Receipt Traveler* or **FRM-109**, *Item Receipt Report*, as specified in **SOP-01-8.2.4**, *Monitoring and Measurement*. Any discrepancy such as a damaged container or container label shall be documented on the form and the client shall be contacted for disposition.
- 4.7.5 Prior to acceptance of a commercial grade item, the receipt inspection shall determine the following:
- (a) Damage was not sustained during shipment;
 - (b) The item has satisfied the specified acceptance criteria; and
 - (c) Specified documentation, as applicable to the item, was received and is acceptable.
- 4.7.6 Receipt inspection of chemical reagents and standards shall also consist of verification of chemical type, grade, container integrity, certificate of analysis, and shelf life, where applicable. Upon acceptance of chemical reagents and standards, the containers shall be labeled with the following:
- (a) Chemical name;
 - (b) Chemical grade;
 - (c) Lot code;

- (d) Date received; and
 - (e) Shelf life, when applicable.
- 4.7.7 Expired shelf life items shall not be used for testing purposes.
- 4.7.8 Lot codes of chemical reagents and standards used during equipment standardization and testing shall be recorded on the individual testing data sheets to provide traceability.
- 4.7.9 Samples supplied to SwRI for testing shall be received by the Sample Custodian and logged into the laboratory logbook. Sample documentation and sample custody shall be maintained in accordance with **TAP-01-0407-001**, *Sample Receipt Inspection*, and **TAP-01-0407-035**, *Organic and Inorganic Sample Security*.
- 4.7.10 Samples supplied to SwRI for testing shall be labeled with the following:
- (a) Sample control number;
 - (b) Purchase order number;
 - (c) Purchase order line item number, as applicable;
 - (d) Task order number;
 - (e) Nuclear QA label; and
 - (f) Sample retention date, when applicable.
- 4.7.11 In the event that samples are damaged upon receipt, a **Sample Discrepancy Record** shall be generated from the Division Intranet.
- 4.7.12 The testing task order shall list the project number, tests required, test methods required, and shall be labeled *Nuclear Quality*.
- 4.7.13 Identification and traceability shall be maintained in accordance with **SOP-01-7.5.1**, *Item Identification and Traceability*.

4.8 Inspection

- 4.8.1 Inspection for acceptance shall be performed by qualified persons other than those who conduct or directly supervise the work being inspected.
- 4.8.2 Institute Quality System (IQS) personnel shall perform surveillance activities as required to ensure compliance with the contract and this Quality Project Plan. Specific areas in which IQS may perform surveillance activities include, but are not limited to, the following:
 - (a) Receiving inspection and labeling of chemical reagents, standards, and testing samples;
 - (b) Testing processes;
 - (c) Calibration and major equipment;
 - (d) Sample and record retention; and
 - (e) Test records.

4.9 Inspection and Testing

- 4.9.1 Required tests for acceptance shall be conducted under appropriate environmental conditions using the tools and equipment necessary to conduct the test in a manner to fulfill test requirements and acceptance criteria.
- 4.9.2 Tests shall be conducted, controlled, and verified in accordance with **SOP-01-8.2.4, *Monitoring and Measurement***.
- 4.9.3 Controls for measuring and test equipment shall be as specified in **SOP-01-7.6.1, *Control of Measuring and Test Equipment***.
- 4.9.4 Controls for identification, segregation, reporting, and resolution of nonconforming items and conditions shall be as specified in **SOP-01-8.3.1, *Nonconformance Reporting***.

4.10 Handling, Storage, Packaging, Preservation, and Delivery

- 4.10.1 Controls for handling, storage, packaging, preservation, and delivery of items are identified in **SOP-01-7.5.3, *Handling, Storage, Packaging, Protection, and Delivery of Items***.
- 4.10.2 Samples specified on the purchase order to be returned to the client shall be prepared and packaged as specified on the purchase order. Each package shall be marked legibly and indelibly with the purchase order/release number and line item number(s) relevant to the package.

4.11 Quality Assurance Records

- 4.11.1 Quality assurance records shall furnish documentary evidence that items or activities meet specified quality requirements. Documents that ensure this evidence include **TAP-01-0407-014**, *Inventory of Case File Purges*, and **SOP-01-4.2.4**, *Storage and Maintenance of Quality Records*. These documents and this QPP ensure that QA records shall be legible, identifiable, retrievable, and maintained in dual storage.
- 4.11.2 Records shall be traceable to associated items and activities and shall accurately reflect the work accomplished or information required.
- 4.11.3 Documents shall be considered valid records only if stamped, initialed or signed and dated by authorized personnel or otherwise authenticated.
- 4.11.4 Records of test analyses performed by the Department of Analytical and Environmental Chemistry are classified as *nonpermanent* and shall be retained for a minimum of five years. Nonpermanent records are those required to show evidence that an activity was performed in accordance with the applicable requirements, but need not be retained for the life of the item. Based on the use of the final data, the client shall be responsible for determining and implementing permanent storage requirements.
- 4.11.5 In order to satisfy duplicate storage requirements, one copy of the QA record shall be maintained by the Project Manager in Building 70 and a separate copy shall be maintained in the Division Quality Assurance Archives in Building 201. Storage requirements shall be as stated in **SOP-01-4.2.4**, *Storage and Maintenance of Quality Records*, to ensure protection against the risk of damage or destruction.

4.12 10 CFR, Part 21

- 4.12.1 SwRI procurement documents shall include requirements for reporting and approving disposition of supplier nonconformances and, when required, compliance to 10 CFR, Part 21.
- 4.12.2 The Manager of Institute Quality Assurance or Director of Institute Quality Systems shall determine if a nonconforming condition is reportable under 10 CFR, Part 21, and initiate reporting and condition in accordance with the SwRI Operating Policies and Procedures (OPP). Safety hazards or defects that could create a substantial safety hazard shall be reported. Substantial safety hazard means a loss of safety function to the extent that there is a major reduction in the degree of protection provided to public health and safety.

4.13 Certified Test Report

The Project Manager, Division 01 QA Manager, and IQS Management as complying with all contractual requirements shall certify test reports. The certified test report shall reference the purchase order/release number, the test methods performed, and the purchase order/release line item number.

4.14 Valid Documents List

The Department of Analytical and Environmental Chemistry task order shall specify all applicable documents and appropriate document revision level for each document. The task order shall then serve as the Valid Documents List (VDL) for each individual project.

5.0 HISTORY OF REVISIONS

Versions 0 through 3 of this plan are maintained on record in Division 01 Quality Assurance.

Revision 4

Title of document changed from the Standard Project Quality Plan *SPQP-CH/AN* to Quality Project Plan, *QPP-015*

Extensive revision to comply with Project Quality Plan PQP-Nuclear, *Nuclear Services*, which replaces SwRI NQAPM, *Nuclear Quality Assurance Program Manual*.

Revision 5

Revised 4.1.1 to include designated Division 01 QA staff to conduct pertinent nuclear training sessions to the SwRI Program Quality Plan (PQP-Nuclear), *Nuclear Services*

Revised step 4.2.4 to include Division QA as an entity along with IQS, to maintain documented evidence of qualifications.

Revision 6

Revised 4.13 to include "Division 01 QA Manager" for the minimum approval signatures for test procedures for nuclear utility final test reports and to replace "Institute Quality Assurance" with "IQS Management"



Southwest Research Institute

ORGANICS

010021

PERSONNEL SIGNATURE SHEET FOR PLANS

I have read, and understand the document listed below. By affixing my signature below, I am aware that I am responsible for abiding by and following the requirements identified in the plan specified below. If I become aware of any deviations from this document, I will inform my supervisor.

Doc Number, Title, QPP-015, Performance of Chemical Analyses for Commercial Nuclear Power Plants and (Rev No/Year): within the Department of Analytical & Environmental Chemistry (Rev 6/July 06)

Table with 4 columns: Printed Name, Signature, Date, Tel Extension. Contains handwritten entries for Jenny Zhang, Pamela Piccini, Jason D. HEARENA, and William L. Barclay Jr.

Supervisor's/Manager's Signatures

The Personnel whose signatures appear above have been trained and certified in the contents of the document identified above:

Table with 4 columns: Printed Name, Signature, Date, Tel Extension. Intended for supervisor/manager signatures.



PERSONNEL SIGNATURE SHEET FOR PLANS

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Doc Number, Title, and (Rev No/Year): QPP-015, Performance of Chemical Analyses for Commercial Nuclear Power Plants within the Dept of Analytical and Environmental Chemistry (Rev 6/July 06)

Table with 4 columns: Printed Name, Signature, Date, Tel Extension. Contains handwritten entries for Valerie DeJesus, Warren A. Naegeli, Carolina Orduna, Darcia Harris, Jackie Ranger, James Ross, Bernie Villasenor, and Radonna Spies.

Supervisor's/Manager's Signatures

The Personnel whose signatures appear above have been trained and certified in the contents of the document identified above:

Printed Name Signature Date Tel Extension



PERSONNEL SIGNATURE SHEET FOR PLANS

I have read, and understand the document listed below. By affixing my signature below, I am aware that I am responsible for abiding by and following the requirements identified in the plan specified below. If I become aware of any deviations from this document, I will inform my supervisor.

Doc Number, Title, and (Rev No/Year): QPP-015, Performance of Chemical Analyses for Commercial Nuclear Power Plants within the Dept of Analytical and Environmental Chemistry (Rev 6/July 06)

Table with 4 columns: Printed Name, Signature, Date, Tel Extension. Contains handwritten entries for David A. Anem, Marissa A. Rodriguez, Roger Prasas, and Cynthia A. Sanchez.

Supervisor's/Manager's Signatures

The Personnel whose signatures appear above have been trained and certified in the contents of the document identified above:

Table with 4 columns: Printed Name, Signature, Date, Tel Extension. Contains handwritten entry for John Boyd.



PERSONNEL SIGNATURE SHEET FOR PLANS

010024

I have read, and understand the document listed below. By affixing my signature below, I am aware that I am responsible for abiding by and following the requirements identified in the plan specified below. If I become aware of any deviations from this document, I will inform my supervisor.

Doc Number, Title, QPP-015, Performance of Chemical Analyses for Commercial Nuclear Power Plants and (Rev No/Year): within the Department of Analytical & Environmental Chemistry (Rev 6/July 06)

Printed Name	Signature	Date	Tel Extension
Radonna Spies	<i>R Spies</i>	9/26/06	3242
Bonnie J. Aschurz	<i>B Aschurz</i>	10/2/06	2702
Caroline Harris	<i>CHarris</i>	10-2-06	3423
Carolina Orduna	<i>Orduna</i>	10/2/04	3146
Jackie Ranger	<i>JRanger</i>	10/2/06	3320
Terence O'Brien	<i>Terence O'Brien</i>	10/2/06	x 3066
Daniel Ramirez	<i>D Ramirez</i>	10/2/06	3867
Jennifer Willis	<i>Jennifer Willis</i>	10/2/06	3129
John Wilks	<i>John Wilks</i>	10-2-06	KE 4-01-3536 5046
Jose Cardenas	<i>J Cardenas</i>	10-3-06	10/3/06 4-01-3079 5046
Khaled Edrisi	<i>K Edrisi</i>	10-3-06	5046
JAMES BOOS	<i>J Boos</i>	10/03/06	5897
Warren A. Naegeli	<i>Warren A. Naegeli</i>	10/03/06	11723

R
10/6/06

Supervisor's/Manager's Signatures

The Personnel whose signatures appear above have been trained and certified in the contents of the document identified above:

Printed Name	Signature	Date	Tel Extension
Mike Damon	<i>M Damon</i>	10-6-06	5728



PERSONNEL SIGNATURE SHEET FOR PLANS

I have read, and understand the document listed below. By affixing my signature below, I am aware that I am responsible for abiding by and following the requirements identified in the plan specified below. If I become aware of any deviations from this document, I will inform my supervisor.

Doc Number, Title, and (Rev No/Year): QPP-015, Performance of Chemical Analyses for Commercial Nuclear Power Plants within the Dept of Analytical and Environmental Chemistry (Rev 6/July 06)

Table with 4 columns: Printed Name, Signature, Date, Tel Extension. Contains signatures of Alice Yam, Rudy Balderaz, Michelle Zuniga, David Carman, Gang Sun, Jackie Clothier, and Kevin Shannon.

Supervisor's/Manager's Signatures

The Personnel whose signatures appear above have been trained and certified in the contents of the document identified above.

Table with 4 columns: Printed Name, Signature, Date, Tel Extension. Contains signature of Lorraine Scheller.



EXTRACTION

PERSONNEL SIGNATURE SHEET FOR PLANS

010026

I have read, and understand the document listed below. By affixing my signature below, I am aware that I am responsible for abiding by and following the requirements identified in the plan specified below. If I become aware of any deviations from this document, I will inform my supervisor.

Doc Number, Title, QPP-015, Performance of Chemical Analyses for Commercial Nuclear Power Plants and (Rev No/Year): within the Department of Analytical & Environmental Chemistry (Rev 6/July 06)

Printed Name	Signature	Date	Tel Extension
Tim Cusmano	<i>Tim Cusmano</i>	9-27-06	5335
Anna Miller	<i>A Miller</i>	9-27-06	5335
Susana Gonzalez	<i>Susana Gonzalez</i>	10-10-06	3073
Carter Copeland	<i>Carter Copeland</i>	10-11-06	5961
Elena Shaydullina	<i>Elena Shaydullina</i>	10-11-06	5335
Ronald Douglas	<i>Ronald Douglas</i>	10/11/06	5335
Daryn Gray	<i>Daryn & Gray</i>	10-11-06	5335
Hamed Edrisi	<i>Hamed Edrisi</i>	10/11/06	5931

Supervisor's/Manager's Signatures

The Personnel whose signatures appear above have been trained and certified in the contents of the document identified above:

Printed Name	Signature	Date	Tel Extension
	<i>[Signature]</i>		

010027

**SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT**

CLIENT: Division 20

TASK ORDER: 061223-1

SRR: 30203

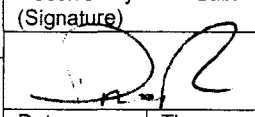
SDG: 291720

CASE: CNWRA

VTSR: December 22, 2006

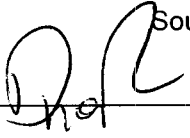
PROJECT#: 06002.01.322

Chain of Custody/Login Paperwork

Shipper Name/Address		SAMPLE LIST/CHAIN OF CUSTODY Southwest Research Institute Chemistry and Chemical Engineering Division 6220 Culebra Road San Antonio, Texas 78238-5166										Requested Turnaround:			
												2 Weeks	3 Weeks	Other: <input checked="" type="checkbox"/>	
Client	Client Purchase Order/Other ID					Site/Zone ID					SwRI Contact				
	Lietai Yang, Div. 20 x2483					06002.01.322.1.20									
Analyses Requested												REMARKS Preservation a = HCl to pH <2 b = HNO ₃ to pH <2 c = H ₂ SO ₄ to pH <2 d = NaOH to pH >12 e = Cool (4°C±2°C) f = Other (specify)			
Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers										
Dump Final #1	12/19/06				1	Na	Cl	NO ₃	NO ₂						
Dump Final #2	12/19/06				1	↓	↓	↓	↓						
Client: Div. 20 SRR #30203 Project #06002.01.322 VTSR: 12/22/06 1330 Case: L. Yang Sample(s) Received Intact Temp.: 22.0 °C/Therm. #027						please return unused samples									
Matrix Types: A - Air B - Biota D - Dust E - Emission/Stack L - Liquid P - Product Sd - Solid S - Soil SED - Sediment T - Tissue W - Water WP - Wipe		Sample Types: D - Duplicate ER - Equipment Rinsate ES - Environmental Sample FB - Field Blank FD - Field Duplicate MS - Matrix Spike MSD - Matrix Spike Dup TB - Trip Blank		Relinquished by (Print/Signature) <i>Jessica Auguste</i>				Date 12/22/06		Time 1330		SwRI Project#:			
Temp: 22.0 Therm #: 027				Received by (Print/Signature) <i>Jessica Auguste</i>				Date 12/23/06		Time 1330		See Above Received by SwRI Lab: (Signature) 			
Comments: Rec'd Intact				Relinquished by (Print/Signature)				Date		Time		Samples Disposed: Date Time			

010028

Traffic Report

Sample Custodian Signature: 

Project: 06002.01-322

Case: L. Yang / SDG: _____

Airbill: HAND DELIVERED

Sample Receipt: 30203

- 1. Custody Seal Not Present or Damaged
- 2. Chain of Custody Present
- 3. Sample Tags Not Present
Sample Tag Numbers Not on COC
- 4. SMO Forms Not Present

Date Received	Time Received	COC Record	SMO Sample #	Corresponding		Traffic Rpt, Tags, COC Agree	Sample Condition
				Sample Tag #	SwRI #		
12/22/06	13:30:00	SwRI COC	Decomp Final #1	None	291720	YES	Intact
12/22/06	13:30:00	SwRI COC	Decomp Final #2	None	291721	YES	Intact



Client: Div. 20

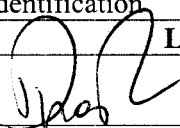


FRM-217



Southwest Research Institute
LOG-IN CHECKLIST
 Sample Receipt Report No.: 30203

010030

Project Information			
All product information shall be derived from a contract, statement of work (SOW), or project manager (PM).			
Current PM information	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Sponsor's Documentation			
All original documentation must be attached to the sample receipt report and sent to Div 01 Quality Assurance (DQA).			
Delivery documentation (*) = (Tape on 8 1/2 x 11 white paper)	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hand carried	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Correspondence	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Custody seals*	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Chain-of-custody/Traffic report	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Sample tags* (Confirm with container information before removal)	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hazard notifications	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Product Condition			
Sample(s) shall not be left unattended once an ice chest has been opened.			
Sample(s) received intact	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Container(s) received leaking	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Container(s) received damaged	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Lid(s) received damaged	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Product Preparation			
FRM-115 (pH) Preservation Report / Metals & Wetchem H2O	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Product Storage			
Sample(s) shall be barcoded and stored in a designated location.			
Sample(s) barcoded and stored in designated location	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Sample Receipt Report			
All copies must be legible.			
Computerized sample receipt report with original documents	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Sample custodian signature and date on all original documents.	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Automated notification to PM	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Case file documents to DQA	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Chain-of-Custody/Traffic Report			
Sample Custodian's signature, date, and time	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Document thermometer no. / temperature (Confirm calibration is current)	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Document condition of sample(s)	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
Record of Sample Discrepancy or FRM-109			
Record of Sample Discrepancy or FRM-109	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Ice Chest Shipment			
Clean ice chest/Discard used bags and ice/Return Sponsor's packing material	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
SwRI shipping ticket with project identification	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
Log-In Closure			
Sample Custodian's Signature: 	Date: 12/22/06	Time: 2:20 PM	

SAMPLE LOG-IN SHEET

010031

Page 1 of 1
Log-in Date
12/22/2006

Lab Name
Southwest Research Institute

Received By (Print Name)

DINO ROMAN
Received By (Signature)

Case Number

L. Yang

Remarks: 06002.01.322

Sample Delivery Group No.

SAS Number

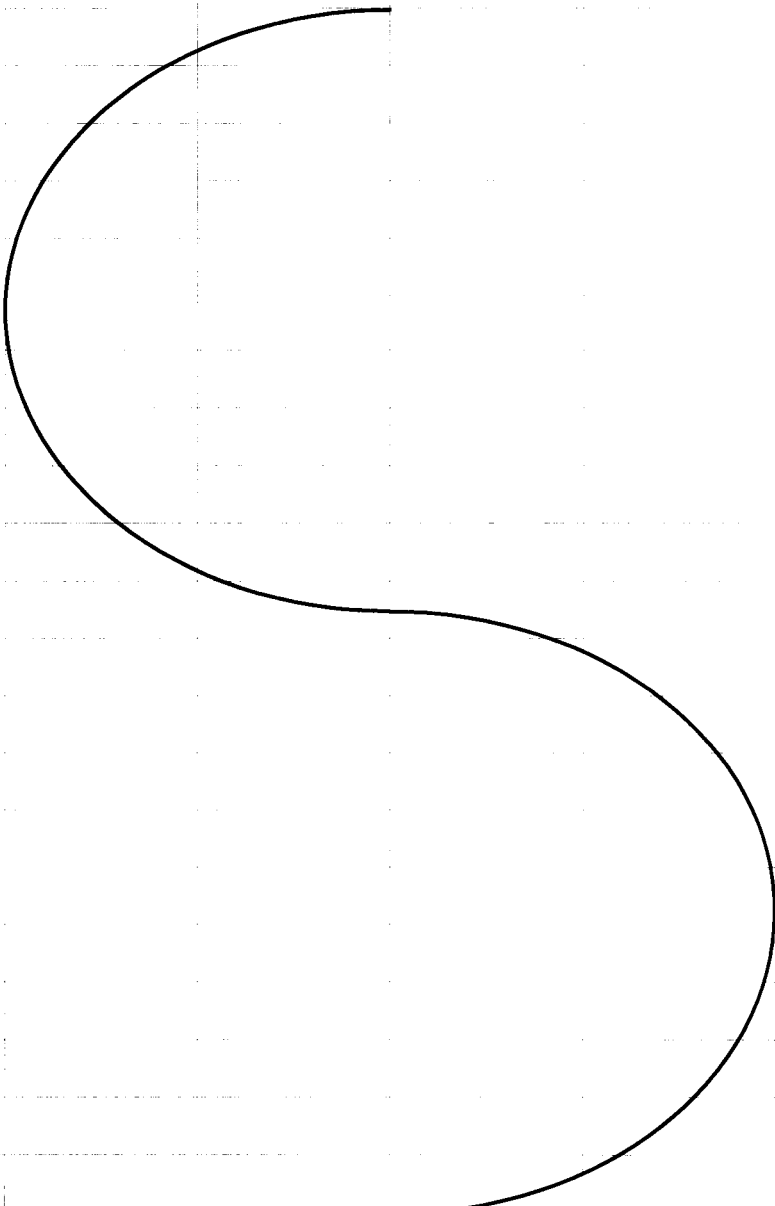
N/A

Corresponding

Remarks:
Condition of Sample
Shipment, etc

- 1. Custody Seal(s) Present ~~Absent~~
Intact/Broken
- 2. Custody Seal Nos. N/A
- 3. Chain-of Custody Records ~~Present~~/Absent*
- 4. Traffic Reports Present ~~Absent~~
or Packing Lists
- 5. Airbill Airbill/Sticker
~~Present~~/Absent*
- 6. Airbill No. HAND DELIVERED
- 7. Sample Tags Present ~~Absent~~
Sample Tag Numbers Listed ~~Not~~
listed on Chain of
Custody
- 8. Sample Condition ~~Intact~~/Broken*/
Leaking
- 9. Cooler Temperature 22.0C
- 10. Does Information ~~Yes~~/No*
on custody
records, traffic
reports, and
sample tags
agree?
- 11. Date Received at Lab 12/22/2006
- 12. Time Received 13:30:00

EPA Sample #	Sample Tag #	Assigned Lab #	Condition
Decomp Final #1	None	291720	Intact
Decomp Final #2	None	291721	Intact



Sample Transfer

Fraction

Fraction

Area #

Inors
Cb #3

Area #

By

DINO ROMAN

By

On

12/22/2006

On

* Contact SMO and attach record of resolution

Reviewed By

01.02.07

Date

Logbook No.

Sample Receipt (30203)

Logbook Page No.

6024 sec 3 of 4

010032

**SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
TASK ORDER: 061223-1
SRR: 30203
SDG: 291720
CASE: CNWRA
VTSR: December 22, 2006
PROJECT#: 06002.01.322**

Copies of Login Book

Sample Login Book

Dec 22, 2006

010033

SwRI Login Area
Division 1

Sample Receipt: 30201		Project: 12474.01.00X	Client: S.M. Stoller
VTSR Date: Dec 23, 2006		VTSR Time: 11:00:00	Manager: DAMMANN, MIKE
System ID	Customer Sample ID	Matrix	
291703	IP5530	WG	
291704	IP5536	WG	
291705	IP5560	WG	
291706	IP5608	WG	
291707	IP5626	WG	

Sample Receipt: 30202		Project: 12545.01.001	Client: WGI
VTSR Date: Dec 22, 2006		VTSR Time: 10:30:00	Manager: MARTINEZ, ROBERT
System ID	Customer Sample ID	Matrix	
291708	Liquid BLK	Liquid	
291709	Liquid BLK/Metals	Liquid	
291710	Liquid HD	Liquid	
291711	Liquid HD/Metals R1	Liquid	
291712	Liquid HD/Metals R2	Liquid	
291713	Liquid HD/Metals R3	Liquid	
291714	Solids BLK	Liquid	
291715	Solids BLK/Metals	Liquid	
291716	Solids HD	Liquid	
291717	Solids HD/Metals R1	Liquid	
291718	Solids HD/Metals R2	Liquid	
291719	Solids HD/Metals R3	Liquid	

Sample Receipt: 30203		Project: 06002.01.322	Client: Div. 20
VTSR Date: Dec 22, 2006		VTSR Time: 13:30:00	Manager: SPIES, RADONNA
System ID	Customer Sample ID	Matrix	
291720	Decomp Final #1	Liquid	
291721	Decomp Final #2	Liquid	

010034

SOUTHWEST RESEARCH INSTITUTE

NUCLEAR PROJECT

CLIENT: Division 20

TASK ORDER: 061223-1

SRR: 30203

SDG: 291720

CASE: CNWRA

VTSR: December 22, 2006

PROJECT#: 06002.01.322

RAW DATA

010035

**SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
TASK ORDER: 061223-1
SRR: 30203
SDG: 291720
CASE: CNWRA
VTSR: December 22, 2006
PROJECT#: 06002.01.322**

Anions by IC

DIV 20
06002.01.322
TO# 061223-1

V. W. Naegeli
02/20/07

Analyst: RSS
Method: 300
Sig Fig: 3

010036

Date Analyzed	System ID	Analyte	Conc. ug/L	RESULT mg/L	Qual	DL	TV	%REC %RPD
01/24/07	ICV (LCS)	Fluoride	100865.149	101		2	100	101%
01/24/07	ICV (LCS)	Chloride	203811.792	204		2	200	102%
01/24/07	ICV (LCS)	Nitrite-N	119713.781	120		2	118	102%
01/24/07	ICV (LCS)	Bromide	401964.993	402		2	400	101%
01/24/07	ICV (LCS)	Nitrate-N	90767.743	90.8		2	90.4	100%
01/24/07	ICV (LCS)	Phosphate-P	191852.888	192		2	196	98.0%
01/24/07	ICB (PB) SS	Sulfate	403855.547	404		2	400	101%
01/24/07	ICB (PB)	Fluoride	0.000	0.1	U	0.1		
01/24/07	ICB (PB)	Chloride	0.000	0.1	U	0.1		
01/24/07	ICB (PB)	Nitrite-N	0.000	0.1	U	0.1		
01/24/07	ICB (PB)	Bromide	0.000	0.1	U	0.1		
01/24/07	ICB (PB)	Nitrate-N	0.000	0.1	U	0.1		
01/24/07	ICB (PB)	Phosphate-P	0.000	0.1	U	0.1		
01/24/07	ICB (PB)	Sulfate	0.000	0.1	U	0.1		
01/24/07	291720	Fluoride	0.000	0.1	U	0.1		
01/24/07	291720	Chloride	40642431.776	40600		2000		
01/24/07	291720	Nitrite-N	0.000	2000	U	2000		
01/24/07	291720	Bromide	0.000	2000	U	2000		
01/24/07	291720	Nitrate-N	182837106.065	183000		2000		
01/24/07	291720	Phosphate-P	17299.474	2000	U	2000		
01/24/07	291720	Sulfate	0.000	2000	U	2000		
01/24/07	291721	Fluoride	0.000	2000	U	2000		
01/24/07	291721	Chloride	96691504.295	96700		2000		
01/24/07	291721	Nitrite-N	0.000	2000	U	2000		
01/24/07	291721	Bromide	0.000	2000	U	2000		
01/24/07	291721	Nitrate-N	68416014.238	68400		2000		
01/24/07	291721	Phosphate-P	0.000	2000	U	2000		
01/24/07	291721	Sulfate	0.000	2000	U	2000		
01/24/07	291721D	Fluoride	0.000	2000	U	2000		0.00%
01/24/07	291721D	Chloride	97044416.278	97000		2000		0.310%
01/24/07	291721D	Nitrite-N	0.000	2000	U	2000		0.00%
01/24/07	291721D	Bromide	0.000	2000	U	2000		0.00%
01/24/07	291721D	Nitrate-N	68414669.783	68400		2000		0.00%
01/24/07	291721D	Phosphate-P	0.000	2000	U	2000		0.00%
01/24/07	291721D	Sulfate	0.000	2000	U	2000		0.00%
01/24/07	291721S	Fluoride	19085692.123	19100		2000	20000	95.5%
01/24/07	291721S	Chloride	135876040.233	136000		2000	40000	98.3%
01/24/07	291721S	Nitrite-N	22739572.623	22700		2000	23600	96.2%
01/24/07	291721S	Bromide	77426267.869	77400		2000	80000	96.8%
01/24/07	291721S	Nitrate-N	84742327.685	84700		2000	18080	90.2%
01/24/07	291721S	Phosphate-P	35602570.183	35600		2000	39200	90.8%
01/24/07	291721S	Sulfate	77884819.257	77900		2000	80000	97.4%

U = Undetected

Line	Sample	Sample Type	Level	Method	Data File	Dilution
1	ICV	Sample		anions061121.met	070124_001.dxd	20
2	ICB	Sample		anions061121.met	070124_002.dxd	1
3	290969	Sample		anions061121.met	070124_003.dxd	1
4	290970	Sample		anions061121.met	070124_004.dxd	1
5	290970D	Sample		anions061121.met	070124_005.dxd	1
6	290970S	Sample		anions061121.met	070124_006.dxd	1
7	291720 DF20000	Sample		anions061121.met	070124_007.dxd	20000
8	291721 DF20000	Sample		anions061121.met	070124_008.dxd	20000
9	291721D DF20000	Sample		anions061121.met	070124_009.dxd	20000
10	291721S DF20000	Sample		anions061121.met	070124_010.dxd	20000
11	CCV	Sample		anions061121.met	070124_011.dxd	20
12	CCB	Sample		anions061121.met	070124_012.dxd	1
13	CCB	Sample		astop.met	070124	1

010037

Default Method Path: C:\PEAKNET\METHOD
 Default Data Path: C:\PEAKNET\DATA\070124
 Comment:
 DIV 20 06002.01.322 TO#061213-4, 061223-1

ICV Sources:

- 1) SPEX LOT#33-13AS (INORG#6254)
 - F = 100 mg/L
 - Cl = 200 mg/L
 - Br = 400 mg/L
 - NO3N = 90.4 mg/L
 - PO4P = 196 mg/L
 - SO4 = 400 mg/L
- 2) 54-01-IC6
 - NO2N 118 mg/L

R. Spies
 2/12/07

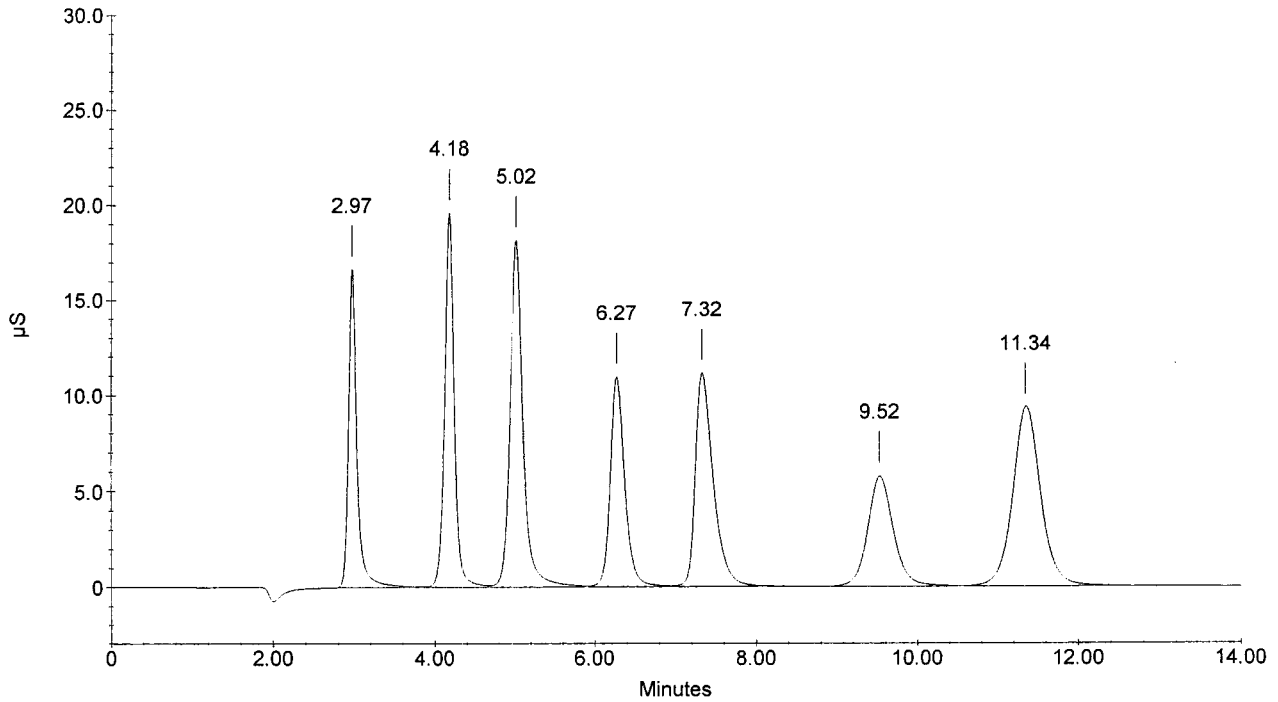
010038

Sample Name : ICV
Dilution Factor : 20.00
Injection Number : 1
Data File Name : c:\peaknet\data\070124\070124_001.DXD
Method File Name : c:\peaknet\method\anions061121.met
Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 8:38:34 AM
System Name : Dx-500
Detector Name : Conductivity Detector
Column Type : AS14-SN#018097 AG14-#019940
System Operator : RSPIES

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	Bl. Code	%Delta
1	2.97	FLUORIDE	100865.149	166244	1214382	2	-1.66
2	4.18	CHLORIDE	203811.792	195905	1647542	2	-2.71
3	5.02	NITRITE-N	119713.781	181437	2042344	2	-3.53
4	6.27	BROMIDE	401964.993	109178	1366763	2	-3.83
5	7.32	NITRATE-N	90767.743	111091	1728186	2	-2.36
6	9.52	PHOSPHATE-P	191852.888	57487	1287539	2	-4.00
7	11.34	SULFATE	403855.547	93256	2267211	2	-4.57
			---total(s)---				
0.00			1512831.893			11553968	

ICV

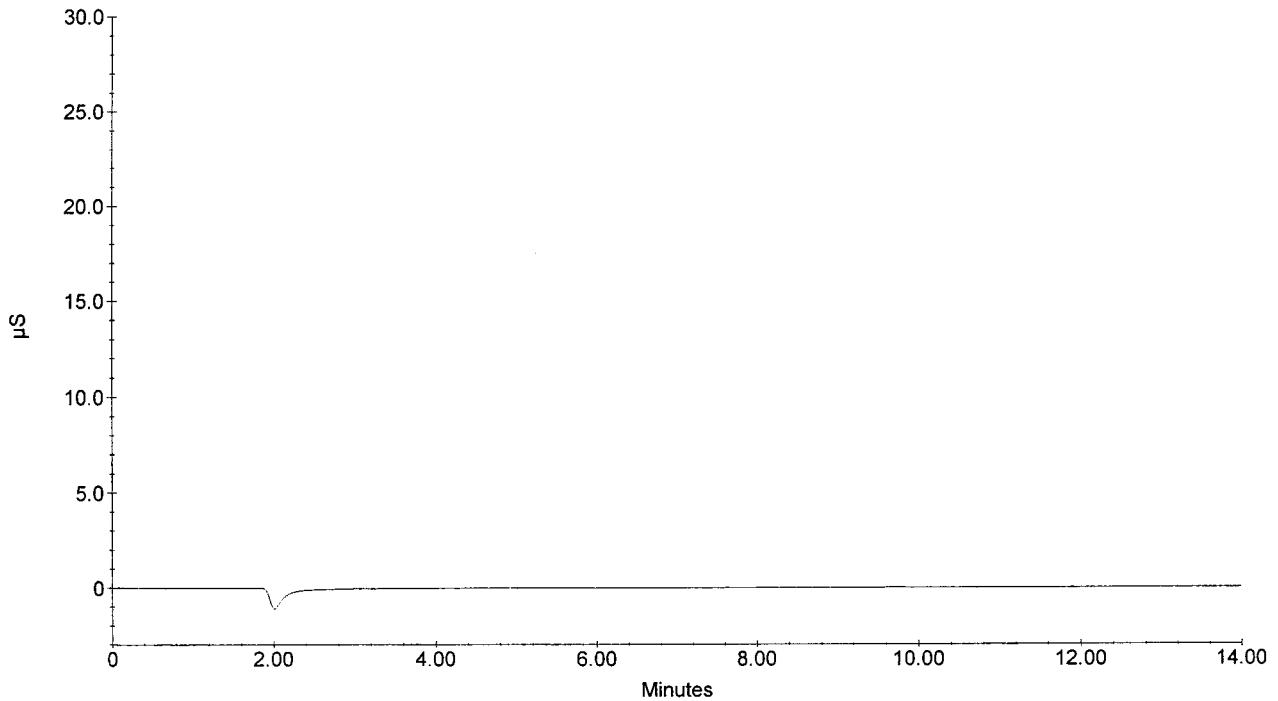


Sample Name : ICB
 Dilution Factor : 1.00
 Injection Number : 2
 Data File Name : c:\peaknet\data\070124\070124_002.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 8:55:16 AM **010039**
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	Bl. Code	%Delta
0	0.00	(null) CHLORIDE NITRITE-N BROMIDE NITRATE-N PHOSPHATE-P SULFATE	0.000	0	0 0		0.00
	0.00		---total(s)--- 0.000		0		

ICB



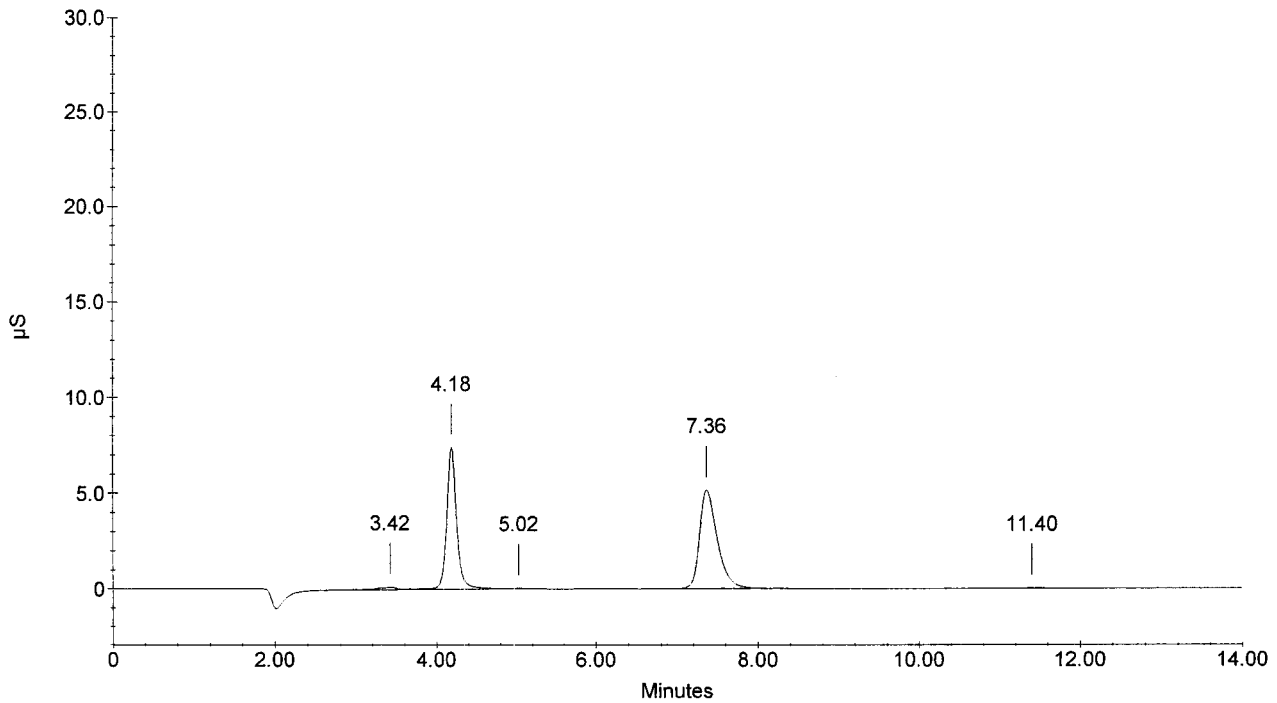
Sample Name : 290969
 Dilution Factor : 1.00
 Injection Number : 3
 Data File Name : c:\peaknet\data\070124\070124_003.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 9:11:53 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010040

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	Bl. Code	%Delta
1	3.42		0.000 ✓	1425	28670	2	
2	4.18	CHLORIDE	4385.117 ✓	73701	643544	3	-2.71
3	5.02	NITRITE-N BROMIDE	41.375 ✓ ✓	325	3216	4	-3.40
4	7.36	NITRATE-N PHOSPHATE-P	2193.685 ✓ ✓	51360	798308	1	-1.82
5	11.40	SULFATE	91.997 ✓	266	5158	1	-4.01
			---total(s)---				
0.00			6712.175		1478896		

290969



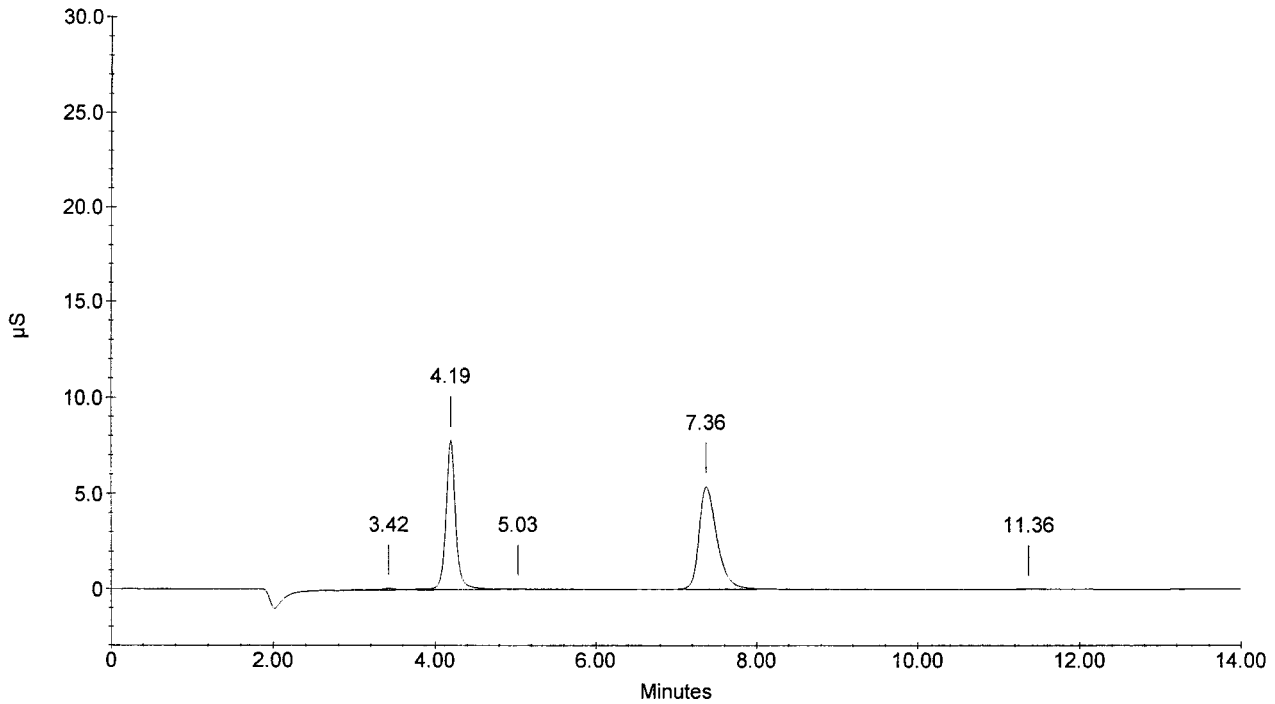
Sample Name : 290970
 Dilution Factor : 1.00
 Injection Number : 4
 Data File Name : c:\peaknet\data\070124\070124_004.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 9:28:33 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010041

Peak Information : All Components						
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	BI. Code %Delta
1	3.42		0.000 ✓	984	20071	2
2	4.19	CHLORIDE	4597.593 ✓	77959	677242	3 -2.56
3	5.03	NITRITE-N BROMIDE	43.873 ✓	377	4012	4 -3.27
4	7.36	NITRATE-N PHOSPHATE-P	2283.366 ✓	53474	832627	1 -1.82
5	11.36	SULFATE	123.893 ✓	372	8457	1 -4.35
			---total(s)---			
0.00			7048.725		1542409	

290970



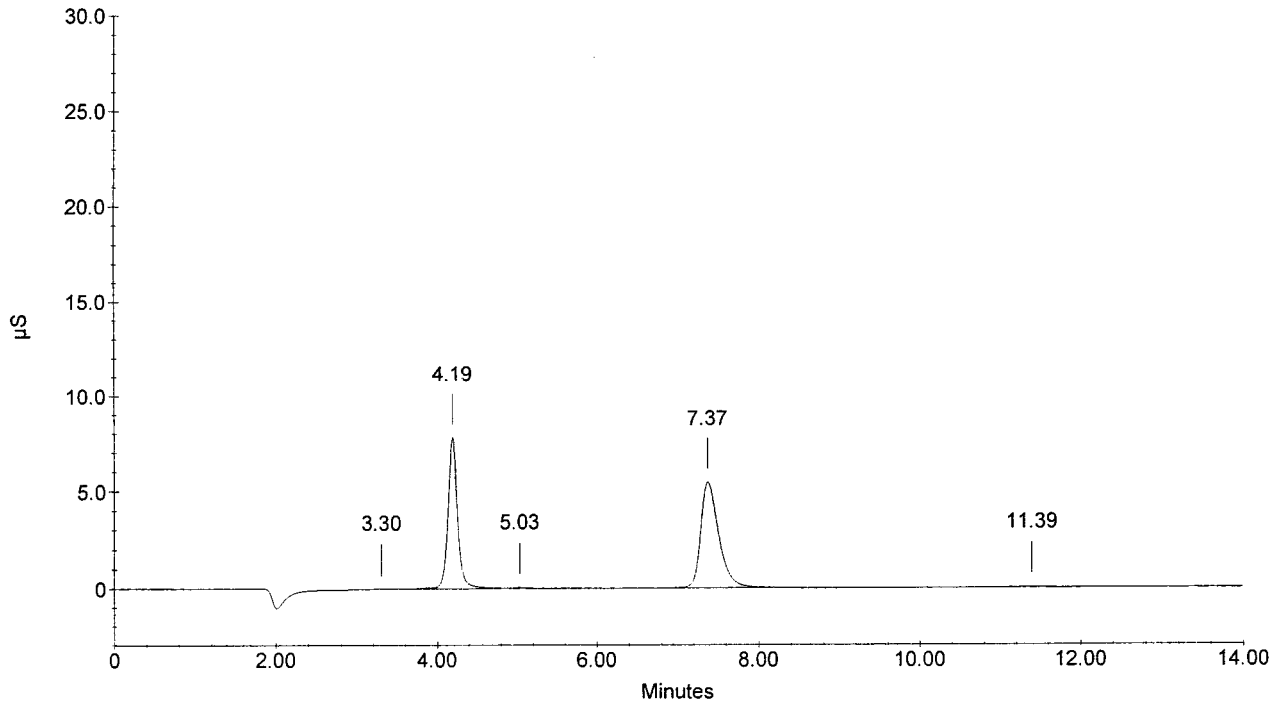
Sample Name : 290970D
 Dilution Factor : 1.00
 Injection Number : 5
 Data File Name : c:\peaknet\data\070124\070124_005.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 9:45:11 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010042

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	Bl. Code	%Delta
1	3.30	FLUORIDE	30.720 ✓	89	790	1	9.38
2	4.19	CHLORIDE	4554.544 ✓	78031	670396	3	-2.56
3	5.03	NITRITE-N BROMIDE	44.808 ✓ ✓	400	4310	4	-3.27
4	7.37	NITRATE-N PHOSPHATE-P	2310.547 ✓ ✓	54256	843047	1	-1.73
5	11.39	SULFATE	109.761 ✓	332	6995	1	-4.12
			---total(s)---				
0.00			7050.381		1525539		

290970D

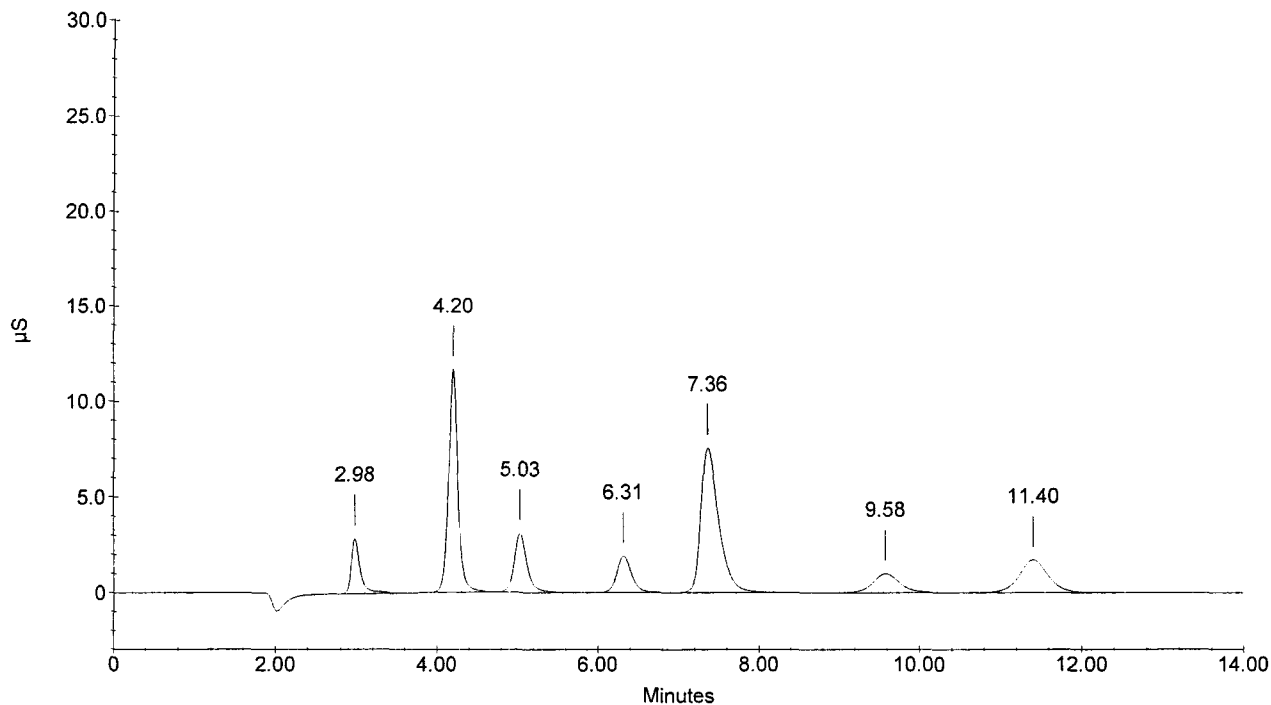


Sample Name : 290970S
 Dilution Factor : 1.00
 Injection Number : 6
 Data File Name : c:\peaknet\data\070124\070124_006.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 10:01:49 AM **010043**
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	Bl. Code	%Delta
1	2.98	FLUORIDE	1007.193 ✓	28719	224808	1	-1.43
2	4.20	CHLORIDE	6354.887 ✓	116371	964917	2	-2.40
3	5.03	NITRITE-N	1095.206 ✓	30766	343630	2	-3.27
4	6.31	BROMIDE	3887.699 ✓	18868	240157	1	-3.22
5	7.36	NITRATE-N	3157.620 ✓	75535	1172308	1	-1.91
6	9.58	PHOSPHATE-P	1811.318 ✓	9837	232338	2	-3.46
7	11.40	SULFATE	4113.416 ✓	16925	427486	2	-4.01
			---total(s)---				
0.00			21427.339	3605644			

290970S



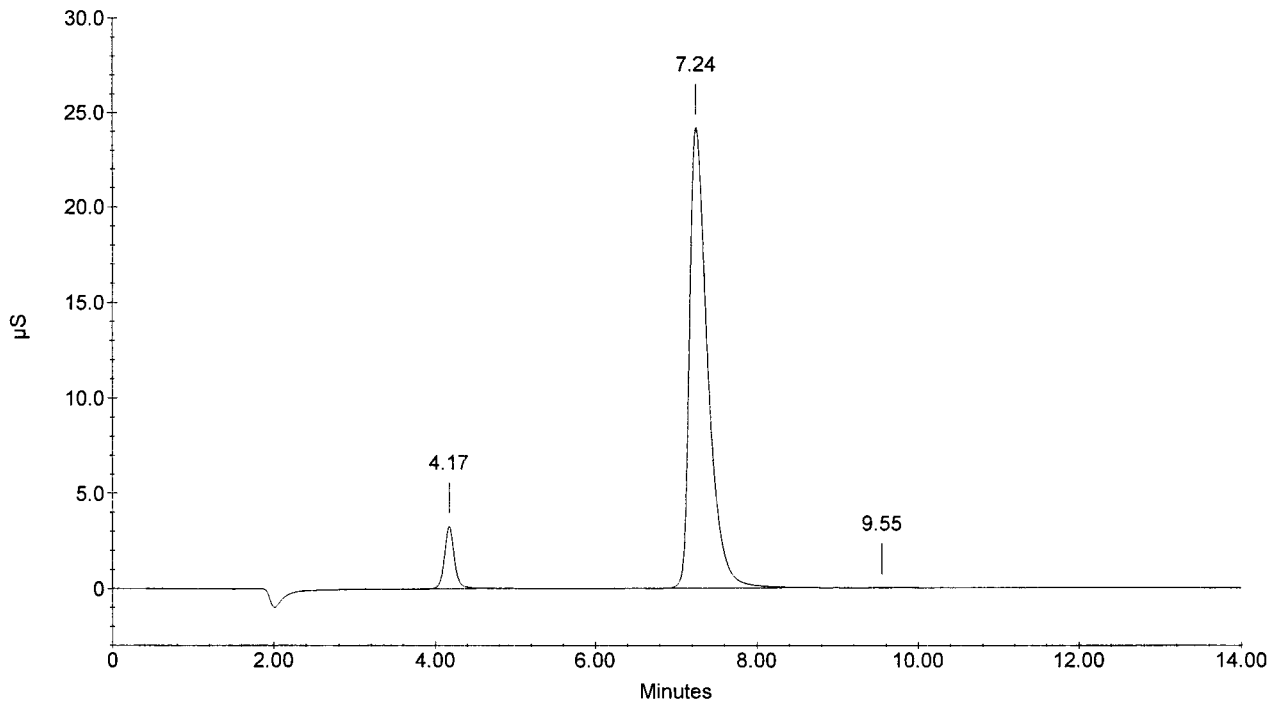
Sample Name : 291720 DF20000
 Dilution Factor : 20000.00
 Injection Number : 7
 Data File Name : c:\peaknet\data\070124\070124_007.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 10:18:28 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010044

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	Bl. Code	%Delta
1	4.17	CHLORIDE	40642431.776	32636	285575	1	-3.02
1	4.17	CHLORIDE	40642431.776 ✓	32636	285575	1	-3.02
		NITRITE-N					
		BROMIDE					
2	7.24	NITRATE-N	182837106.065 ✓	241590	3759779	1	-3.42
3	9.55	PHOSPHATE-P	17299.474	77	933	1	-3.73
		SULFATE					
			---total(s)---				
0.00			264139269.091		4331863		

291720 DF20000



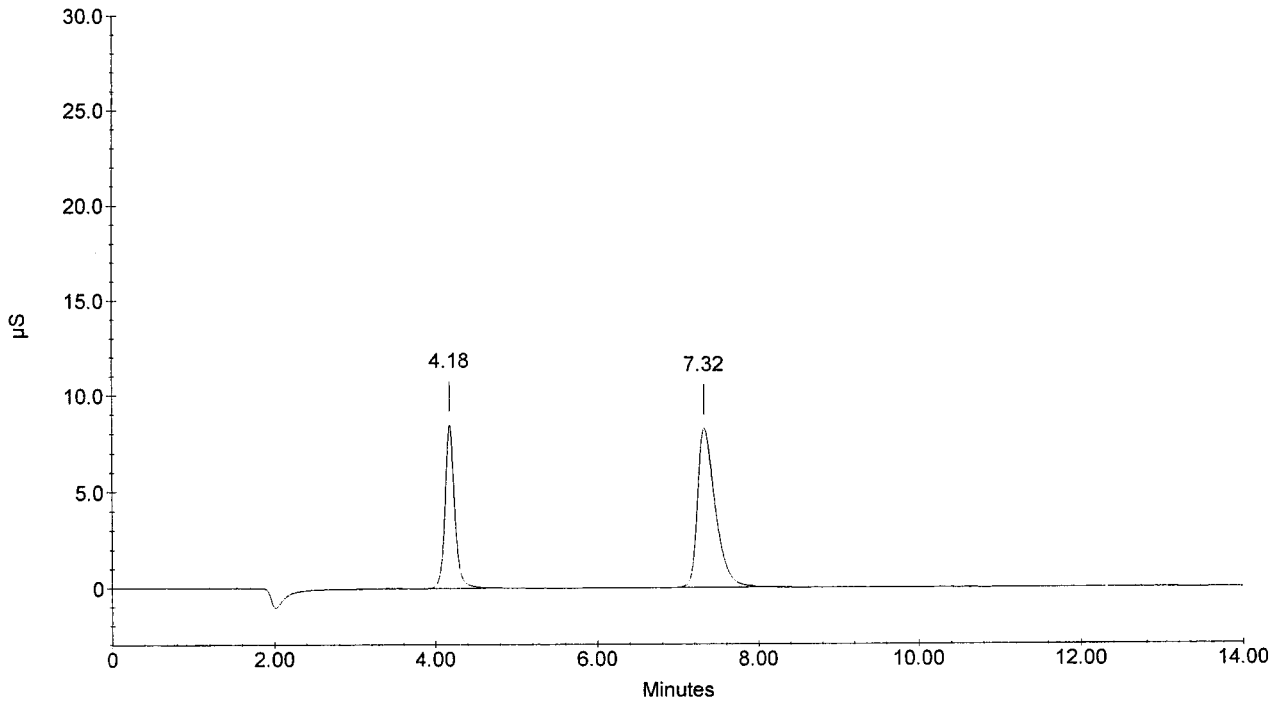
Sample Name : 291721 DF20000
 Dilution Factor : 20000.00
 Injection Number : 8
 Data File Name : c:\peaknet\data\070124\070124_008.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 10:35:07 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010045

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	Bl. Code	%Delta
1	4.18	CHLORIDE	96691504.295	84535	715102	1	-2.87
1	4.18	CHLORIDE	96691504.295	84535	715102	1	-2.87
		NITRITE-N					
		BROMIDE					
2	7.32	NITRATE-N	68416014.238	82259	1276408	1	-2.36
		PHOSPHATE-P					
		SULFATE					
			---total(s)---				
0.00			261799022.829		2706612		

291721 DF20000



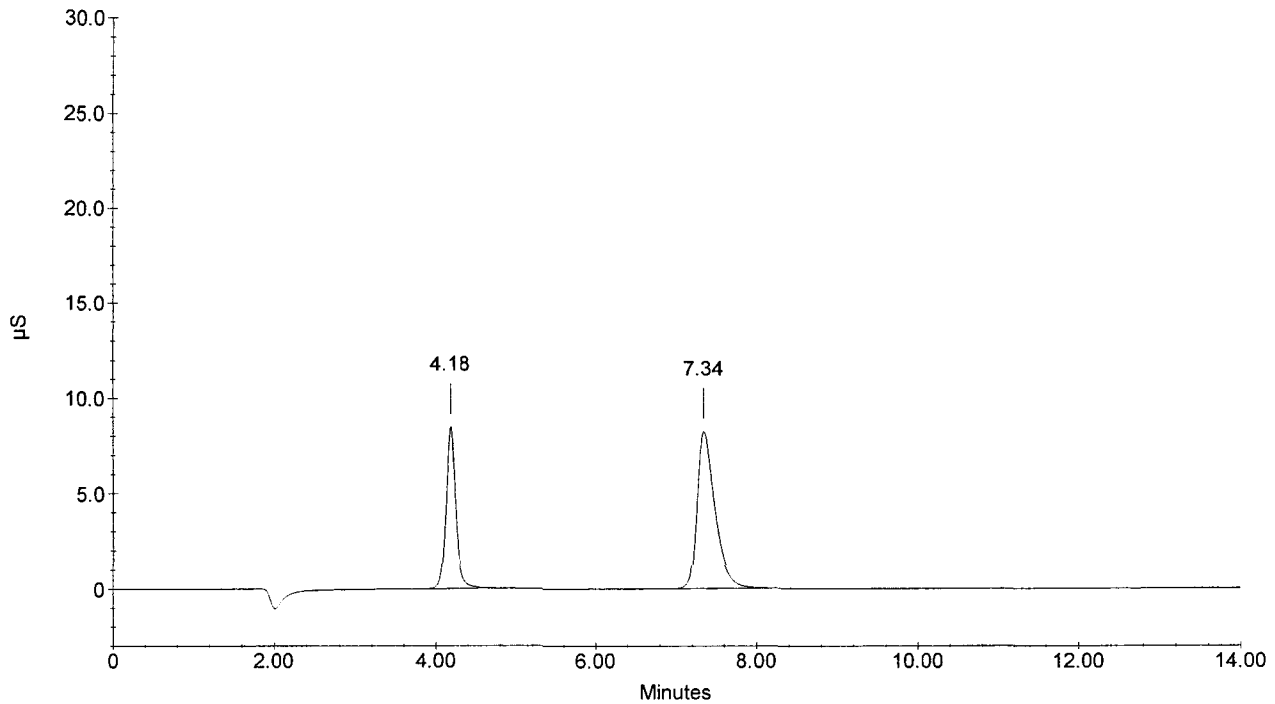
Sample Name : 291721D DF20000
 Dilution Factor : 20000.00
 Injection Number : 9
 Data File Name : c:\peaknet\data\070124\070124_009.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 10:51:47 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010046

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	BI. Code	%Delta
1	4.18	CHLORIDE	97044416.278	84328	717932	1	-2.87
1	4.18	CHLORIDE NITRITE-N BROMIDE	97044416.278	84328	717932	1	-2.87
2	7.34	NITRATE-N PHOSPHATE-P SULFATE	68414669.783	81880	1276382	1	-2.18
---total(s)---							
	0.00		262503502.340		2712247		

291721D DF20000



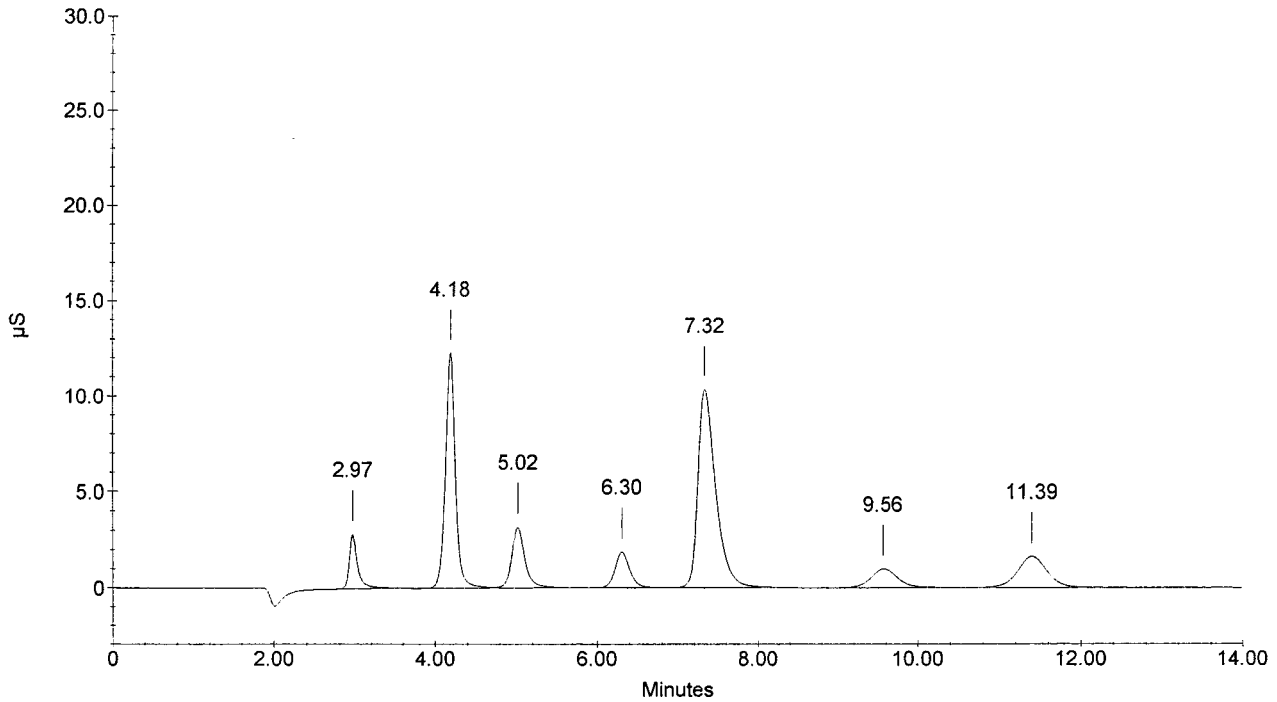
Sample Name : 291721S DF20000
 Dilution Factor : 20000.00
 Injection Number : 10
 Data File Name : c:\peaknet\data\070124\070124_010.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 11:08:24 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010047

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	Bl. Code	%Delta
1	2.97	FLUORIDE	19085692.123	28079	212515	1	-1.66
2	4.18	CHLORIDE	135876040.233	122561	1039279	2	-2.71
3	5.02	NITRITE-N	22739572.623	31443	357316	2	-3.53
4	6.30	BROMIDE	77426267.869	18632	239110	1	-3.32
5	7.32	NITRATE-N	84742327.685	103239	1604835	1	-2.36
6	9.56	PHOSPHATE-P	35602570.183	9752	228310	1	-3.60
7	11.39	SULFATE	77884819.257	16221	404130	1	-4.12
			---total(s)---				
0.00			453357289.974	4085495			

291721S DF20000



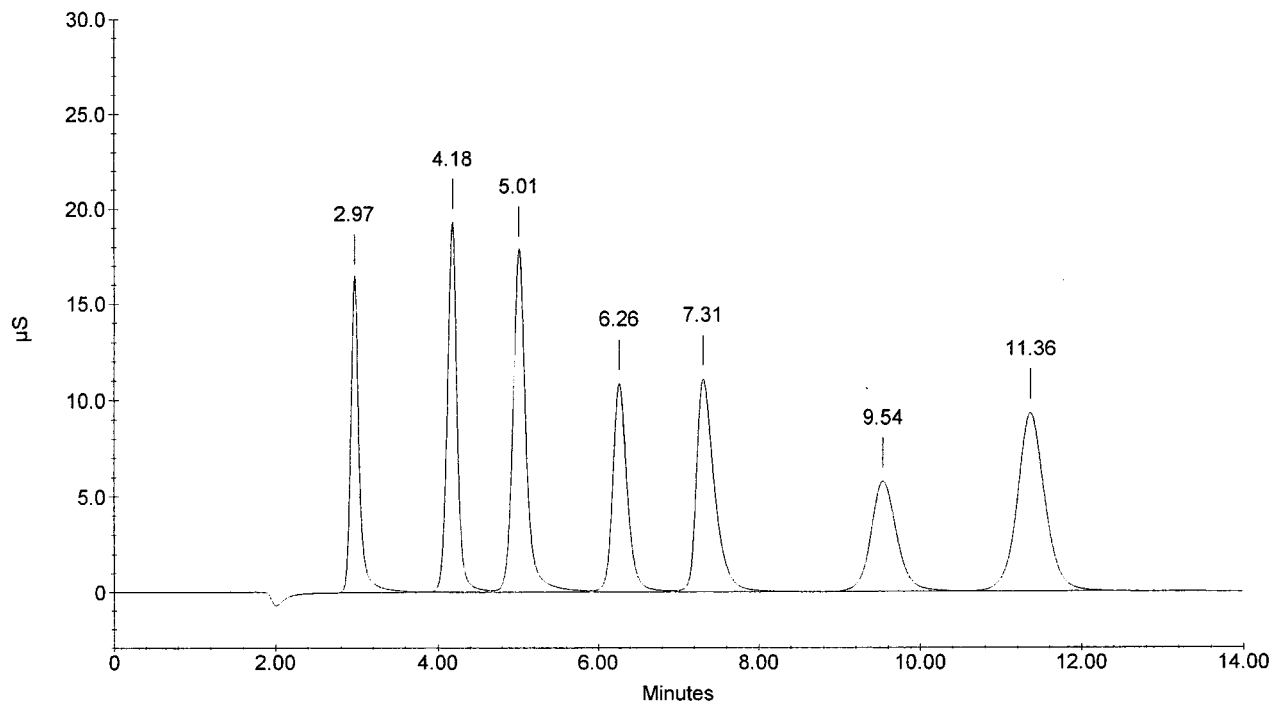
Sample Name : CCV
 Dilution Factor : 20.00
 Injection Number : 11
 Data File Name : c:\peaknet\data\070124\070124_011.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 11:25:05 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010048

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	Bl. Code	%Delta
1	2.97	FLUORIDE	100940.582	163736	1215353	2	-1.66
2	4.18	CHLORIDE	203293.589	193056	1642696	2	-2.71
3	5.01	NITRITE-N	118980.418	178590	2028931	2	-3.65
4	6.26	BROMIDE	402935.981	108553	1370463	2	-3.94
5	7.31	NITRATE-N	91342.187	110656	1740007	2	-2.53
6	9.54	PHOSPHATE-P	192448.816	57558	1291793	2	-3.86
7	11.36	SULFATE	401370.090	93089	2251887	2	-4.35
			---total(s)---				
0.00			1511311.663	11541130			

CCV



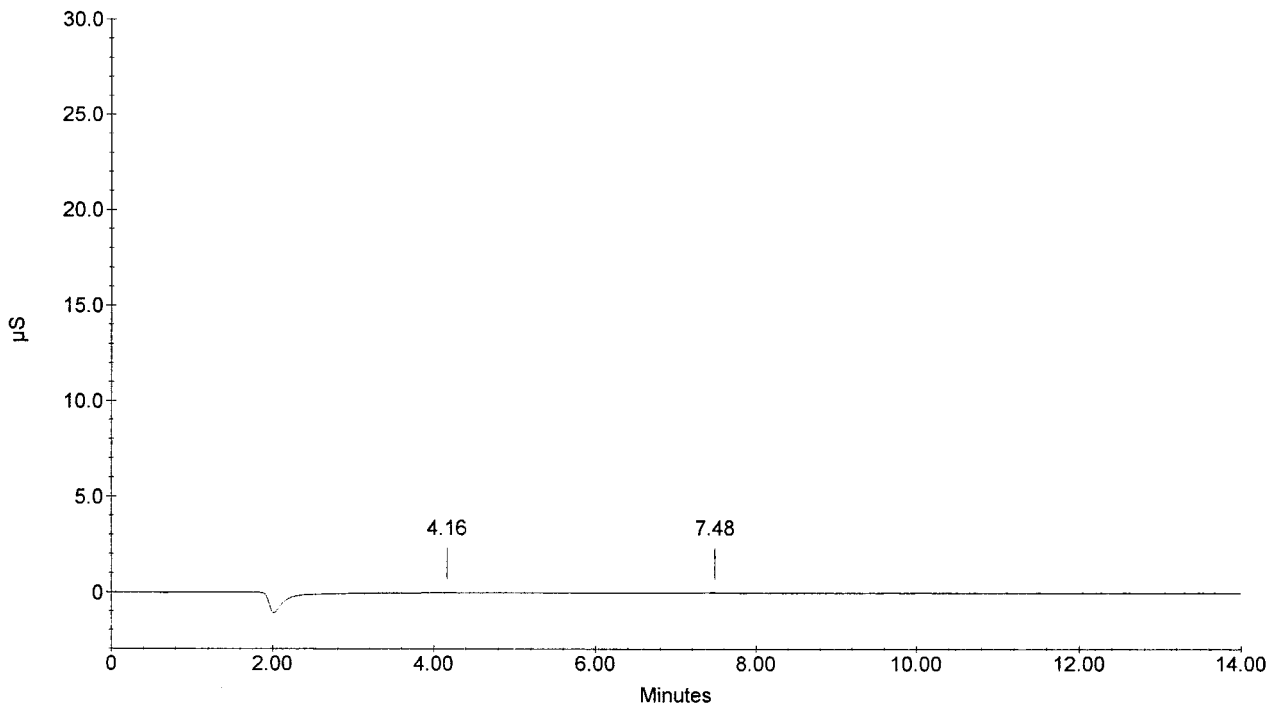
Sample Name : CCB
 Dilution Factor : 1.00
 Injection Number : 12
 Data File Name : c:\peaknet\data\070124\070124_012.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\24jan06.sch

Date Time Collected : 1/24/07 11:41:43 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010049

Peak Information : All Components							
Pk. Num	Ret Time	Component Name	Concentration (PPB)	Height	Area	Bl. Code	%Delta
1	4.16	CHLORIDE	22.591	152	910	1	-3.18
1	4.16	CHLORIDE	22.591	152	910	1	-3.18
		NITRITE-N					
		BROMIDE					
2	7.48	NITRATE-N	40.855	234	2708	1	-0.22
		PHOSPHATE-P					
		SULFATE					
			---total(s)---				
0.00			86.038		4528		

CCB



Line	Sample	Sample Type	Level	Method	Data File	Dilution
1	BLK	Sample		anions061121.met	061121_001.dxd	1
2	0ppb 36-08-IC6	Calibration St	1	anions061121.met	061121_002.dxd	1
3	100ppb 36-07-IC6	Calibration St	2	anions061121.met	061121_003.dxd	1
4	500ppb 36-06-IC6	Calibration St	3	anions061121.met	061121_004.dxd	1
5	1000ppb 36-05-IC6	Calibration St	4	anions061121.met	061121_005.dxd	1
6	5000ppb 36-04-IC6	Calibration St	5	anions061121.met	061121_006.dxd	1
7	10000ppb 36-03-IC6	Calibration St	6	anions061121.met	061121_007.dxd	1
8	15000ppb 36-02-IC6	Calibration St	7	anions061121.met	061121_008.dxd	1
9	20000ppb 36-01-IC6	Calibration St	8	anions061121.met	061121_009.dxd	1
10	ICV	Sample		anions061121.met	061121_010.dxd	20
11	ICB	Sample		anions061121.met	061121_011.dxd	1

010050

Default Method Path: C:\PEAKNET\METHOD
 Default Data Path: C:\PEAKNET\DATA\061121
 Comment:
 METHODS: EPA 300.0 & SW 846 9056

ICV Sources:

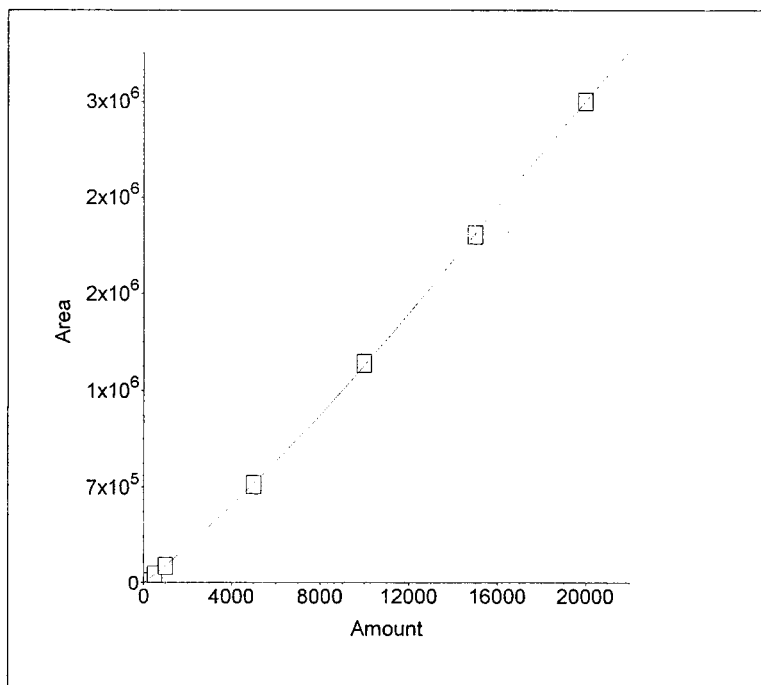
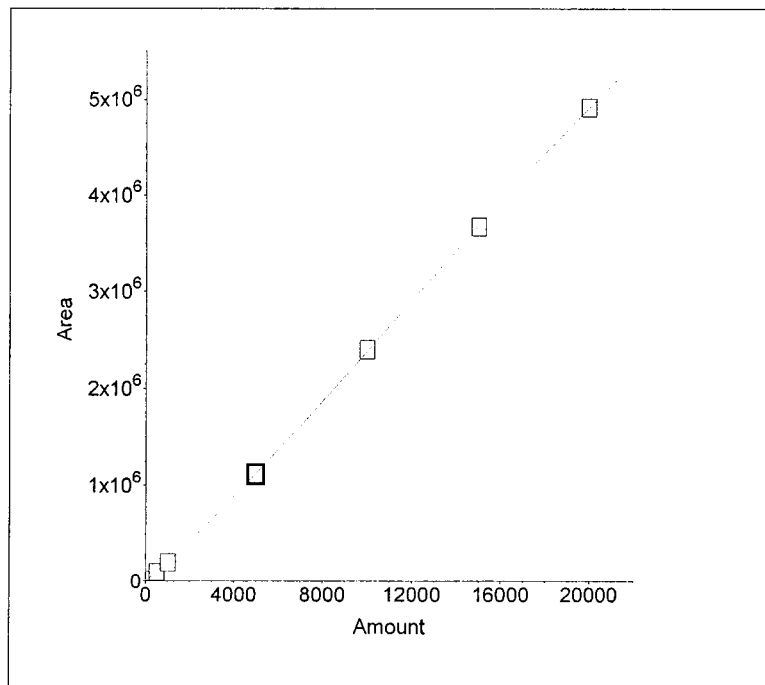
- 1) SPEX LOT#33-13AS (INORG#6118)
 - F = 100 mg/L
 - Cl = 200 mg/L
 - Br = 400 mg/L
 - NO3N = 90.4 mg/L
 - PO4P = 196 mg/L
 - SO4 = 400 mg/L
- 2) 35-01-IC6
 - NO2N 111 mg/L

R Spies
 11/29/06

1. Component:FLUORIDE
 Standard:External Fit Type:Cubic
 Origin:Include Calibration:Area
 $r^2=0.999983$
 $Amt=2.996716e-017*Resp^3+$
 $-2.741223e-010*Resp^2+$
 $4.419215e-003*Resp+27.23$

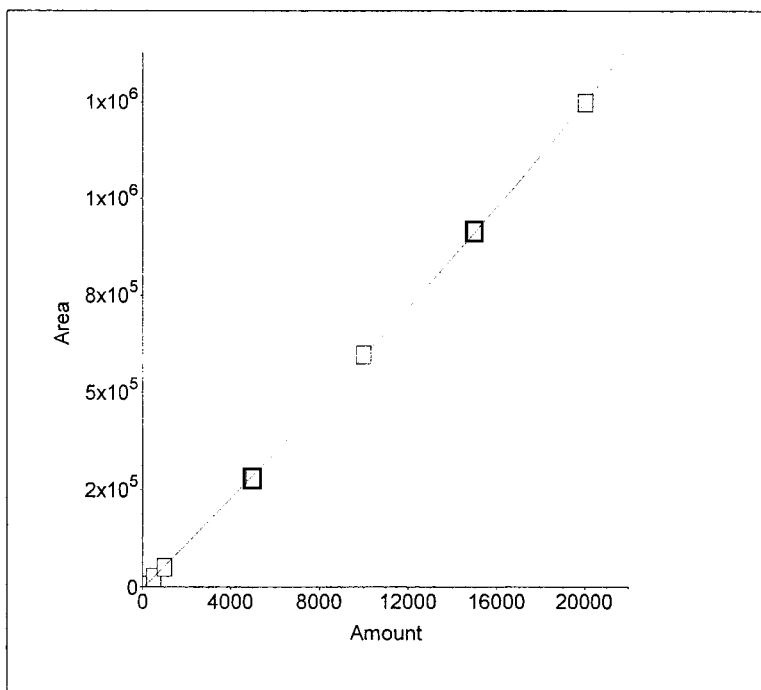
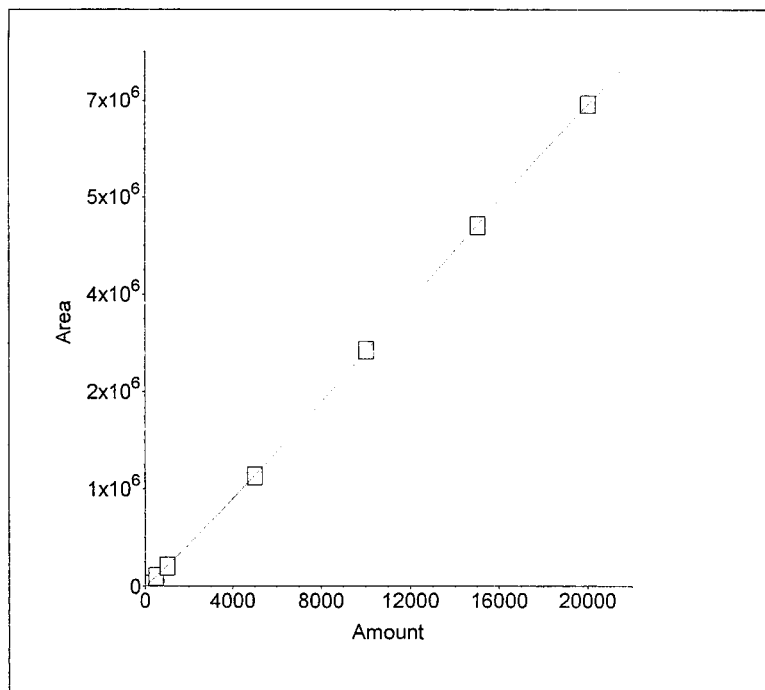
2. Component:CHLORIDE
 Standard:External Fit Type:Cubic
 Origin:Include Calibration:Area
 $r^2=0.999965$
 $Amt=1.067262e-016*Resp^3+$
 $-8.556534e-010*Resp^2+$
 $7.295674e-003*Resp+15.95$

010051



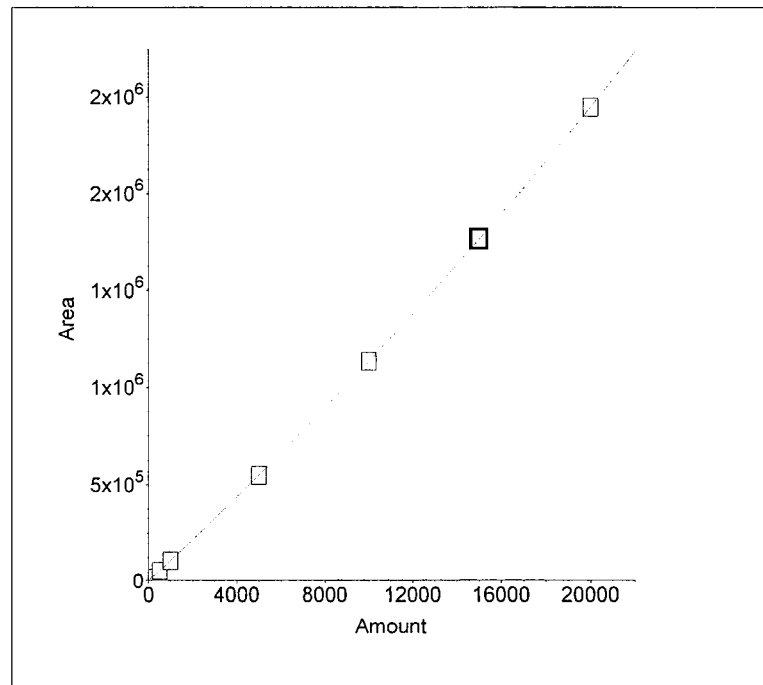
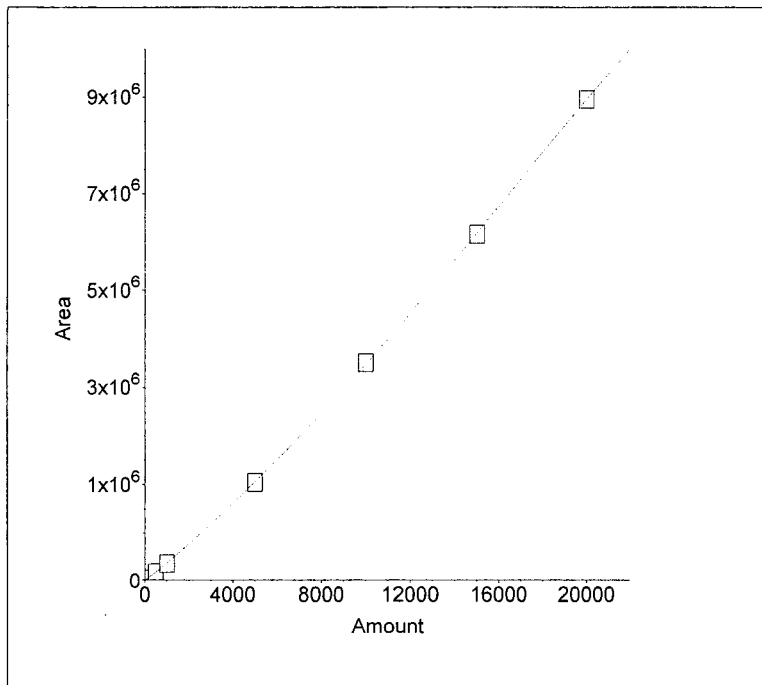
3. Component:NITRITE-N
 Standard:External Fit Type:Cubic
 Origin:Include Calibration:Area
 $r^2=0.999979$
 $Amt=9.968819e-018*Resp^3+$
 $-1.301414e-010*Resp^2+$
 $3.139690e-003*Resp+31.28$

4. Component:BROMIDE
 Standard:External Fit Type:Quadratic
 Origin:Include Calibration:Area
 $r^2=0.999913$
 $Amt=-1.119978e-009*Resp^2+$
 $1.618856e-002*Resp+64.5$

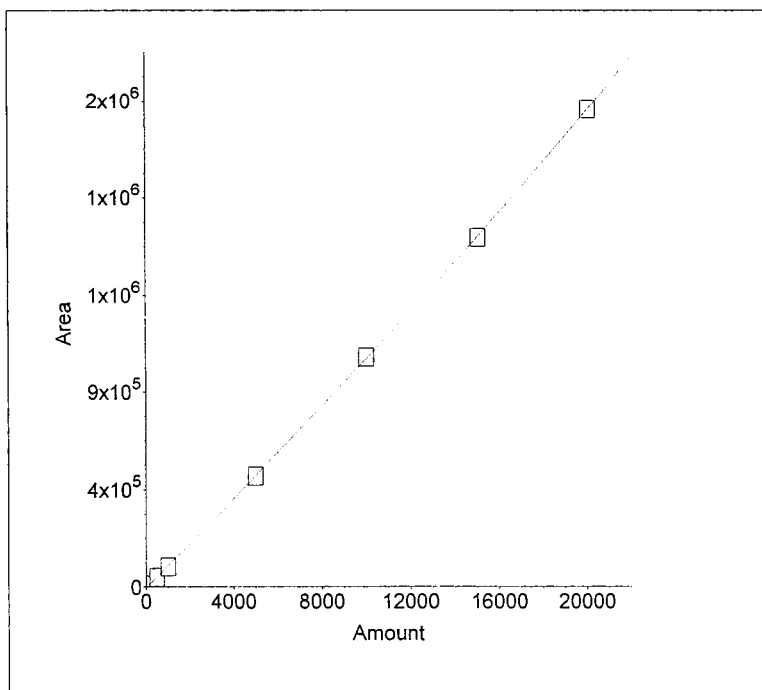


5. Component: NITRATE-N
 Standard: External Fit Type: Cubic
 Origin: Include Calibration: Area
 $r^2 = 0.999972$
 $Amt = 5.475663e-018 * Resp^3 +$
 $-1.207215e-010 * Resp^2 +$
 $2.799120e-003 * Resp + 33.28$

6. Component: PHOSPHATE-P **010052**
 Standard: External Fit Type: Quadratic
 Origin: Include Calibration: Area
 $r^2 = 0.999996$
 $Amt = -3.493784e-010 * Resp^2 +$
 $7.905269e-003 * Resp + -6.513$



7. Component: SULFATE
 Standard: External Fit Type: Quadratic
 Origin: Include Calibration: Area
 $r^2 = 0.999969$
 $Amt = -3.456706e-010 * Resp^2 +$
 $9.671567e-003 * Resp + 42.12$



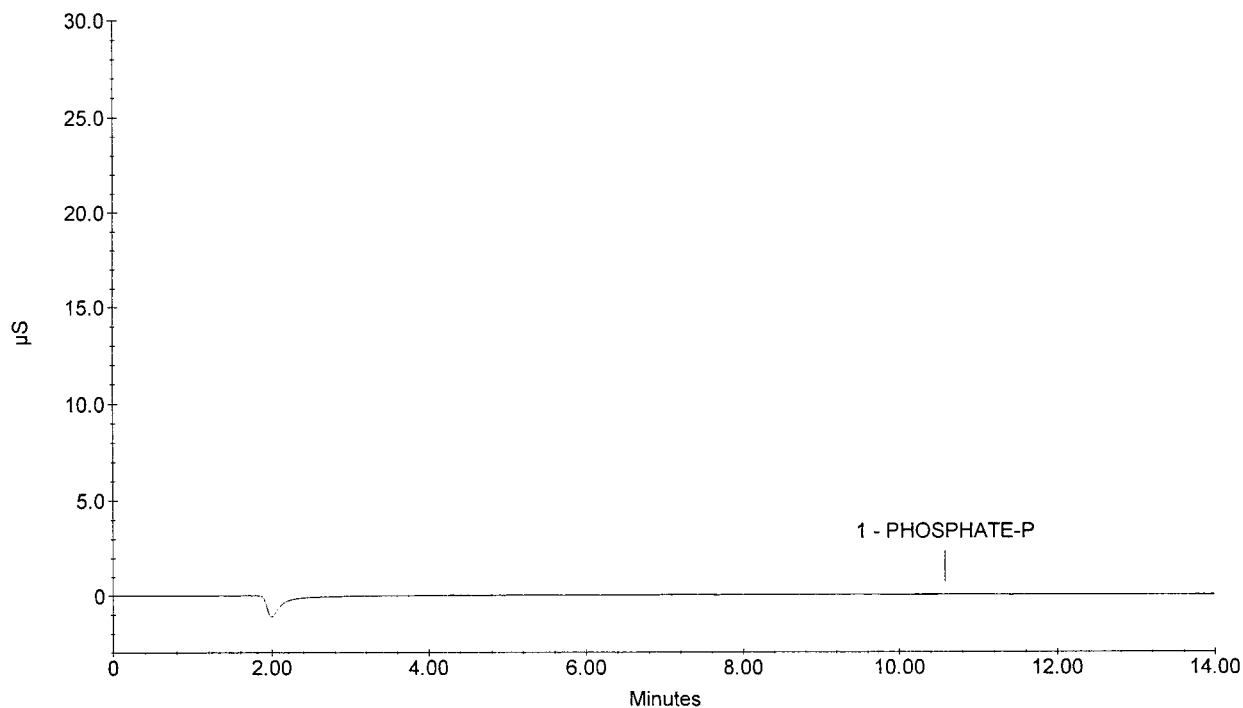
Sample Name : Oppb 36-08-IC6
 Dilution Factor : 1.00
 Injection Number : 2
 Data File Name : c:\peaknet\data\061121\061121_002.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\061121.sch

Date Time Collected : 11/21/06 9:50:23 AM
 Date Time Updated : 11/21/06 10:06:55 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010053

Peak Information : All Components					
Peak Number	Peak Retention Time	Component Name	Concentration, ppm (PPB)	Peak Area	Peak Height
1	10.58	PHOSPHATE-P CHLORIDE NITRITE-N BROMIDE NITRATE-N	0.00	1020	40
1	10.58	PHOSPHATE-P SULFATE	0.00	1020	40

Oppb 36-08-IC6



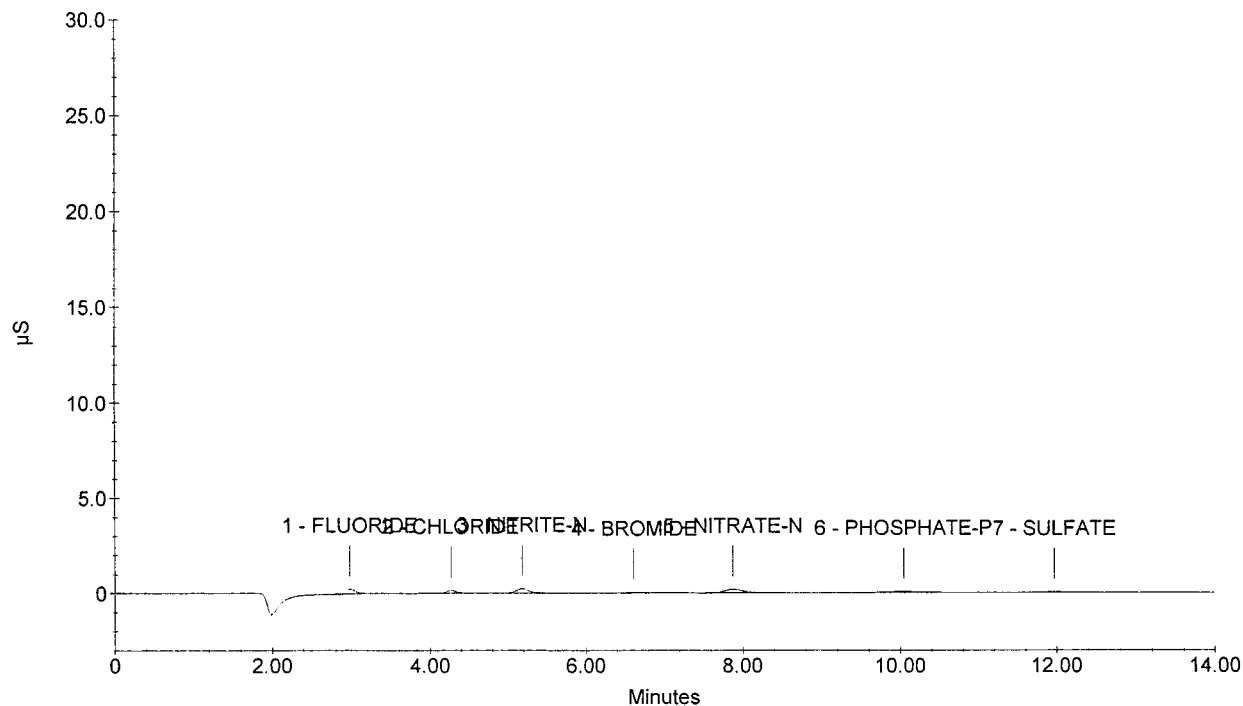
Sample Name : 100ppb 36-07-IC6
 Dilution Factor : 1.00
 Injection Number : 3
 Data File Name : c:\peaknet\data\061121\061121_003.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\061121.sch

Date Time Collected : 11/21/06 10:07:00 AM
 Date Time Updated : 11/21/06 10:23:31 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010054

Peak Information : All Components					
Peak Number	Peak Retention Time	Component Name	Concentration, ppm (PPB)	Peak Area	Peak Height
1	2.98	FLUORIDE	100.00	18168	2533
2	4.27	CHLORIDE	100.00	15692	1516
3	5.18	NITRITE-N	100.00	26374	2385
4	6.62	BROMIDE	100.00	4906	402
5	7.88	NITRATE-N	100.00	29909	1810
6	10.04	PHOSPHATE-P	100.00	17240	651
7	11.97	SULFATE	100.00	9218	398

100ppb 36-07-IC6



Sample Name : 500ppb 36-06-IC6

Dilution Factor : 1.00

Injection Number : 4

Data File Name : c:\peaknet\data\061121\061121_004.DXD

Method File Name : c:\peaknet\method\anions061121.met

Schedule File Name : c:\peaknet\schedule\061121.sch

Date Time Collected : 11/21/06 10:23:35 AM

Date Time Updated : 11/21/06 10:40:08 AM

System Name : Dx-500

Detector Name : Conductivity Detector

Column Type : AS14-SN#018097 AG14-#019940

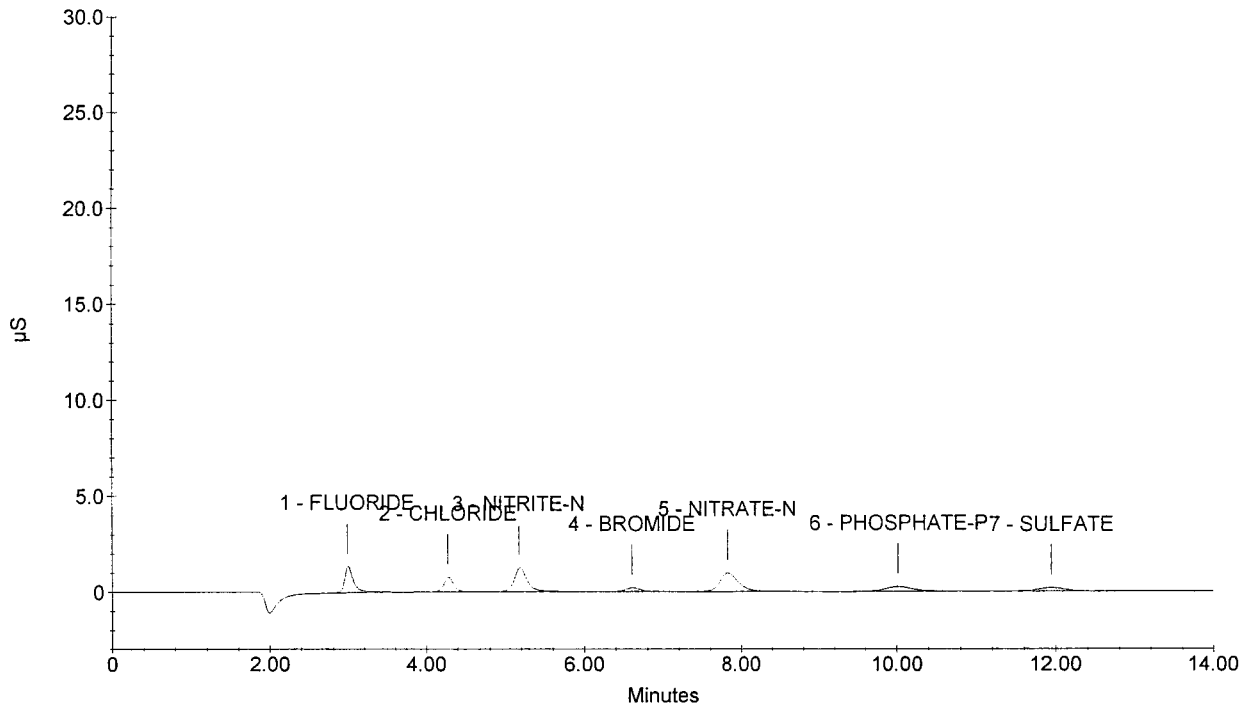
System Operator : RSPIES

010055

Peak Information : All Components

Peak Number	Peak Retention Time	Component Name	Concentration, ppm (PPB)	Peak Area	Peak Height
1	2.98	FLUORIDE	500.00	105570	13386
2	4.27	CHLORIDE	500.00	65978	7499
3	5.17	NITRITE-N	500.00	146554	12339
4	6.60	BROMIDE	500.00	26546	2038
5	7.82	NITRATE-N	500.00	165885	9805
6	10.02	PHOSPHATE-P	500.00	63449	2525
7	11.94	SULFATE	500.00	45764	1852

500ppb 36-06-IC6



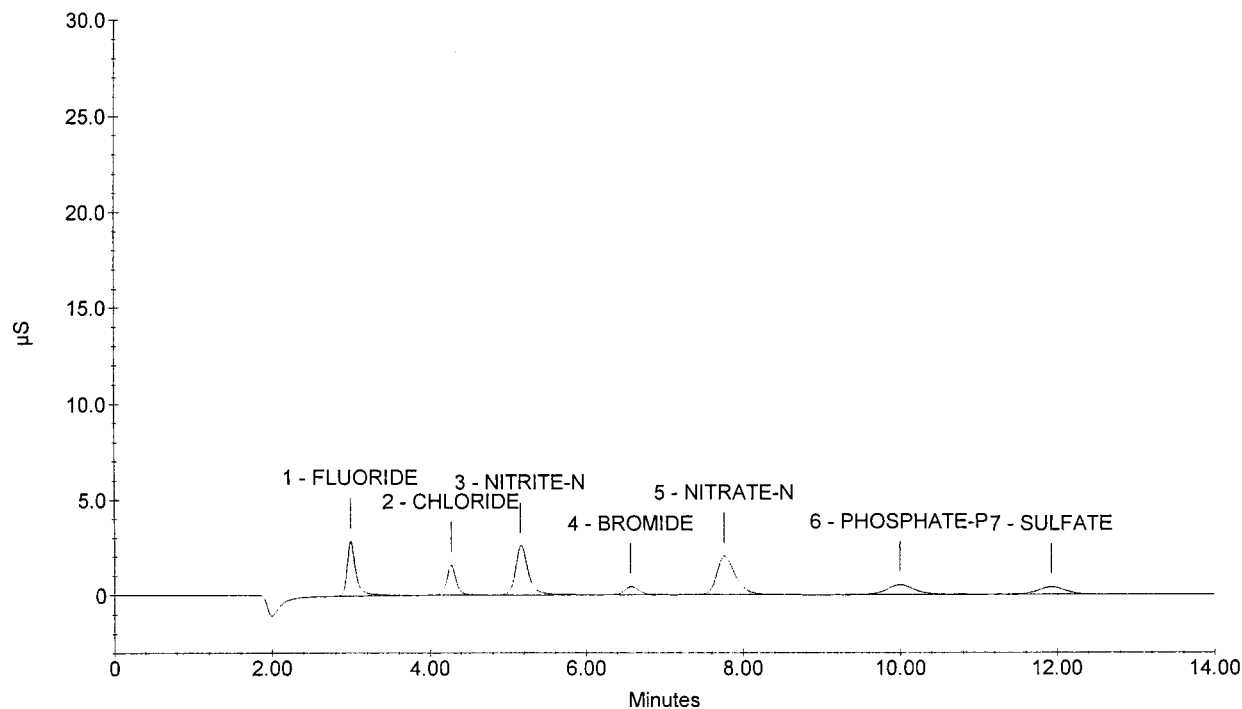
Sample Name : 1000ppb 36-05-IC6
 Dilution Factor : 1.00
 Injection Number : 5
 Data File Name : c:\peaknet\data\061121\061121_005.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\061121.sch

Date Time Collected : 11/21/06 10:40:12 AM
 Date Time Updated : 11/21/06 10:56:45 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010056

Peak Information : All Components					
Peak Number	Peak Retention Time	Component Name	Concentration, ppm (PPB)	Peak Area	Peak Height
1	2.98	FLUORIDE	1000.00	218414	28563
2	4.27	CHLORIDE	1000.00	133332	15552
3	5.15	NITRITE-N	1000.00	302442	25591
4	6.57	BROMIDE	1000.00	55490	4128
5	7.76	NITRATE-N	1000.00	337227	20285
6	9.99	PHOSPHATE-P	1000.00	126725	4994
7	11.92	SULFATE	1000.00	93736	3746

1000ppb 36-05-IC6

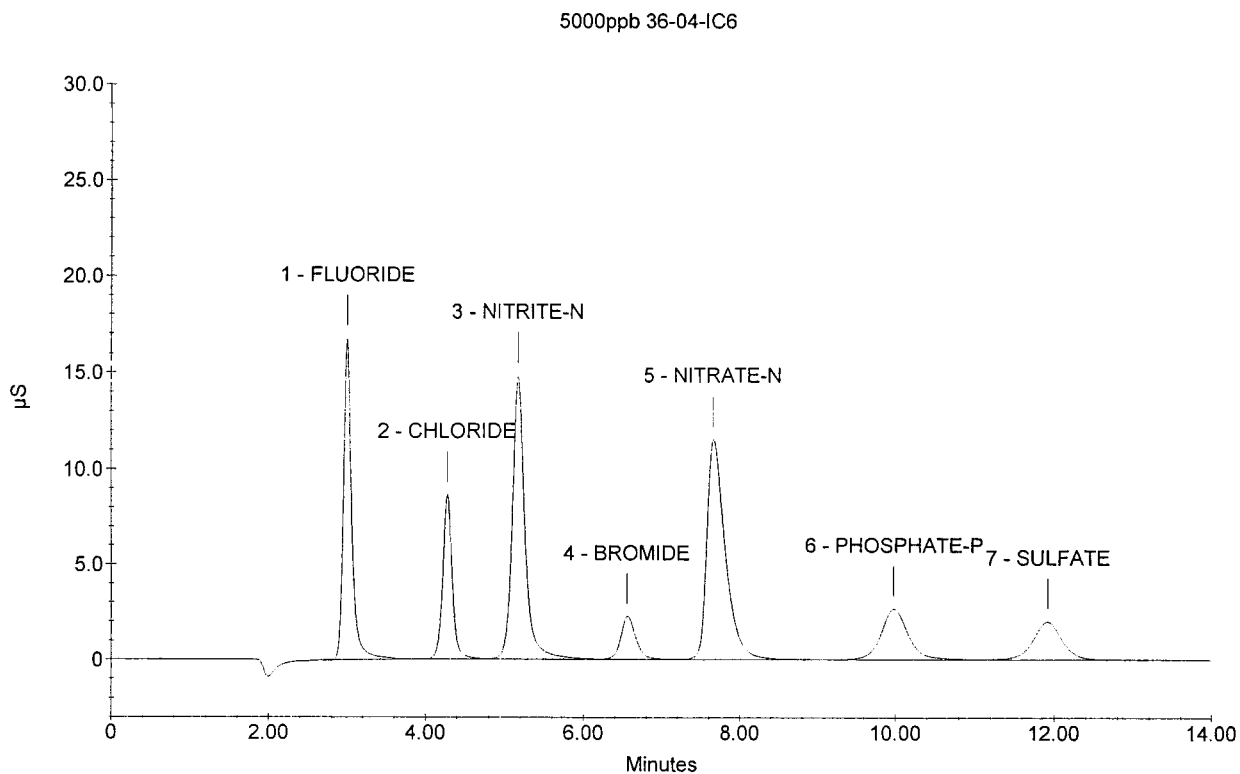


Sample Name : 5000ppb 36-04-IC6
Dilution Factor : 1.00
Injection Number : 6
Data File Name : c:\peaknet\data\061121\061121_006.DXD
Method File Name : c:\peaknet\method\anions061121.met
Schedule File Name : c:\peaknet\schedule\061121.sch

Date Time Collected : 11/21/06 10:56:49 AM
Date Time Updated : 11/21/06 11:13:21 AM
System Name : Dx-500
Detector Name : Conductivity Detector
Column Type : AS14-SN#018097 AG14-#019940
System Operator : RSPIES

010057

Peak Information : All Components					
Peak Number	Peak Retention Time	Component Name	Concentration, ppm (PPB)	Peak Area	Peak Height
1	3.00	FLUORIDE	5000.00	1194951	167245
2	4.27	CHLORIDE	5000.00	732576	85884
3	5.17	NITRITE-N	5000.00	1673560	147535
4	6.55	BROMIDE	5000.00	302366	22265
5	7.65	NITRATE-N	5000.00	1900543	114863
6	9.98	PHOSPHATE-P	5000.00	649628	26414
7	11.92	SULFATE	5000.00	518253	19812

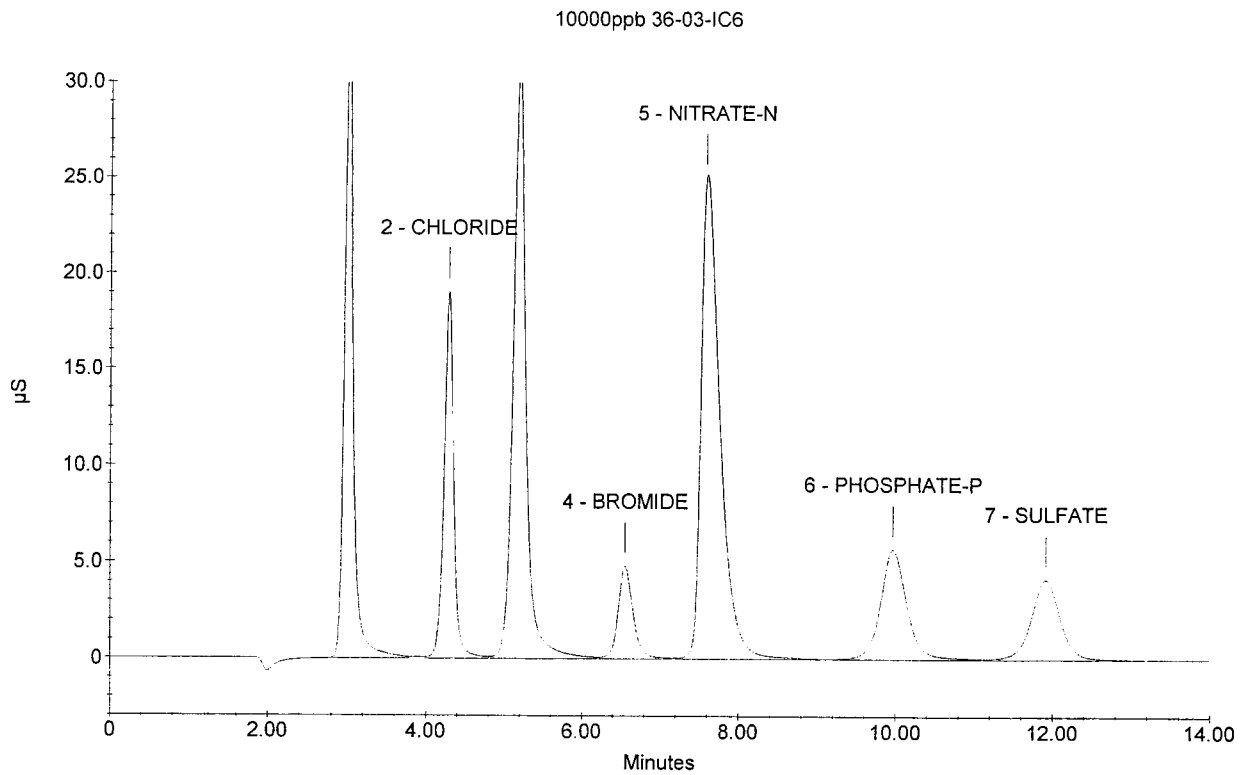


Sample Name : 10000ppb 36-03-IC6
Dilution Factor : 1.00
Injection Number : 7
Data File Name : c:\peaknet\data\061121\061121_007.DXD
Method File Name : c:\peaknet\method\anions061121.met
Schedule File Name : c:\peaknet\schedule\061121.sch

Date Time Collected : 11/21/06 11:13:27 AM
Date Time Updated : 11/21/06 11:29:58 AM
System Name : Dx-500
Detector Name : Conductivity Detector
Column Type : AS14-SN#018097 AG14-#019940
System Operator : RSPIES

010058

Peak Information : All Components					
Peak Number	Peak Retention Time	Component Name	Concentration, ppm (PPB)	Peak Area	Peak Height
1	3.00	FLUORIDE	10000.00	2562619	333959
2	4.28	CHLORIDE	10000.00	1627259	190309
3	5.18	NITRITE-N	10000.00	3579861	308441
4	6.55	BROMIDE	10000.00	646876	47950
5	7.58	NITRATE-N	10000.00	4202641	250659
6	9.96	PHOSPHATE-P	10000.00	1346525	56771
7	11.91	SULFATE	10000.00	1077771	41538

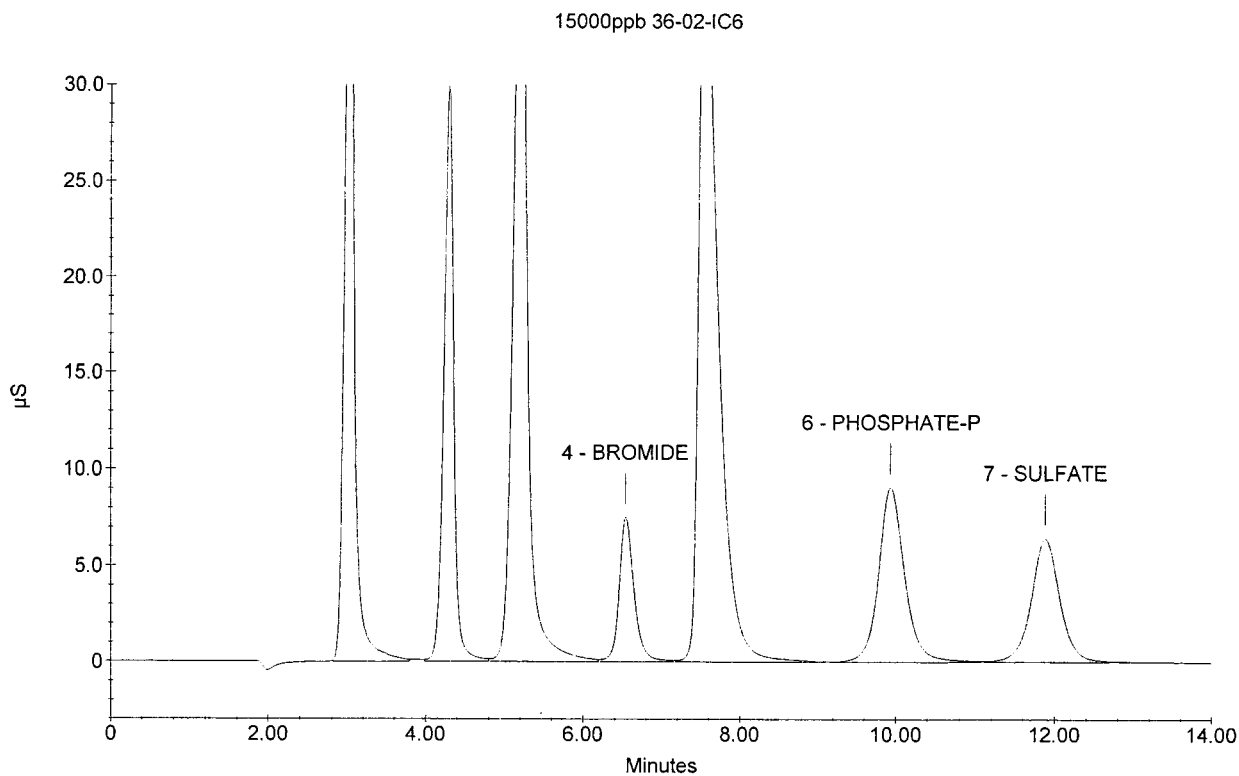


Sample Name : 15000ppb 36-02-IC6
 Dilution Factor : 1.00
 Injection Number : 8
 Data File Name : c:\peaknet\data\061121\061121_008.DXD
 Method File Name : c:\peaknet\method\anions061121.met
 Schedule File Name : c:\peaknet\schedule\061121.sch

Date Time Collected : 11/21/06 11:30:03 AM
 Date Time Updated : 11/21/06 11:46:36 AM
 System Name : Dx-500
 Detector Name : Conductivity Detector
 Column Type : AS14-SN#018097 AG14-#019940
 System Operator : RSPIES

010059

Peak Information : All Components					
Peak Number	Peak Retention Time	Component Name	Concentration, ppm (PPB)	Peak Area	Peak Height
1	3.02	FLUORIDE	15000.00	3924796	508739
2	4.28	CHLORIDE	15000.00	2574669	293457
3	5.18	NITRITE-N	15000.00	5475503	453490
4	6.53	BROMIDE	15000.00	993907	74896
5	7.53	NITRATE-N	15000.00	6669133	393455
6	9.93	PHOSPHATE-P	15000.00	2093534	90624
7	11.88	SULFATE	15000.00	1638986	64372

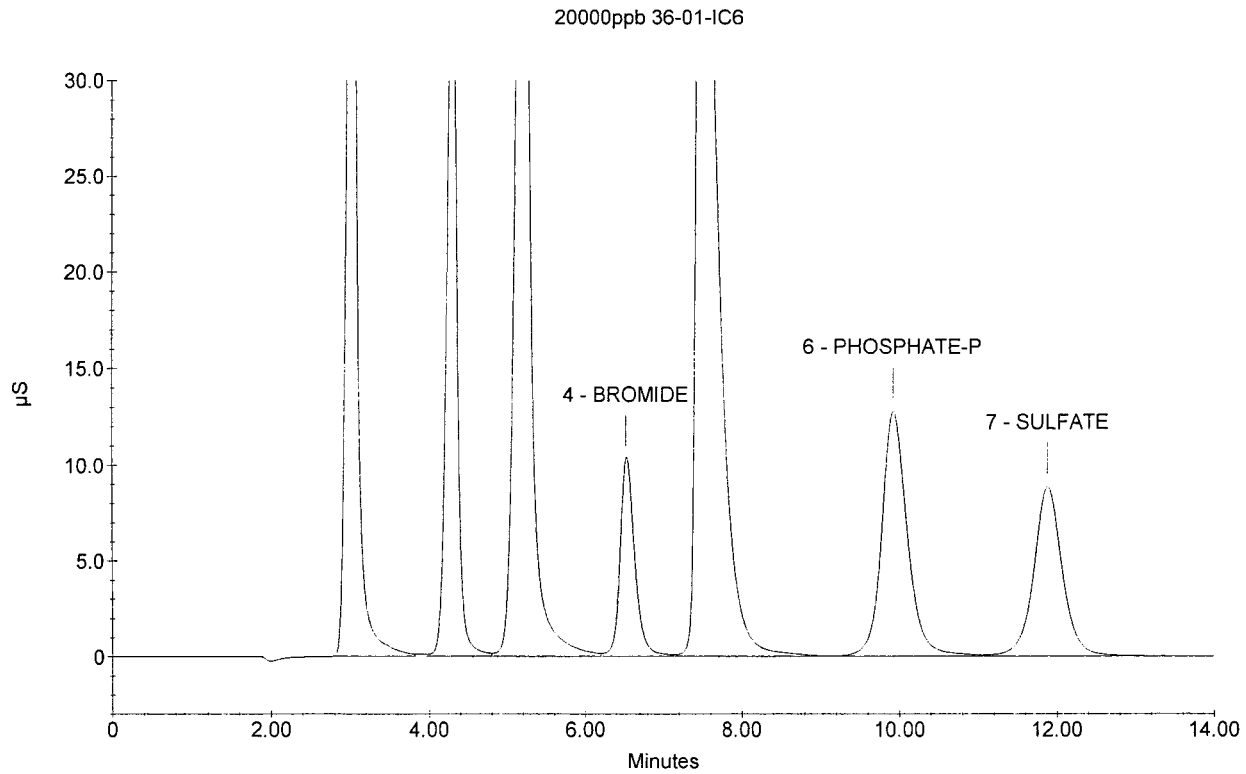


Sample Name : 20000ppb 36-01-IC6
Dilution Factor : 1.00
Injection Number : 9
Data File Name : c:\peaknet\data\061121\061121_009.DXD
Method File Name : c:\peaknet\method\anions061121.met
Schedule File Name : c:\peaknet\schedule\061121.sch

Date Time Collected : 11/21/06 11:46:43 AM
Date Time Updated : 11/21/06 12:03:16 PM
System Name : Dx-500
Detector Name : Conductivity Detector
Column Type : AS14-SN#018097 AG14-#019940
System Operator : RSPIES

010060

Peak Information : All Components					
Peak Number	Peak Retention Time	Component Name	Concentration, ppm (PPB)	Peak Area	Peak Height
1	3.02	FLUORIDE	20000.00	5250308	636965
2	4.30	CHLORIDE	20000.00	3569897	408450
3	5.20	NITRITE-N	20000.00	7341323	594634
4	6.52	BROMIDE	20000.00	1356694	102757
5	7.50	NITRATE-N	20000.00	9290814	538827
6	9.92	PHOSPHATE-P	20000.00	2902233	127550
7	11.88	SULFATE	20000.00	2244177	88802



SOUTHWEST RESEARCH INSTITUTE 010061
NUCLEAR PROJECT
CLIENT: Division 20
TASK ORDER: 061223-1
SRR: 30203
SDG: 291720
CASE: CNWRA
VTSR: December 22, 2006
PROJECT#: 06002.01.322

METALS

DIV. 20
 TO#061223-1
 Project No. 06002.01.322
 Prep. Page 66-168

1-807

Sample ID	Element	Result	Qual (C)	Qual (Q)	Units	RL	%RPD	%Recovery	TV	rl	mg/L	sigwt	Dilution	Calc RL	ug/ml	Date	Time
pbw-A02H1	Na589	0.250	U		mg/L	0.25				0.250	0.155013113	0.155	1	0.25	0.155013113	01/02/07	12:41 PM
lcsw-A02H1	Na589	19.4			mg/L	0.25		97.0%	20	0.250	19.40788211	19.4	1	0.25	19.40788211	01/02/07	12:43 PM
291721	Na589	108000			mg/L	250				0.250	108076.2417	108000	1	250	108.0762417	01/02/07	12:56 PM
291721d	Na589	109000			mg/L	250	0.9%			0.250	108779.7696	109000	1	250	108.7797696	01/02/07	12:59 PM
291721s	Na589	129000			mg/L	250		105.0%	20000	0.250	129340.4379	129000	1	250	129.3404379	01/02/07	1:01 PM
291720	Na589	166000			mg/L	250				0.250	166221.1001	166000	1	250	166.2211001	01/02/07	1:04 PM

291721

$$\frac{108.076 \text{ ug/ml} \times 50 \text{ ml}}{0.05 \text{ ml}} = 108076 \text{ mg/L} = 108000 \text{ mg/L}$$

W. Sample
 118107

010062

- 200.7 TAP No. 01-0406-028 Rev3/Jan06
- 6010B TAP No. 01-0406-130 Rev5/Jan06
- Other _____

QC STD. ID's
 CCV 07A02
 CRI _____
 ICSA _____
 ICSAB 07A02

ICP CAL.STD.
 ID's
 Std0 07A02 **010063**
 Std1 07A02
 Std2 _____
 Std3 _____
 Std4 _____
 Std5 _____
 Std6 07A02

na

PROJ. NO. PROJECT TO# DATE MATRIX LOGBK PG

~~06002.01.322 DIV. 20 062134 1-2-07 Liquid 66-168~~ ^{at 1-2-07}

06002.01.322 DIV. 20 062231 1-2-07 Liquid 66-168

INSTRUMENT: Spectro FILENAME: 06 070102A
06 1-2-07

1-2-07

File converted to wsl?

TRACE METALS PREPARATORY LABORATORY DIGESTION LOG

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO, TEXAS 78228

BOOK / PAGE: 66 168

CLIENT(S): Div. 20 010064
 TASK ORDER(S): 061213-4, 061223-1 SDG(S): 290969, 291720
 PROJECT NO(S): 06667.01.322
 METHOD: 3005A 3050B 3050B-7.5 3010A 3020A 7760A 7740A HClO₄ HClO₄/H₂SO₄
 Microwave Fusion Teflon Rock OTHER dilutions
 MATRIX: Water Soil Biota Solid Liquid TCLP Ext OTHER
 INSTRUMENT: GFAA ICP ICP-MS IC FLAA HYDRIDE OTHER
 ACID INORG #: HNO₃# 6191 HCl# 6199 H₂SO₄# HClO₄# HF# H₂O₂#
 INTERNAL STD: Sc @ 10 PPM Be @ 10 PPM SOURCE: SV INORG# 6160 EXP: 11-1-07 AMT: 50uL
 Oven/Hotplate/ Block ID: N/A Temperature (°C): N/A

Sample Identification	df	WT(g)	I.V.(ml)	F.V. (ml)
PBW-A02H1			5	5
LCSW-A02H1*			5	5
290969	2		2.5	5
290969d	2		2.5	5
290970	2		2.5	5
290970s*	2		2.5	5
291720 1	1000		0.05	50
291720 1d	1000		0.05	50
291720 1s	1000		0.05	50
291721 0	1000		0.05	50

*20uL ICAL-1 Spex#6164 exp. 10/31/07
 PBW&LCSW are prepared as 5mls 1%HNO₃ / 10% HCL

Note: spine & 5ml portions of 291720~~1~~ & 291721~~0~~ 1-2-07

LOCATION: N/A

PREPARED BY: [Signature] DATE: 1-2-07
 REVIEWED BY: [Signature] DATE: 1-2-07
 DISPOSAL INT/DATE/LOC: _____

Keep last result visible enabled ...

Starting run ...

Creating high priority queue entries ...

BACKGROUND CORRECTED INTENSITIES

Identity 1 : BLK_SC Identity 2 : Type : STD

Weight : 1.0000 Volume : 1.00 Printed : 12:17:56 PM January 2, 2007

	Na589	Sc361
# 1	73.5	2555.0
# 2	48.5	2505.0
Mean	61.0	2530.0
SD	17.7	35.4
%RSD	29.0	1.4

INTENSITIES

Identity 1 : BLK_SC Identity 2 : Type : STD

Weight : 1.0000 Volume : 1.00 Printed : 12:17:56 PM January 2, 2007

	Na589	Sc361
# 1	0.0	2555.0
# 2	0.0	2505.0
Mean	0.0	2530.0
SD	0.0	35.4
%RSD	27.6	1.4

BACKGROUND CORRECTED INTENSITIES

Identity 1 : CLP_STD1_SC Identity 2 : Type : STD

Weight : 1.0000 Volume : 1.00 Printed : 12:20:28 PM January 2, 2007

	Na589
# 1	17828.5
# 2	17714.5
Mean	17771.5
SD	80.6
%RSD	0.5

INTENSITIES

Identity 1 : CLP_STD1_SC Identity 2 : Type : STD

Weight : 1.0000 Volume : 1.00 Printed : 12:20:28 PM January 2, 2007

	Na589
# 1	7.0
# 2	7.0
Mean	7.0
SD	0.0
%RSD	0.1

BACKGROUND CORRECTED INTENSITIES

Identity 1 : CLP_CCV_SC Identity 2 : Type : CV

Weight : 1.0000 Volume : 1.00 Printed : 12:23:02 PM January 2, 2007

	Na589	Sc	Sc361
# 1	10915.5	2586.5	2586.5
# 2	10713.5	2530.5	2530.5

Handwritten signature and date: 1/18/07

Handwritten signature and date: 1-2-07

mean	10814.5	2558.5	2558.5
SD	142.8	39.6	39.6
%RSD	1.3	1.5	1.5

010066

APPARENT CONCENTRATIONS

EVOLUTION by Micro-Active Australia Pty Ltd 12:28:12 PM January 2, 2007

Identity 1 : CLP_CCV_SC Identity 2 : Type : CV
 Weight : 1.0000 Volume : 1.00 Printed : 12:23:02 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	30.1078	2586.500 H	102.2390
# 2	30.2051	2530.500 H	100.0198
Mean	30.1565	2558.500 H	101.1294
SD	0.0688	39.598	1.5692
%RSD	0.2282	1.548	1.5516

Checking calibration verification ...

Identity 1 : CLP_CCV_SC Identity 2 :
 Report name Low limit Value High limit
 Na589 27.000 30.156 33.000

BACKGROUND CORRECTED INTENSITIES

Identity 1 : Calibration blank Identity 2 : Type : CB
 Weight : 1.0000 Volume : 1.00 Printed : 12:25:36 PM January 2, 2007

	Na589	Sc	Sc361
# 1	43.0	2559.5	2559.5
# 2	113.0	2552.5	2552.5
Mean	78.0	2556.0	2556.0
SD	49.5	4.9	4.9
%RSD	63.5	0.2	0.2

APPARENT CONCENTRATIONS

Identity 1 : Calibration blank Identity 2 : Type : CB
 Weight : 1.0000 Volume : 1.00 Printed : 12:25:36 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1 L	-0.0525	2559.500 H	101.1690
# 2	0.1447	2552.500 H	100.8916
Mean	0.0461	2556.000 H	101.0303
SD	0.1394	4.950	0.1961
%RSD	302.3447	0.194	0.1941

Checking calibration blank ...

Identity 1 : Calibration blank Identity 2 :
 Report name CRDL Value
 Na589 0.050 0.046
 Sc361 0.000 101.030

BACKGROUND CORRECTED INTENSITIES

Identity 1 : CRI Identity 2 : Type : CV
 Weight : 1.0000 Volume : 1.00 Printed : 12:28:10 PM January 2, 2007

	Na589	Sc	Sc361
# 1	53.5	2534.5	2534.5
# 2	94.5	2488.5	2488.5
Mean	74.0	2511.5	2511.5
SD	29.0	32.5	32.5
%RSD	39.2	1.3	1.3

APPARENT CONCENTRATIONS

Identity 1 : CRI Identity 2 : Type : CV
 Weight : 1.0000 Volume : 1.00 Printed : 12:28:10 PM January 2, 2007

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EVOLUTION by Micro-Active Australia Pty Ltd 12:33:42 PM January 2, 2007

	Na589	Sc	Sc361
	ppm		ppm
# 1 L	-0.0215	2534.500 H	100.1783
# 2	0.0995	2488.500	98.3555
Mean	0.0390	2511.500	99.2669
SD	0.0856	32.527	1.2890
%RSD	219.5914	1.295	1.2985

Checking calibration verification ...

Identity 1 : CRI Identity 2 :
 Report name Low limit Value High limit
 Na589 0.000 0.039 0.000 Failed

BACKGROUND CORRECTED INTENSITIES

Identity 1 : ICSA Identity 2 : Type : INTRF
 Weight : 1.0000 Volume : 1.00 Printed : 12:30:44 PM January 2, 2007

	Na589	Sc	Sc361
# 1	36.0	2438.0	2438.0
# 2	63.0	2424.0	2424.0
Mean	49.5	2431.0	2431.0
SD	19.1	9.9	9.9
%RSD	38.6	0.4	0.4

APPARENT CONCENTRATIONS

Identity 1 : ICSA Identity 2 : Type : INTRF
 Weight : 1.0000 Volume : 1.00 Printed : 12:30:44 PM January 2, 2007

	Na589	Sc	Sc361
	ppm		ppm
# 1 L	-0.0670	2438.000	96.3543
# 2	0.0135	2424.000	95.7995
Mean L	-0.0268	2431.000	96.0769
SD	0.0569	9.899	0.3923
%RSD	212.6309	0.407	0.4083

BACKGROUND CORRECTED INTENSITIES

Identity 1 : ICSAB Identity 2 : Type : ICSAB
 Weight : 1.0000 Volume : 1.00 Printed : 12:33:20 PM January 2, 2007

	Na589	Sc	Sc361
# 1	75.5	2443.0	2443.0
# 2	99.5	2411.0	2411.0
Mean	87.5	2427.0	2427.0
SD	17.0	22.6	22.6
%RSD	19.4	0.9	0.9

APPARENT CONCENTRATIONS

Identity 1 : ICSAB Identity 2 : Type : ICSAB
 Weight : 1.0000 Volume : 1.00 Printed : 12:33:20 PM January 2, 2007

	Na589	Sc	Sc361
	ppm		ppm
# 1	0.0487	2443.000	96.5524
# 2	0.1231	2411.000	95.2843

Mean 0.0859 2427.000 95.9184
 SD 0.0526 22.627 0.8967
 %RSD 61.1949 0.932 0.9348

EVOLUTION by Micro-Active Australia Pty Ltd 12:38:42 PM January 2, 2007

010068

Checking interference check standard ...

Identity 1 : ICSAB Identity 2 :

Report name	Low limit	Value	High limit	
Na589	0.000	0.086	0.000	Failed

BACKGROUND CORRECTED INTENSITIES

Identity 1 : CLP_CCV_SC Identity 2 : Type : CV

Weight : 1.0000 Volume : 1.00 Printed : 12:35:54 PM January 2, 2007

	Na589	Sc	Sc361
# 1	10655.0	2526.0	2526.0
# 2	10560.0	2496.0	2496.0
Mean	10607.5	2511.0	2511.0
SD	67.2	21.2	21.2
%RSD	0.6	0.8	0.8

APPARENT CONCENTRATIONS

Identity 1 : CLP_CCV_SC Identity 2 : Type : CV

Weight : 1.0000 Volume : 1.00 Printed : 12:35:54 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	30.0931	2526.000	99.8415
# 2	30.1838	2496.000	98.6527
Mean	30.1384	2511.000	99.2471
SD	0.0641	21.213	0.8406
%RSD	0.2128	0.845	0.8470

Checking calibration verification ...

Identity 1 : CLP_CCV_SC Identity 2 :

Report name	Low limit	Value	High limit
Na589	27.000	30.138	33.000

BACKGROUND CORRECTED INTENSITIES

Identity 1 : Calibration blank Identity 2 : Type : CB

Weight : 1.0000 Volume : 1.00 Printed : 12:38:28 PM January 2, 2007

	Na589	Sc	Sc361
# 1	97.0	2531.0	2531.0
# 2	100.0	2496.0	2496.0
Mean	98.5	2513.5	2513.5
SD	2.1	24.7	24.7
%RSD	2.2	1.0	1.0

APPARENT CONCENTRATIONS

Identity 1 : Calibration blank Identity 2 : Type : CB

Weight : 1.0000 Volume : 1.00 Printed : 12:38:28 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	0.1020	2531.000 H	100.0396
# 2	0.1145	2496.000	98.6527
Mean	0.1082	2513.500	99.3461
SD	0.0088	24.749	0.9807
%RSD	8.1537	0.985	0.9872

Checking calibration blank ...
Identity 1 : Calibration blank Identity 2 :
Report name CRDL Value
EVOLUTION by Micro-Active Australia Pty Ltd 12:46:20 PM January 2, 2007

010069

Na589	0.050	0.108	Contaminated
Sc361	0.000	99.346	

BACKGROUND CORRECTED INTENSITIES

Identity 1 : pbw-A02H1 Identity 2 : Type : SAMPLE
Weight : 1.0000 Volume : 1.00 Printed : 12:41:02 PM January 2, 2007

	Na589	Sc	Sc361
# 1	130.5	2595.5	2595.5
# 2	104.5	2539.5	2539.5
Mean	117.5	2567.5	2567.5
SD	18.4	39.6	39.6
%RSD	15.6	1.5	1.5

APPARENT CONCENTRATIONS

Identity 1 : pbw-A02H1 Identity 2 : Type : SAMPLE
Weight : 1.0000 Volume : 1.00 Printed : 12:41:02 PM January 2, 2007

	Na589	Sc	Sc361
	ppm		ppm
# 1	0.1878	2595.500 H	102.5956
# 2	0.1223	2539.500 H	100.3765
Mean	0.1550	2567.500 H	101.4860
SD	0.0463	39.598	1.5692
%RSD	29.8813	1.542	1.5462

BACKGROUND CORRECTED INTENSITIES

Identity 1 : lcsW-A02H1 Identity 2 : Type : SAMPLE
Weight : 1.0000 Volume : 1.00 Printed : 12:43:36 PM January 2, 2007

	Na589	Sc	Sc361
# 1	7084.0	2605.0	2605.0
# 2	7038.0	2570.0	2570.0
Mean	7061.0	2587.5	2587.5
SD	32.5	24.7	24.7
%RSD	0.5	1.0	1.0

APPARENT CONCENTRATIONS

Identity 1 : lcsW-A02H1 Identity 2 : Type : SAMPLE
Weight : 1.0000 Volume : 1.00 Printed : 12:43:36 PM January 2, 2007

	Na589	Sc	Sc361
	ppm		ppm
# 1	19.3392	2605.000 H	102.9721
# 2	19.4765	2570.000 H	101.5851
Mean	19.4079	2587.500 H	102.2786
SD	0.0971	24.749	0.9807
%RSD	0.5002	0.956	0.9589

BACKGROUND CORRECTED INTENSITIES

Identity 1 : 290969 Identity 2 : Type : SAMPLE
Weight : 1.0000 Volume : 1.00 Printed : 12:46:10 PM January 2, 2007

	Na589	Sc	Sc361
# 1	642.5	2742.0	2742.0
# 2	661.5	2662.0	2662.0

Mean	652.0	2702.0	2702.0
SD	13.4	56.6	56.6
%RSD	2.1	2.1	2.1

EVOLUTION by Micro-Active Australia Pty Ltd 12:54:12 PM January 2, 2007

010070

APPARENT CONCENTRATIONS

Identity 1 : 290969 Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:46:10 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	1.5083	2742.000 H	108.4010
# 2	1.6100	2662.000 H	105.2308
Mean	1.5592	2702.000 H	106.8159
SD	0.0719	56.569	2.2417
%RSD	4.6141	2.094	2.0986

BACKGROUND CORRECTED INTENSITIES

Identity 1 : 290969d Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:48:44 PM January 2, 2007

	Na589	Sc	Sc361
# 1	638.0	2712.5	2712.5
# 2	600.0	2675.5	2675.5
Mean	619.0	2694.0	2694.0
SD	26.9	26.2	26.2
%RSD	4.3	1.0	1.0

APPARENT CONCENTRATIONS

Identity 1 : 290969d Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:48:44 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	1.5147	2712.500 H	107.2320
# 2	1.4361	2675.500 H	105.7658
Mean	1.4754	2694.000 H	106.4989
SD	0.0556	26.163	1.0368
%RSD	3.7656	0.971	0.9735

BACKGROUND CORRECTED INTENSITIES

Identity 1 : 290970 Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:51:18 PM January 2, 2007

	Na589	Sc	Sc361
# 1	594.5	2775.0	2775.0
# 2	562.5	2729.0	2729.0
Mean	578.5	2752.0	2752.0
SD	22.6	32.5	32.5
%RSD	3.9	1.2	1.2

APPARENT CONCENTRATIONS

Identity 1 : 290970 Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:51:18 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	1.3642	2775.000 H	109.7087
# 2	1.3060	2729.000 H	107.8859

mean	1.5551	2732.000	n	100.7573
SD	0.0412	32.527		1.2890
%RSD	3.0839	1.182		1.1847

BACKGROUND CORRECTED INTENSITIES

EVOLUTION by Micro-Active Australia Pty Ltd 12:59:12 PM January 2, 2007

010071

Identity 1 : 290970s Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:53:54 PM January 2, 2007

	Na589	Sc	Sc361
# 1	7740.5	2692.0	2692.0
# 2	7744.5	2660.0	2660.0
Mean	7742.5	2676.0	2676.0
SD	2.8	22.6	22.6
%RSD	0.0	0.8	0.8

APPARENT CONCENTRATIONS

Identity 1 : 290970s Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:53:54 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	20.4585	2692.000 H	106.4197
# 2	20.7175	2660.000 H	105.1516
Mean	20.5880	2676.000 H	105.7856
SD	0.1831	22.627	0.8967
%RSD	0.8895	0.846	0.8476

BACKGROUND CORRECTED INTENSITIES

Identity 1 : 291721 Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:56:28 PM January 2, 2007

	Na589	Sc	Sc361
# 1	38304.5	2544.0	2544.0
# 2	37654.5	2491.0	2491.0
Mean	37979.5	2517.5	2517.5
SD	459.6	37.5	37.5
%RSD	1.2	1.5	1.5

APPARENT CONCENTRATIONS

Identity 1 : 291721 Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:56:28 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1 H	107.8631	2544.000 H	100.5548
# 2 H	108.2894	2491.000	98.4545
Mean H	108.0762	2517.500	99.5047
SD	0.3015	37.477	1.4851
%RSD	0.2789	1.489	1.4925

BACKGROUND CORRECTED INTENSITIES

Identity 1 : 291721d Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:59:02 PM January 2, 2007

	Na589	Sc	Sc361
# 1	38012.5	2499.0	2499.0
# 2	37455.5	2471.0	2471.0
Mean	37734.0	2485.0	2485.0
SD	393.9	19.8	19.8

APPARENT CONCENTRATIONS

Identity 1 : 291721d Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 12:59:02 PM January 2, 2007
 EVOLUTION by Micro-Active Australia Pty Ltd 1:07:12 PM January 2, 2007

010072

		Na589	Sc	Sc361
		ppm		ppm
# 1	H	108.9701	2499.000	98.7715
# 2	H	108.5894	2471.000	97.6620
Mean	H	108.7798	2485.000	98.2168
SD		0.2692	19.799	0.7846
%RSD		0.2474	0.797	0.7988

BACKGROUND CORRECTED INTENSITIES

Identity 1 : 291721s Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 1:01:36 PM January 2, 2007

		Na589	Sc	Sc361
# 1		46162.5	2559.0	2559.0
# 2		45260.5	2506.0	2506.0
Mean		45711.5	2532.5	2532.5
SD		637.8	37.5	37.5
%RSD		1.4	1.5	1.5

APPARENT CONCENTRATIONS

Identity 1 : 291721s Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 1:01:36 PM January 2, 2007

		Na589	Sc	Sc361
		ppm		ppm
# 1	H	129.2630	2559.000 H	101.1492
# 2	H	129.4179	2506.000	99.0489
Mean	H	129.3404	2532.500 H	100.0991
SD		0.1095	37.477	1.4851
%RSD		0.0847	1.480	1.4836

BACKGROUND CORRECTED INTENSITIES

Identity 1 : 291720 Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 1:04:10 PM January 2, 2007

		Na589	Sc	Sc361
# 1		58955.5	2545.5	2545.5
# 2		58408.5	2515.5	2515.5
Mean		58682.0	2530.5	2530.5
SD		386.8	21.2	21.2
%RSD		0.7	0.8	0.8

APPARENT CONCENTRATIONS

Identity 1 : 291720 Identity 2 : Type : SAMPLE
 Weight : 1.0000 Volume : 1.00 Printed : 1:04:10 PM January 2, 2007

		Na589	Sc	Sc361
		ppm		ppm
# 1	H	166.0103	2545.500 H	100.6142
# 2	H	166.4319	2515.500	99.4254
Mean	H	166.2211	2530.500 H	100.0198
SD		0.2981	21.213	0.8406
%RSD		0.1794	0.838	0.8405

BACKGROUND CORRECTED INTENSITIES

Identity 1 : CLP_CCV_SC Identity 2 : Type : CV
 Weight : 1.0000 Volume : 1.00 Printed : 1:06:44 PM January 2, 2007

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	Na589	Sc	Sc361
# 1	10603.5	2488.5	2488.5
# 2	10368.5	2425.5	2425.5
Mean	10486.0	2457.0	2457.0
SD	166.2	44.5	44.5
%RSD	1.6	1.8	1.8

APPARENT CONCENTRATIONS

Identity 1 : CLP_CCV_SC Identity 2 : Type : CV
 Weight : 1.0000 Volume : 1.00 Printed : 1:06:44 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	30.4007	2488.500	98.3555
# 2	30.4996	2425.500	95.8589
Mean	30.4501	2457.000	97.1072
SD	0.0700	44.548	1.7653
%RSD	0.2297	1.813	1.8179

Checking calibration verification ...

Identity 1 : CLP_CCV_SC Identity 2 :
 Report name Low limit Value High limit
 Na589 27.000 30.450 33.000

BACKGROUND CORRECTED INTENSITIES

Identity 1 : Calibration blank Identity 2 : Type : CB
 Weight : 1.0000 Volume : 1.00 Printed : 1:09:18 PM January 2, 2007

	Na589	Sc	Sc361
# 1	69.5	2512.0	2512.0
# 2	92.5	2481.0	2481.0
Mean	81.0	2496.5	2496.5
SD	16.3	21.9	21.9
%RSD	20.1	0.9	0.9

APPARENT CONCENTRATIONS

Identity 1 : Calibration blank Identity 2 : Type : CB
 Weight : 1.0000 Volume : 1.00 Printed : 1:09:18 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	0.0255	2512.000	99.2867
# 2	0.0945	2481.000	98.0583
Mean	0.0600	2496.500	98.6725
SD	0.0488	21.920	0.8686
%RSD	81.2908	0.878	0.8803

Checking calibration blank ...

Identity 1 : Calibration blank Identity 2 :
 Report name CRDL Value
 Na589 0.050 0.060 Contaminated
 Sc361 0.000 98.672

BACKGROUND CORRECTED INTENSITIES

Identity 1 : CRI Identity 2 : Type : CV

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	Na589	Sc	Sc361
# 1	64.5	2485.0	2485.0
# 2	85.5	2458.0	2458.0

EVOLUTION by Micro-Active Australia Pty Ltd 1:17:14 PM January 2, 2007

Mean	75.0	2471.5	2471.5
SD	14.8	19.1	19.1
%RSD	19.8	0.8	0.8

APPARENT CONCENTRATIONS

Identity 1 : CRI Identity 2 : Type : CV
 Weight : 1.0000 Volume : 1.00 Printed : 1:11:52 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	0.0132	2485.000	98.2168
# 2	0.0766	2458.000	97.1468
Mean	0.0449	2471.500	97.6818
SD	0.0448	19.092	0.7566
%RSD	99.7349	0.772	0.7745

Checking calibration verification ...

Identity 1 : CRI Identity 2 :

Report name	Low limit	Value	High limit	
Na589	0.000	0.045	0.000	Failed

BACKGROUND CORRECTED INTENSITIES

Identity 1 : ICSA Identity 2 : Type : INTRF
 Weight : 1.0000 Volume : 1.00 Printed : 1:14:28 PM January 2, 2007

	Na589	Sc	Sc361
# 1	99.5	2398.5	2398.5
# 2	43.5	2348.5	2348.5
Mean	71.5	2373.5	2373.5
SD	39.6	35.4	35.4
%RSD	55.4	1.5	1.5

APPARENT CONCENTRATIONS

Identity 1 : ICSA Identity 2 : Type : INTRF
 Weight : 1.0000 Volume : 1.00 Printed : 1:14:28 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	0.1247	2398.500	94.7890
# 2 L	-0.0401	2348.500	92.8076
Mean	0.0423	2373.500	93.7983
SD	0.1165	35.355	1.4010
%RSD	275.5354	1.490	1.4937

BACKGROUND CORRECTED INTENSITIES

Identity 1 : ICSAB Identity 2 : Type : ICSAB
 Weight : 1.0000 Volume : 1.00 Printed : 1:17:04 PM January 2, 2007

	Na589	Sc	Sc361
# 1	54.5	2400.0	2400.0
# 2	73.5	2396.0	2396.0
Mean	64.0	2398.0	2398.0
SD	13.4	2.8	2.8
%RSD	21.0	0.1	0.1

010075

APPARENT CONCENTRATIONS

Identity 1 : ICSAB Identity 2 : Type : ICSAB
Weight : 1.0000 Volume : 1.00 Printed : 1:17:04 PM January 2, 2007

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	Na589 ppm	Sc	Sc361 ppm
# 1 L	-0.0101	2400.000	94.8484
# 2	0.0471	2396.000	94.6899
Mean	0.0185	2398.000	94.7692
SD	0.0404	2.828	0.1121
%RSD	218.2434	0.118	0.1183

Checking interference check standard ...

Report name	Low limit	Value	High limit	
Na589	0.000	0.019	0.000	Failed

BACKGROUND CORRECTED INTENSITIES

Identity 1 : CLP_CCV_SC Identity 2 : Type : CV
Weight : 1.0000 Volume : 1.00 Printed : 1:19:38 PM January 2, 2007

	Na589	Sc	Sc361
# 1	10499.5	2491.0	2491.0
# 2	10199.5	2419.0	2419.0
Mean	10349.5	2455.0	2455.0
SD	212.1	50.9	50.9
%RSD	2.0	2.1	2.1

APPARENT CONCENTRATIONS

Identity 1 : CLP_CCV_SC Identity 2 : Type : CV
Weight : 1.0000 Volume : 1.00 Printed : 1:19:38 PM January 2, 2007

	Na589 ppm	Sc	Sc361 ppm
# 1	30.0704	2491.000	98.4545
# 2	30.0807	2419.000	95.6013
Mean	30.0756	2455.000	97.0279
SD	0.0073	50.912	2.0175
%RSD	0.0243	2.074	2.0793

Checking calibration verification ...

Report name	Low limit	Value	High limit
Na589	27.000	30.076	33.000

BACKGROUND CORRECTED INTENSITIES

Identity 1 : Calibration blank Identity 2 : Type : CB
Weight : 1.0000 Volume : 1.00 Printed : 1:22:12 PM January 2, 2007

	Na589	Sc	Sc361
# 1	90.0	2509.0	2509.0
# 2	130.0	2494.0	2494.0
Mean	110.0	2501.5	2501.5
SD	28.3	10.6	10.6
%RSD	25.7	0.4	0.4

APPARENT CONCENTRATIONS

Identity 1 : Calibration blank Identity 2 : Type : CB
Weight : 1.0000 Volume : 1.00 Printed : 1:22:12 PM January 2, 2007

	Na589	Sc	Sc361
	ppm		ppm
# 1	0.0844	2509.000	99.1678
# 2	0.2010	2494.000	98.5734

EVOLUTION by Micro-Active Australia Pty Ltd

1:32:42 PM January 2, 2007

010076

Mean	0.1427	2501.500	98.8706
SD	0.0825	10.607	0.4203
%RSD	57.7930	0.424	0.4251

Checking calibration blank ...

Identity 1 : Calibration blank	Identity 2 :
Report name	CRDL Value
Na589	0.050 0.143 Contaminated
Sc361	0.000 98.871