

APPENDIX C.4

GROUNDWATER CHEMISTRY TESTS

NORTH ANNA COL

**DATA REPORT REV. 0
JANUARY 23, 2007**

MACTEC PROJECT NO. 6468-06-1472



**DOCUMENTATION OF TECHNICAL REVIEW
SUBCONTRACTOR WORK PRODUCT**

Project Name: North Anna COL

Project Number: 6468-06-1472

Project Manager: Steve Criscenzo

Project Principal: Al Tice

The report described below has been prepared by the named subcontractor retained in accordance with the MACTEC QAPD. The work and report have been reviewed by a MACTEC technically qualified person. Comments on the work or report, if any, have been satisfactorily addressed by the subcontractor. The attached report is approved in accordance with section QS-7 of MACTEC's QAPD

The information and data contained in the attached report are hereby released by MACTEC for project use.

REPORT : Analytical Report Project No. 6468-06-1472, North Anna, Lot #: F6K290160

January 4, 2007

SUBCONTRACTOR: Severn Trent Laboratories, Inc. (STL St. Louis)

DATE OF ACCEPTANCE : January 4, 2007

TECHNICAL REVIEWER: *Walter A. Shi*

PROJECT PRINCIPAL : J. Allan Tice

Note = Samples from OW 946 and 949/A2 1-19-07

DCN NA COL-192



3301 Atlantic Avenue, Raleigh, NC 27604



Client Dominion Power Laboratory STL - St. Louis

MACTEC Project 6468-06-1472 Data Report Number/Date lot # F6 K29016 / 1-2-07

1-4-2007
LSE
1-19-07

LABORATORY DATA REVIEW CHECKLIST

	<u>YES</u>	<u>NO</u>	<u>NOT APPLICABLE</u>
1. Laboratory analytical data report appears complete (all data results present for all samples submitted for analysis) and there are no apparent transcription errors:	✓	___	___
2. Samples analyzed within applicable holding times (based on date of sample collection):*	✓	___	___
3. Trip blanks, field blanks or laboratory method blanks are free of blank contamination:	___	✓ ^①	___
4. If field duplicate samples collected, calculated results meet Relative Percent Difference guidelines: **	___	___	✓
5. Surrogate recoveries (organic analyses only) within laboratory reported recovery acceptance ranges:	___	___	✓
6. If Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples required to meet project objectives, Percent Recoveries (%R) and Relative Percent Difference (RPD) within laboratory reported acceptance ranges:	___	✓ ^②	___
7. Reported detection limits meet project objectives (e.g., are capable of achieving applicable site standards):	✓	___	___
8. Completed Chain-Of-Custody received noting sample/custody seal condition (with airbill, if appropriate):	✓	___	___
9. Analytical costs within authorized budget for these services:	✓	___	___

COMMENTS: ^{estimated} ① Fluoride detected in samples and method blank @ concentrations below reporting limit but above MDLs
 ② MS + MSD samples showed QC recoveries b/c of matrix interference, QC passed on LC + LES samples.

Notes: 1. This checklist is intended for use with the laboratory reporting formats typical of most projects. If "no" is answered to one or more of the above checklist questions 1 through 7, a more detailed Data Validation may be required, and a person knowledgeable in Data Validation protocols should be consulted. This checklist should not be used if the project scope requires Data Validation from the onset.

2. * = Based upon EPA Guidance and the applicable analytical method references. See reverse side of checklist for details.

3. ** = Based upon EPA Guidance. Use these criteria on duplicate and sample results which exceed five times the reported detection limit. See reverse side of checklist for details.

Checked by: William A. Spivey Date: 1-19-07



STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Tel: 314 298 8566 Fax: 314 298 8757
www.stl-inc.com

ANALYTICAL REPORT

NORTH ANNA

Lot #: F6K290160

J. Allan Tyce

MACTEC Engineering & Consultin
3301 Atlantic Ave
Raleigh, NC 27604

SEVERN TRENT LABORATORIES, INC.


Terry Romanko
Project Manager

January 4, 2007

DCN NA COL 190

Case Narrative
LOT NUMBER: F6K290160

This report contains the analytical results for the two samples received under chain of custody by STL St. Louis on November 29, 2006. These samples are associated with your NORTH ANNA project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted on the following page.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by STL St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Anions (Bromide, Chloride, Fluoride, Sulfate) (MCAWW 300.0A)

The anion matrix spike solution contains all routine anions. Poor matrix spike recovery for Bromide in batch 6361318 and Fluoride in batch 6361320 is attributed to matrix interference. Spiking technique, sample preparation and method compliance is demonstrated by the remaining acceptable MS recoveries.

Affected Samples:

F6K290160 (1): 0W-949

F6K290160 (2): 0W-946

Nitrate-Nitrite (MCAWW 353.1)

When performing a sample dilution due to matrix interference, the surrogates and/or matrix spike compounds were diluted below reliable detection, making QC recoveries unreliable. A LCS and LCSD were performed to display precision and accuracy.

Affected Samples:

F6K290160 (1): 0W-949

There were no nonconformances or observations noted with any other analysis on this lot.

METHODS SUMMARY

F6K290160

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Alkalinity	MCAWW 310.1	MCAWW 310.1
Bromide	MCAWW 300.0A	MCAWW 300.0A
Chloride	MCAWW 300.0A	MCAWW 300.0A
Filterable Residue (TDS)	MCAWW 160.1	MCAWW 160.1
Fluoride	MCAWW 300.0A	MCAWW 300.0A
Nitrate-Nitrite	MCAWW 353.1	
Nitrogen, Ammonia	MCAWW 350.1	MCAWW 350.1
Sulfate	MCAWW 300.0A	MCAWW 300.0A

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes",
EPA-600/4-79-020, March 1983 and subsequent revisions.

SAMPLE SUMMARY

F6K290160

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
JKGJT	001	OW-949	11/28/06	15:30
JKGWD	002	OW-946	11/28/06	17:15

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: OW-949

General Chemistry

Lot-Sample #....: F6K290160-001 Work Order #....: JKGJT Matrix.....: WATER
 Date Sampled....: 11/28/06 15:30 Date Received...: 11/29/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Bromide	ND	0.25	mg/L	MCAWW 300.0A	12/26/06	6361318
		Dilution Factor: 1		Analysis Time...: 02:34		
Chloride	2.3	0.20	mg/L	MCAWW 300.0A	12/26/06	6361319
		Dilution Factor: 1		Analysis Time...: 02:34		
Fluoride	0.094 B,J	0.10	mg/L	MCAWW 300.0A	12/26/06	6361320
		Dilution Factor: 1		Analysis Time...: 02:34		
Nitrate/Nitrite as N	0.52	0.050	mg/L	MCAWW 353.1	12/04/06	6339055
		Dilution Factor: 1		Analysis Time...: 00:00		
Nitrogen, as Ammonia	ND	0.050	mg/L	MCAWW 350.1	12/07/06	6341275
		Dilution Factor: 1		Analysis Time...: 00:00		
Sulfate	2.9	0.50	mg/L	MCAWW 300.0A	12/26/06	6361321
		Dilution Factor: 1		Analysis Time...: 02:34		
Total Alkalinity	38.0	5.0	mg/L	MCAWW 310.1	12/11-12/13/06	6345302
		Dilution Factor: 1		Analysis Time...: 00:00		
Total Dissolved Solids	93.0	5.0	mg/L	MCAWW 160.1	12/02/06	6336108
		Dilution Factor: 1		Analysis Time...: 00:00		

NOTE(S) :

RL Reporting Limit

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

MACTEC Engineering and Consulting Inc

Client Sample ID: OW-946

General Chemistry

Lot-Sample #...: F6K290160-002 Work Order #...: JKGWD Matrix.....: WATER
 Date Sampled...: 11/28/06 17:15 Date Received...: 11/29/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Bromide	ND	0.25	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 04:25	12/26/06	6361318
Chloride	1.5	0.20	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 04:25	12/26/06	6361319
Fluoride	0.027 B,J	0.10	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 04:25	12/26/06	6361320
Nitrate/Nitrite as N	0.065	0.050	mg/L	MCAWW 353.1 Dilution Factor: 1 Analysis Time...: 00:00	12/06/06	6345250
Nitrogen, as Ammonia	ND	0.050	mg/L	MCAWW 350.1 Dilution Factor: 1 Analysis Time...: 00:00	12/07/06	6341275
Sulfate	0.69	0.50	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 04:25	12/26/06	6361321
Total Alkalinity	22.0	5.0	mg/L	MCAWW 310.1 Dilution Factor: 1 Analysis Time...: 00:00	12/11-12/13/06	6345302
Total Dissolved Solids	64.0	5.0	mg/L	MCAWW 160.1 Dilution Factor: 1 Analysis Time...: 00:00	12/02/06	6336108

NOTE(S) :

- RL Reporting Limit
- B Estimated result. Result is less than RL.
- J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

METHOD BLANK REPORT

General Chemistry

Client Lot #....: F6K290160

Matrix.....: WATER

PARAMETER	RESULT	REPORTING			METHOD	PREPARATION-	PREP
		LIMIT	UNITS			ANALYSIS DATE	BATCH #
Bromide	ND	Work Order #: JL74T1AA	MB Lot-Sample #: F6L270000-318				
		0.25	mg/L	MCAWW 300.0A	12/26/06		6361318
		Dilution Factor: 1		Analysis Time...: 01:31			
Chloride	ND	Work Order #: JL7401AA	MB Lot-Sample #: F6L270000-319				
		0.20	mg/L	MCAWW 300.0A	12/26/06		6361319
		Dilution Factor: 1		Analysis Time...: 01:31			
Fluoride	0.027 B	Work Order #: JL75A1AA	MB Lot-Sample #: F6L270000-320				
		0.10	mg/L	MCAWW 300.0A	12/26/06		6361320
		Dilution Factor: 1		Analysis Time...: 01:31			
Nitrate/Nitrite as N	ND	Work Order #: JKREL1AA	MB Lot-Sample #: F6L050000-055				
		0.050	mg/L	MCAWW 353.1	12/04/06		6339055
		Dilution Factor: 1		Analysis Time...: 00:00			
Nitrate/Nitrite as N	ND	Work Order #: JK7VE1AA	MB Lot-Sample #: F6L110000-250				
		0.050	mg/L	MCAWW 353.1	12/06/06		6345250
		Dilution Factor: 1		Analysis Time...: 00:00			
Nitrogen, as Ammonia	ND	Work Order #: JK04Q1AA	MB Lot-Sample #: F6L070000-275				
		0.050	mg/L	MCAWW 350.1	12/07/06		6341275
		Dilution Factor: 1		Analysis Time...: 00:00			
Sulfate	ND	Work Order #: JL75H1AA	MB Lot-Sample #: F6L270000-321				
		0.50	mg/L	MCAWW 300.0A	12/26/06		6361321
		Dilution Factor: 1		Analysis Time...: 01:31			
Total Alkalinity	ND	Work Order #: JLCRH1AA	MB Lot-Sample #: F6L110000-302				
		5.0	mg/L	MCAWW 310.1	12/11-12/13/06		6345302
		Dilution Factor: 1		Analysis Time...: 00:00			
Total Dissolved Solids	ND	Work Order #: JLMRX1AA	MB Lot-Sample #: F6L020000-108				
		5.0	mg/L	MCAWW 160.1	12/02/06		6336108
		Dilution Factor: 1		Analysis Time...: 00:00			

(Continued on next page)

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F6K290160

Matrix.....: WATER

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #....: F6K290160

Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Bromide	100	(90 - 110)			MCAWW 300.0A	12/26/06	6361318
	94	(90 - 110)	5.9	(0-20)	MCAWW 300.0A	12/26/06	6361318
			Dilution Factor: 1			Analysis Time...: 01:12	
Chloride	96	(90 - 110)			MCAWW 300.0A	12/26/06	6361319
	90	(90 - 110)	6.1	(0-20)	MCAWW 300.0A	12/26/06	6361319
			Dilution Factor: 1			Analysis Time...: 01:12	
Fluoride	96	(90 - 110)			MCAWW 300.0A	12/26/06	6361320
	96	(90 - 110)	0.07	(0-20)	MCAWW 300.0A	12/26/06	6361320
			Dilution Factor: 1			Analysis Time...: 01:12	
Nitrate/Nitrite as N	108	(90 - 110)			MCAWW 353.1	12/04/06	6339055
	107	(90 - 110)	0.82	(0-20)	MCAWW 353.1	12/04/06	6339055
			Dilution Factor: 1			Analysis Time...: 00:00	
Nitrate/Nitrite as N	99	(90 - 110)			MCAWW 353.1	12/06/06	6345250
	101	(90 - 110)	1.8	(0-20)	MCAWW 353.1	12/06/06	6345250
			Dilution Factor: 1			Analysis Time...: 00:00	
Sulfate	97	(90 - 110)			MCAWW 300.0A	12/26/06	6361321
	90	(90 - 110)	7.3	(0-20)	MCAWW 300.0A	12/26/06	6361321
			Dilution Factor: 1			Analysis Time...: 01:12	
Total Alkalinity	99	(90 - 110)			MCAWW 310.1	12/11-12/13/06	6345302
	99	(90 - 110)	0.0	(0-15)	MCAWW 310.1	12/11-12/13/06	6345302
			Dilution Factor: 1			Analysis Time...: 00:00	
Total Dissolved Solids	102	(90 - 110)			MCAWW 160.1	12/02/06	6336108
	102	(90 - 110)	0.39	(0-15)	MCAWW 160.1	12/02/06	6336108
			Dilution Factor: 1			Analysis Time...: 00:00	

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: F6K290160

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
------------------	-------------------------	------------------------	------------	-------------------	---------------	-----------------------------------	---------------------

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F6K290160

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrogen, as Ammonia	98	(90 - 110)	MCAWW 350.1	12/07/06	6341275
		Dilution Factor: 1		Analysis Time...: 00:00	

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #....: F6K290160

Matrix.....: WATER

Date Sampled...: 11/17/06 09:40 Date Received...: 11/18/06

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Nitrogen, as Ammonia			WO#:	JJ28E1E9-MS/JJ28E1FA-MSD	MS Lot-Sample #:	F6K180200-001	
	102	(90 - 110)			MCAWW 350.1	12/07/06	6341275
	100	(90 - 110)	1.5	(0-20)	MCAWW 350.1	12/07/06	6341275
			Dilution Factor: 1				
			Analysis Time...: 00:00				

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #....: F6K290160

Matrix.....: WATER

Date Sampled....: 11/28/06 15:30 Date Received...: 11/29/06

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Bromide	199 N	Work Order #....: JKGJT1AM (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K290160-001 12/26/06	6361318
		Dilution Factor: 1		Analysis Time...: 02:34	
Chloride	99	Work Order #....: JKGJT1AP (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K290160-001 12/26/06	6361319
		Dilution Factor: 1		Analysis Time...: 02:34	
Fluoride	0 N	Work Order #....: JKGJT1AR (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K290160-001 12/26/06	6361320
		Dilution Factor: 1		Analysis Time...: 02:34	
Nitrate/Nitrite as N	1130 N	Work Order #....: JKGRQ1CU (90 - 110)	MCAWW 353.1	MS Lot-Sample #: F6K290183-003 12/04/06	6339055
		Dilution Factor: 10		Analysis Time...: 00:00	
Sulfate	91	Work Order #....: JKGJT1AU (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K290160-001 12/26/06	6361321
		Dilution Factor: 1		Analysis Time...: 02:34	
Total Alkalinity	96	Work Order #....: JKGJT1AK (50 - 121)	MCAWW 310.1	MS Lot-Sample #: F6K290160-001 12/11-12/13/06	6345302
		Dilution Factor: 1		Analysis Time...: 00:00	

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F6K290160

Work Order #...: JKGRQ-SMP
JKGRQ-DUP

Matrix.....: WATER

Date Sampled...: 11/28/06 10:40

Date Received...: 11/29/06

<u>PARAM</u>	<u>RESULT</u>	<u>DUPLICATE</u> <u>RESULT</u>	<u>UNITS</u>	<u>RPD</u> <u>RPD</u>	<u>RPD</u> <u>LIMIT</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>PREP</u> <u>BATCH #</u>
Total Dissolved Solids						SD Lot-Sample #: F6K290183-003		
	307	302	mg/L	1.6	(0-15)	MCAWW 160.1	12/02/06	6336108
			Dilution Factor: 1			Analysis Time...: 00:00		
Nitrate/Nitrite as N						SD Lot-Sample #: F6K290183-003		
	4.4	4.4	mg/L	1.8	(0-20)	MCAWW 353.1	12/04/06	6339055
			Dilution Factor: 10			Analysis Time...: 00:00		

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #....: F6K290160

Work Order #....: JKGJT-SMP
JKGJT-DUP

Matrix.....: WATER

Date Sampled....: 11/28/06 15:30 Date Received...: 11/29/06

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Bromide	ND	ND	mg/L	0	(0-20)	SD Lot-Sample #: F6K290160-001 MCAWW 300.0A	12/26/06	6361318
						Dilution Factor: 1 Analysis Time...: 02:34		
Chloride	2.3	2.3	mg/L	0.18	(0-20)	SD Lot-Sample #: F6K290160-001 MCAWW 300.0A	12/26/06	6361319
						Dilution Factor: 1 Analysis Time...: 02:34		
Fluoride	0.094 B,J	0.11	mg/L	14	(0-20)	SD Lot-Sample #: F6K290160-001 MCAWW 300.0A	12/26/06	6361320
						Dilution Factor: 1 Analysis Time...: 02:34		
Sulfate	2.9	2.9	mg/L	0.91	(0-20)	SD Lot-Sample #: F6K290160-001 MCAWW 300.0A	12/26/06	6361321
						Dilution Factor: 1 Analysis Time...: 02:34		
Total Alkalinity	38.0	39.0	mg/L	2.6	(0-20)	SD Lot-Sample #: F6K290160-001 MCAWW 310.1	12/11-12/13/06	6345302
						Dilution Factor: 1 Analysis Time...: 00:00		

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

**SEVERN
TRENT
SERVICES**

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

STL Savannah *MACTEZ COFC
NA COL NA-14*

STL Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.stl-inc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location
*STL - ST. LOUIS
13715 RIDGE TRAIL NORTH
BENTON CITY, MO 63045*

Phone: *314-298-8566*
Fax: *314-298-8757*

PROJECT REFERENCE <i>NA COL</i>	PROJECT NO. <i>6468-06-1472</i>	PROJECT LOCATION (STATE) <i>VA</i>	MATRIX TYPE	REQUIRED ANALYSIS	PAGE <i>1</i>	OF <i>1</i>
STL (LAB) PROJECT MANAGER <i>TERRY ROMANKO</i>	P.O. NUMBER <i>TASK 04</i>	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...) <i>500 ml, poly, no pres.</i> <i>30.1, 300.0, 160.1</i> <i>500 ml poly, H2SO4</i> <i>353.1, 350.1</i>	STANDARD REPORT DELIVERY <input checked="" type="checkbox"/> DATE DUE _____ EXPEDITED REPORT DELIVERY (SURCHARGE) <input type="checkbox"/> DATE DUE _____ NUMBER OF COOLERS SUBMITTED PER SHIPMENT: <i>1</i>		
CLIENT (SITE) PM <i>STEVE MACTEZ CRISCENEO</i>	CLIENT PHONE <i>919-876-0416</i>	CLIENT FAX				
CLIENT NAME <i>MACTEZ</i>	CLIENT E-MAIL <i>mleav@mactec.com</i>					
CLIENT ADDRESS <i>3301 ATLANTIC AVE, RALEIGH, NC 27604</i>	COMPANY CONTRACTING THIS WORK (if applicable)					

SAMPLE		SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	NUMBER OF CONTAINERS SUBMITTED										REMARKS
DATE	TIME							1	2	3	4	5	6	7	8	9	10	
<i>11/28/06</i>	<i>1530</i>	<i>OW-949</i>	<input checked="" type="checkbox"/>					<i>1</i>	<i>1</i>									<i>TOTAL DISSOLVED SOLIDS METHOD 160.1</i>
<i>11/28/06</i>	<i>1715</i>	<i>OW-946</i>	<input checked="" type="checkbox"/>					<i>1</i>	<i>1</i>									<i>INORGANIC IONS (BROMIDE, CHLORIDE, FLUORIDE, SULFATE) METHOD 300.0</i>
																		<i>ALKALINITY (BICARBONATE & CARBONATE) METHOD 310.1</i>
																		<i>AMMONIA METHOD 350.1</i>
																		<i>NITRATE/NITRITE METHOD 353.1</i>
		<i>SAMPLE DISPOSAL = BY LAB</i>																

RELINQUISHED BY: (SIGNATURE) EMPTY CONTAINERS	DATE <i>11/28/06</i>	TIME <i>18:00</i>	RELINQUISHED BY: (SIGNATURE) <i>J. Joseph Wall</i>	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE) EMPTY CONTAINERS	DATE	TIME	RECEIVED BY: (SIGNATURE) <i>B. [Signature]</i>	DATE <i>11/29/06</i>	TIME <i>09:00</i>	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY							
RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES <input type="radio"/> NO <input type="radio"/>	CUSTODY SEAL NO.	STL SAVANNAH LOG NO.	LABORATORY REMARKS	

ORIGINAL -- RETURN TO LABORATORY WITH SAMPLE(S)

F6K290160

CLIENT ANALYSIS SUMMARY

Storage Loc: 2-100
 Date Received: 2006-11-29
 Analytical Due Date: 2006-12-11
 Report Due Date: 2006-12-13
 Report Type: B Standard Report
 EDD Code: 00

Project Manager: TJR
 Project: NORTH ANNA
 O#: 66813
 Client: 373886 MACTEC Engineering and Consulting Inc

Quote #: 71966 SDG:
 Report to: Mike Depalma

#SMPS in LOT: 2

SAMPLE #	CLIENT SAMPLE ID	DATE/TIME SAMPLED	WORKORDER	I
1	0W-949	2006-11-28 / 1530	JKGJT	WATER
<u>SAMPLE COMMENTS:</u>				
XX AK	MCAW 160.1 W	Solids, Filterable "TDS" (160.1)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX C8	MCAW 300.0A W	Fluoride (300.0A, Ion Chromatography)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX CX	MCAW 300.0A W	Chloride (300.0A, Ion Chromatography)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX CY	MCAW 300.0A W	Sulfate (300.0A, Ion Chromatography)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX GM	MCAW 300.0A W	Bromide (300.0A, Ion Chromatography)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX HN	MCAW 353.1 W	Nitrate-Nitrite (353.1)	23 REDUCTION	01 STANDARD TEST SET PROT: A WRK LOC 06
XX VC	MCAW 310.1 W	Alkalinity, Total (310.1)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX VM	MCAW 350.1 W	Nitrogen, Ammonia (350.1, Automated)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06

SAMPLE #	CLIENT SAMPLE ID	DATE/TIME SAMPLED	WORKORDER	I
2	0W-946	2006-11-28 / 1715	JKGWD	WATER
<u>SAMPLE COMMENTS:</u>				
XX AK	MCAW 160.1 W	Solids, Filterable "TDS" (160.1)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX C8	MCAW 300.0A W	Fluoride (300.0A, Ion Chromatography)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX CX	MCAW 300.0A W	Chloride (300.0A, Ion Chromatography)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX CY	MCAW 300.0A W	Sulfate (300.0A, Ion Chromatography)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX GM	MCAW 300.0A W	Bromide (300.0A, Ion Chromatography)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX HN	MCAW 353.1 W	Nitrate-Nitrite (353.1)	23 REDUCTION	01 STANDARD TEST SET PROT: A WRK LOC 06
XX VC	MCAW 310.1 W	Alkalinity, Total (310.1)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06
XX VM	MCAW 350.1 W	Nitrogen, Ammonia (350.1, Automated)	88 NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET PROT: A WRK LOC 06

F6K290160

CLIENT COMMENTS SUMMARY

Project Manager: TJR

Quote #: 71966 SDG:

Project:

NORTH ANNA

PO#: 66813

Report to: Mike Depalma

Client: 373886 MACTEC Engineering and Consulting Inc

#SMPS in LOT: 2

Storage Loc: 2-100

Date Received: 2006-11-29

Analytical Due Date: 2006-12-11

Report Due Date: 2006-12-13

Report Type: B Standard Report

EDD Code: 00



DOCUMENTATION OF TECHNICAL REVIEW
SUBCONTRACTOR WORK PRODUCT

Project Name: Dominion North Anna COL

Project Number: 6468-06-1472

Project Manager: Steve Criscenzo

Project Principal: Al Tice

The report described below has been prepared by the named subcontractor retained in accordance with the MACTEC QAPD. The work and report have been reviewed by a MACTEC technically qualified person. Comments on the work or report, if any, have been satisfactorily addressed by the subcontractor. The attached report is approved in accordance with section QS-7 of MACTEC's QAPD

The information and data contained in the attached report are hereby released by MACTEC for project use.

REPORT: Analytical Report, North Anna COL, Lot # F6K170278
dated December 18, 2006

SUBCONTRACTOR: STL - St. Louis

DATE OF ACCEPTANCE: 12-19-06

TECHNICAL REVIEWER: William A. King

PROJECT PRINCIPAL Al Tice

NOTE - Samples from OW 901 and OW 950

DCN NA COL-179



3301 Atlantic Avenue, Raleigh, NC 27604

1064



Client Domestic Power Laboratory STL - St. Louis

MACTEC Project 6468-06-1472 Data Report Number/Date Lot # FBK170278/12-18

LABORATORY DATA REVIEW CHECKLIST

YES **NO** **NOT APPLICABLE**

1. Laboratory analytical data report appears complete (all data results present for all samples submitted for analysis) and there are no apparent transcription errors:

YES NO NOT APPLICABLE

2. Samples analyzed within applicable holding times (based on date of sample collection):*

YES NO ^① NOT APPLICABLE

3. Trip blanks, field blanks or laboratory method blanks are free of blank contamination:

YES NO NOT APPLICABLE

4. If field duplicate samples collected, calculated results meet Relative Percent Difference guidelines: **

YES NO NOT APPLICABLE

5. Surrogate recoveries (organic analyses only) within laboratory reported recovery acceptance ranges:

YES NO NOT APPLICABLE

6. If Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples required to meet project objectives, Percent Recoveries (%R) and Relative Percent Difference (RPD) within laboratory reported acceptance ranges:

YES NO ^② NOT APPLICABLE

7. Reported detection limits meet project objectives (e.g., are capable of achieving applicable site standards):

YES NO NOT APPLICABLE

8. Completed Chain-Of-Custody received noting sample/custody seal condition (with airbill, if appropriate):

YES NO NOT APPLICABLE

9. Analytical costs within authorized budget for these services:

YES NO NOT APPLICABLE
WST 11/18/06

COMMENTS: ^① Nitrate and nitrite were tested outside of the 48-hour hold time for both samples (LOW-901 and LOW-950).

^② LCS results within limits; Matrix Spike for Nitrogen, Bromide, Fluoride, Nitrate, nitrate/nitrite, and nitrite outside QL limits. Lab duplicate results for TDS and nitrate/nitrite, nitrate, and nitrite outside QL limits.

Notes: 1. This checklist is intended for use with the laboratory reporting formats typical of most projects. If "no" is answered to one or more of the above checklist questions 1 through 7, a more detailed Data Validation may be required, and a person knowledgeable in Data Validation protocols should be consulted. This checklist should not be used if the project scope requires Data Validation from the onset.

2. * = Based upon EPA Guidance and the applicable analytical method references. See reverse side of checklist for details.

3. ** = Based upon EPA Guidance. Use these criteria on duplicate and sample results which exceed five times the reported detection limit. See reverse side of checklist for details.

Checked by: William D. Klein Date: 11-18-06

GENERAL DATA REVIEW CRITERIA

Typical Holding Times for Water Samples:*

Volatile Organic Compounds (EPA Method 8260/624)

Semi-volatile Organic Compounds (EPA Method 8270)

Pesticides/PCBs (EPA Method 8081/8082)

Metals (except Mercury)

Mercury

Cyanide

14 days to analysis when preserved with HCl
(7 days if not preserved)

7 days to extraction, 40 days to analysis

7 days to extraction, 40 days to analysis

180 days to analysis when preserved with HNO₃

28 days to analysis

14 days to analysis

Typical Relative Percent Difference (RPD) Guidelines:**

Volatile Organic Compounds (EPA Method 8260/624)

Semi-volatile Organic Compounds (EPA Method 8270)

Pesticides/PCBs (EPA Method 8081/8082)

Metals and Cyanide

<u>Aqueous</u>	<u>Soil</u>
<30	<50
<30	<50
<30	<50
<30	<50

Notes:

RPD calculated as:

$$RPD = [|A-B|] / [(A+B)/2] \times 100$$

where:

RPD = Relative Percent Difference

A = Sample Result

B = Duplicate Sample Result

* = Based upon EPA Guidance and the applicable analytical method references.

** = Based upon EPA Guidance. Use these criteria on duplicate and sample results that exceed five times the reported detection limit.

MACTEC

TELECON RECORD

Date: 12-19-06 Time: 1335

Grimes of MACTEC Placed () call.

Received () call.

Talked To: Terry Romano Of: STL - St. Louis

Concerning: North Anna

Phone No.: _____

Message:

^{STL 12-19-06}
(1) Ormatix Spike Sample tested DL for general analysis. LGS were the samples passed/validated based on LGS return-yes? Yes

(2) Case narrative - nitrate/nitrite listed as non-homogeneous sample - how? OK, can have floccules or residues

(3) Nitrogen as Ammonia - ms sample tested DL, LGS used to validate? Yes

(4) According to Actuate listed in test methods - Nitrate / 48 Hr hold - tests conducted outside of nitrate hold time if not qualified.

↳ out of hold, but not work, not requested in DL

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Tel: 314 298 8566 Fax: 314 298 8757
www.stl-inc.com

ANALYTICAL REPORT


NORTH ANNA COL

Lot #: F6K170278

J. Allan Tyce

MACTEC Engineering & Consultin
3301 Atlantic Ave
Raleigh, NC 27604

SEVERN TRENT LABORATORIES, INC.


Terry Romanko
Project Manager

December 18, 2006

DCN NA COL 178

Case Narrative
LOT NUMBER: F6K170278

This report contains the analytical results for the two samples received under chain of custody by STL St. Louis on November 17, 2006. These samples are associated with your NORTH ANNA COL project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted on the following page.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by STL St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Anions (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Sulfate) (MCAWW 300.0A)

The anion matrix spike solution contains all routine anions. Spiking technique, sample preparation and method compliance is demonstrated by the remaining acceptable MS recoveries. Poor matrix spike recovery Bromide in batch 6341065, Fluoride in batch 6341067, Nitrate in batch 6341068, and Nitrite in batch 6341069 is attributed to matrix interference.

The sample duplicate %RPD for Nitrate in batch 6341068 and Nitrite in batch 6341069 is outside the established QC limits. A matrix interference is physically evident in the sample. Method performance is demonstrated by acceptable LCS recovery.

Affected Samples:

F6K170278 (1): OW-950

F6K170278 (2): OW-901

Nitrate/Nitrite as N (MCAWW 353.1)

The MS recovery for Nitrate is outside the established QC limits. A matrix interference is physically evident in the sample. Method performance is demonstrated by acceptable LCS/LCSD recoveries. The RPD is not within method acceptance criteria. The sample is non-homogeneous. Method performance is demonstrated by acceptable LCS/LCSD recovery and RPD.

Affected Samples:

F6K170278 (1): OW-950

F6K170278 (2): OW-901

Nitrogen, as Ammonia (MCAWW 350.1)

When performing a sample dilution due to high concentrations of target analytes, the matrix spike was diluted below reliable detection, making QC recoveries unreliable.

Affected Samples:

F6K170278 (1): OW-950

F6K170278 (2): OW-901

There were no nonconformances or observations noted with any other analysis on this lot.

FILE NO. 10010

METHODS SUMMARY

F6K170278

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Alkalinity	MCAWW 310.1	MCAWW 310.1
Bromide	MCAWW 300.0A	MCAWW 300.0A
Chloride	MCAWW 300.0A	MCAWW 300.0A
Filterable Residue (TDS)	MCAWW 160.1	MCAWW 160.1
Fluoride	MCAWW 300.0A	MCAWW 300.0A
Nitrate as N	MCAWW 300.0A	MCAWW 300.0A
Nitrate-Nitrite	MCAWW 353.1	
Nitrite as N	MCAWW 300.0A	MCAWW 300.0A
Nitrogen, Ammonia	MCAWW 350.1	MCAWW 350.1
Sulfate	MCAWW 300.0A	MCAWW 300.0A

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes",
EPA-600/4-79-020, March 1983 and subsequent revisions.

SAMPLE SUMMARY

F6K170278

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
JJ02X	001	OW-950	11/16/06	12:10
JJ029	002	OW-901	11/16/06	14:55

NOTE (S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: OW-950

General Chemistry

Lot-Sample #...: F6K170278-001 Work Order #...: JJ02X Matrix.....: WATER
 Date Sampled...: 11/16/06 12:10 Date Received...: 11/17/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Bromide	ND	0.25	mg/L	MCAWW 300.0A	12/01/06	6341065
		Dilution Factor: 1		Analysis Time...: 08:27		
Chloride	25.3	2.0	mg/L	MCAWW 300.0A	12/01/06	6341066
		Dilution Factor: 10		Analysis Time...: 09:19		
Fluoride	0.14	0.10	mg/L	MCAWW 300.0A	12/01/06	6341067
		Dilution Factor: 1		Analysis Time...: 08:27		
Nitrate	0.32	0.020	mg/L	MCAWW 300.0A	12/01/06	6341068
		Dilution Factor: 1		Analysis Time...: 08:27		
Nitrate/Nitrite as N	0.65	0.050	mg/L	MCAWW 353.1	12/04/06	6339052
		Dilution Factor: 1		Analysis Time...: 00:00		
Nitrite	0.13	0.020	mg/L	MCAWW 300.0A	12/01/06	6341069
		Dilution Factor: 1		Analysis Time...: 08:27		
Nitrogen, as Ammonia	0.14	0.050	mg/L	MCAWW 350.1	12/08/06	6349319
		Dilution Factor: 1		Analysis Time...: 00:00		
Sulfate	17.2	5.0	mg/L	MCAWW 300.0A	12/01/06	6341070
		Dilution Factor: 10		Analysis Time...: 09:19		
Total Alkalinity	71.0	5.0	mg/L	MCAWW 310.1	11/30-12/02/06	6334286
		Dilution Factor: 1		Analysis Time...: 00:00		
Total Dissolved Solids	162	5.0	mg/L	MCAWW 160.1	11/20/06	6334178
		Dilution Factor: 1		Analysis Time...: 00:00		

MACTEC Engineering and Consulting Inc

Client Sample ID: OW-901

General Chemistry

Lot-Sample #...: F6K170278-002 Work Order #...: JJ029 Matrix.....: WATER
 Date Sampled...: 11/16/06 14:55 Date Received...: 11/17/06

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Bromide	ND	0.25	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 10:47	12/01/06	6341065
Chloride	8.8	2.0	mg/L	MCAWW 300.0A Dilution Factor: 10 Analysis Time...: 11:04	12/01/06	6341066
Fluoride	0.12	0.10	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 10:47	12/01/06	6341067
Nitrate	0.13	0.020	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 10:47	12/01/06	6341068
Nitrate/Nitrite as N	0.19	0.050	mg/L	MCAWW 353.1 Dilution Factor: 1 Analysis Time...: 00:00	12/04/06	6339052
Nitrite	0.30	0.020	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 10:47	12/01/06	6341069
Nitrogen, as Ammonia	0.14	0.050	mg/L	MCAWW 350.1 Dilution Factor: 1 Analysis Time...: 00:00	12/08/06	6349319
Sulfate	2.1	0.50	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 10:47	12/01/06	6341070
Total Alkalinity	74.0	5.0	mg/L	MCAWW 310.1 Dilution Factor: 1 Analysis Time...: 00:00	11/30-12/02/06	6334286
Total Dissolved Solids	133	5.0	mg/L	MCAWW 160.1 Dilution Factor: 1 Analysis Time...: 00:00	11/20/06	6334178

METHOD BLANK REPORT

General Chemistry

Client Lot #....: F6K170278

Matrix.....: WATER

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION-	PREP
		LIMIT	UNITS		ANALYSIS DATE	BATCH #
Bromide	ND	Work Order #: JK0JX1AA 0.25	mg/L	MB Lot-Sample #: F6L070000-065 MCAWW 300.0A	12/01/06	6341065
		Dilution Factor: 1		Analysis Time...: 06:25		
Chloride	ND	Work Order #: JK0J01AA 0.20	mg/L	MB Lot-Sample #: F6L070000-066 MCAWW 300.0A	12/01/06	6341066
		Dilution Factor: 1		Analysis Time...: 06:25		
Fluoride	ND	Work Order #: JK0J11AA 0.10	mg/L	MB Lot-Sample #: F6L070000-067 MCAWW 300.0A	12/01/06	6341067
		Dilution Factor: 1		Analysis Time...: 06:25		
Nitrate	ND	Work Order #: JK0J21AA 0.020	mg/L	MB Lot-Sample #: F6L070000-068 MCAWW 300.0A	12/01/06	6341068
		Dilution Factor: 1		Analysis Time...: 06:25		
Nitrate/Nitrite as N	ND	Work Order #: JKREF1AA 0.050	mg/L	MB Lot-Sample #: F6L050000-052 MCAWW 353.1	12/04/06	6339052
		Dilution Factor: 1		Analysis Time...: 00:00		
Nitrite	ND	Work Order #: JK0J31AA 0.020	mg/L	MB Lot-Sample #: F6L070000-069 MCAWW 300.0A	12/01/06	6341069
		Dilution Factor: 1		Analysis Time...: 06:25		
Nitrogen, as Ammonia	ND	Work Order #: JLKM11AA 0.050	mg/L	MB Lot-Sample #: F6L150000-319 MCAWW 350.1	12/08/06	6349319
		Dilution Factor: 1		Analysis Time...: 00:00		
Sulfate	ND	Work Order #: JK0J51AA 0.50	mg/L	MB Lot-Sample #: F6L070000-070 MCAWW 300.0A	12/01/06	6341070
		Dilution Factor: 1		Analysis Time...: 06:25		
Total Alkalinity	ND	Work Order #: JKN151AA 5.0	mg/L	MB Lot-Sample #: F6K300000-286 MCAWW 310.1	11/30-12/02/06	6334286
		Dilution Factor: 1		Analysis Time...: 00:00		

(Continued on next page)

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F6K170278

Matrix.....: WATER

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Total Dissolved Solids	ND	5.0	mg/L	MCAWW 160.1	11/20/06	6334178
Work Order #: JKH971AA MB Lot-Sample #: F6K300000-178 Dilution Factor: 1 Analysis Time...: 00:00						

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: F6K170278

Matrix.....: WATER

PARAMETER	PERCENT	RECOVERY	RPD		METHOD	PREPARATION-	PREP	
	RECOVERY	LIMITS	RPD	LIMITS		ANALYSIS DATE	BATCH #	
Bromide		WO#:JKOJX1AC-LCS/JKOJX1AD-LCSD LCS Lot-Sample#: F6L070000-065						
	100	(90 - 110)			MCAWW 300.0A	12/01/06	6341065	
	94	(90 - 110)	5.6	(0-20)	MCAWW 300.0A	12/01/06	6341065	
		Dilution Factor: 1		Analysis Time...: 06:08				
Chloride		WO#:JKOJ01AC-LCS/JKOJ01AD-LCSD LCS Lot-Sample#: F6L070000-066						
	99	(90 - 110)			MCAWW 300.0A	12/01/06	6341066	
	101	(90 - 110)	2.2	(0-20)	MCAWW 300.0A	12/01/06	6341066	
		Dilution Factor: 1		Analysis Time...: 06:08				
Fluoride		WO#:JKOJ11AC-LCS/JKOJ11AD-LCSD LCS Lot-Sample#: F6L070000-067						
	99	(90 - 110)			MCAWW 300.0A	12/01/06	6341067	
	100	(90 - 110)	0.67	(0-20)	MCAWW 300.0A	12/01/06	6341067	
		Dilution Factor: 1		Analysis Time...: 06:08				
Nitrate		WO#:JKOJ21AC-LCS/JKOJ21AD-LCSD LCS Lot-Sample#: F6L070000-068						
	102	(90 - 110)			MCAWW 300.0A	12/01/06	6341068	
	98	(90 - 110)	4.6	(0-20)	MCAWW 300.0A	12/01/06	6341068	
		Dilution Factor: 1		Analysis Time...: 06:08				
Nitrate/Nitrite as N		WO#:JKREF1AC-LCS/JKREF1AD-LCSD LCS Lot-Sample#: F6L050000-052						
	100	(90 - 110)			MCAWW 353.1	12/04/06	6339052	
	109	(90 - 110)	8.2	(0-20)	MCAWW 353.1	12/04/06	6339052	
		Dilution Factor: 1		Analysis Time...: 00:00				
Nitrite		WO#:JKOJ31AC-LCS/JKOJ31AD-LCSD LCS Lot-Sample#: F6L070000-069						
	104	(90 - 110)			MCAWW 300.0A	12/01/06	6341069	
	101	(90 - 110)	3.2	(0-20)	MCAWW 300.0A	12/01/06	6341069	
		Dilution Factor: 1		Analysis Time...: 06:08				
Sulfate		WO#:JKOJ51AC-LCS/JKOJ51AD-LCSD LCS Lot-Sample#: F6L070000-070						
	97	(90 - 110)			MCAWW 300.0A	12/01/06	6341070	
	98	(90 - 110)	0.84	(0-20)	MCAWW 300.0A	12/01/06	6341070	
		Dilution Factor: 1		Analysis Time...: 06:08				
Total Alkalinity		WO#:JKN151AC-LCS/JKN151AD-LCSD LCS Lot-Sample#: F6K300000-286						
	100	(90 - 110)			MCAWW 310.1	11/30-12/02/06	6334286	
	100	(90 - 110)	0.0	(0-15)	MCAWW 310.1	11/30-12/02/06	6334286	
		Dilution Factor: 1		Analysis Time...: 00:00				

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #....: F6K170278

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Total Dissolved Solids			WO#:JKH971AC-LCS/JKH971AD-LCSD LCS Lot-Sample#: F6K300000-178				
	92	(90 - 110)			MCAWW 160.1	11/20/06	6334178
	97	(90 - 110)	4.7	(0-15)	MCAWW 160.1	11/20/06	6334178
			Dilution Factor: 1		Analysis Time...: 00:00		

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F6K170278

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrogen, as Ammonia	103	Work Order #: JLKML1AC (90 - 110)	LCS Lot-Sample#: F6L150000-319 MCAWW 350.1	12/08/06	6349319
		Dilution Factor: 1		Analysis Time.: 00:00	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F6K170278

Matrix.....: WATER

Date Sampled...: 12/01/06 14:30 Date Received...: 12/02/06

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrogen, as Ammonia			WO#:	JKPN51HC-MS/JKPN51HD-MSD	MS Lot-Sample #:	F6L020205-006	
	0.0 N	(90 - 110)			MCAWW 350.1	12/08/06	6349319
	2880 N	(90 - 110)	0.0	(0-20)	MCAWW 350.1	12/08/06	6349319
			Dilution Factor: 1				
			Analysis Time...: 00:00				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F6K170278

Matrix.....: WATER

Date Sampled...: 11/16/06 12:10 Date Received...: 11/17/06

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Bromide	236 N	Work Order #...: JJ02X1AM (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K170278-001 12/01/06	6341065
		Dilution Factor: 1		Analysis Time...: 08:27	
Chloride	97	Work Order #...: JJ02X1AP (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K170278-001 12/01/06	6341066
		Dilution Factor: 10		Analysis Time...: 09:19	
Fluoride	134 N	Work Order #...: JJ02X1AR (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K170278-001 12/01/06	6341067
		Dilution Factor: 1		Analysis Time...: 08:27	
Nitrate	214 N	Work Order #...: JJ02X1AU (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K170278-001 12/01/06	6341068
		Dilution Factor: 1		Analysis Time...: 08:27	
Nitrate/Nitrite as N	42 N	Work Order #...: JJCRL1AJ (90 - 110)	MCAWW 353.1	MS Lot-Sample #: F6K090297-001 12/04/06	6339052
		Dilution Factor: 1		Analysis Time...: 00:00	
Nitrite	437 N	Work Order #...: JJ02X1AW (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K170278-001 12/01/06	6341069
		Dilution Factor: 1		Analysis Time...: 08:27	
Sulfate	95	Work Order #...: JJ02X1A0 (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K170278-001 12/01/06	6341070
		Dilution Factor: 10		Analysis Time...: 09:19	
Total Alkalinity	101	Work Order #...: JJ27W1AN (50 - 121)	MCAWW 310.1	MS Lot-Sample #: F6K180195-002 11/30-12/02/06	6334286
		Dilution Factor: 1		Analysis Time...: 00:00	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

SIL 51. 10015

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F6K170278 Work Order #...: JJ27W-SMP Matrix.....: WATER

JJ27W-DUP

Date Sampled...: 11/17/06 15:08 Date Received...: 11/18/06

<u>PARAM</u>	<u>RESULT</u>	<u>DUPLICATE</u> <u>RESULT</u>	<u>UNITS</u>	<u>RPD</u> <u>RPD</u>	<u>RPD</u> <u>LIMIT</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>PREP</u> <u>BATCH #</u>
Total Dissolved Solids	72.0	80.0	mg/L	11	(0-0.0)	MCAWW 160.1	11/20/06	6334178
				Dilution Factor: 1		Analysis Time...: 00:00		
						SD Lot-Sample #: F6K180195-002		
Total Alkalinity	25.0	24.0	mg/L	4.1	(0-20)	MCAWW 310.1	11/30-12/02/06	6334286
				Dilution Factor: 1		Analysis Time...: 00:00		
						SD Lot-Sample #: F6K180195-002		

SIE ST. LOUIS

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F6K170278

Work Order #...: JJCRL-SMP
JJCRL-DUP

Matrix.....: WATER

Date Sampled...: 11/07/06 08:32

Date Received...: 11/09/06

<u>PARAM</u>	<u>RESULT</u>	<u>DUPLICATE</u> <u>RESULT</u>	<u>UNITS</u>	<u>RPD</u>	<u>RPD</u> <u>LIMIT</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>PREP</u> <u>BATCH #</u>
Nitrate/Nitrite as N	0.094	ND	mg/L	200	(0-20)	MCAWW 353.1	12/04/06	6339052
			Dilution Factor: 1			Analysis Time...: 00:00		

LOT# F6K170278

Chain of Custody Record

SEVERN
TRENT

STL

Severn Trent Laboratories, Inc.

MACTEC North ANNA COL COC = NA-11

STL-4124 (0901)

Client MACTEC	Project Manager Steve Criscenzo	Date 11-16-06	Chain of Custody Number 321998
Address 3301 Atlantic Avenue	Telephone Number (Area Code)/Fax Number 919-876-0416	Lab Number	Page 1 of 1

City Raleigh	State NC	Zip Code 27604	Site Contact Kim Charlo-Smith	Lab Contact Terry Romanko	Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt
Project Name and Location (State) North ANNA COL			Carrier/Waybill Number Fed Ex. 8582 9218 4021			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix				Containers & Preservatives						Analysis	Special Instructions/ Conditions of Receipt	
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	Zinc			NaOH
OW-950	11/16/06	1210		X				X	X						Total Dissolved Solids method 160.1 Fragenic ions (Boride Chloride, Fluoride, Sulfide method 300.0 Alkalinity (bicarbonate- carbonate method 310.1 Ammonia Method 350.1 Nitrate/Nitrite Method 353.1
OW-901	11/16/06	1455		X				X	X						

Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal: Return To Client Disposal By Lab Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: 24 Hours 48 Hours 7 Days 14 Days 21 Days Other **Stand**

QC Requirements (Specify)

1. Relinquished By Kim Charlo-Smith	Date 11/16/06	Time 1620	1. Received By B-S	Date 11/17/06	Time 0900
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

17 OF 18



**DOCUMENTATION OF TECHNICAL REVIEW
SUBCONTRACTOR WORK PRODUCT**

Project Name: North Anna COL

Project Number: 6468-06-1472

Project Manager: Steve Criscenzo

Project Principal: Al Tice

The report described below has been prepared by the named subcontractor retained in accordance with the MACTEC QAPD. The work and report have been reviewed by a MACTEC technically qualified person. Comments on the work or report, if any, have been satisfactorily addressed by the subcontractor. The attached report is approved in accordance with section QS-7 of MACTEC's QAPD

The information and data contained in the attached report are hereby released by MACTEC for project use.

REPORT : Analytical Report Project No. 6468-06-1472, North Anna, Lot #: F6K180195

December 22, 2006

SUBCONTRACTOR: Severn Trent Laboratories, Inc. (STL St. Louis)

DATE OF ACCEPTANCE : January 19, 2007

TECHNICAL REVIEWER: William J. Thini

PROJECT PRINCIPAL : J. Allan Tice

*Note - Samples from OW945, OW947 and OW951
JAT 1-19-07*

DCN NA COL- 193



3301 Atlantic Avenue, Raleigh, NC 27604



Client Dominion Power

Laboratory STL - St. Louis

MACTEC Project 6468-06-1472

Data Report Number/Date Lot # FBK180195 / 12-22-2006

Amended Review Based on Final Report

LABORATORY DATA REVIEW CHECKLIST

	<u>YES</u>	<u>NO</u>	<u>NOT APPLICABLE</u>
1. Laboratory analytical data report appears complete (all data results present for all samples submitted for analysis) and there are no apparent transcription errors:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Samples analyzed within applicable holding times (based on date of sample collection):*	<input type="checkbox"/>	<input checked="" type="checkbox"/> (D)	<input type="checkbox"/>
3. Trip blanks, field blanks or laboratory method blanks are free of blank contamination:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. If field duplicate samples collected, calculated results meet Relative Percent Difference guidelines: **	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Surrogate recoveries (organic analyses only) within laboratory reported recovery acceptance ranges:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. If Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples required to meet project objectives, Percent Recoveries (%R) and Relative Percent Difference (RPD) within laboratory reported acceptance ranges:	<input type="checkbox"/>	<input checked="" type="checkbox"/> (D)	<input type="checkbox"/>
7. Reported detection limits meet project objectives (e.g., are capable of achieving applicable site standards):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Completed Chain-Of-Custody received noting sample/custody seal condition (with airbill, if appropriate):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Analytical costs within authorized budget for these services:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS: (1) Tests originally run within Hold Time, but equipment malfunction resulted in invalid results. Tests rerun out of hold.

Nonconformance and Corrective Action Report (NCR-NCA-18) determined results usable as is. NCR-NCA-18 also approved the use of 1 sample for reanalysis outside of Hold Time due to use of an expired reagent. (2) MS + MSD samples for several analytes failed QC criteria. Sample results validate.

- Notes:
- This checklist is intended for use with the laboratory reporting formats typical of most projects. If "no" is answered to one or more of the above checklist questions 1 through 7, a more detailed Data Validation may be required, and a person knowledgeable in Data Validation protocols should be consulted. This checklist should not be used if the project scope requires Data Validation from the onset.
 - * = Based upon EPA Guidance and the applicable analytical method references. See reverse side of checklist for details.
 - ** = Based upon EPA Guidance. Use these criteria on duplicate and sample results which exceed five times the reported detection limit. See reverse side of checklist for details.

Checked by: William H. King Date: 1.19.07



Client Dominion Power Laboratory STL - St. Louis

MACTEC Project 6468-06-1472 Data Report Number/Date Lot # F6K180195 / 12-18-2

Partial - Draft Rpt.

LABORATORY DATA REVIEW CHECKLIST

	<u>YES</u>	<u>NO</u>	<u>NOT APPLICABLE</u>
1. Laboratory analytical data report appears complete (all data results present for all samples submitted for analysis) and there are no apparent transcription errors:	___	✓ ^①	___
2. Samples analyzed within applicable holding times (based on date of sample collection):*	✓	___	___
3. Trip blanks, field blanks or laboratory method blanks are free of blank contamination:	✓	___	___
4. If field duplicate samples collected, calculated results meet Relative Percent Difference guidelines:**	___	___	✓
5. Surrogate recoveries (organic analyses only) within laboratory reported recovery acceptance ranges:	___	___	✓
6. If Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples required to meet project objectives, Percent Recoveries (%R) and Relative Percent Difference (RPD) within laboratory reported acceptance ranges:	___	✓ ^②	___
7. Reported detection limits meet project objectives (e.g.: are capable of achieving applicable site standards):	✓	___	___
8. Completed Chain-Of-Custody received noting sample/custody seal condition (with airbill, if appropriate):	___	✓ ^③	___
9. Analytical costs within authorized budget for these services:	___	___	✓

Answers Based on Data provided, subject to change w/ final Lab Reports

COMMENTS: ① missing results - all, draft report. ② matrix spike sample for nitrogen as ammonia, nitrate/nitrite and lab duplicates
For TDS and nitrate/nitrite outside RL limits ③ draft report, missing COL - should be in final

- Notes: 1. This checklist is intended for use with the laboratory reporting formats typical of most projects. If "no" is answered to one or more of the above checklist questions 1 through 7, a more detailed Data Validation may be required, and a person knowledgeable in Data Validation protocols should be consulted. This checklist should not be used if the project scope requires Data Validation from the onset.
2. * = Based upon EPA Guidance and the applicable analytical method references. See reverse side of checklist for details.
3. ** = Based upon EPA Guidance. Use these criteria on duplicate and sample results which exceed five times the reported detection limit. See reverse side of checklist for details.

Checked by: Willie A. Pin Date: 12-18-20



STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Tel: 314 298 8566 Fax: 314 298 8757
www.stl-inc.com

ANALYTICAL REPORT

*This base NA
for 12/20/06*

North Anna COL

Lot #: F6K180195

Mike Sufnarski

MACTEC Engineering & Consultin
2801 Yorkmont Rd
Suite 100
Charlotte, NC 28208

SEVERN TRENT LABORATORIES, INC.

Angelo P. Bufalino

for
Terry Romanko
Project Manager

December 22, 2006

DCN NA 191



STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Tel: 314 298 8566 Fax: 314 298 8757
www.stl-inc.com

ANALYTICAL REPORT

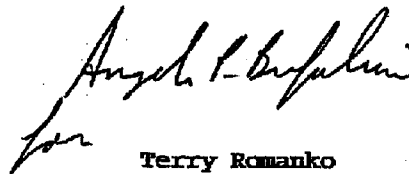
North Anna CDL

Lot #: F6K180195

J. Allan Tyce

**MACTEC Engineering & Consultin
3301 Atlantic Ave
Raleigh, NC 27604**

SEVERN TRENT LABORATORIES, INC.

A handwritten signature in black ink, appearing to read "Terry Romanko".

**Terry Romanko
Project Manager**

December 22, 2006

Case Narrative
LOT NUMBER: F6K180195

This report contains the analytical results for the three samples received under chain of custody by STL St. Louis on November 18, 2006. These samples are associated with your North Anna COL project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted on the following page.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by STL St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Anions by MCAWW 300.0A

Poor matrix spike recovery for Chloride, Nitrate, Nitrite, Bromide, and Sulfate is attributed to matrix interference. These samples were originally analyzed within hold time, but the re-analysis, due to CCV failure, was after the hold time had expired.

Affected Samples:

F6K180195 (1): OW-945

F6K180195 (2): OW-947

F6K180195 (3): OW-951

Nitrite by MCAWW 300.0A

The sample was analyzed at a dilution due to high concentrations of target analytes.

Affected Samples:

F6K180195 (1): OW-945

F6K180195 (2): OW-947

F6K180195 (3): OW-951

Nitrogen, Ammonia by MCAWW 350.1

When performing a sample dilution due to high concentrations of target analytes, the matrix spike was diluted below reliable detection, making QC recoveries uninformative. Due to analyst error the sodium hypochlorite reagent was used past its expiration date.

Affected Samples:

F6K180195 (1): OW-945

F6K180195 (2): OW-947

Nitrate-Nitrite by MCAWW 353.1

The MS recovery and RPD are outside the established QC limits. Matrix interference is physically evident in the sample. Method performance is demonstrated by acceptable LCS/LCSD recoveries.

Affected Samples:

F6K180195 (1): OW-945

F6K180195 (2): OW-947

F6K180195 (3): OW-951

There are no anomalies to report for the following analyses:

Alkalinity by MCAWW 310.1

TDS by MCAWW 160.1

METHODS SUMMARY

F6K180195

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Alkalinity	MCAWW 310.1	MCAWW 310.1
Bromide	MCAWW 300.0A	MCAWW 300.0A
Chloride	MCAWW 300.0A	MCAWW 300.0A
Filterable Residue (TDS)	MCAWW 160.1	MCAWW 160.1
Fluoride	MCAWW 300.0A	MCAWW 300.0A
Nitrate as N	MCAWW 300.0A	MCAWW 300.0A
Nitrate-Nitrite	MCAWW 353.1	
Nitrite as N	MCAWW 300.0A	MCAWW 300.0A
Nitrogen, Ammonia	MCAWW 350.1	MCAWW 350.1
Sulfate	MCAWW 300.0A	MCAWW 300.0A

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes",
EPA-600/4-79-020, March 1983 and subsequent revisions.

SAMPLE SUMMARY**F6K180195**

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT</u>	<u>SAMPLE ID</u>	<u>SAMPLED</u>	<u>SAMP</u>
				<u>DATE</u>	<u>TIME</u>
JJ27V	001	OW-945		11/17/06	12:20
JJ27W	002	OW-947		11/17/06	15:08
JJ27X	003	OW-951		11/17/06	15:48

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: OW-945

General Chemistry

Lot-Sample #...: F6K180195-001 Work Order #...: JJ27V Matrix.....: WATER
 Date Sampled...: 11/17/06 12:20 Date Received...: 11/18/06

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Bromide	ND	0.25	mg/L	MCAWW 300.0A	12/18/06	6328268
		Dilution Factor: 1		Analysis Time...: 11:33		
Chloride	0.93	0.20	mg/L	MCAWW 300.0A	12/18/06	6328269
		Dilution Factor: 1		Analysis Time...: 11:33		
Fluoride	ND	0.10	mg/L	MCAWW 300.0A	12/18/06	6328270
		Dilution Factor: 1		Analysis Time...: 11:33		
Nitrate	ND	0.020	mg/L	MCAWW 300.0A	12/18/06	6328271
		Dilution Factor: 1		Analysis Time...: 11:33		
Nitrate/Nitrite as N	ND	0.050	mg/L	MCAWW 353.1	12/04/06	6339052
		Dilution Factor: 1		Analysis Time...: 00:00		
Nitrite	ND	0.020	mg/L	MCAWW 300.0A	12/18/06	6328272
		Dilution Factor: 1		Analysis Time...: 11:33		
Nitrogen, as Ammonia	ND	0.050	mg/L	MCAWW 350.1	12/08/06	6349319
		Dilution Factor: 1		Analysis Time...: 00:00		
Sulfate	0.52	0.50	mg/L	MCAWW 300.0A	12/18/06	6328273
		Dilution Factor: 1		Analysis Time...: 11:33		
Total Alkalinity	ND	5.0	mg/L	MCAWW 310.1	11/30-12/02/06	6334286
		Dilution Factor: 1		Analysis Time...: 00:00		
Total Dissolved Solids	11.0	5.0	mg/L	MCAWW 160.1	11/20/06	6334178
		Dilution Factor: 1		Analysis Time...: 00:00		

MACTEC Engineering and Consulting Inc

Client Sample ID: OW-947

General Chemistry

Lot-Sample #...: F6K180195-002 Work Order #...: JJ27W Matrix.....: WATER

Date Sampled...: 11/17/06 15:08 Date Received...: 11/18/06

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Bromide	ND	0.25	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 01:06	12/18-12/19/06	6328268
Chloride	1.9	0.20	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 01:06	12/18-12/19/06	6328269
Fluoride	0.049 B	0.10	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 01:06	12/18-12/19/06	6328270
Nitrate	0.92	0.020	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 01:06	12/18-12/19/06	6328271
Nitrate/Nitrite as N	0.97	0.050	mg/L	MCAWW 353.1 Dilution Factor: 1 Analysis Time...: 00:00	12/04/06	6339052
Nitrite	ND	0.020	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 01:06	12/18-12/19/06	6328272
Nitrogen, as Ammonia	ND	0.050	mg/L	MCAWW 350.1 Dilution Factor: 1 Analysis Time...: 00:00	12/08/06	6349319
Sulfate	2.1	0.50	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time...: 01:06	12/18-12/19/06	6328273
Total Alkalinity	25.0	5.0	mg/L	MCAWW 310.1 Dilution Factor: 1 Analysis Time...: 00:00	11/30-12/02/06	6334286
Total Dissolved Solids	72.0	5.0	mg/L	MCAWW 160.1 Dilution Factor: 1 Analysis Time...: 00:00	11/20/06	6334178

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

MACTEC Engineering and Consulting Inc

Client Sample ID: OW-951

General Chemistry

Lot-Sample #....: F6K180195-003 Work Order #....: JJ27X Matrix.....: WATER
 Date Sampled....: 11/17/06 15:48 Date Received...: 11/18/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Bromide	ND	2.5	mg/L	MCAWW 300.0A Dilution Factor: 10 Analysis Time..: 01:44	12/18-12/19/06	6328268
Chloride	9.3	2.0	mg/L	MCAWW 300.0A Dilution Factor: 10 Analysis Time..: 01:44	12/18-12/19/06	6328269
Fluoride	0.63	0.10	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time..: 01:25	12/18-12/19/06	6328270
Nitrate	0.25	0.020	mg/L	MCAWW 300.0A Dilution Factor: 1 Analysis Time..: 01:25	12/18-12/19/06	6328271
Nitrate/Nitrite as N	0.39	0.050	mg/L	MCAWW 353.1 Dilution Factor: 1 Analysis Time..: 00:00	12/04/06	6339052
Nitrite	0.17 B	0.20	mg/L	MCAWW 300.0A Dilution Factor: 10 Analysis Time..: 01:44	12/18-12/19/06	6328272
Nitrogen, as Ammonia	0.078	0.050	mg/L	MCAWW 350.1 Dilution Factor: 1 Analysis Time..: 00:00	12/07/06	6341275
Sulfate	592	25.0	mg/L	MCAWW 300.0A Dilution Factor: 50 Analysis Time..: 02:02	12/18-12/19/06	6328273
Total Alkalinity	184	5.0	mg/L	MCAWW 310.1 Dilution Factor: 1 Analysis Time..: 00:00	11/30-12/02/06	6334286
Total Dissolved Solids	1090	5.0	mg/L	MCAWW 160.1 Dilution Factor: 1 Analysis Time..: 00:00	11/20/06	6334178

NOTE(S) :

RL Reporting Limit

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F6K180195

Matrix.....: WATER

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION-	PREP
		LIMIT	UNITS		ANALYSIS DATE	BATCH #
Bromide	ND	Work Order #: JLTL31AA 0.25	mg/L	MB Lot-Sample #: F6K240000-268 MCAWW 300.0A	12/18/06	6328268
		Dilution Factor: 1 Analysis Time...: 08:43				
Chloride	ND	Work Order #: JLTL41AA 0.20	mg/L	MB Lot-Sample #: F6K240000-269 MCAWW 300.0A	12/18/06	6328269
		Dilution Factor: 1 Analysis Time...: 08:43				
Fluoride	ND	Work Order #: JLTL51AA 0.10	mg/L	MB Lot-Sample #: F6K240000-270 MCAWW 300.0A	12/18/06	6328270
		Dilution Factor: 1 Analysis Time...: 08:43				
Nitrate	ND	Work Order #: JLTL11AA 0.020	mg/L	MB Lot-Sample #: F6K240000-271 MCAWW 300.0A	12/18/06	6328271
		Dilution Factor: 1 Analysis Time...: 08:43				
Nitrate/Nitrite as N	ND	Work Order #: JKREF1AA 0.050	mg/L	MB Lot-Sample #: F6L050000-052 MCAWW 353.1	12/04/06	6339052
		Dilution Factor: 1 Analysis Time...: 00:00				
Nitrite	ND	Work Order #: JLTL61AA 0.020	mg/L	MB Lot-Sample #: F6K240000-272 MCAWW 300.0A	12/18/06	6328272
		Dilution Factor: 1 Analysis Time...: 08:43				
Nitrogen, as Ammonia	ND	Work Order #: JK04Q1AA 0.050	mg/L	MB Lot-Sample #: F6L070000-275 MCAWW 350.1	12/07/06	6341275
		Dilution Factor: 1 Analysis Time...: 00:00				
Nitrogen, as Ammonia	ND	Work Order #: JLKM11AA 0.050	mg/L	MB Lot-Sample #: F6L150000-319 MCAWW 350.1	12/08/06	6349319
		Dilution Factor: 1 Analysis Time...: 00:00				
Sulfate	ND	Work Order #: JLTL71AA 0.50	mg/L	MB Lot-Sample #: F6K240000-273 MCAWW 300.0A	12/18/06	6328273
		Dilution Factor: 1 Analysis Time...: 08:43				

(Continued on next page)

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F6K180195

Matrix.....: WATER

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>	<u>PREPARATION-</u>	<u>PREP</u>
		<u>LIMIT</u>	<u>UNITS</u>		<u>ANALYSIS DATE</u>	<u>BATCH #</u>
Total Alkalinity	ND	Work Order #: JKN151AA	MB Lot-Sample #: F6K300000-286	MCAWW 310.1	11/30-12/02/06	6334286
		5.0	mg/L			
		Dilution Factor: 1				
		Analysis Time...: 00:00				
Total Dissolved Solids	ND	Work Order #: JKH971AA	MB Lot-Sample #: F6K300000-178	MCAWW 160.1	11/20/06	6334178
		5.0	mg/L			
		Dilution Factor: 1				
		Analysis Time...: 00:00				

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: F6K180195

Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Bromide							
		WO#:JLTL31AC-LCS/JLTL31AD-LCSD LCS Lot-Sample#: F6K240000-268					
	95	(90 - 110)			MCAWW 300.0A	12/18/06	6328268
	91	(90 - 110)	4.3	(0-20)	MCAWW 300.0A	12/18/06	6328268
		Dilution Factor: 1		Analysis Time...: 08:08			
Chloride							
		WO#:JLTL41AC-LCS/JLTL41AD-LCSD LCS Lot-Sample#: F6K240000-269					
	95	(90 - 110)			MCAWW 300.0A	12/18/06	6328269
	97	(90 - 110)	2.7	(0-20)	MCAWW 300.0A	12/18/06	6328269
		Dilution Factor: 1		Analysis Time...: 08:08			
Fluoride							
		WO#:JLTL51AC-LCS/JLTL51AD-LCSD LCS Lot-Sample#: F6K240000-270					
	96	(90 - 110)			MCAWW 300.0A	12/18/06	6328270
	94	(90 - 110)	1.6	(0-20)	MCAWW 300.0A	12/18/06	6328270
		Dilution Factor: 1		Analysis Time...: 08:08			
Nitrate							
		WO#:JLTML1AC-LCS/JLTML1AD-LCSD LCS Lot-Sample#: F6K240000-271					
	98	(90 - 110)			MCAWW 300.0A	12/18/06	6328271
	102	(90 - 110)	3.4	(0-20)	MCAWW 300.0A	12/18/06	6328271
		Dilution Factor: 1		Analysis Time...: 08:08			
Nitrate/Nitrite as N							
		WO#:JKREF1AC-LCS/JKREF1AD-LCSD LCS Lot-Sample#: F6L050000-052					
	100	(90 - 110)			MCAWW 353.1	12/04/06	6339052
	109	(90 - 110)	8.2	(0-20)	MCAWW 353.1	12/04/06	6339052
		Dilution Factor: 1		Analysis Time...: 00:00			
Nitrite							
		WO#:JLTL61AC-LCS/JLTL61AD-LCSD LCS Lot-Sample#: F6K240000-272					
	96	(90 - 110)			MCAWW 300.0A	12/18/06	6328272
	101	(90 - 110)	4.5	(0-20)	MCAWW 300.0A	12/18/06	6328272
		Dilution Factor: 1		Analysis Time...: 08:08			
Sulfate							
		WO#:JLTL71AC-LCS/JLTL71AD-LCSD LCS Lot-Sample#: F6K240000-273					
	95	(90 - 110)			MCAWW 300.0A	12/18/06	6328273
	94	(90 - 110)	0.92	(0-20)	MCAWW 300.0A	12/18/06	6328273
		Dilution Factor: 1		Analysis Time...: 08:08			
Total Alkalinity							
		WO#:JKN151AC-LCS/JKN151AD-LCSD LCS Lot-Sample#: F6K300000-286					
	100	(90 - 110)			MCAWW 310.1	11/30-12/02/06	6334286
	100	(90 - 110)	0.0	(0-15)	MCAWW 310.1	11/30-12/02/06	6334286
		Dilution Factor: 1		Analysis Time...: 00:00			

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: F6K180195

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Total Dissolved Solids		WO#:JKH971AC-LCS/JKH971AD-LCSD		LCS Lot-Sample#: F6K300000-178			
	92	(90 - 110)			MCAWW 160.1	11/20/06	6334178
	97	(90 - 110)	4.7	(0-15)	MCAWW 160.1	11/20/06	6334178
		Dilution Factor: 1		Analysis Time..: 00:00			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F6K180195

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrogen, as Ammonia	98	Work Order #: JK04Q1AC (90 - 110)	LCS Lot-Sample#: F6L070000-275 MCAWW 350.1	12/07/06	6341275
		Dilution Factor: 1		Analysis Time...: 00:00	
Nitrogen, as Ammonia	103	Work Order #: JLKM11AC (90 - 110)	LCS Lot-Sample#: F6L150000-319 MCAWW 350.1	12/08/06	6349319
		Dilution Factor: 1		Analysis Time...: 00:00	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F6K180195

Matrix.....: WATER

Date Sampled...: 12/01/06 14:30 Date Received...: 12/02/06

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD LIMITS		METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
	RECOVERY	LIMITS	RPD	LIMITS			
Nitrogen, as Ammonia		WO#: JJ28E1E9-MS/JJ28E1FA-MSD	MS Lot-Sample #: F6K180200-001				
	102	(90 - 110)			MCAWW 350.1	12/07/06	6341275
	100	(90 - 110)	1.5	(0-20)	MCAWW 350.1	12/07/06	6341275
		Dilution Factor: 1					
		Analysis Time...: 00:00					
Nitrogen, as Ammonia		WO#: JKPN51HC-MS/JKPN51HD-MSD	MS Lot-Sample #: F6L020205-006				
	0.0 N	(90 - 110)			MCAWW 350.1	12/08/06	6349319
	2880 N	(90 - 110)	0.0	(0-20)	MCAWW 350.1	12/08/06	6349319
		Dilution Factor: 1					
		Analysis Time...: 00:00					

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F6K180195

Matrix.....: WATER

Date Sampled...: 11/17/06 12:20 Date Received...: 11/18/06

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Bromide	188 N	Work Order #...: JJ27V1AM (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K180195-001 12/18-12/19/06	6328268
		Dilution Factor: 1		Analysis Time...: 11:33	
Chloride	115 N	Work Order #...: JJ27V1AP (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K180195-001 12/18-12/19/06	6328269
		Dilution Factor: 1		Analysis Time...: 11:33	
Fluoride	106	Work Order #...: JJ27V1AR (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K180195-001 12/18-12/19/06	6328270
		Dilution Factor: 1		Analysis Time...: 11:33	
Nitrate	114 N	Work Order #...: JJ27V1A0 (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K180195-001 12/18-12/19/06	6328271
		Dilution Factor: 1		Analysis Time...: 11:33	
Nitrate/Nitrite as N	42 N	Work Order #...: JJCRL1AJ (90 - 110)	MCAWW 353.1	MS Lot-Sample #: F6K090297-001 12/04/06	6339052
		Dilution Factor: 1		Analysis Time...: 00:00	
Nitrite	31 N	Work Order #...: JJ27V1AU (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K180195-001 12/18-12/19/06	6328272
		Dilution Factor: 1		Analysis Time...: 11:33	
Sulfate	100	Work Order #...: JJ27V1AW (90 - 110)	MCAWW 300.0A	MS Lot-Sample #: F6K180195-001 12/18-12/19/06	6328273
		Dilution Factor: 1		Analysis Time...: 11:33	
Total Alkalinity	101	Work Order #...: JJ27W1AN (50 - 121)	MCAWW 310.1	MS Lot-Sample #: F6K180195-002 11/30-12/02/06	6334286
		Dilution Factor: 1		Analysis Time...: 00:00	

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

