Appendix A

Analytical Method Summary

Table A-1. Analytical method summary.

Analyte	Action Level[a]	Analytical Method	Method Detection Limit[b,c]	Monitoring Phase or Other Data Collection Activity
VOCs				
TCE	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-FID	10 µg/L	Performance
PCE	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-FID	10 µg/L	Performance
cis-DCE	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-FID	10 µg/L	Performance
trans-DCE	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-FID	10 µg/L	Performance
vinyl chloride	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-FID	10 µg/L	Performance
Radionuclides				
Tritium	N/A	liquid scintillation counting	400 pCi/L	Performance
Electron Donor				
Lactate	N/A	ion chromatography	0.3 mg/L	Performance
Acetate	N/A	GC/FID	5 mg/L	Performance
Propionate	N/A	GC/FID	5 mg/L	Performance
Butyrate	N/A	GC/FID	5 mg/L	Performance
COD	N/A	Hach Method 10067	14 mg/L	Performance
Redox Indicators				
Sulfate	N/A	Hach Method 8051	4.9 mg/L	Performance
Iron	N/A	Hach Method 8146	0.03 mg/L	Performance
pH	N/A	multiparameter water quality instrument	0-14 units	Performance
ORP	N/A	multiparameter water quality instrument	-999-+999 mV	Performance
Bioactivity Indicators				
Alkalinity	N/A	Hach Method 8203	10 mg/L	Performance

Table A-1. (continued).

Analyte	Action Level[a]	Analytical Method	Method Detection Limit[b,c]	Monitoring Phase or Other Data Collection Activity
Specific conductance	N/A	multiparameter water quality instrument	0-100 mS/cm	Performance
Dissolved Gases				
Ethene	N/A	GC-FID	1 μg/L	Performance
Ethane	N/A	GC-FID	1 μg/L	Performance
Methane	N/A	GC-FID	1 μg/L	Performance
Nutrients				
Ammonia nitrogen	N/A	Hach Method 10023 (for low range) Hach Method 10031 (for high range)	0.02 mg/L	Performance
Orthophosphate	N/A	Hach Method 8048	0.05 mg/L	Performance

a. Action levels apply only to compliance monitoring, for which chloroethene levels are compared to MCLs to determine end of phase.

b. Method detection limits for: EPA method organics and radionuclides from DOE (2002c), *QAPjP for Waste Area Groups (WAGs) 1, 2, 3, 4, 5, 6, 7, 10 and Inactive Sites*; Hach methods from the Hach Manual; multiparameter water quality instrument parameters ranges reported are from the Minisonde 4a manual; electron donor and SPME organics from IRC organics analyst Cathy Rae, personal communication.

c. For purposes of this groundwater monitoring plan, "Detection limits must not exceed one tenth the risk-based or decision-based concentrations for the contaminants of concern" (DOE 2002c). This applies to compliance monitoring only. Chloroethene action levels were divided by ten and compared to the MDL to determine appropriate analytical methods for compliance monitoring.
DCE = dichloroethene
FID = flame ionization detector
ORP = oxidation reduction potential
PCE = tetrachloroethene
SPME-GC-FID = solid phase micro extraction – gas chromatography – flame ionization eetector
VOC = volatile organic compound

Appendix B

Sampling and Analysis Plan Tables

Plan Table Number: INTERIM_ANNUAL

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 11/04/2002 Plan Table Revision: 1.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM ANNUAL (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	R6	R5	R4	GA	1N	RB	R8	VA	VE						
IAN000	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1	1		1	2							
IAN001	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1	1		1	2							
IAN002	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1	1		1	2							
IAN003	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1		1	1		1	2							
IAN004	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-27 (1003)	235	1	1	1	2						1		1	2							
IAN005	REG/QC	GROUND WATER	DUP		11/04/2002	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2	2		2	4							
IAN006	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	1	2							
IAN007	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		1				1		1	2							
IAN008	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1	1		1		2						
IAN009	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2						1		1	2							
IAN010	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1		2					1		1	2							
IAN011	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2						1		1	2							
IAN012	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2						1		1	2							
IAN013	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2						1		1	2							
IAN014	QC	WATER	FBLK		11/04/2002	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	1	2							

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Gamma Spec
AT9: Gross Alpha
AT10: Propionate/Butyrate/Acetate/Lactate
AT11: Sr-90
AT12: Tritium
AT13: VOCs (TAL)
AT14: VOCs (TAL) - MS/MSD
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:
Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_ANNUAL

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 11/04/2002 Plan Table Revision: 1.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM ANNUAL (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	GA	1N	RB	R8	VA	VE						
IAN015	QC	WATER	TBLK		11/04/2002	TAN	TRIP BLANK	QC	NA				3									3							

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number.

The complete sample identification number will appear on the sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_DEC02

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 11/12/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM/INTERIM MONTHLY (PM)-12/02 Project Manager: NELSON, L. O.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	MB	1N	R8	VA	VE								
INM016	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1			1		1	1	1									
INM017	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1			1		1	1	1									
INM018	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	1		1	1		1	1	1									
INM019	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	1			1		1	1	1									
INM020	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	1					1	1	1									
INM021	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-28 (1008)	240	1	1	1	1					1	1		1								
INM022	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1					1	1	1									
INM023	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	1					1	1	1									
INM024	REG/QC	GROUND WATER	DUP		12/9/2002	TAN	MONITORING WELL	TAN-31 (1219)	258	2	2	2	2			1		2	2	2									
INM025	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	1					1	1	1									
INM026	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1		1				1	1	1									
INM027	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	1				1	1	1	1									
INM028	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	1					1	1	1									
INM029	REG	GROUND WATER	GRAB		12/9/2002	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	1					1	1	1									
INM030	QC	WATER	FBLK		12/9/2002	TAN	FIELD BLANK	QC	NA	1	1	1	1				1	1	1	1									

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Microbiological Analysis
AT9: Propionate/Butyrate/Acetate/Lactate
AT10: Tritium
AT11: VOCs (TAL)
AT12: VOCs (TAL) - MS/MSD
AT13:
AT14:
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD, and Field Standard Addition - QC

Microbiological samples will only be collected in months when a lactate injection has not been done.
TAN-37C microbiological sample is for an LDRD project at IRC

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

10/15/2003 02:04 PM

Plan Table Number: INTERIM_DEC02

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 11/12/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW/M-INTERIM/MONTHLY (PM)- 12/02 Project Manager: NELSON, L. O.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
										AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	A1	3A	C5	EG	E3	R6	R5	MB	1N	R8	VA	VE									
INM031	QC	WATER	TBLK		12/9/2002	TAN	TRIP BLANK	QC	NA					2						2										

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Microbiological Analysis
AT9: Propionate/Butyrate/Acetate/Lactate
AT10: Tritium
AT11: VOCs (TAL)
AT12: VOCs (TAL) - MS/MSD
AT13:
AT14:
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD, and Field Standard Addition - QC

Microbiological samples will only be collected in months when a lactate injection has not been done.
TAN-37C microbiological sample is for an LDRD project at IRC

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

10/15/2003 02:04 PM

Plan Table Number: INTERIM_JAN03

SAP Number: INEEL/EXT-2002-00779

Date: 01/13/2003 Plan Table Revision: 2.0 Project: OU 1-07B ISB RA GWM - INTERIM MONTHLY 1/03 (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	1N	R8	VA	VE									
INM/D32	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1			1	1	1	1										
INM/D33	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1			1	1	1	1										
INM/D34	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1		1		1	1	1		1									
INM/D35	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-26 (1118)	389	2	2	2	2			2	2	2	2										
INM/D36	REG/QC	GROUND WATER	DUP		01/13/2003	TAN	MONITORING WELL	TAN-27 (1009)	235	2	2	2	2				2	2	2										
INM/D37	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-28 (1008)	240	1	1	1	1				1	1	1										
INM/D38	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1		1		1	1	1										
INM/D39	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	1				1	1	1										
INM/D40	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	1			1	1	1	1										
INM/D41	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	1				1	1	1										
INM/D42	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	1				1	1	1										
INM/D43	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	1				1	1	1										
INM/D44	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	1				1	1	1										
INM/D45	REG	GROUND WATER	GRAB		01/13/2003	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	1				1	1	1										
INM/D46	QC	WATER	FBLK		01/13/2003	TAN	FIELD BLANK	QC	NA	2	2	2	2				2	2	2										

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number.

The complete sample identification number will appear on the sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Propionate/Butyrate/Acetate/Lactate

AT9: Tritium

AT10: VOCs (TAL)

AT11: VOCs (TAL) - MS/MSD

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

Field Tests - Analysis Suite #1, alkalinity, COD, and Field Standard Addition - QC

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_JAN03

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 01/13/2003 Plan Table Revision: 2.0 Project: OU 1-07B ISB RA GWM - INTERIM MONTHLY 1.03 (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	1N	R8	VA	VE									
INM047	QC	WATER	TBLK		01/13/2003	TAN	TRIP BLANK	QC	NA				2						2										

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Propionate/Butyrate/Acetate/Lactate
AT9: Tritium
AT10: VOCs (TAL)
AT11: VOCs (TAL) - MS/MSD
AT12:
AT13:
AT14:
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
Field Tests - Analysis Suite #1, alkalinity, COD, and Field Standard Addition - QC

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_FEB03

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 02/06/2003 Plan Table Revision: 4.0 Project: OU 1-07B ISB RA GWM- INTERIM QUARTERLY 2/03 (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	MB	1N	RB	R8	VA	VE							
INM048	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1			1		1	2							
INM049	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1			1		1	2							
INM050	REG/QC	GROUND WATER	DUP		02/10/2003	TAN	MONITORING WELL	TAN-25 (1117)	218	2	2	2	4			1		1	2		2	4							
INM051	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1			1		1	2							
INM052	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2		1				1		1	2							
INM053	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TAN-28 (1008)	240	1	1	1	2						1		1	2							
INM054	REG/QC	GROUND WATER	DUP		02/10/2003	TAN	MONITORING WELL	TAN-29 (1010)	253	2	2	2	4				2		2	2	2	4							
INM055	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TAN-30A (1012)	313	1	1	1	2						1		1	2							
INM056	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1			1		1	2							
INM057	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2						1		1	2							
INM058	REG/QC	GROUND WATER	DUP		02/10/2003	TAN	MONITORING WELL	TAN-37B (1163)	270	2	2	2	4						2		2	4							
INM059	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2						1		1	2							
INM060	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2						1		1		2						
INM061	REG	GROUND WATER	GRAB		02/10/2003	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1		2					1		1	2							
INM062	QC	WATER	FBLK		02/10/2003	TAN	FIELD BLANK	QC	NA	1	1	1	2				1		1	1	1	2							

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Gamma Spec
AT9: Microbiological Analysis
AT10: Propionate/Butyrate/Acetate/Lactate
AT11: Sr-90
AT12: Tritium
AT13: VOCs (TAL)
AT14: VOCs (TAL) - MS/MSD
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:

VOCs (CLP TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite 1, Alkalinity, COD, and Field Standard Addition

Split samples will be collected at all locations for VOCs and Ethane/Ethene/Methane analyses

The third duplicate and field blank and the fourth trip blank will only be collected if sample collection is extended to a third day

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

10/15/2003 02:04 PM

Plan Table Number: INTERIM_FEB03

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 02/06/2003 Plan Table Revision: 4.0 Project: OU 1-07B ISB RA GWM - INTERIM QUARTERLY 2Q3 (PM) Project Manager: NELSON, L. O.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	R6	R5	R4	MB	1N	RB	R8	VA	VE							
INM063	QC	WATER	FBLK		02/10/2003	TAN	FIELD BLANK	QC	NA	1	1	1	2						1		1	2							
INM080	QC	WATER	FBLK		02/10/2003	TAN	FIELD BLANK	QC	NA	1	1	1	2						1		1	2							
INM081	QC	WATER	TBLK		02/10/2003	TAN	TRIP BLANK	QC	NA				1									1							
INM082	QC	WATER	TBLK		02/10/2003	TAN	TRIP BLANK	QC	NA				1									1							
INM083	QC	WATER	TBLK		02/10/2003	TAN	TRIP BLANK	QC	NA				1									1							
INM088	QC	WATER	TBLK		02/10/2003	TAN	TRIP BLANK	QC	NA				1									1							

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Gamma Spec
AT9: Microbiological Analysis
AT10: Propionate/Butyrate/Acetate/Lactate
AT11: Sr-90
AT12: Tritium
AT13: VOCs (TAL)
AT14: VOCs (TAL) - MS/MSD
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
VOCs (CLP TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite 1, Alkalinity, COD, and Field Standard Addition

Split samples will be collected at all locations for VOCs and Ethane/Ethene/Methane analyses

The third duplicate and field blank and the fourthe trip blank will only be collected if sample collection is extended to a third day

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

10/15/2003 02:07 PM

Plan Table Number: INTERIM_APR03

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 03/31/2003 Plan Table Revision: 4.0 Project: OU 1-07B ISB RA GWM - INTERIM MONTHLY 4.03 (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	R6	R5	MB	1N	R8	VA	VE								
INM150	REG/QC	GROUND WATER	DUP		04/07/2003	TAN	MONITORING WELL	TSF-05A (71)	235	2	2	2	2			1		2	2	2									
INM151	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1			1		1	1	1									
INM152	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	1		1	1		1	1	1									
INM153	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	1			1		1	1	1									
INM154	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1		1				1	1	1									
INM155	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TAN-28 (1008)	240	1	1	1	1					1	1	1									
INM156	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1					1	1	1									
INM157	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TAN-30A (1012)	313	1	1	1	1					1	1		1								
INM158	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	1			1		1	1	1									
INM159	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	1					1	1	1									
INM160	REG/QC	GROUND WATER	DUP		04/07/2003	TAN	MONITORING WELL	TAN-37B (1163)	270	2	2	2	2					2	2	2									
INM161	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	1				1	1	1	1									
INM162	REG/QC	GROUND WATER	DUP		04/07/2003	TAN	MONITORING WELL	TAN-10A (348)	233	2	2	2	2					2	2	2									
INM163	REG	GROUND WATER	GRAB		04/07/2003	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	1					1	1	1									
INM164	REG	GROUND WATER	GRAB		04/07/2003	TAN	MW - BARCAD	ANP-8 (76)	268										3	3									

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Microbiological Analysis
AT9: Propionate/Butyrate/Acetate/Lactate
AT10: Tritium
AT11: VOCs (TAL)
AT12: VOCs (TAL) - MS/MSD
AT13:
AT14:
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
Field Tests - Analysis Suite #1, alkalinity, COD, and Field Standard Addition - QC

Samples will be sent to IRC except tritium which will be shipped to an off-site lab.

The third duplicate, field blank, and trip blank will only be collected if the sample collection is extended to a third day.

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_APR03

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 03/31/2003 Plan Table Revision: 4.0 Project: OU 1-07B ISB RA GWM - INTERIM MONTHLY 4/03 (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	MB	1N	R8	VA	VE									
INM165	REG	GROUND WATER	GRAB		04/07/2003	TAN	MW - RF2 PUMPS	ANP-8 (76)	298										3	3										
INM166	QC	WATER	FBLK		04/07/2003	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1										
INM167	QC	WATER	FBLK		04/07/2003	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1										
INM168	QC	WATER	FBLK		04/07/2003	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1										
INM169	QC	WATER	TBLK		04/07/2003	TAN	TRIP BLANK	QC	NA				1							1										
INM170	QC	WATER	TBLK		04/07/2003	TAN	TRIP BLANK	QC	NA				1							1										
INM171	QC	WATER	TBLK		04/07/2003	TAN	TRIP BLANK	QC	NA				1							1										

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Microbiological Analysis
AT9: Propionate/Butyrate/Acetate/Lactate
AT10: Tritium
AT11: VOCs (TAL)
AT12: VOCs (TAL) - MS/MSD
AT13:
AT14:
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
Field Tests - Analysis Suite #1, alkalinity, COD, and Field Standard Addition - QC

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

The third duplicate, field blank, and trip blank will only be collected if the sample collection is extended to a third day

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_JUN03

SAP Number: INEEL/EXT-2002-00779

Date: 06/12/2003 Plan Table Revision: 4.0 Project: OU 1-07B ISB RA GWM - INTERIM MONTHLY 6/03 (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	MB	1N	R8	VA	VE								
INM230	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1			1		1	1	1									
INM231	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1			1		1	1	1									
INM232	REG/QC	GROUND WATER	DUP		6/16/2003	TAN	MONITORING WELL	TAN-25 (1117)	218	2	2	2	2			1	1	2	2	2									
INM233	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	1			1		1	1	1									
INM234	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1		1				1	1	1									
INM235	REG/QC	GROUND WATER	DUP		6/16/2003	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	2					2	2	2									
INM236	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1		1			1	1	1									
INM237	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TAN-30A (1012)	313	1	1	1	1					1	1		1								
INM238	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	1			1	1	1	1	1									
INM239	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	1				1	1	1	1									
INM240	REG/QC	GROUND WATER	DUP		6/16/2003	TAN	MONITORING WELL	TAN-37B (1163)	270	2	2	2	2				1	2	2	2									
INM241	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	1				1	1	1	1									
INM242	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	1					1	1	1									
INM243	REG	GROUND WATER	GRAB		6/16/2003	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	1			1		1	1	1									
INM244	REG	GROUND WATER	GRAB		6/16/2003	TAN	MW - BARCAD	ANP-8 (76)	268											3									

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Microbiological Analysis
AT9: Propionate/Butyrate/Acetate/Lactate
AT10: Tritium
AT11: VOCs (TAL)
AT12: VOCs (TAL) - MS/MSD
AT13:
AT14:
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
Field Tests - Analysis Suite #1, alkalinity, COD, and Field Standard Addition - QC

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

The third duplicate, field blank, and trip blank will only be collected if the sample collection is extended to a third day

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_JUN03

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 06/12/2003 Plan Table Revision: 4.0 Project: OU 1-07B ISB RA GWM - INTERIM MONTHLY 6/03 (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	MB	1N	R8	VA	VE									
INM245	REG	GROUND WATER	GRAB		6/16/2003	TAN	MW - RF2 PUMPS	ANP-8 (76)	268											3									
INM246	QC	WATER	FBLK		6/16/2003	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1									
INM247	QC	WATER	FBLK		6/16/2003	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1									
INM248	QC	WATER	FBLK		6/16/2003	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1									
INM249	QC	WATER	TBLK		6/16/2003	TAN	TRIP BLANK	QC	NA				1							1									
INM250	QC	WATER	TBLK		6/16/2003	TAN	TRIP BLANK	QC	NA				1							1									
INM251	QC	WATER	TBLK		6/16/2003	TAN	TRIP BLANK	QC	NA				1							1									
INM252	QC	WATER	FBLK		6/16/2003	TAN	FIELD BLANK	QC	NA											1									
INM253	QC	WATER	TBLK		6/16/2003	TAN	TRIP BLANK	QC	NA											1									

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Microbiological Analysis
AT9: Propionate/Butyrate/Acetate/Lactate
AT10: Tritium
AT11: VOCs (TAL)
AT12: VOCs (TAL) - MS/MSD
AT13:
AT14:
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
Field Tests - Analysis Suite #1, alkalinity, COD, and Field Standard Addition - QC

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

The third duplicate, field blank, and trip blank will only be collected if the sample collection is extended to a third day

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

10/15/2003 02:04 PM

Plan Table Number: INTERIM_JUL03

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 07/03/2003 Plan Table Revision: 2.0 Project: OU 1-07B ISB RA GWM - INTERIM MONTHLY 7.03 (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	MB	1N	R8	VA	VE									
INM300	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1			1		1	1	1									
INM301	REG/QC	GROUND WATER	DUP		07/14/2003	TAN	MONITORING WELL	TSF-05B (71)	270	2	2	2	2			1		2	2	2									
INM302	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	1			1	1	1	1	1									
INM303	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	1		1	1		1	1	1									
INM304	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1		1				1	1	1									
INM305	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TAN-28 (1008)	240	1	1	1	1					1	1	1									
INM306	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1					1	1	1									
INM307	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TAN-30A (1012)	313	1	1	1	1					1	1		1								
INM308	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	1			1		1	1	1									
INM309	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	1					1	1	1									
INM310	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TAN-37B (1163)	270	1	1	1	1					1	1	1									
INM311	REG/QC	GROUND WATER	DUP		07/14/2003	TAN	MONITORING WELL	TAN-37C (1163)	375	2	2	2	2				2	2	2	2									
INM312	REG	GROUND WATER	GRAB		07/14/2003	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	1					1	1	1									
INM313	REG/QC	GROUND WATER	DUP		07/14/2003	TAN	MONITORING WELL	TAN-D2 (339)	241	2	2	2	2					2	2	2									
INM314	QC	WATER	FBLK		07/14/2003	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1									

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Microbiological Analysis
AT9: Propionate/Butyrate/Acetate/Lactate
AT10: Tritium
AT11: VOCs (TAL)
AT12: VOCs (TAL) - MS/MSD
AT13:
AT14:
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
Field Tests - Analysis Suite #1, alkalinity, COD, and Field Standard Addition - QC

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

The third duplicate, field blank, and trip blank will only be collected if the sample collection is extended to a third day

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_JUL03

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 07/03/2003 Plan Table Revision: 2.0 Project: OU 1-07B ISB RA GWM - INTERIM MONTHLY 7/03 (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
										AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	A1	3A	C5	EG	E3	F6	R5	MB	1N	R8	VA	VE										
INIM315	QC	WATER	FBLK		07/14/2003	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1											
INIM316	QC	WATER	FBLK		07/14/2003	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1											
INIM317	QC	WATER	TBLK		07/14/2003	TAN	TRIP BLANK	QC	NA				1							1											
INIM318	QC	WATER	TBLK		07/14/2003	TAN	TRIP BLANK	QC	NA				1							1											
INIM319	QC	WATER	TBLK		07/14/2003	TAN	TRIP BLANK	QC	NA				1							1											

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Microbiological Analysis
AT9: Propionate/Butyrate/Acetate/Lactate
AT10: Tritium
AT11: VOCs (TAL)
AT12: VOCs (TAL) - MS/MSD
AT13:
AT14:
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:

Field Tests - Analysis Suite #1, alkalinity, COD, and Field Standard Addition - QC

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

The third duplicate, field blank, and trip blank will only be collected if the sample collection is extended to a third day

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_AUG03

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 08/04/2003 Plan Table Revision: 2.0 Project: OU 1-07B ISB RA GWM - INTERIM QUARTERLY 8/03 (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	MB	1N	RB	R8	VA	VE						
INM060	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1			1		1	2							
INM061	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1			1		1	2							
INM062	REG/QC	GROUND WATER	DUP		08/18/2003	TAN	MONITORING WELL	TAN-25 (1117)	218	2	2	2	4			1		1	2		2	4							
INM063	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1			1		1	2							
INM064	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2		1				1		1	2							
INM065	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-28 (1008)	240	1	1	1	2						1		1	2							
INM066	REG/QC	GROUND WATER	DUP		08/18/2003	TAN	MONITORING WELL	TAN-29 (1010)	253	2	2	2	4				2		2	2	2	4							
INM067	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-30A (1012)	313	1	1	1	2						1		1	2							
INM068	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1			1		1	2							
INM069	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2						1		1	2							
INM070	REG/QC	GROUND WATER	DUP		08/18/2003	TAN	MONITORING WELL	TAN-37B (1163)	270	1	1	1	2						1		1	2							
INM071	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2					2	1		1	2							
INM072	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2						1		1		2						
INM073	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1		2					1		1	2							
INM074	QC	WATER	FBLK		08/18/2003	TAN	FIELD BLANK	QC	NA	1	1	1	2				1		1	1	1	2							

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Gamma Spec
AT9: Microbiological Analysis
AT10: Propionate/Butyrate/Acetate/Lactate
AT11: Sr-90
AT12: Tritium
AT13: VOCs (TAL)
AT14: VOCs (TAL) - MS/MSD
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
VOCs (CLP TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite 1, Alkalinity, COD, and Field Standard Addition

Split samples will be collected at all locations for VOCs and Ethane/Ethene/Methane analyses

TAN-1859, 1860, and 1861 samples are to establish a baseline and will not be sampled for splits at this time.

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: INTERIM_AUG03

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 08/04/2003 Plan Table Revision: 2.0 Project: OU 1-07B ISB RA GWM - INTERIM QUARTERLY 8/03 (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
										AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	A1	3A	C5	EG	E3	F6	R5	R4	MB	1N	RB	R8	VA	VE						
INM365	QC	WATER	FBLK		08/18/2003	TAN	FIELD BLANK	QC	NA	1	1	1	2						1		1	2							
INM366	QC	WATER	FBLK		08/18/2003	TAN	FIELD BLANK	QC	NA	1	1	1	2						1		1	2							
INM367	QC	WATER	TBLK		08/18/2003	TAN	TRIP BLANK	QC	NA				1									1							
INM368	QC	WATER	TBLK		08/18/2003	TAN	TRIP BLANK	QC	NA				1									1							
INM369	QC	WATER	TBLK		08/18/2003	TAN	TRIP BLANK	QC	NA				1									1							
INM370	QC	WATER	TBLK		08/18/2003	TAN	TRIP BLANK	QC	NA				1									1							
INM371	QC	WATER	PES		08/18/2003	TAN	MONITORING WELL	TAN-2 (123)	NA													1							
INM372	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-1859	TBD	1	1	1	1			1			1		1	1							
INM373	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-1860	TBD	1	1	1	1						1		1	1							
INM374	REG	GROUND WATER	GRAB		08/18/2003	TAN	MONITORING WELL	TAN-1861	TBD	2	2	2	2						2		2	2							

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Gamma Spec
AT9: Microbiological Analysis
AT10: Propionate/Butyrate/Acetate/Lactate
AT11: Sr-90
AT12: Tritium
AT13: VOCs (TAL)
AT14: VOCs (TAL) - MS/MSD
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
VOCs (CLP TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite 1, Alkalinity, COD, and Field Standard Addition

Split samples will be collected at all locations for VOCs and Ethane/Ethene/Methane analyses

TAN-1859, 1860, and 1861 samples are to establish a baseline and will not be sampled for splits at this time.

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Appendix C

Water Quality Instruments

Table C-1. Analytical method summary.

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
11/06/02	Currently deployed in TAN-28.	Currently deployed in TAN-37B. Disconnected from the telemetry network to install building over TAN-37.	Currently deployed in TAN-30A.	Currently deployed in TAN-37A. Disconnected from the telemetry network to install building over TAN-37.			
11/08/02		Reconnected to telemetry network.		Reconnected to telemetry network.		Deployed in TAN-31 at the same depth the Hydrolab had been by comparing cables.	
11/08/02	Telemetry network no longer connects to the computer in town. The installation of a building over TAN-37 may be obstructing the signal.						
11/18/02 11/18/02	Extracted data in TAN-28.	Extracted data in TAN-37B.	Extracted data in TAN-30A.	Extracted data in TAN-37A.		Extracted data in TAN-31. Unit reprogrammed to collect data every 10 minutes.	
11/25/02	Removed Troll 30391 from well TAN-28. Extracted test 28-102802 and 28-102902. All tests deleted. Traditional Standardization (calibration) performed. Set test named 28-112502. Redeployed in TAN-28.	Removed Troll 30542 from well TAN-37B. Extracted test 37B-103102. Deleted all tests. Performed traditional standardization. Set test named 37B-112502 to start at 160000. Redeployed in TAN-37B.	Removed Troll 30543 from TAN-30A. Extracted data and deleted all tests. Performed traditional standardization. The DO slope is slightly below the recommended slope. Perhaps need to change DO membrane next time. Set test named 30A-112502. Redeployed in well TAN-30A.	Removed Troll 30544 from TAN-37A. Extracted data and deleted all tests. The installed pH/ORP sensor would not stabilize. It was replaced with pH/ORP probe #30. The pH would not stabilize so was accepted at nominal. All other parameters stabilized. Set test named 37A-112502. Redeployed in TAN-37A.		Removed Troll 30546 from TAN-31. Extracted test 31-110802. All tests deleted. Performed traditional standardization (calibration). Set test named 31-112502 to start at 160000. Redeployed in TAN-31.	

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
12/4/02	Extracted data in TAN-28.	Data not extracted in TAN-37B. Unit would not connect.	Extracted data in TAN-30A.	Data not extracted in TAN-37A. Unit would not connect.		Extracted data in TAN-31.	
12/11/02	Extracted data in TAN-28. Battery power 79%.		Extracted data in TAN-30A. Battery power 89%. ORP is reading low			Extracted data in TAN-31. Battery power 69%.	
12/17/02		Removed from TAN-37B. Extracted test 37B-112502 and stopped test. Battery power 41%. Changed batteries and set new battery information. Performed quick-CAL. Set up test 37B-121702. Redeployed in TAN-37B.		Removed Troll 30544 from TAN-37A. Extracted test 37A-112502. Test had stopped Dec. 17th. File said, "abend". Battery power 52%. Changed batteries. Updated battery information. Replaced pH/ORP probe. Performed quick-CAL. PH only got to nominal w/ deviation of -0.03. Set test 37A-121702. Redeployed in TAN-37A.			
12/18/03	Extended telemetry pole with a 3 ft. section of 1-inch diameter pipe. Attached new high power antenna and pointed it toward the middle butte.						
1/7/03	Adjusted Troll antenna. Will not transmit data to town. Still did not even after adjustment. The phone works fine.						

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
1/7/03	Removed from TAN-28. Extracted file 28-112502. Deleted test. Performed quick CAL. Set new test 28-010703. Battery at 67%. Added a circulator and redeployed in TAN-28.	Removed from TAN-37B. Extracted file 37B-121702 and deleted test. Performed quick CAL. Set new test 37B-010703. Added a circulator and redeployed in TAN-37B.	Removed Troll 30543 from TAN-30A. Extracted file 30A-112502 and deleted test. Performed quick CAL. Set new test 30A-010703. Added a circulator and redeployed in TAN-30A with circulator operating.	Removed Troll 30544 from TAN-37A. Extracted file 37A-121702 and deleted test. Performed quick CAL. Set new test 37A-010703. Added Test 37A-010703. Added a circulator and redeployed in TAN-37A with circulator operating.	Assembled Troll SN 30545. Will not operate. Will return it to the vendor.	Removed from TAN-31. Thin black layer covering Troll and 10 feet of cord. Extracted file 31-112502. Deleted test. Performed quick CAL. Set new test 31-010703. Added a circulator and redeployed in TAN-31.	
1/15/03	Extracted data in TAN-28. Reset to 1200-baud rate.	Will not communicate in TAN-37B.	Extracted data in TAN-30A. ORP is low. Reset to 1200-baud rate.	Will not communicate in TAN-37A	Returned to In Situ because we cannot get this unit to operate.	Extracted data in TAN-31. ORP seems high.	
1/15/03	Disconnected the small antenna and attached the large antenna to the network. Data from the Trolls in TAN-28, 31 and 30A can now be read in town. Got a toolbox in which to keep the Troll supplies. Shipped four hydrolabs, MS-31893, MS-35025, MS-35770 and DS-35026 to In Situ as trade-ins for the Trolls. Also returned 2 pH/ORP probes that were replaced by In Situ because of being defective.						
2/4/03	Removed from TAN-28. Circulator was off upon removal. Extracted test 28-010703 and deleted test. Performed quick CAL. Battery power 67%. pH set at nominal reading with 0.00 deviation. Added test 28-020403. Redeployed into TAN-28 with the circulator on.	Removed from TAN-37B. Circulator was on upon removal. Replaced elastometer and batteries. Extracted test 37B-010703. Deleted test. Performed quick CAL. Updated battery information. Set new test 37B-020403. Redeployed into TAN-37B.	Removed Troll 30543 from TAN-30A. Circulator was off upon removal. Extracted test 30A-010703. Deleted test. Performed quick CAL. Battery power 80%. Set new test 30A-020403. Redeployed into TAN-30A with circulator operating.	Removed Troll 30544 from TAN-37A. Circulator was off upon removal. Changed batteries. Extracted test 37A-010703. Updated battery information. Performed quick CAL. pH set at nominal with 0.06 deviation. Added test 37a-020403. Reinstalled into TAN-37A with	Unit returned from In Situ. Paperwork says, upgraded firmware to 1.07, replaced elastometer, replaced housing/body with new style, passed ops check. Says no problem found with communication. Assembled probes, conditioned instrument, performed quick	Removed from TAN-31. Unit and cord covered with black deposits plus brown mass is accumulating on it in places. Circulator was on upon removal. Extracted test 31-010703. Deleted test. Performed quick CAL. Set new test 31-020403. Reinstalled into TAN-31.	Removed Troll 30547 from shipping carton. Assembled unit/added probes. Replaced batteries. Upgraded firmware to 1.02. Set battery and clock. Performed quick CAL. Sensors stored in boxes as per mfg. instructions. Unit ready for purging.

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
				circulator on.	CAL. Battery power 100%. Ready for ISB purging.		
2/10/03							Performed quick CAL. Used for obtaining ISB purge parameters.
2/11/03							Performed quick CAL. Used for obtaining ISB purge parameters.
2/12/03	Extracted test 28-020403 in TAN-28.	Extracted test 37B-020403 in TAN-37B. Reconnected at 1200 baud. Now all Troll data can be read in town except SN 30544 that is not operating properly.	Extracted test 30A-020103 in TAN-30A.	Attempted to extract test 37A-020403 in TAN-37A. It was not working. It appeared to have no start or stop time. Defined a new test and renamed it and it still would not work.		Extracted Test #1 in TAN-31. DO does not appear to be working. Data recording in a sine wave.	
2/18/03				Removed from TAN-37A.		Removed from TAN-31. Circulator was off upon removal. Extracted and then stopped test #1. Replaced DO membrane as per mfg directions. Conditioned DO probe. Performed quick CAL, set test 31-021803 and redeployed into TAN-31 with circulator on.	Assembled probes. Deleted 12 purging tests. Performed quick CAL. Set test 37A-021803. Deployed in TAN-37A.

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
2/27/03	Extracted data in TAN-28, file name 28-020403.	Extracted data in TAN-37B, file name 37B-020403.	Extracted data in TAN-30A, file name 30A-020403.			Extracted data in TAN-31, file name 31-021803.	Extracted data in TAN-37A, file name 37A-021803.
3/3/03				Assembled probes. Neither the DO nor pH appears to be working. Performed a quick CAL. Unit used for ISB sampling to obtain purge parameters.	Assembled probes and left in DI water for conditioning in case it is needed for purging.		
03/04/03				Performed a quick CAL. Unit used for ISB sampling to obtain purge parameters.			
03/05/03				Performed a quick CAL. Unit used for NPTF performance sampling to obtain purge parameters.			
3/10/03	Removed from TAN-28. Circulator was operating upon removal. Extracted test 28-020403 and deleted test. Performed quick CAL. Battery power 69%. Programmed new test 28-031003. Redeployed in TAN-28 with circulator operating.	Removed from TAN-37B. Circulator was off upon removal. Extracted test 37B-020403 and deleted test. Performed quick CAL. Battery power 100%. Programmed new test 37B-031003. Replaced batteries in circulator. Redeployed in TAN-37B with circulator operating.	Removed Troll 30543 from TAN-30A. Circulator was off upon removal. Extracted test 30A-020403 and deleted test. Performed quick CAL. Battery power 79%. Programmed new test 30A-031003. Redeployed in TAN-30A with circulator operating.			Removed from TAN-31. Cable and unit are stained black. Circulator was off upon removal. Extracted test 31-021803. Deleted test. Performed quick CAL. Battery power 44%. Set new test 31-031003. Replaced batteries in circulator. Redeployed in TAN-31 with circulator operating.	Removed Troll 30547 from TAN-37A. Circulator was on upon removal. Extracted test 37A-021803. Deleted test. Battery power 82%. Performed quick CAL. Set new test 37A-031003. Redeployed in TAN-37A with circulator operating.

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
4/1/03	Removed from TAN-28. Attempt to extract test 28-031003 failed. File tagged "ABEND". File deleted. Quick Cal performed. Batteries at 69%. Checked date and time. Set test 28-040103. Changed batteries in circulator. Redeployed in TAN-28.	Removed from TAN-37B. Extracted test 37B-031003. Deleted file. Battery at 100 %. Quick CAL performed. Test added 37B-040103. Redeployed into TAN-37B with circulator operating upon deployment.	Removed troll 30543 from TAN-30A. Circulator was not on upon removal. Extracted test 30A-031003. Battery at 80%. Quick CAL performed. Added test 30A-040103. Batteries changed in circulator. Redeployed in TAN-30A.			Removed from TAN-31 for summer construction activities. Extracted test 31-031003 and deleted test.	Removed Troll 30547 from TAN-37A. Extracted test 37A-031003. Test deleted. Batteries at 67%. Quick CAL performed. Added test 37A-040103. Replaced batteries in circulator. Redeployed into TAN-37A.
4/1/03	A cable for connecting Troll 9000s to the computer delivered today. P/N number 21900.						
4/7/03				Quick CAL performed prior to use in purging of wells for ISB Sampling. Probes not previously installed so unit was conditioned for 1 hour for DO prior to calibration and use. Extracted all March purge data and deleted March data. Used for only a few wells because the pH was not reading properly.		Probes installed and conditioned all morning. Performed Quick CAL on unit. ORP would only accept nominal calibration. Other probes calibrated to stable. Used for purging after the first few wells and data appeared reasonable.	
4/7/03	Troll 9000 flow-through cell on ISB sample board cracked and was replaced.						

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
4/8/03						Performed Quick CAL on unit. ORP would only accept nominal calibration. Other probes calibrated to stable. Used for purging of ISB wells.	
4/9/03	Extracted file 28-040103 in TAN-28. 70% battery power left. Data appears fine.	Extracted file 37B-040103 in TAN-37B. 100% battery power left. ORP appears to be reading too low.	Extracted file 30A-031003 and file 30A-040103 in TAN-30A. 80% battery power left. ORP appears to be reading too low.			Performed Quick CAL on unit. ORP would only accept nominal calibration. Other probes calibrated to stable. Used for purging of well ANP-8.	Device will not connect to computer. No data extracted.
4/9/03	Deployed Trolls were not reset to 1200-baud rate after extraction so will not communicate from town. In Situ is trying to trouble shoot the problem of downloading and needs the communication.						
4/14/03	Deployed Trolls were reset for 1200-baud rate and the network checked and does communicate from town. In Situ software updated in both portable computers.						
4/29/03	Removed from TAN-28. Circulator was operating upon removal. Upgraded firmware to 1.19. Downloaded test TAN-28. Synced clock to computer clock due to daylight savings time. Battery at 69%. All parameters stabilized except ORP, which was accepted as nominal. Set test 28-042903. Test reported unknown failure no. 101. In Situ reported internal circuitry problems with this unit during	Removed Troll 30542 From TAN-37B. Circulator was not operating upon removal. It was full of grit and iron filings. Small amount of brown slime on cable and unit. Quick CAL performed. Redeployed in TAN-37B.	Removed Troll 30543 from TAN-30A. Circulator not operating upon removal. Upgraded firmware to 1.19. Replaced batteries in circulator. Synced clock with computer. Battery at 75%. Performed quick CAL. All parameters stabilized. Extracted tests 30A-011003 and 30A-040103. Deleted tests. Added test 30A-042903.		Installed probes from Troll 30391 into Troll 30345. Uploaded firmware 1.19. Synced clock to computer. Changed Troll name from Tan-31 to TAN-28. Changed batteries. Updated battery information. Performed quick CAL. Added test 28-042903. Checked profile and all probes appeared to be taking reasonable readings. Deployed unit into TAN-28.		Removed Troll 30547 from TAN-37A. Circulator was operating upon removal. Some brown slime was on cord and unit. Upgraded firmware to 1.19. Synced clock to computer. Extracted tests 37A-041003 and 37A-040103. Deleted tests. Performed quick CAL. Accepted nominal for ORP at -.03 deviation. All other parameters stabilized. Battery at

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
	telemetry system checks. Unit will be returned to In Situ for maintenance and repair.		Redeployed into TAN-30A.				87%. Added test 37A-042903. Redeployed into TAN-37A.
4/30/03						Installed probes in Troll 30546. Conditioned 1 hour. Upgraded firmware to 1.19. Performed quick CAL. All parameters stabilized. Left with water in cup for the weekend.	
5/5/03						Performed quick CAL on Troll 30546. All parameters stabilized. Battery at 80%. Used for purging during ISB sampling.	
5/6/03						Performed quick CAL on Troll 30546. All parameters stabilized. Battery at 77%. Used for purging during ISB sampling. Changed ORP/pH probe due to apparent high readings. Performed quick CAL. All parameters stabilized. Battery at 72%. Continued purging for ISB sampling.	

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
5/7/03						Performed Quick CAL. All parameters stabilized. Used to purge ANP-8 for sampling. Removed probes and stored as per mfg. instructions.	
5/8/03	Shipped Troll 30391 to In Situ for repair after Rad con check.	Extracted test 37B-042903 from Troll 30542 in TAN-37B. Battery at 97%.	Extracted test 30A-042903 from Troll 30543 in TAN-30A. Battery at 79%.		Extracted test 28-042903 from Troll 30545 in TAN-28. Battery at 79%.		Extracted test 37A-042903 from Troll 30547 in TAN-37A. Battery at 87%.
5/28/03		Removed Troll 30542 from TAN-37B. Circulator not operating. Unit covered with brown scum and lots of metal filings. Upgraded firmware to 1.21. Extracted test 37B-042903. Test deleted. Battery at 82%. Performed quick CAL. Added test 37B-052803. Synced clock with computer. Cleaned circulator. Redeployed into TAN-37B with circulator operating.	Removed Troll 30543 from TAN-30A. Circulator not operating upon removal. Upgraded firmware to 1.21. Extracted test 30A-042903. Deleted test. Performed quick CAL. All sensors stabilized. Added test 30A-052803. Battery at 80%. Cleaned circulator. Replaced cable in TAN-30A due to a broken female end. Redeployed Troll 30543 into TAN-30A with circulator operating.		Removed Troll 30545 from TAN-28. Circulator was not operating upon removal. Slime-like material removed from DO probe. Upgraded firmware to 1.21. Extracted test 28-042903. Test deleted. Performed quick CAL. All sensors stabilized. pH probe 32020 took longer than normal to stabilize. Battery at 100%. Clock synced to computer. Added test 28-052803. Cleaned and changed batteries in circulator. Redeployed into TAN-28 with circulator operating.		Removed Troll 30547 from TAN-37A. Small amount of brown scum on cable and instrument mixed with iron filings. Circulator not operating upon removal. Upgraded firmware to 1.21. Extracted test 37A-042903. Test deleted. Synced clock with computer. Battery at 74%. Performed quick CAL. All parameters stabilized. Added test 37A-052803. Cleaned circulator that was very dirty. Redeployed into TAN-37A with circulator operating.

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
6/4/03			Attempted to connect computer directly to Troll 30543 in TAN-30A. Telemetry system not able to contact this unit. Attempt failed. Later the unit did communicate and no data was lost.				
6/10/03						Probes installed in Troll 30546 for conditioning. Firmware updated to 1.21	
6/11/03						Performed quick CAL on Troll 30546. All parameters stabilized. Used for purging ANP-8 during sampling today. Probes removed and stored as per mfg. instructions following sampling.	
6/11/03	Received new probes: pH probes SN 1099 and SN 1095 with exp date = Nov. 2004 and Lot no. = 526076-2; ORP probes SN 28 and SN 23 with exp date = August 2004 and Lot no. = RA03-083.						

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
6/16/03						Installed probes into Troll 30546. Replaced combination probe SN 1101 with new separate pH (SN 1099) and ORP (SN 28) probes. DO probe (SN42) installed. DO membrane changed.	
6/17/03						Performed quick CAL. Troll 30546 used for purging during ISB sampling. Changed DO membrane on probe SN 42.	
6/17/03	Changed DO membranes on probes SN 46 and SN 45 not currently assigned to a particular unit.						
6/18/03	Received Troll 30391 back from In-Situ inc. The SN number has been changed to 30960. Information from In-Situ says: replaced housing/body; replaced sleeve sensor housing block, top cap, flex, bearing and elastometer. Installed pins, pass: sensor adjust and quick CAL; pressure test and final ops.	Extracted test 37B-052803 from Troll 30542 in TAN-37B. Battery at 89%.	Extracted test 30A-052803 from Troll 30543 in TAN-30A. Battery at 80%.		Extracted test 28-052803 from Troll 30545 in TAN-28. Battery at 100%.	Removed probes from Troll 30546. Stored as per mfg. instructions.	Extracted test 37A-052803 from Troll 30547 in TAN-28. Battery at 65%.

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
7/8/03		Removed Troll 30542 from TAN-37B. Circulator not operating upon removal. Cable and Troll were covered with brown slime changing to black with depth. Smelled like rotten onions. Battery at 90%. Extracted test 37B-052803. Changed DO membrane on probe SN 60. Cleaned circulator. Full of iron filings, some gray sand and one soft mass the size of a pea of tan clay or biomass or something. Changed circulator batteries.	Removed Troll 30543 from TAN-30A. Circulator not operating upon removal. Battery at 79%. Extracted test 30A-052803. Deleted test. Changed DO membrane on probe SN 43. Replaced batteries in circulator.		Removed Troll 30545 From TAN-28. Circulator operating upon removal. Battery at 100%. Extracted test 28-052803. Deleted test. Changed DO membrane on probe SN 32870. Battery at 60%. Extracted test 37A-052803. Deleted test. PH and ORP results appear questionable.		Removed Troll 30547 from TAN-37A. Circulator not operating upon removal. Cable and troll covered with brown and black goo as bad or worse than the one in TAN-37B. Changed DO membrane on probe SN 34. Cleaned circulator. Packed with gray sand and a few iron filings. Changed circulator batteries.
7/9/03		Deleted test 37B-052803. Performed Quick CAL. All parameters stabilized. Added Test 37B-070903. Redeployed in TAN-37B. Circulator operating upon deployment.	Performed Quick CAL. All parameters stabilized. Added test 30A-070903. Redeployed into TAN-30A. Circulator operating upon deployment.		Performed Quick CAL. Conductivity, DO and pH stabilized. ORP accepted nominal at .04 deviation. ORP/pH probe SN 32020. Added test 28-070903. Redeployed into TAN-28. Circulator operating upon deployment.		Performed Quick CAL. All parameters stabilized. Added test 37A-070903. Redeployed into TAN-37A. Circulator operating upon deployment.

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
7/21/03		Extracted test 37B-070903. Battery at 89%.	Extracted test 30A-070903. Battery at 77%.		Extracted test 28-070903. Battery at 100%.		Extracted test 37A-070903. Batery at 52%.
7/28/03						Installed probes and conditioned instrument for 1 hour. Changed batteries and now at 77%. Performed Quick CAL. All parameters stabilized. Used for ISB well purging.	
7/29/03						Performed quick CAL. Batteries at 74%. All parameters stabilized. Used for ISB well purging.	
7/30/03		Extracted test 37B-070903. Battery at 87%.	Extracted test 30A-070903. Battery at 77%.		Extracted test 28-070903. Battery at 100%.	Performed quick CAL. All parameters stabilized. Batteries at 74%. Used for ISB well purging. Removed probes and stored appropriately.	Extracted test 37A-070903. Battery at 44%.
8/12/03		Removed Troll 30542 from TAN-37B. Circulator was not operating upon removal. Brown film on cable and troll. Lots of iron filings on circulator. Battery at 87%. Extracted test 37B-070903. Test deleted. Replaced pH/ORP sensor with separate pH and ORP sensors. Performed quick CAL. All	Removed Troll 30543 from TAN-30A. Circulator was operating upon removal. Battery at 77%. Extracted test 30A-070903. Deleted test. Replaced pH/ORP sensor with separate pH and ORP sensors. Performed quick CAL. All	Installed probes into Troll 30544. Synced clock with computer. Firmware updated from 1.02 to 1.19. Changed batteries. Battery at 100%. Checked that sensors were working but did not complete Quick CAL. Began conditioning unit for use in purging	Removed Troll 30545 from TAN-28. Circulator was not operating upon removal. Battery at 100%. Extracted test 28-070903. Deleted test. Replaced pH/ORP sensor with separate pH and ORP sensors. Performed Quick CAL. All parameters	Installed probes into Troll 30546. Battery at 67%. Difficulties with pH and ORP but found a probe that appears to work. Did not complete Quick CAL. Began conditioning unit for use in purging wells during sampling next week.	Removed Troll 30457 from TAN-37A. Circulator was not operating upon removal. Slight amount of brown film on cable and Troll. A few iron filings in circulator. Battery at 27%. Extracted test 37A-070903. Test deleted. Changed batteries and

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
		parameters stabilized. Synced clock with computer. Added test 37B-081203. Cleaned circulator. Redeployed into TAN-37B with circulator operating.	parameters stabilized. Synced clock with computer. Added new test 30A-081203. Cleaned circulator. Redeployed into TAN-30 A with circulator operating.	wells during sampling next week	stabilized. Synced clock with computer. Added test 28-081203. Cleaned circulator and changed circulator batteries. Redeployed into TAN-28 with circulator operating.		updated battery information. Replaced pH/ORP sensor with separate pH and ORP sensors. Performed Quick CAL. All parameters stabilized. Synced clock with computer. Added new test TAN37A-081203. Cleaned circulator. Redeployed into TAN-37A with circulator operating.
8/18/03				Performed Quick CAL for instrument to be used for purging MNA wells. All sensors stabilized except DO, which was accepted as nominal.		Performed Quick CAL for instrument to be used for purging ISB wells. All sensors stabilized.	
8/19/03				Performed Quick CAL for instrument to be used for purging MNA wells. All sensors stabilized.		Performed Quick CAL for instrument to be used for purging ISB wells. All sensors stabilized.	
8/20/03				Performed Quick CAL for instrument to be used for purging MNA wells. All sensors stabilized.		Performed Quick CAL for instrument to be used for purging ISB wells. All sensors stabilized	

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
8/21/03		Upgraded firmware to 1.23 with instrument in TAN-37B. Battery at 64%. Extracted test 37B-081203. Deleted it. Set up test 37B-082103 to start at 16:00.	Upgraded firmware to 1.23 with instrument in TAN-30A. Battery at 54%. Extracted test 30A-081203. Deleted it. Set up test 30A-082103 to start at 16:00.		Upgraded firmware to 1.23 with instrument in TAN-28. Battery at 94%. Extracted test 28-081203. Deleted it. Set up test 28-082103 to start at 16:00.		Upgraded firmware to 1.23 with instrument in TAN-37A. Battery at 100%. Extracted test 37A-081203. Deleted it. Set up test 37A-082103 to start at 16:00
9/9/03		Not able to connect to Troll 30542 in TAN-37B.	Extracted test 30A-082103. Battery at 26%. DO and ORP are not reading consistently.		Extracted test 28-082103. Battery at 67%. DO and ORP readings are not stable.		Extracted test 37A-0/821/03. Battery at 87%. DO readings are not stable.
9/15/03	Troll down-hole cable returned from In-Situ where the female end was repaired. SN number 78791.						
9/15/03						Performed Quick CAL for instrument to be used for purging ISB wells. All sensors stabilized except DO, which was accepted at nominal.	
9/16/03						Performed Quick CAL for instrument to be used for purging ISB wells. All sensors stabilized except ORP, which was accepted at nominal. DO electrode filling solution was added to the DO probe at the end of the day for overnight conditioning.	

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
9/17/03				Performed Quick CAL for instrument to be used for purging ISB wells. All sensors stabilized except ORP, which was accepted at nominal.		Performed Quick CAL for instrument to be used for purging ISB wells. Due to difficulty with the probes, Troll SN 30544 was used instead. Troubleshooting was done with the instrument without effect.	
9/18/03	Probes installed, DO membrane changed. Quick CAL performed. ORP accepted as nominal.	Removed from well TAN-37B. Circulator was not operating upon removal. Test extracted. Probes cleaned and DO membrane changed. Quick CAL performed.	Removed from well TAN-30A. Circulator was not operating upon removal. Test extracted. Probes cleaned and DO membrane changed. Quick CAL performed.	Instrument will be used for purge reading during ISB sampling. Probes appeared to be operating normally according to the profiler so were not standardized, except DO so the membrane was changed.	Removed from well TAN-28. Circulator was operating upon removal. The battery connection was broken during attempt to replace batteries. Must be returned to mfg. for repair.		Removed from well TAN-37A. Circulator was not operating upon removal. The battery connection was broken during attempt to replace batteries. Must be returned to mfg. for repair.
9/23/03	Quick CAL performed after replacing ORP probe. All parameters stabilized. Deployed in well TAN-28 with circulator operating.	Quick CAL performed. All parameters stabilized. DO slope was low. Deployed in well TAN-37B with circulator operating.	Quick CAL performed. All parameters stabilized. Deployed in well TAN-30A with circulator operating.	Quick CAL performed. All parameters stabilized. DO slope was low. Deployed in well TAN-37A with circulator operating.			
9/30/03	Extracted test 28-092303. Battery at 100%. Reconnected at 1200 baud.	Extracted test 37B-092303. Battery at 100%. Reconnected at 1200 baud.	Extracted test 30A-092303. Battery at 100%. Reconnected at 1200 baud.	Extracted test 37A-092303. Battery at 69%. Reconnected at 1200 baud	Surveyed by Rad Con and is ready to be shipped to In-Situ for repairs.		Surveyed by Rad Con and is ready to be shipped to In-Situ for repairs.

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
10/6/03						Probes were inserted and batteries changed to use for purge data collection. Standardized, ORP accepted as nominal and the DO did not condition in the appropriate amount of time. Re-standardized and ORP accepted as nominal.	
10/7/03						Performed Quick Cal to use for purge data collection. ORP/pH probes were changed because they did not stabilize. All parameters stabilized accept ORP, which was accepted as nominal.	
10/8/03	Extracted test 28-092303. Battery at 100%. Reconnected at 1200 baud.	Extracted test 37B-092303. Battery at 97%. Reconnected at 1200 baud.	Extracted test 30A-092303. Battery at 100%. Reconnected at 1200 baud.	Extracted test 37A-092303. Battery at 60%. Reconnected at 1200 baud.		Prepared for purge data collection. All parameters stabilized. Stored appropriately.	
10/21/03	Extracted test 28-092303. Battery at 100%. Reconnected at 1200 baud.	Extracted test 37B-092303. Battery at 90%. Reconnected at 1200 baud.	Extracted test 30A-092303. Battery at 100%. Reconnected at 1200 baud.	Unable to establish a connection.			

Table C-1. (continued).

Date	SN 30391/30960	SN 30542	SN 30543	SN 30544	SN 30545	SN 30546	SN 30547
10/27/03	Removed Troll 30960 from TAN-28. Circulator was operating. All probes were standardized within operational ranges.	Removed Troll 30542 from TAN-37B. Circulator was operating. All probes were standardized within operational ranges.	Removed Troll 30543 from TAN-30A. Circulator was operating. All probes were standardized within operational ranges.	Removed Troll 30544 from the well TAN-37A. Circulator was not operating. All probes were standardized within operational ranges.		Prepared to use for sampling. Probes inserted and all probes stabilized, ORP offset was out of range.	
10/28/03	Deployed in well TAN-28 with circulator operating. The cable length was previously measured to place the Troll at 236 ft bls.		Deployed in well TAN-30A with circulator operating. The cable length was previously measured to place the Troll at 307 ft bls.			Deployed in well TAN-31 to a depth of 255 ft bls.	
10/29/03	Extracted test 28-102803. Battery at 83%. Reconnected at 1200 baud.		Extracted test 30A-102803. Battery at 83%. Reconnected at 1200 baud.			Extracted test 31-102803. Battery at 75%. Baud rate left at 9600 because this Troll is not connected to the telemetry system.	
10/30/03		Standardized and deployed in well TAN-31. The profiler was used to check and the readings for depth, pH, and DO appeared to be good.				Removed Troll 30546 from TAN-31 because pH reading was 3, DO was unstable and the depth was reading 90 ft. The depth had to be recalibrated. It is recommended that depth be standardized before deployment.	

Appendix D

Analytical Data

(see attached CD-ROM)

TSF-05A

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN00001	11/04/02		3790	>2.5	0.24
INM01601	12/12/02				
INM03201	01/13/03		3860		
INM04801	02/10/03		3550		
INM06401	03/03/03		3690		
INM15001	04/07/03		3920		
INM15002	04/07/03		3630		
INM20001	05/05/03		4180	1.74	0.03
INM30001	07/28/03		3700		
INM35001	08/19/03		3360		
INM40001	09/15/03		3580		
RAA00001	10/06/03		2990		

TSF-05B

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN00101	11/05/02		3700	>2.5	0.46
INM01701	12/12/02				
INM03301	01/14/03		4240		
INM04901	02/11/03		4580		
INM06501	03/04/03		3070		
INM15101	04/08/03		4450		
INM20101	05/06/03		5640	0.25	0.22
INM30101	07/29/03		3730		
INM35101	08/20/03		5000		
INM40101	09/16/03		4360		
RAA00101	10/07/03		4220		

TAN-1859

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
INM37201	08/19/03		2020		
INM41401	09/17/03		2220		
RAA01401	10/08/03		1820		

TAN-25

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN00201	11/05/02		5880	>2.5	0
INM01801	12/10/02		6720		
INM03401	01/14/03		4740		
INM05001	02/11/03		6780		
INM05002	02/11/03		6990		
INM06601	03/04/03		5050		
INM06602	03/04/03		5580		
INM15201	04/08/03		5730		
INM20201	05/06/03		6740	0.23	0
INM23201	06/17/03		5760		
INM23202	06/17/03		5660		
INM30201	07/29/03		4690		
INM35201	08/19/03		5600		
INM35202	08/19/03		6040		
INM40201	09/16/03		5200		
RAA00201	10/07/03		5860		

TAN-31

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN00801	11/05/02		2160	1.64	0.02
INM02401	12/10/02		2880		
INM02402	12/10/02		2740		
INM04001	01/14/03		3240		
INM05601	02/11/03		2060		
INM07201	03/04/03		3480		
INM15801	04/08/03		1910		
INM20801	05/06/03		2670	2.54	0.02
INM20802	05/06/03		2550	2.42	0
INM23801	06/17/03		3620		
INM35801	08/20/03		2060		
INM40801	09/17/03		2700		
RAA00801	10/07/03		1850		
RAA00802	10/07/03		1810		

TAN-26

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN00301	11/05/02		2780	0.71	0.07
INM01901	12/10/02		3180		
INM03501	01/14/03		3370		
INM03502	01/14/03		3200		
INM05101	02/11/03		3860		
INM06701	03/04/03		3000		
INM15301	04/08/03		3580		
INM20301	05/06/03		2300	1.78	0.08
INM30301	07/29/03		1900		
INM35301	08/19/03		2000		
INM40301	09/16/03		2200		
INM40302	09/16/03		2260		
RAA00301	10/07/03		2290		

TAN-37C

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN01101	11/05/02		1785	0.88	0.53
INM02701	12/10/02		1580		
INM04301	01/14/03		1900		
INM05901	02/11/03		2090		
INM07501	03/04/03		1700		
INM16101	04/08/03		2030		
INM21101	05/06/03		2040	1.71	0.59
INM31101	07/29/03		1700		
INM31102	07/29/03		1780		
INM36101	08/18/03		1880		
INM41101	09/18/03		1900		
INM41102	09/18/03		1910		
RAA01101	10/07/03		2030		

TAN-37A

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN00901	11/05/02		418	0.52	1.15
INM02501	12/10/02		412		
INM04101	01/14/03		498		
INM05701	02/11/03		436		
INM07301	03/04/03		456		
INM15901	04/08/03		466		
INM20901	05/06/03		454	1.46	1.07
INM23901	06/17/03		488		
INM30901	07/29/03		414		
INM35901	08/18/03		416		
INM40901	09/18/03		460		
RAA00901	10/07/03		402		

TAN-37B

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN01001	11/05/02		444	0.48	1.06
INM02601	12/10/02		404		
INM04201	01/14/03		466		
INM05801	02/11/03		446		
INM07401	03/04/03		476		
INM16001	04/08/03		480		
INM16002	04/08/03		476		
INM21001	05/06/03		474	1.00	1.06
INM24001	06/17/03		514		
INM31001	07/29/03		432		
INM36001	08/18/03		420		
INM41001	09/18/03		454		
RAA01001	10/07/03		420		

TAN-1860

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
INM37301	08/20/03		366		
INM41501	09/17/03		391		
RAA01501	10/06/03		404		

TAN-28

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN00501	11/04/02		296	0.48	0.76
IAN00502	11/04/02		298	0.61	0.78
INM02101	12/09/02		313		
INM03701	01/13/03		297		
INM05301	02/10/03		314		
INM06901	03/03/03		365		
INM06902	03/03/03		317		
INM15501	04/07/03		298		
INM20501	05/05/03		376	0.53	0.79
INM30501	07/28/03		323		
INM35501	08/18/03		326		
INM40501	09/15/03		307		
INM40502	09/15/03		310		
RAA00501	10/06/03		312		
RAA00502	10/06/03		314		

TAN-30A

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN00701	11/04/02		333	0.46	0.39
INM02301	12/09/02		354		
INM03901	01/13/03		334		
INM05501	02/10/03		365		
INM07101	03/03/03		370		
INM15701	04/07/03		373		
INM20701	05/05/03		404	0.39	0.17
INM30701	07/28/03		436		
INM35701	08/18/03		440		
INM40701	09/15/03		452		
RAA00701	10/06/03		474		

TAN-1861

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
INM37401	08/20/03		365		
INM37402	08/20/03		376		
INM41601	09/15/03		345		

TAN-D2

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN01301	11/05/02		618	0.96	0.37
INM02901	12/09/02		656		
INM04501	01/13/03		598		
INM06101	02/11/03		662		
INM07701	03/04/03		632		
INM16301	04/08/03		666		
INM21301	05/05/03		662	0.86	0.26
INM31301	07/28/03		458		
INM31302	07/28/03		448		
INM36301	08/19/03		422		
INM41301	09/16/03		396		
RAA01301	10/07/03		352		

TAN-29

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN00601	11/04/02		228	0.49	0.58
INM02201	12/09/02		259		
INM03801	01/13/03		253		
INM05401	02/10/03		272		
INM05403	02/10/03		268		
INM07001	03/03/03		260		
INM15601	04/07/03		267		
INM20601	05/05/03		267	0.55	0.86
INM20602	05/05/03		274	0.46	0.84
INM30601	07/28/03		246		
INM35601	08/18/03		249		
INM35602	08/18/03		250		
INM40601	09/16/03		256		
RAA00601	10/06/03		193		

TAN-27

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN00401	11/04/02		203	0.42	0.08
INM02001	12/09/02		212		
INM03601	01/13/03		205		
INM03602	01/13/03		199		
INM05201	02/10/03		219		
INM06801	03/03/03		222		
INM15401	04/07/03		235		
INM20401	05/05/03		223	0.92	0.04
INM30401	07/28/03		220		
INM35401	08/20/03		192		
INM40401	09/15/03		227		
RAA00401	10/06/03		229		

TAN-10A

Sample ID	Date	Carbon Dioxide (mg/L)	Alkalinity (mg/L)	PO4 3- Phosphate (mg/L)	NH3-N Ammonia (mg/L)
IAN01201	11/04/02		202	0.39	0.04
INM02801	12/09/02		214		
INM04401	01/13/03		208		
INM06001	02/10/03		211		
INM07601	03/03/03		220		
INM16201	04/07/03		226		
INM21201	05/05/03		218	0.64	0.01
INM31201	07/28/03		219		
INM36201	08/20/03		214		
INM41201	09/15/03		221		
RAA01201	10/06/03		224		

TSF-05A

Sample ID	Date	Ethane (mg/L)	Flag	Ethene (mg/L)	Flag	Methane (mg/L)	Flag
IAN00002	11/04/02	1.9	U	110	J	3300	D
INM04802	02/10/03	3.69	UJ	237	J	6040	J
INM20002	05/05/03	1000	U	1200		9700	D
INM35002	08/19/03	12		600		15000	D

TSF-05B

Sample ID	Date	Ethane (mg/L)	Flag	Ethene (mg/L)	Flag	Methane (mg/L)	Flag
IAN00102	11/05/02	1.9	U	110		5300	D
INM04902	02/11/03	3.69	UJ	127	J	8100	J
INM20102	05/06/03	500	U	500	U	22000	D
INM35102	08/20/03	1000	U	1000	U	30000	D

TAN-1859

Sample ID	Date	Ethane (mg/L)	Flag	Ethene (mg/L)	Flag	Methane (mg/L)	Flag
INM37202	08/19/03						

TAN-25

Sample ID	Date	Ethane (mg/L)	Flag	Ethene (mg/L)	Flag	Methane (mg/L)	Flag
IAN00202	11/05/02	1.9	U	7.8		2900	D
INM05002	02/11/03	3.69	UJ	3.43	U	6150	J
INM05004	02/11/03	3.69	UJ	11	J	7730	J
INM20202	05/06/03	350	J	500	U	14000	
INM35202	08/19/03	10	U	31		6000	D
INM35204	08/19/03	10	U	20		6400	D

TAN-31

Sample ID	Date	Ethane (mg/L)	Flag	Ethene (mg/L)	Flag	Methane (mg/L)	Flag
IAN00802	11/05/02	1.9	U	5		6200	D
INM05602	02/11/03	3.69	UJ	3.43	U	5450	J
INM20802	05/06/03	1	U	1	U	1	U
INM20804	05/06/03	500	U	500	U	43000	D
INM35802	08/20/03	10	U	16		10000	D

TAN-26

Sample ID	Date	Ethane (mg/L)	Flag	Ethene (mg/L)	Flag	Methane (mg/L)	Flag
IAN00302	11/05/02	9.3		2.7		5800	D
INM05102	02/11/03	3.69	UJ	3.43	U	5600	J
INM20302	05/06/03	1	U	1	U	1	U
INM35302	08/19/03	100		29		17000	D

TAN-37C							
Sample ID	**Date**	**Ethane (mg/L)**	**Flag**	**Ethene (mg/L)**	**Flag**	**Methane (mg/L)**	**Flag**
IAN01102	11/05/02	17		5.5		13000	D
INM05902	02/11/03	3.69	UJ	3.43	U	12300	J
INM21102	05/06/03	1	U	1	U	1	U
INM36102	08/18/03	10	U	9	J	*7700	D

*The diluted sample was run one day outside of the holding time.

TAN-37A							
Sample ID	**Date**	**Ethane (mg/L)**	**Flag**	**Ethene (mg/L)**	**Flag**	**Methane (mg/L)**	**Flag**
IAN00902	11/05/02	1.9	U	1.8	U	6700	D
INM05702	02/11/03	3.69	UJ	9.43	J	10200	J
INM20902	05/06/03	1	U	1	U	1	U
INM35902	08/18/03	10	U	8	J	*5800	D

TAN-37B							
Sample ID	**Date**	**Ethane (mg/L)**	**Flag**	**Ethene (mg/L)**	**Flag**	**Methane (mg/L)**	**Flag**
IAN01002	11/05/02	1.9	U	2.6		8400	D
INM05802	02/11/03	3.69	UJ	10.8	J	10700	J
INM21002	05/06/03	1000	U	1000	U	9000	
INM36002	08/18/03	10	U	6	J	*4800	D

TAN-1860							
Sample ID	**Date**	**Ethane (mg/L)**	**Flag**	**Ethene (mg/L)**	**Flag**	**Methane (mg/L)**	**Flag**
INM37302	08/20/03						

TAN-28							
Sample ID	**Date**	**Ethane (mg/L)**	**Flag**	**Ethene (mg/L)**	**Flag**	**Methane (mg/L)**	**Flag**
IAN00502	11/04/02	2.7		2.6		2300	
IAN00504	11/04/02	1.9	U	1.8	U	2100	D
INM05302	02/10/03	3.69	U	3.43	U	3140	D
INM20502	05/05/03	200	U	200	U	4400	
INM35502	08/18/03	10	U	10	U	*1400	D

TAN-30A							
Sample ID	**Date**	**Ethane (mg/L)**	**Flag**	**Ethene (mg/L)**	**Flag**	**Methane (mg/L)**	**Flag**
IAN00702	11/04/02	1.9	U	1.8	U	5100	D
INM05502	02/10/03	3.69	UJ	3.43	U	9270	J
INM20702	05/05/03	500	U	500	U	12000	
INM35702	08/18/03	10	U	10	U	*6400	D

TAN-1861							
Sample ID	**Date**	**Ethane (mg/L)**	**Flag**	**Ethene (mg/L)**	**Flag**	**Methane (mg/L)**	**Flag**
INM37402	08/20/03						
INM37404	08/20/03						

*The diluted sample was run one day outside of the holding time.

TAN-D2							
Sample ID	**Date**	**Ethane (mg/L)**	**Flag**	**Ethene (mg/L)**	**Flag**	**Methane (mg/L)**	**Flag**
IAN01302	11/05/02	1.9	U	3.4		5900	D
INM06102	02/11/03	3.69	UJ	3.43	U	13000	J
INM21302	05/05/03	360	J	500	U	9400	D
INM36302	08/19/03	10	U	10	U	5000	D

TAN-29							
Sample ID	**Date**	**Ethane (mg/L)**	**Flag**	**Ethene (mg/L)**	**Flag**	**Methane (mg/L)**	**Flag**
IAN00602	11/04/02	1.9	U	1.8	U	1900	
INM05402	02/10/03	3.69	UJ	3.43	U	4000	J
INM05404	02/10/03	3.69	UJ	3.43	U	4020	J
INM20602	05/05/03	200	U	200	U	6200	
INM20604	05/05/03	200	U	200	U	6300	
INM35602	08/18/03	10	U	10	U	150	D
INM35604	08/18/03	10	U	10	U	180	D

TAN-27 Sample ID	Date	Ethane (mg/L)	Flag	Ethene (mg/L)	Flag	Methane (mg/L)	Flag
IAN00402	11/04/02	1.9	U	1.8	U	570	
INM05202	02/10/03	3.69	UJ	3.43	U	830	J
INM20402	05/05/03	200	U	200	U	2300	
INM35402	08/20/03	10	U	10	U	140	D

TAN-10A Sample ID	Date	Ethane (mg/L)	Flag	Ethene (mg/L)	Flag	Methane (mg/L)	Flag
IAN01202	11/04/02	1.9	U	1.8	U	260	
INM06002	02/10/03	3.69	UJ	3.43	U	650	J
INM21202	05/05/03	100	U	100	U	380	
INM36202	08/20/03	10	U	10	U	120	D

Offsite Blanks Sample ID	Date	Ethane (mg/L)	Flag	Ethene (mg/L)	Flag	Methane (mg/L)	Flag	
IAN01402	11/05/02	1.9	U	1.8	U	3.8		Field blank
IAN01502	11/07/02	1.9	U	1.8	U	2.1		Trip blank
INM06202	02/10/03	3.69	UJ	3.43	U	1.96	U	Field blank
INM08301	02/10/03	3.69	UJ	3.43	U	1.96	U	Trip blank
INM06302	02/11/03	3.69	UJ	3.43	U	1.96	U	Field blank
INM22101	05/05/03	1	U	1	U	1	U	Trip blank
INM21602	05/05/03	1	U	1	U	1	U	Field blank
INM21702	05/06/03	1	U	1	U	1	U	Field blank
INM36402	08/18/03	10	U	10	U	74		Field blank
INM36502	08/19/03	10	U	10	U	66		Field blank
INM36602	08/20/03	10	U	10	U	190		Field blank
INM37001	08/21/03							Trip blank

TSF-05A

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN00002	11/04/02	5	U	0.52	J	460		13		17	
INM04802	02/10/03	5	U	1	J	400	D	67		41	
INM20002	05/05/03	10	U	10	U	390	D	45		38	
INM35002	08/19/03	10	U	2	J	310	D	43		25	

TSF-05B

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN00102	11/05/02	5	U	1.1	J	430		14		11	
INM04902	02/11/03	5	U	0.52	J	370	D	13		9.5	
INM20102	05/06/03	10	U	10	U	350	D	12		6.3	J
INM35102	08/20/03	10	U	10	U	380	D	26		15	

TAN-1859

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
INM37202	08/19/03										

TAN-25

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN00202	11/05/02	5	U	2.6	J	270		3.5	J	2.4	J
INM05002	02/11/03	5	U	2.9	J	170		0.88	J	0.98	J
INM05004	02/11/03	5	U	3.1	J	180		0.99	J	1.1	J
INM20202	05/06/03	10	U	10	U	190		10	U	10	U
INM35202	08/19/03	10	U	4	J	210	D	6	J	5	J
INM35204	08/19/03	50	U	50	U	220		5	J	5	J

TAN-31

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN00802	11/05/02	5.0	U	0.5	J	260.0		1.5	J	1.5	J
INM05602	02/11/03	5.0	U	1.3	J	230.0	D	1.4	J	1.0	J
INM20802	05/06/03	10.0	U	10.0	U	250.0	D	10.0	U	10.0	U
INM20804	05/06/03	10.0	U	10.0	U	250.0	D	10.0	U	10.0	U
INM35802	08/20/03	50.0	U	50.0	U	320.0		50.0	U	50.0	U

TAN-26

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN00302	11/05/02	5	U	5	U	60		5	U	5	U
INM05102	02/11/03	5	U	1.7	J	44		5	U	5	U
INM20302	05/06/03	10	U	10	U	37		10	U	10	U
INM35302	08/19/03	10	U	10	U	72		10	U	10	U

TAN-37C

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN01102	11/05/02	5	U	1.5	J	81		3.6	J	3.8	J
INM05902	02/11/03	5	U	1	J	120		5.2		2.9	J
INM21102	05/06/03	10	U	10	U	120		5.8	J	10	U
INM36102	08/18/03	10	U	17		140		22		6	J

TAN-37A

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN00902	11/05/02	1.5	J	160		94		36		3.7	J
INM05702	02/11/03	5	U	59		110		49		6.7	
INM20902	05/06/03	10	U	64		120		42		4.7	J
INM35902	08/18/03	0.9	J	120		140		29		5	J

TAN-37B

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN01002	11/05/02	1	J	130		91		29		3.8	J
INM05802	02/11/03	5	U	64		110		42		7.1	
INM21002	05/06/03	10	U	56		130		46		5.6	J
INM36002	08/18/03	50	U	110		150		28	J	5	J

TAN-1860

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
INM37302	08/20/03										

TAN-28

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN00502	11/04/02	14.0		1100.0		160.0		160.0		5.3	
IAN00504	11/04/02	14.0		1100.0		160.0		160.0		5.0	
INM05302	02/10/03	9.8		920.0	D	140.0		150.0		5.0	
INM20502	05/05/03	10.0		1300.0	D	170.0		180.0		6.3	J
INM35502	08/18/03	18.0	J	1400.0		120.0		180.0		100.0	U

TAN-30A

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN00702	11/04/02	3.7	J	64		41		9.1		2.3	J
INM05502	02/10/03	3.3	J	70		45		9.9		1.6	J
INM20702	05/05/03	3.2	J	70		50		8.5	J	10	U
INM35702	08/18/03	3	J	85		98		12		3	J

TAN-1861

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
INM37402	08/20/03										
INM37404	08/20/03										

TAN-D2

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN01302	11/05/02	5	U	8.8		110		7.7		1.5	J
INM06102	02/11/03	5	U	1.9	J	120		15		1.9	J
INM21302	05/05/03	10	U	2.8	J	130		16		10	U
INM36302	08/19/03	10	U	9	J	90		4	J	2	J

TAN-29

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN00602	11/04/02	11		690		76		130		2.7	J
INM05402	02/10/03	8		600	D	100		130		3.5	J
INM05404	02/10/03	7.4		610	D	100		120		3.5	J
INM20602	05/05/03	7.7	J	740	D	110		130		10	U
INM20604	05/05/03	7.8	J	790	D	110		130		10	U
INM35602	08/18/03	13	J	980		130		170		3	J
INM35604	08/18/03	14	J	1000	D	130		170		50	U

TAN-27

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN00402	11/04/02	5.3		34		2.3	J	1.8	J	5	U
INM05202	02/10/03	5.3		38		4.5	J	2.5	J	5	U
INM20402	05/05/03	5	J	34		4.8	J	10	U	10	U
INM35402	08/20/03	7	J	39		5	J	1	J	10	U

TAN-10A

Sample ID	Date	PCE (mg/L)	Flag	TCE (mg/L)	Flag	t-DCE (mg/L)	Flag	c-DCE (mg/L)	Flag	VC (mg/L)	Flag
IAN01202	11/04/02	2.2	J	8.3		5	U	5	U	5	U
INM06002	02/10/03	2.4	J	12		5	U	0.46	J	5	U
INM21202	05/05/03	2.1	J	8.8	J	10	U	10	U	10	U
INM36202	08/20/03	3	J	9	J	10	U	10	U	10	U

Offsite VOC Blank Data												
Sample ID	**Date**	**PCE (mg/L)**	**Flag**	**TCE (mg/L)**	**Flag**	**t-DCE (mg/L)**	**Flag**	**c-DCE (mg/L)**	**Flag**	**VC (mg/L)**	**Flag**	
IAN01402	11/05/02	5	U	5	U	5	U	5	U	5	U	Field blank
IAN01502	11/07/02	5	U	5	U	5	U	5	U	5	U	Trip blank
INM08301	02/10/03	5	U	5	U	5	U	5	U	5	U	Trip blank
INM06202	02/10/03	5	U	5	U	5	U	5	U	5	U	Field blank
INM06302	02/11/03	5	U	5	U	5	U	5	U	5	U	Field blank
INM22101	05/05/03	10	U	10	U	10	U	10	U	10	U	Trip blank
INM21602	05/05/03	10	U	1.2	J	10	U	10	U	10	U	Field blank
INM21702	05/06/03	10	U	10	U	10	U	10	U	10	U	Field blank
INM36402	08/18/03	10	U	10	U	10	U	10	U	10	U	Field blank
INM36502	08/19/03	10	U	10	U	10	U	10	U	10	U	Field blank
INM36602	08/20/03	1	J	10	U	0.8	J	10	U	10	U	Field blank
INM37001	08/21/03	10	U	10	U	10	U	10	U	10	U	Trip blank

Nov. 1998
NA* denotes that the RPD is at least +/-25%.

Feb. 1999
NA* denotes that the RPD is at least +/-25%.

Apr. 1999

NA* denotes that the RPD is at least +/-25%.
1. Another diluted analysis reported a value of 14 ppb for TCE , 260 ppb for t-DCE, 780 ppb for c-DCE, and 65 ppb for vinyl chloride in TAN-25 (Quanterra).
2. A second analysis reported a value of 38 ppb for TCE in TAN-D2 (Quanterra).
3. A second analysis reported a value of 68 ppb for TCE and 12 for c-DCE in TAN-27 (Quanterra).
4. A duplicate analysis reported a value of 2 U for vinyl chloride, 77 ppb for TCE, 5 ppb for PCE, 8 ppb for t-DCE, and 15 ppb for c-DCE in TAN-27 (Quanterra).
5. A second analysis of the duplicate sample reported values of 72 ppb for TCE, 10 and 11 ppb for c-DCE in TAN-27 (Quanterra).
6. The duplicate analysis reported ND for vinyl chloride, <10 ppb for t-DCE, 13.5 ppb for c-DCE, 89.7 ppb for TCE, and <10 for PCE in TAN-27 (IRC).
7. A second analysis reported values of 710 ppb for TCE, 90 ppb for t-DCE, and 220 ppb for c-DCE in TAN-37A (Quanterra).
8. A second analysis reported values of 240 ppb for TCE, 38 ppb for t-DCE, and 320 ppb for c-DCE in TAN-37B (Quanterra).
9. Two additional diluted runs reported values of 17 ppb for TCE, 12 ppb and 10 ppb for t-DCE. One of those diluted runs reported 85 ppb for c-DCE in TAN-31 (Quanterra).
10. A second analysis reported values of 240 ppb for TCE, 17 ppb for t-DCE, and 25 ppb for c-DCE in TAN-29 (Quanterra).

Jul. 1999

Note: Quanterra's data is biased low because the diluted sample was ran from the same vial as the undiluted sample which had significant headspace and sat for 4 days before analysis. (TAN-25)

NA* denotes that the RPD is at least +/-25%.

Oct. 1999

NA* denotes that the RPD is at least +/-25%.
1. Sample was analyzed in duplicate reporting 19 ppb for vinyl chloride, 630 ppb for TCE, 5 ppb for PCE, 340 ppb for c-DCE, and 150 ppb for t-DCE in TAN-37A (Quanterra).
2. Sample duplicate reported <10 ppb for vinyl chloride, <10 ppb for PCE, 621.3 ppb for TCE, 330.6 ppb for c-DCE, and 128.1 ppb for t-DCE in TAN-37A (IRC).

Jun. 2000

1. Formerly Quanterra, now Severn Trent Laboratories (STL)
2. Sample duplicate reported 4.5 J ppb for vinyl chloride, 5 U ppb for PCE, 130 ppb for TCE, 48 ppb for c-DCE, and 84 ppb for t-DCE in TAN-37A (STL).
3. Sample duplicate reported <10 ppb for vinyl chloride, <10 ppb for PCE, 193.2 ppb for TCE, 58.3 ppb for c-DCE, and 111.0 ppb for t-DCE in TAN-37A (IRC).

Sept. 2000

1. Formerly Quanterra, now Severn Trent Laboratories (STL)
2. Results for t-DCE exceeded the calibration range and should have been diluted and reanalyzed TAN-37B (STL).
3. Sample duplicate reported 3.2 J ppb for vinyl chloride, 11.6 ppb for PCE, 141.2 D ppb for TCE, 39.3 ppb for c-DCE, and 45.2 D ppb for t-DCE in TAN-30A (STL).
4. Sample duplicate reported ND for vinyl chloride, <10 ppb for PCE, 164.0 ppb for TCE, 14.3 ppb for c-DCE, and 18.7 ppb for t-DCE in TAN-30A (IRC).

Nov. 2000

1. Formerly Quanterra, now Severn Trent Laboratories (STL)
2. Sample duplicate reported 5 U ppb for vinyl chloride, 5 U ppb for PCE, 5 U ppb for TCE, 2 U ppb for c-DCE, and 87 ppb for t-DCE in TAN-26 (STL).
3. Sample duplicate reported 5 ug/L for vinyl chloride, 0 ug/L for PCE, 5 ug/L for TCE, 5 ug/L for c-DCE, and 79.7 ug/L for t-DCE in TAN-26 (IRC).
4. Sample duplicate reported <10 ug/L for vinyl chloride, <10 ug/L for PCE, 194.5 ug/L for TCE, 30.7 ug/L for c-DCE, and 91.7 ug/L for t-DCE in TAN-37A (IRC).

Feb. 2001

1. Formerly Quanterra, now Severn Trent Laboratories (STL)
2. Sample duplicate reported <10 ug/L for vinyl chloride, <10 ug/L for PCE, 156.1 ug/L for TCE, 37.0 ug/L for c-DCE, and 87.0 ug/L for t-DCE in TAN-37A (IRC).
3. Sample duplicate reported 1.356 J ug/L for vinyl chloride, 2.043 J ug/L for PCE, 30.80 ug/L for TCE, 2.447 J ug/L for c-DCE, and 39.92 ug/L for t-DCE in TAN-D2 (STL).
4. Sample duplicate reported <10 ug/L for vinyl chloride, <10 ug/L for PCE, 35.8 ug/L for TCE, <10 ug/L for c-DCE, and 40.9 ug/L for t-DCE in TAN-D2 (IRC).

May 2001

1. Formerly Quanterra, now Severn Trent Laboratories (STL)
2. Sample duplicate reported 7.2 J ug/L for vinyl chloride, 5 U ug/L for PCE, 1.8 J ug/L for TCE, 4.7 ug/L for c-DCE, and 77 ug/L for t-DCE in TAN-26 (STL).
3. Sample duplicate reported 14.1 ug/L for vinyl chloride, ND for PCE, <10 ug/L for TCE, <10 ug/L for c-DCE, and 70.1 ug/L for t-DCE in TAN-26 (IRC).
4. Sample duplicate reported 13.4 ug/L for vinyl chloride, <10 ug/L for PCE, 147.2 ug/L for TCE, 34.6 ug/L for c-DCE, and 85.7 ug/L for t-DCE in TAN-37A (IRC).
5. Sample received by the lab with a pH>2 for TAN-25, TAN-29, and TSF-05B (STL).
6. Sample hold time was exceeded, so results are not accurate for TAN-29.

Aug. 2001

1. Sample duplicate reported 5 U ug/L for vinyl chloride, 5 U ug/L for PCE, 1.2 J ug/L for TCE, 25 U ug/L for c-DCE, and 69 ug/L for t-DCE in TAN-26 (STL).
2. Sample duplicate reported ND for vinyl chloride, ND for PCE, <10 ug/L for TCE, <10 ug/L for c-DCE, and 78.2 ug/L for t-DCE in TAN-26 (IRC).
3. Sample duplicate reported <10 ug/L for vinyl chloride, <10 ug/L for PCE, 259.8 ug/L for TCE, 40.6 ug/L for c-DCE, and 113.5 ug/L for t-DCE in TAN-37A (IRC).

Nov. 2001

1. Samples received by the lab with a pH>2 for TAN-25 and TSF-05B (STL).
2. Sample duplicate reported 25 ug/L for VC, 5 ug/L for PCE, 6l4 ug/L for TCE, 7.183 ug/L for c-DCE, 306.8 for t-DCE (STL)
3. Sample duplicate reported ND for PCE, <10 for TCE, 52.6 ug/L for c-DCE, 305.3 ug/L for t-DCE, 12.2 ug/L for VC (IRC)

Feb.2002

1. Recovery of trichloloethene fell below 70% quality control limits on MS/MSD analysis.
2. Sample duplicate reported 3.8 ug/L for VC, 5 ug/L for PCE, 1.4 ug/L for TCE, 356.4 ug/L for t-DCE, 2.838 for c-DCE (STL)
3. Sample duplicate reported ND for PCE, <10 for TCE, 382.8 ug/L for t-DCE, <10 for c-DCE, <10 for VC (IRC)

May.2002
Re: TAN-37B ; The first undiluted sample had hits of VC, cis- and trans-Dichloloethene and TCE. The sample was rerun with a second vial diluted and did not duplicate the first run. The first sample was run again with the first vial and it showed results similar to the second diluted run. So a third vial was used (out of holding time) and this undiluted run matched the previous diluted runs so both the first diluted run and last undiluted run were reported. Please reference report for clarification.

August.2002
1) pH >2 for TAN-25, TAN-31, and TSF-05B
2)

TSF-05A

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN00001	11/04/02			3.06	0	9366.1
INM01601	12/12/02			3.06	0	4695.0
INM03201	01/13/03			3.40	0	10776.7
INM04801	02/10/03			3.70	0	8668.4
INM06401	03/03/03			2.88	0	5992.4
INM15001	04/07/03			2.92	5	11808.8
INM15002	04/07/03			2.15	0	11615.4
INM20001	05/05/03			3.21	0	11251.0
INM30001	07/28/03			2.62	0	5262.6
INM35001	08/19/03			3.30	0	8876.3
INM40001	09/15/03			4.20	0	7070.9
RAA00001	10/06/03			3.00	0	9311.5

TSF-05B

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN00101	11/05/02			4.00	0	13825.7
INM01701	12/12/02					9237.1
INM03301	01/14/03			2.71	0	15223.7
INM04901	02/11/03			3.40	0	12377.7
INM06501	03/04/03			3.10	0	7354.9
INM15101	04/08/03			2.95		13582.6
INM20101	05/06/03			3.50	0	11984.8
INM30101	07/29/03			4.20	0	4901.3
INM35101	08/20/03			3.30	0	10007.6
INM40101	09/16/03			4.60	0	6302.0
RAA00101	10/07/03			4.10	0	12827.0
RAA00101	10/07/03					10763.8

TAN-1859

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
INM37201	08/19/03	0.95		0.72	0	10228.1
INM41401	09/17/03	0.31		0.73	0	9574.1
RAA01401	10/08/03			0.50	0	10773.9

TAN-25

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN00201	11/05/02	0.09		2.84	0	9615.2
INM01801	12/10/02	0.07		2.90	0	5570.0
INM03401	01/14/03	0.08		2.67	0	4086.1
INM03402	01/14/03					4340.3
INM05001	02/11/03	0.11		3.10	0	7073.9
INM05002	02/11/03			2.75	0	8316.6
INM06601	03/04/03	0.44		2.3	0	4378.7
INM06602	03/04/03			2.03	0	6515.4
INM15201	04/08/03	0.29		2.30	0	10163.9
INM20201	05/06/03	0.22		3.10	0	10147.4
INM23201	06/17/03	2.06		3.80	0	6698.5
INM23202	06/17/03			4.00	0	10090.2
INM30201	07/29/03	0.43		4.20	0	6963.8
INM35201	08/19/03	0.61		2.62	0	8782.5
INM35202	08/19/03			2.72	0	9188.0
INM40201	09/16/03	0.55		2.95	0	3649.7
RAA00201	10/07/03	1.77		2.67	0	9912.4

TAN-31

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN00801	11/05/02	0.09		4.1	0.0	15846.1
INM02401	12/10/02	0.07		3.80	0	11029.3
INM02402	12/10/02			3.80	0	12348.2
INM04001	01/14/03	0.14		3.10	0	8841.5
INM05601	02/11/03	0.05		2.82	0	11893.9
INM07201	03/04/03	0.35		3.40	0	10754.1
INM15801	04/08/03	0.21		3.60	0	15362.4
INM20801	05/06/03	0.18		3.30	0	11758.3
INM20802	05/06/03			2.93	0	10946.8
INM23801	06/17/03	2.82		4.10	0	4738.3
INM35801	08/20/03	0.65		3.80	0	9390.3
INM40801	09/17/03	0.19		4.40	0	10421.4
RAA00801	10/07/03	0.00		3.90	0	19757.2
RAA00802	10/07/03			4.00	0	20860.2

TAN-26

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN00301	11/05/02	0.10		4.00	0	14188.5
INM01901	12/10/02	0.07		2.55	0	12608.8
INM03501	01/14/03	0.11		3.90	0	13291.9
INM03502	01/14/03			3.90	0	14490.3
INM05101	02/11/03	0.1		2.73	0	11346.1
INM06701	03/04/03	0.28		3.60	0	13486.0
INM15301	04/08/03	0.24		2.75	0	11446.5
INM20301	05/06/03	0.2		3.00	0	13066.5
INM30301	07/29/03	0.32		3.60	0	18455.9
INM35301	08/19/03	0.70		3.10	0	12245.2
INM40301	09/16/03	0.21		3.20	0	7019.4
INM40302	09/16/03	0.03		3.30	0	8998.9
RAA00301	10/07/03	2.17		3.26	0	18271.1

TAN-37C

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN01101	11/05/02	0.45		3.6	0	16389.1
INM02701	12/10/02	0.1		3	0	13566.1
INM04301	01/14/03	0.06		2.15	0	15057.4
INM05901	02/11/03	1.6		3.3	0	14448.1
INM07501	03/04/03	0.24		2.46	0	15563.8
INM16101	04/08/03	0.27		3.00	0	12870.9
INM21101	05/06/03	0.15		2.03	0	16439.3
INM31101	07/29/03	0.44		2.69	0	16738.6
INM31102	07/29/03			2.7	0	15933.6
INM36101	08/18/03	1.8		2.67	0	9146.1
INM41101	09/18/03	0.17		3.2	0	14404.7
INM41102	09/18/03			3.1	0	14710.7
RAA01101	10/07/03	1.14		2.9	0	14388.3

TAN-37A

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN00901	11/05/02	0.20		0.02	25	17261.8
INM02501	12/10/02	0.10		0.13	25	14579.5
INM04101	01/14/03	0.10		0.55	0	16855.9
INM05701	02/11/03	0.05		0.78	30	13356.4
INM07301	03/04/03	0.4		0.56	12	14310.6
INM15901	04/08/03	0.22		1.62	16	14259.4
INM20901	05/06/03	0.09		1.01	27	14099.5
INM23901	06/17/03	0.00		0.50	23	10312.6
INM23901	06/17/03					9589.9
INM30901	07/29/03	0.43		0.29	36	14654.0
INM35901	08/18/03	1.25		0.26	35	8207.1
INM40901	09/18/03	0.23		0.26	38	12428.5
RAA00901	10/07/03	0.00		0.29	37	10974.2

TAN-37B

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN01001	11/05/02			0.12	23	17992.4
IAN01001	11/05/02	0.20		0.12	23	16554.7
INM02601	12/10/02	0.22		0.15	25	14284.4
INM02601	12/10/02					14456.5
INM04201	01/14/03	0.17		1.26	23	17877.7
INM05801	02/11/03	0.03		0.94	31	9996.8
INM07401	03/04/03	0.26		1.88	14	13659.8
INM16001	04/08/03	0.24		1.97	16	12858.3
INM16002	04/08/03			2.00	15	13008.8
INM21001	05/06/03	0.11		1.26	22	13380.0
INM24001	06/17/03	0.06		0.59	18	12726.8
INM31001	07/29/03	0.86		0.36	36	14541.6
INM36001	08/18/03	1.66		0.36	37	13015.4
INM41001	09/18/03	0.18		0.36	36	14647.8
RAA01001	10/07/03	0.00		0.46	39	11344.7

TAN-1860

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
INM37301	08/20/03	0.95		0.06	37	4079.2
INM41501	09/17/03	0.60		0.05	37	6382.2
INM41501	09/17/03					6762.3
RAA01501	10/06/03	0.00		0.11	38	6573.3

TAN-28

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN00501	11/04/02			0.02	38	4819.0
IAN00502	11/04/02	0.09		0.00	40	4496.8
INM02101	12/09/02	0.08		0.02	36	4809.7
INM03701	01/13/03	0.09		0.03	41	4464.2
INM05301	02/10/03	0		0.04	41	13816.7
INM06901	03/03/03	2.48		0.02	39	5060.3
INM06902	03/03/03			0.02	39	4812.1
INM15501	04/07/03	1.45		0.00	39	4380.3
INM20501	05/05/03	0.34		0.00	38	5521.4
INM30501	07/28/03	0.49		0.00	39	1775.2
INM35501	08/18/03	0.65		0.01	39	1579.6
INM40501	09/15/03	0.03		0.02	35	1664.4
INM40502	09/15/03			0.01	39	1796.2
RAA00501	10/06/03	0.00		0.01	40	1260.1
RAA00502	10/06/03			0.00	39	1219.3

TAN-30A

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN00701	11/04/02	0.06		0.09	25	10031.3
INM02301	12/09/02	0.03		0.06	27	9146.5
INM03901	01/13/03	0.12		0.08	29	9628.6
INM05501	02/10/03	0		0.14	29	10707.6
INM07101	03/03/03	2.39		0.07	29	9987.6
INM15701	04/07/03	2.09		0.13	31	9907.5
INM20701	05/05/03	0.13		0.10	31	9754.7
INM30701	07/28/03	0.42		0.07	30	9533.8
INM35701	08/18/03	0.60		0.12	30	12814.8
INM40701	09/15/03	0.04		0.12	28	12430.2
RAA00701	10/06/03	1.26		0.15	28	8640.0
RAA00701	10/06/03					9592.8

TAN-1861

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
INM37401	08/20/03	1.47		0.05	40	10467.8
INM37402	08/20/03			0.06	40	7561.8
INM41601	09/15/03	6.26		0.01	42	11576.7
TAN-1861 not sampled b/c of well maintenance.						

TAN-D2

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN01301	11/05/02	0.13		4.20	0	11838.0
INM02901	12/09/02	0.01		3.70	0	15496.5
INM04501	01/13/03	0.08		3.70	0	11920.8
INM06101	02/11/03	0.10		3.70	0	15831.2
INM06101	02/11/03					18567.6
INM07701	03/04/03	0.35		3.50	0	19241.9
INM16301	04/08/03	0.1		3.50	0	13867.7
INM21301	05/05/03	0.19		4.40	0	18277.5
INM21301	05/05/03					14465.7
INM31301	07/28/03	0.11		3.80	0	6750.7
INM31302	07/28/03			4.10	0	7677.5
INM36301	08/19/03	0.53		4.20	11	6617.4
INM36301	08/19/03					8312.0
INM41301	09/16/03	0.21		3.80	26	3277.8
RAA01301	10/07/03	0.00		2.82	34	2131.9

TAN-29

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN00601	11/04/02	0.00		0.06	35	3013.3
INM02201	12/09/02	0.00		0.02	36	4932.2
INM03801	01/13/03	0.03		0.04	37	4569.6
INM05401	02/10/03	0		0.04	42	11178.1
INM05403	02/10/03			0.03	41	13810.8
INM07001	03/03/03	1.85		0.01	41	5442.7
INM15601	04/07/03	0.26		0.01	37	5324.9
INM20601	05/05/03	0.13		0.01	38	5154.1
INM20602	05/05/03			0.02	35	4899.2
INM30601	07/28/03	0.35		0.04	37	2831.9
INM35601	08/18/03	0.09		0.02	39	4026.6
INM35602	08/18/03			0.02	38	3022.1
INM40601	09/16/03	0.07		0.01	38	4469.4
RAA00601	10/06/03	0.00		0.02	49	1166.0

TAN-27

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN00401	11/04/02	0.00		0.04	41	1437.0
INM02001	12/09/02	0.00		0.01	41	1340.1
INM03601	01/13/03	0.06		0.05	43	1662.1
INM03602	01/13/03			0.03	44	2013.8
INM05201	02/10/03	0.00		0.04	42	1788.8
INM06801	03/03/03	1.38		0.03	45	1858.9
INM06802	03/03/03					2508.3
INM15401	04/07/03	0.32		0.04	41	2153.6
INM15401	04/07/03					1991.8
INM20401	05/05/03	0.15		0.02	41	2287.2
INM30401	07/28/03	0.32		0.02	43	1991.9
INM30401	07/28/03					2054.9
INM35401	08/20/03	0.74		0.03	45	2092.1
INM40401	09/15/03	0.02		0.03	43	2495.8
INM40401	09/15/03					3777.5
RAA00401	10/06/03	0.00		0.03	44	2125.7

TAN-10A

Sample ID	Date	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)
IAN01201	11/04/02	0.00		0.39	41	621.4
INM02801	12/09/02	0.03		0.32	42	799.3
INM04401	01/13/03	0.06		0.35	45	1094.3
INM06001	02/10/03	0		0.35	44	981.8
INM07601	03/03/03	1.36		0.33	46	1436.6
INM16201	04/07/03	0.32		0.29	49	870.1
INM21201	05/05/03	0.20		0.36	42	1250.9
INM31201	07/28/03	0.3		0.89	46	1151.6
INM36201	08/20/03	0.47		0.84	43	1481.7
INM41201	09/15/03	0.02		0.86	48	1951.5
RAA01201	10/06/03	0.00		0.75	45	2024.9

TSF-05A						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN00001	11/04/02	221.9	53.2	7.4	<0.223	283
INM01601	12/12/02	875.8	501.6	90.8	<0.223	
INM03201	01/15/03	1239.4	1141.7	17.5	2534.5	4878
INM04801	02/10/03	113.1	21.2	<5	<0.223	213
INM06401	03/03/03	1017.7	873.8	13.5	3735.7	4266
INM15001	04/07/03	31.9	7.1	<5	<0.223	77
INM15002	04/07/03	35.8	<5	<5	<0.223	67
INM20001	05/05/03	584.3	153.4	14.5	<0.223	348
INM30001	07/28/03	1268.8	983.4	21.4	2124.7	2925
INM35001	08/19/03	125.4	23.1	<5	<0.223	81
INM40001	09/15/03	983.0	688.2	11.3	217.9	2475
RAA00001	10/06/03	67.7	<5	<5	<0.223	71

TSF-05B						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN00101	11/05/02	294.5	96.7	11.4	<0.223	444
INM01701	12/12/02	1161.0	836.5	66.0	<0.223	
INM03301	01/15/03	1724.7	1168.3	16.4	3945.8	7344
INM04901	02/11/03	236.2	62.6	<5	<0.223	285
INM06501	03/04/03	1451.4	965.5	14.8	4089.2	6174
INM15101	04/08/03	116.9	24.6	<5	<0.223	114
INM20101	05/06/03	613.4	218.8	16.7	<0.223	597
INM30101	07/29/03	1778.2	811.5	13.9	9275.2	8730
INM35101	08/20/03	235.4	96.2	<5	<0.223	377
INM40101	09/16/03	1661.5	636.9	11.5	9602.8	8865
RAA00101	10/07/03	298.7	87.5	<5	<0.223	260

TAN-1859						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
INM37201	08/19/03	<5	<5	<5	<0.223	0
INM41401	09/17/03	84.2	48.5	<5	<0.223	214
RAA01401	10/08/03	7.5	<5	<5	<0.223	15

TAN-25						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN00201	11/05/02	363.5	90.6	14.3	14.3	428
INM01801	12/10/02	1443.9	979.9	86.5	43.8	1100
INM03401	01/15/03	1695.5	1417.4	19.7	2879.2	6750
INM05001	02/11/03	113.5	33.4	6.1	3.3	445
INM05002	02/11/03	165.4	44.7	7.8	3.3	432
INM06601	03/04/03	1382.6	1164.4	16.7	2763.6	5508
INM06602	03/04/03	1832.0	1568.3	21.3	2778.6	5553
INM15201	04/08/03	46.5	12.6	<5	<0.223	87
INM20201	05/06/03	601.4	197.4	29.3	<0.223	578
INM23201	06/17/03	1397.5	870.9	60.4	19.022	2523
INM23202	06/17/03	910.3	557.3	38.8	19.307	2571
INM30201	07/29/03	1684.2	1023.6	18.9	2492.3	3564
INM35201	08/19/03	139.7	27.3	<5	<0.223	139
INM35202	08/19/03	123.3	23.8	<5	<0.223	139
INM40201	09/16/03	988.7	417.4	6.7	2852.9	3429
RAA00201	10/07/03	160.0	24.9	<5	9.143	236

TAN-31						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN00801	11/05/02	<5	<5	<5	<0.223	19
INM02401	12/10/02	167.8	197.7	7.7	2.5	576
INM02402	12/10/02	163.1	191.8	7.5	2.5	486
INM04001	01/15/03	742.7	877.1	5.4	1391.1	>3000
INM05601	02/11/03	11.1	8.5	<5	trace	67.0
INM07201	03/04/03	893.5	1136.1	9.4	1530.8	3213
INM15801	04/08/03	<5	<5	<5	<0.223	19
INM20801	05/06/03	10.4	15.3	<5	<0.223	43
INM20802	05/06/03	18.5	17.6	<5	<0.223	40
INM23801	06/17/03	316.6	308.7	5.2	5.512	1179
INM35801	08/20/03	8.8	11.4	<5	6.476	49
INM40801	09/17/03	325.1	291.5	<5	5.390	758
RAA00801	10/07/03	8.1	7.2	<5	3.428	35
RAA00802	10/07/03	<5	<5	<5	3.447	39

TAN-26						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN00301	11/05/02	60.2	40.7	<5	6.976	137
INM01901	12/10/02	19.7	13.0	<5	<0.223	72
INM03501	01/15/03	<5	<5	<5	<0.223	2
INM03502	01/15/03	<5	<5	<5	<0.223	20
INM05101	02/11/03	<5	<5	<5	<0.223	16
INM06701	03/04/03	<5	<5	<5	<0.223	0
INM15301	04/08/03	<5	<5	<5	<0.223	40
INM20301	05/06/03	<5	<5	<5	<0.223	35
INM30301	07/29/03	<5	<5	<5	<0.223	24
INM35301	08/19/03	<5	<5	<5	<0.223	14
INM40301	09/16/03	<5	<5	<5	<0.223	25
INM40302	09/16/03	<5	<5	<5	<0.223	32
RAA00301	10/07/03	<5	<5	<5	<0.223	21

TAN-37C						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN01101	11/05/02	<5	<5	<5	<0.223	29
INM02701	12/10/02	11.0	<5	<5	<0.223	39
INM04301	01/15/03	9.6	5.5	<5	<0.223	26
INM05901	02/11/03	6.4	6.3	<5	<0.223	59
INM07501	03/04/03	14.5	14.5	<5	<0.223	48
INM16101	04/08/03	<5	<5	<5	<0.223	50
INM21101	05/06/03	15.9	12.0	<5	<0.223	26
INM31101	07/29/03	<5	<5	<5	<0.223	26
INM31102	07/29/03	<5	<5	<5	<0.223	14
INM36101	08/18/03	<5	<5	<5	<0.223	0
INM41101	09/18/03	<5	<5	<5	<0.223	27
INM41102	09/18/03	<5	<5	<5	<0.223	11
RAA01101	10/07/03	<5	<5	<5	<0.223	11

TAN-37A						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN00901	11/05/02	<5	<5	<5	<0.223	16
INM02501	12/10/02	<5	<5	<5	<0.223	21
INM04101	01/15/03	<5	<5	<5	<0.223	0
INM05701	02/11/03	<5	<5	<5	<0.223	20
INM07301	03/04/03	<5	<5	<5	<0.223	0
INM15901	04/08/03	<5	<5	<5	<0.223	0
INM20901	05/06/03	<5	<5	<5	<0.223	18
INM23901	06/17/03	<5	<5	<5	<0.223	0
INM30901	07/29/03	<5	<5	<5	<0.223	29
INM35901	08/18/03	<5	<5	<5	<0.223	0
INM40901	09/18/03	<5	<5	<5	<0.223	0
RAA00901	10/07/03	<5	<5	<5	<0.223	5

TAN-37B						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN01001	11/05/02	<5	<5	<5	<0.223	23
INM02601	12/10/02	<5	<5	<5	<0.223	9
INM04201	01/15/03	<5	<5	<5	<0.223	0
INM05801	02/11/03	<5	<5	<5	<0.223	40
INM07401	03/04/03	<5	<5	<5	<0.223	0
INM16001	04/08/03	<5	<5	<5	<0.223	21
INM16002	04/08/03	<5	<5	<5	<0.223	18
INM21001	05/06/03	<5	<5	<5	<0.223	14
INM24001	06/17/03	<5	<5	<5	<0.223	0
INM31001	07/29/03	<5	<5	<5	<0.223	36
INM36001	08/18/03	<5	<5	<5	<0.223	0
INM41001	09/18/03	<5	<5	<5	<0.223	0
RAA01001	10/07/03	<5	<5	<5	<0.223	8

TAN-1860						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
INM37301	08/20/03	<5	<5	<5	<0.223	0
INM41501	09/17/03	<5	<5	<5	<0.223	19
RAA01501	10/06/03	<5	<5	<5	<0.223	23

TAN-28						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN00501	11/04/02	<5	<5	<5	<0.223	13
IAN00502	11/04/02	<5	<5	<5	<0.223	18
INM02101	12/09/02	<5	<5	<5	<0.223	3
INM03701	01/15/03	<5	<5	<5	<0.223	0
INM05301	02/10/03	<5	<5	<5	<0.223	38
INM06901	03/03/03	<5	<5	<5	<0.223	9
INM06902	03/03/03	<5	<5	<5	<0.223	0
INM15501	04/07/03	<5	<5	<5	<0.223	0
INM20501	05/05/03	<5	<5	<5	<0.223	34
INM30501	07/28/03	<5	<5	<5	<0.223	11
INM35501	08/18/03	<5	<5	<5	<0.223	5
INM40501	09/15/03	<5	<5	<5	<0.223	0
INM40502	09/15/03	<5	<5	<5	<0.223	0
RAA00501	10/06/03	<5	<5	<5	<0.223	0
RAA00502	10/06/03	<5	<5	<5	<0.223	8

TAN-30A						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN00701	11/04/02	<5	<5	<5	<0.223	5
INM02301	12/09/02	<5	<5	<5	<0.223	20
INM03901	01/15/03	<5	<5	<5	<0.223	0
INM05501	02/10/03	<5	<5	<5	<0.223	9
INM07101	03/03/03	<5	<5	<5	<0.223	12
INM15701	04/07/03	<5	<5	<5	<0.223	0
INM20701	05/05/03	<5	<5	<5	<0.223	14
INM30701	07/28/03	<5	<5	<5	<0.223	0
INM35701	08/18/03	<5	<5	<5	<0.223	0
INM40701	09/15/03	<5	<5	<5	<0.223	0
RAA00701	10/06/03	<5	<5	<5	<0.223	26

TAN-1861						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
INM37401	08/20/03	<5	<5	<5	<0.223	0
INM37402	08/20/03	<5	<5	<5	<0.223	0
INM41601	09/15/03	<5	<5	<5	<0.223	0

TAN-D2						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN01301	11/05/02	<5	<5	<5	<0.223	22
INM02901	12/09/02	<5	<5	<5	<0.223	21
INM04501	01/15/03	6.3	<5	<5	<0.223	0
INM06101	02/11/03	<5	<5	<5	<0.223	37
INM07701	03/04/03	9.2	10.5	<5	<0.223	28
INM16301	04/08/03	<5	<5	<5	<0.223	0
INM21301	05/05/03	<5	<5	<5	<0.223	0
INM31301	07/28/03	<5	<5	<5	<0.223	0
INM31302	07/28/03	<5	<5	<5	<0.223	8
INM36301	08/19/03	<5	<5	<5	<0.223	0
INM41301	09/16/03	<5	<5	<5	<0.223	4
RAA01301	10/07/03	<5	<5	<5	<0.223	0

TAN-29						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN00601	11/04/02	<5	<5	<5	<0.223	0
INM02201	12/09/02	<5	<5	<5	<0.223	24
INM03801	01/15/03	<5	<5	<5	<0.223	0
INM05401	02/10/03	<5	<5	<5	<0.223	19
INM05402	02/10/03	<5	<5	<5	<0.223	12
INM07001	03/03/03	<5	<5	<5	<0.223	10
INM15601	04/07/03	<5	<5	<5	<0.223	2
INM20601	05/05/03	<5	<5	<5	<0.223	15
INM20602	05/05/03	<5	<5	<5	<0.223	29
INM30601	07/28/03	<5	<5	<5	<0.223	0
INM35601	08/18/03	<5	<5	<5	<0.223	0
INM35602	08/18/03	<5	<5	<5	<0.223	1
INM40601	09/16/03	<5	<5	<5	<0.223	16
RAA00601	10/06/03	<5	<5	<5	<0.223	16

TAN-27						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN00401	11/04/02	<5	<5	<5	<0.223	4
INM02001	12/09/02	<5	<5	<5	<0.223	6
INM03601	01/15/03	<5	<5	<5	<0.223	0
INM03602	01/15/03	<5	<5	<5	<0.223	0
INM05201	02/10/03	<5	<5	<5	<0.223	38
INM06801	03/03/03	<5	<5	<5	<0.223	0
INM15401	04/07/03	<5	<5	<5	<0.223	0
INM20401	05/05/03	<5	<5	<5	<0.223	20
INM30401	07/28/03	<5	<5	<5	trace	0
INM35401	08/20/03	<5	<5	<5	<0.223	0
INM40401	09/15/03	<5	<5	<5	<0.223	20
RAA00401	10/06/03	<5	<5	<5	<0.223	0

TAN-10A						
Sample ID	Sample Date	Acetate (μg/L)	Propionate (μg/L)	Butyrate (μg/L)	Lactate (μg/L)	COD (mg/L)
IAN01201	11/04/02	<5	<5	<5	<0.223	5
INM02801	12/09/02	<5	<5	<5	<0.223	0
INM04401	01/15/03	<5	<5	<5	<0.223	1
INM06001	02/10/03	<5	<5	<5	<0.223	44
INM07601	03/03/03	<5	<5	<5	<0.223	0
INM16201	04/07/03	<5	<5	<5	<0.223	13
INM21201	05/05/03	<5	<5	<5	<0.223	28
INM31201	07/28/03	<5	<5	<5	<0.223	0
INM36201	08/20/03	<5	<5	<5	<0.223	0
INM41201	09/15/03	<5	<5	<5	<0.223	10
RAA01201	10/06/03	<5	<5	<5	<0.223	0

TAN-29 TAN-29 only well sampled in FY03 for gamma spec.

Sample ID	Date	Time	AG-108M (pCi/L)	+/-	MDA	Flags	AG-110M (pCi/L)	+/-	MDA	Flags	AM-241 (pCi/L)	+/-	MDA	Flags
IAN00601R4	11/04/02	1120	1.29E-01	1.10E-00	4.03E-00		4.61E-02	1.06E-00	3.86E-00		1.15E+01	9.97E-00	3.16E+01	
INM05401R4	02/10/03	1200	-4.16E-01	8.77E-01	3.12E-00		-4.27E-01	7.70E-01	2.70E-00		-1.13E+01	6.33E-00	1.94E+01	
INM05402R4	02/10/03	1200	-2.54E-00	1.01E-00	3.05E-00		8.04E-01	1.11E-00	4.17E-00		-4.29E-01	1.91E-00	6.48E-00	
INM20601R4	05/05/03	1101	2.96E-01	8.73E-01	3.17E-00		-6.75E-01	8.91E-01	3.05E-00		-5.56E-00	6.22E-00	1.90E+01	
INM20602R4	05/05/03	1101	2.03E-01	8.56E-01	3.15E-00		2.56E-00	1.07E-00	3.17E-00		2.54E+01	1.01E+01	2.33E+01	
INM35601R4	08/18/03	1331	-1.06E-00	9.60E-01	3.07E-00	U	4.89E-00	2.37E-00	3.61E-00	UJ	-1.82E-01	1.58E-00	5.18E-00	U
INM35602R4	08/18/03	1331	1.12E-01	9.82E-01	3.42E-00	U	-6.98E-01	9.87E-01	3.29E-00	U	3.08E-00	5.11E-00	1.80E+01	U

Sample ID	Date	Time	CE-144 (pCi/L)	+/-	MDA	Flags	CO-58 (pCi/L)	+/-	MDA	Flags	CO-60 (pCi/L)	+/-	MDA	Flags
IAN00601R4	11/04/02	1120	-4.29E-00	7.57E-00	2.63E+01		1.75E-00	1.06E-00	4.29E-00		1.42E-00	1.21E-00	4.94E-00	
INM05401R4	02/10/03	1200	9.67E-00	5.88E-00	2.15E+01		-9.95E-01	8.50E-01	2.81E-00		6.49E-01	8.49E-01	3.15E-00	
INM05402R4	02/10/03	1200	-2.27E-00	5.46E-00	1.78E+01		-8.85E-01	1.21E-00	4.21E-00		1.36E-00	1.19E-00	4.87E-00	
INM20601R4	05/05/03	1101	5.10E-00	6.50E-00	2.27E+01		5.61E-01	1.14E-00	3.69E-00		4.20E-01	9.05E-01	3.50E-00	
INM20602R4	05/05/03	1101	2.77E-00	6.29E-00	2.23E+01		2.66E-01	9.40E-01	3.49E-00		-4.38E-01	7.69E-01	2.85E-00	
INM35601R4	08/18/03	1331	-6.24E-00	4.86E-00	1.66E+01	U	-1.04E-01	1.17E-00	4.02E-00	U	9.46E-01	1.06E-00	3.96E-00	U
INM35602R4	08/18/03	1331	-2.67E-00	5.81E-00	1.96E+01	U	1.07E-00	1.14E-00	4.20E-00	U	-3.82E-01	1.16E-00	4.00E-00	U

Sample ID	Date	Time	CS-134 (pCi/L)	+/-	MDA	Flags	CS-137 (pCi/L)	+/-	MDA	Flags	EU-152 (pCi/L)	+/-	MDA	Flags
IAN00601R4	11/04/02	1120	6.47E-01	1.09E-00	3.63E-00		-9.59E-01	1.15E-00	3.97E-00		-2.30E-00	3.45E-00	1.15E+01	
INM05401R4	02/10/03	1200	-5.05E-01	8.26E-01	2.51E-00		9.92E-01	8.77E-01	3.36E-00		-8.71E-01	2.76E-00	9.26E-00	
INM05402R4	02/10/03	1200	1.24E-00	1.20E-00	4.08E-00		1.01E-00	1.21E-00	4.60E-00		-2.17E-00	2.75E-00	9.34E-00	
INM20601R4	05/05/03	1101	-2.13E-01	9.27E-01	2.85E-00		3.75E-01	9.51E-01	3.44E-00		1.69E-00	2.45E-00	9.04E-00	
INM20602R4	05/05/03	1101	-1.46E-00	9.07E-01	3.01E-00		-2.98E-01	9.38E-01	2.93E-00		4.22E-00	2.61E-00	9.53E-00	
INM35601R4	08/18/03	1331	1.44E-00	9.44E-01	3.41E-00	U	-4.34E-01	1.15E-00	3.47E-00	U	1.46E-01	2.59E-00	8.68E-00	U
INM35602R4	08/18/03	1331	-1.43E-00	1.02E-00	3.33E-00	U	1.02E-00	1.06E-00	3.75E-00	U	4.75E-01	2.75E-00	9.69E-00	U

Sample ID	Date	Time	EU-154 (pCi/L)	+/-	MDA	Flags	EU-155 (pCi/L)	+/-	MDA	Flags	K-40 (pCi/L)	+/-	MDA	Flags
IAN00601R4	11/04/02	1120	5.86E-00	3.67E-00	1.27E+01		-4.48E-00	3.99E-00	1.38E+01		3.68E+01	1.50E+01	6.25E+01	
INM05401R4	02/10/03	1200	1.74E-00	2.67E-00	1.05E+01		2.38E-00	3.18E-00	1.16E+01		3.87E+01	1.10E+01	4.87E+01	
INM05402R4	02/10/03	1200	8.35E-00	5.98E-00	1.37E+01		2.36E-00	2.83E-00	9.71E-00		-4.18E-00	1.44E+01	5.22E+01	
INM20601R4	05/05/03	1101	-2.78E-00	2.30E-00	7.89E-00		1.40E-01	3.52E-00	1.22E+01					
INM20602R4	05/05/03	1101	-1.76E-00	2.63E-00	9.49E-00		-2.62E-01	3.31E-00	1.17E+01					
INM35601R4	08/18/03	1331	-6.07E-01	3.01E-00	1.07E+01	U	-1.11E-00	2.50E-00	7.92E-00	U				
INM35602R4	08/18/03	1331	-2.61E-01	2.91E-00	1.03E+01	U	-1.89E-00	2.94E-00	9.98E-00	U				

Sample ID	Date	Time	MN-54 (pCi/L)	+/-	MDA	Flags	NB-95 (pCi/L)	+/-	MDA	Flags	RA-226 (pCi/L)	+/-	MDA	Flags
IAN00601R4	11/04/02	1120	-1.98E-02	1.13E-00	4.05E-00		-6.02E-02	1.37E-00	4.92E-00		2.30E+01	6.10E-00	8.01E-00	
INM05401R4	02/10/03	1200	1.89E-01	8.10E-01	2.97E-00		1.38E-01	1.27E-00	3.20E-00		7.43E-00	3.75E-00	6.13E-00	
INM05402R4	02/10/03	1200	7.50E-01	1.21E-00	4.52E-00		8.32E-01	1.33E-00	4.97E-00		1.25E+01	3.76E-00	7.99E-00	
INM20601R4	05/05/03	1101	4.37E-01	7.69E-01	2.87E-00		1.71E-00	1.29E-00	4.89E-00		5.99E-00	4.01E-00	7.95E-00	
INM20602R4	05/05/03	1101	-8.39E-01	8.82E-01	2.98E-00		4.98E-01	1.26E-00	4.63E-00		7.27E-00	3.11E-00	8.05E-00	
INM35601R4	08/18/03	1331	5.39E-01	1.04E-00	3.64E-00	U	1.47E-00	1.45E-00	5.17E-00	U	1.28E-01	3.46E-00	6.99E-00	U
INM35602R4	08/18/03	1331	-6.45E-01	9.90E-01	3.46E-00	U	2.65E-00	1.49E-00	5.38E-00	U	2.73E-00	3.78E-00	7.53E-00	U

Sample ID	Date	Time	RU-103 (pCi/L)	+/-	MDA	Flags	RU-106 (pCi/L)	+/-	MDA	Flags	SB-125 (pCi/L)	+/-	MDA	Flags
IAN00601R4	11/04/02	1120	7.83E-01	1.46E-00	4.22E-00		8.24E-01	1.04E+01	3.78E+01		-1.90E-00	3.24E-00	1.15E+01	
INM05401R4	02/10/03	1200	1.60E-00	1.63E-00	3.17E-00		4.60E-00	7.16E-00	2.70E+01		-3.82E-01	2.19E-00	7.96E-00	
INM05402R4	02/10/03	1200	8.20E-01	1.28E-00	4.52E-00		-1.38E-00	8.76E-00	3.23E+01		-1.11E-00	2.85E-00	9.73E-00	
INM20601R4	05/05/03	1101	-2.69E-01	1.19E-00	4.23E-00		-4.26E-00	8.17E-00	2.84E+01		-3.24E-00	2.11E-00	7.10E-00	
INM20602R4	05/05/03	1101	1.22E-00	1.22E-00	4.60E-00		2.18E-00	7.90E-00	2.91E+01		-3.63E-00	2.26E-00	7.69E-00	
INM35601R4	08/18/03	1331	-1.56E-00	1.21E-00	4.10E-00	U	-3.07E-01	8.80E-00	3.07E+01	U	-4.66E-00	3.01E-00	8.28E-00	U
INM35602R4	08/18/03	1331	7.32E-01	1.37E-00	4.80E-00	U	8.29E-00	9.31E-00	3.28E+01	U	2.08E-00	2.68E-00	9.50E-00	U

Sample ID	Date	Time	U-235 (pCi/L)	+/-	MDA	Flags	ZN-65 (pCi/L)	+/-	MDA	Flags	ZR-95 (pCi/L)	+/-	MDA	Flags
IAN00601R4	11/04/02	1120	6.15E-00	7.96E-00	2.65E+01		-1.34E-00	2.28E-00	8.30E-00		1.96E-01	2.19E-00	7.08E-00	
INM05401R4	02/10/03	1200	1.21E-00	6.15E-00	2.17E+01		-1.33E-00	2.29E-00	8.15E-00		2.10E-00	1.63E-00	6.26E-00	
INM05402R4	02/10/03	1200	2.27E-00	8.99E-00	2.22E+01		-7.41E-00	3.17E-00	9.47E-00		-2.36E-00	2.25E-00	7.72E-00	
INM20601R4	05/05/03	1101	1.66E+01	7.21E-00	2.33E+01		1.34E-00	1.92E-00	7.42E-00		7.47E-01	1.89E-00	6.14E-00	
INM20602R4	05/05/03	1101	-7.03E-01	6.62E-00	2.30E+01		2.56E-00	4.06E-00	5.57E-00		7.66E-01	1.60E-00	6.04E-00	
INM35601R4	08/18/03	1331	1.06E-00	8.98E-00	1.79E+01	U	-1.09E-00	2.18E-00	7.66E-00	U	-8.94E-03	2.09E-00	7.24E-00	U
INM35602R4	08/18/03	1331	2.11E-00	1.22E+01	2.08E+01	U	-2.55E-00	2.47E-00	8.31E-00	U	-2.37E-00	2.17E-00	7.03E-00	U

Blanks

Sample ID	Date	Time	AG-108M (pCi/L)	+/-	MDA	Flags	AG-110M (pCi/L)	+/-	MDA	Flags	AM-241 (pCi/L)	+/-	MDA	Flags
IAN01401R4	11/05/02	1415	6.41E-02	1.11E-00	4.06E-00		-1.20E-00	1.08E-00	3.65E-00		1.49E+01	9.00E-00	2.58E+01	
INM06201R4	02/10/03	945	-1.73E-01	7.75E-01	2.82E-00		-1.74E-00	8.60E-01	2.75E-00		1.10E+01	7.71E-00	2.45E+01	
INM21601R4	05/05/03	1120	8.23E-01	8.14E-01	3.10E-00		9.29E-02	8.05E-01	2.94E-00		-4.53E-00	6.33E-00	1.86E+01	
INM36401R4	08/18/03	1245	-2.34E-00	9.45E-01	3.03E-00	U	6.67E-01	9.37E-01	3.27E-00	U	-3.80E-00	5.56E-00	1.64E+01	U

Sample ID	Date	Time	CE-144 (pCi/L)	+/-	MDA	Flags	CO-58 (pCi/L)	+/-	MDA	Flags	CO-60 (pCi/L)	+/-	MDA	Flags
IAN01401R4	11/05/02	1415	-1.58E+01	7.56E-00	2.47E+01		6.16E-01	1.23E-00	4.08E-00		-4.80E-01	1.29E-00	4.68E-00	
INM06201R4	02/10/03	945	-7.95E-00	5.74E-00	1.93E+01		2.63E-00	1.20E-00	2.78E-00		3.55E-01	8.75E-01	3.46E-00	
INM21601R4	05/05/03	1120	-3.92E-01	6.12E-00	2.15E+01		4.20E-01	8.59E-01	3.25E-00		1.65E-01	1.17E-00	4.33E-00	
INM36401R4	08/18/03	1245	-5.90E-00	6.47E-00	2.09E+01	U	-2.38E-02	1.32E-00	3.90E-00	U	-4.40E-01	9.29E-01	3.26E-00	U

Sample ID	Date	Time	CS-134 (pCi/L)	+/-	MDA	Flags	CS-137 (pCi/L)	+/-	MDA	Flags	EU-152 (pCi/L)	+/-	MDA	Flags
IAN01401R4	11/05/02	1415	-7.90E-00	1.66E-00	3.47E-00		1.04E-00	1.12E-00	4.26E-00		3.73E-00	3.25E-00	1.17E+01	
INM06201R4	02/10/03	945	-1.02E-00	8.26E-01	2.80E-00		1.21E-00	9.59E-01	3.66E-00		3.35E-00	2.65E-00	9.54E-00	
INM21601R4	05/05/03	1120	-1.17E-00	8.69E-01	2.91E-00		6.90E-02	8.69E-01	3.13E-00		-1.78E-00	2.53E-00	8.38E-00	
INM36401R4	08/18/03	1245	-1.98E-00	9.66E-01	3.08E-00	U	-4.57E-01	1.07E-00	3.58E-00	U	-4.73E-00	2.76E-00	9.17E-00	U

Sample ID	Date	Time	EU-154 (pCi/L)	+/-	MDA	Flags	EU-155 (pCi/L)	+/-	MDA	Flags	K-40 (pCi/L)	+/-	MDA	Flags
IAN01401R4	11/05/02	1415	-1.98E-00	3.59E-00	1.29E+01		6.73E-01	4.09E-00	1.46E+01		3.73E+01	1.45E+01	6.14E+01	
INM06201R4	02/10/03	945	1.71E-01	2.58E-00	9.84E-00		-1.05E-00	3.13E-00	1.10E+01		4.25E-00	1.26E+01	3.55E+01	
INM21601R4	05/05/03	1120	3.77E-00	2.10E-00	8.88E-00		1.75E-00	3.10E-00	1.12E+01					
INM36401R4	08/18/03	1245	2.72E-00	2.75E-00	1.03E+01	U	-3.37E-00	3.32E-00	1.08E+01	U				

Sample ID	Date	Time	MN-54 (pCi/L)	+/-	MDA	Flags	NB-95 (pCi/L)	+/-	MDA	Flags	RA-226 (pCi/L)	+/-	MDA	Flags
IAN01401R4	11/05/02	1415	-1.42E-01	1.10E-00	3.91E-00		2.66E-00	1.45E-00	5.65E-00		4.14E-00	4.84E-00	7.14E-00	
INM06201R4	02/10/03	945	-1.08E-01	8.55E-01	3.06E-00		-6.54E-01	9.53E-01	3.30E-00		8.02E-01	1.78E-00	6.55E-00	
INM21601R4	05/05/03	1120	8.78E-01	9.15E-01	3.46E-00		1.89E-00	1.20E-00	4.73E-00		3.38E-00	3.07E-00	6.04E-00	
INM36401R4	08/18/03	1245	-7.48E-01	9.58E-01	3.15E-00	U	2.05E-00	2.24E-00	4.50E-00	U	2.84E-00	4.15E-00	6.46E-00	U

Sample ID	Date	Time	RU-103 (pCi/L)	+/-	MDA	Flags	RU-106 (pCi/L)	+/-	MDA	Flags	SB-125 (pCi/L)	+/-	MDA	Flags
IAN01401R4	11/05/02	1415	-7.31E-01	1.35E-00	4.76E-00		3.13E-00	1.00E-00	3.68E+01		-1.96E-00	3.10E-00	1.10E+01	
INM06201R4	02/10/03	945	7.26E-01	9.83E-01	3.67E-00		1.13E+01	7.59E-00	2.95E+01		2.52E-00	2.32E-00	8.82E-00	
INM21601R4	05/05/03	1120	-8.40E-01	1.12E-00	3.93E-00		-2.50E-00	8.01E-00	2.85E+01		4.20E-00	2.37E-00	9.21E-00	
INM36401R4	08/18/03	1245	-1.71E-00	1.27E-00	4.18E-00	U	1.55E-00	8.78E-00	3.02E+01	U	-1.69E-00	2.68E-00	9.06E-00	U

Sample ID	Date	Time	U-235 (pCi/L)	+/-	MDA	Flags	ZN-65 (pCi/L)	+/-	MDA	Flags	ZR-95 (pCi/L)	+/-	MDA	Flags
IAN01401R4	11/05/02	1415	1.78E-00	7.56E-00	2.68E+01		-2.24E-00	2.64E-00	9.31E-00		4.08E-01	2.07E-00	7.55E-00	
INM06201R4	02/10/03	945	9.22E-00	6.18E-00	2.23E+01		-3.31E-01	2.45E-00	5.43E-00		3.20E-01	1.62E-00	5.27E-00	
INM21601R4	05/05/03	1120	2.63E-00	6.15E-00	2.18E+01		-7.55E-01	2.43E-00	7.65E-00		-2.18E-00	1.70E-00	5.62E-00	
INM36401R4	08/18/03	1245	1.25E+01	6.71E-00	2.23E+01	U	-3.29E-00	2.33E-00	7.81E-00	U	-1.59E-00	1.86E-00	6.15E-00	U

TAN-29

Sample ID	Date	Sr-90 (pCi/L)	+/-	MDA	Flags
IAN00601	11/04/02	4.03	5.17	0.35	
INM05401	02/10/03	46.3	4.95	0.488	
INM05402	02/10/03	51.3	5.77	0.6	
INM20601	05/05/03	58.2	7.45	0.585	
INM20602	05/05/03	57.1	7.22	0.574	
INM35601	08/18/03	48.9	5.69	0.339	
INM35602	08/18/03	52.2	6.43	0.307	

Sr-90 Blanks

Sample ID	Date	Sr-90 (pCi/L)	+/-	MDA	Flags
IAN01401	11/05/02	0.0634	0.18	0.831	U
INM06201	02/10/03	0.472	0.166	0.555	U
INM21601	05/05/03	0.0266	0.138	0.646	U
INM36401	08/18/03	0.0501	0.0898	0.392	U
U = No radioactivity detected					
TAN-29 only well sampled in FY03 for Sr-90.					

Field Blanks

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN01401	11/05/02	1009	80.6	57	189	U
INM03001	12/09/02	1100	0	86.3	308	U
INM04601	01/13/03	1045	120	120	398	U
INM04602	01/14/03	1000	0	106	356	U
INM06201	02/10/03	945	5.5	104	349	U
INM06301	02/11/03	1015	163	110	363	U
INM07801	03/03/03	1400	48.5	73.3	252	
INM07901	03/04/03	1355	66.2	71.4	242	
INM16601	04/07/03	1400	41.1	55	187	
INM16701	04/08/03	1115	-45.9	50.7	184	
INM21601	05/05/03	1120	-44.1	85.4	294	U
INM21701	05/06/03	1510	199	89	289	UJ
INM24601	06/17/03	1033	0	110	387	U
INM31401	07/28/03	1106	-76.5	98	335	
INM31501	07/29/03	958	-26.1	90	305	
INM36401	08/18/03	1245	-91.1	101	373	U
INM36501	08/19/03	1245	-87.3	96.5	358	U
INM36601	08/20/03	1145	0	104	369	U
INM41701	09/15/03	1425	45.6	115	317	U
INM41801	09/16/03	1320	244	131	352	U
INM41901	09/18/03	915	50.2	82.1	284	U
RAA01701	10/06/03	1330	-63.8	89.6	325	
RAA01801	10/07/03	1244	30.6	93.2	323	

U = No radioactivity detected
J = Estimated value
UJ = False positive

TSF-05A

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN00001	11/04/02	1253	4250	153	192	
INM01601	12/12/02	924	4210	216	307	
INM03201	01/13/03	1343	3780	159	372	
INM04801	02/10/03	1343	3720	157	365	
INM06401	03/03/03	1307	2550	151	253	
INM15001	04/07/03	1206	2660	119	185	
INM15002	04/07/03	1206	2880	124	186	
INM20001	05/05/03	1400	3030	137	290	
INM30001	07/28/03	1618	3000	138	324	
INM35001	08/19/03	912	2560	192	370	
INM40001	09/15/03	1636	3030	194	456	
RAA00001	10/06/03	1519	2760	182	345	

TSF-05B

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN00101	11/05/02	1300	4410	157	194	
INM01701	12/12/02	1309	4410	220	306	
INM03301	01/14/03	1251	2860	154	391	
INM04901	02/11/03	1107	4060	160	362	
INM06501	03/04/03	1145	2090	137	245	
INM15101	04/08/03	1423	3560	137	189	
INM20101	05/06/03	1047	3610	140	274	
INM30101	07/29/03	1330	2120	124	316	
INM35101	08/20/03	833	3210	208	365	
INM40101	09/16/03	1100	2920	163	347	
RAA00101	10/07/03	1317	2820	183	343	

TAN-25

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN00201	11/05/02	927	3670	142	188	
INM01801	12/10/02	1340	3390	199	312	
INM03401	01/14/03	1110	2480	148	388	
INM05001	02/11/03	926	3620	150	348	
INM05002	02/11/03	926	3410	146	343	
INM06601	03/04/03	1003	2100	139	251	
INM06602	03/04/03	1003	1720	132	258	
INM15201	04/08/03	1518	2590	118	185	
INM20201	05/06/03	907	2760	134	293	
INM23201	06/17/03	927	2310	186	395	
INM23202	06/17/03	927	2420	189	369	
INM30201	07/29/03	850	2140	125	316	
INM35201	08/19/03	1058	3020	210	387	
INM35202	08/19/03	1058	2890	203	377	
INM40201	09/16/03	911	2720	187	451	
RAA00201	10/07/03	1043	2740	178	334	

TAN-31

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN00801	11/05/02	1141	1910	109	192	
INM02401	12/10/02	1434	2120	164	308	
INM02402	12/10/02	1434	1910	157	303	
INM04001	01/14/03	920	2030	130	347	
INM05601	02/11/03	1402	1400	129	368	
INM07201	03/04/03	1404				
INM15801	04/08/03	1344	1070	84.5	183	

TAN-1859

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
INM37201	08/19/03	1416	4600	243	374	
INM41401	09/17/03	941	5040	810	381	
RAA01401	10/08/03	1214	4620	217	330	

TAN-26

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN00301	11/05/02	1034	2400	119	190	
INM01901	12/10/02	1255	2510	174	305	
INM03501	01/14/03	1024	2730	153	393	
INM03502	01/14/03	1028	2850	153	390	
INM05101	02/11/03	1039	2310	140	368	
INM06701	03/04/03	1114	2120	140	250	
INM15301	04/08/03	1622	2020	106	185	
INM20301	05/06/03	1017	2050	122	288	
INM30301	07/29/03	958	1780	111	288	
INM35301	08/19/03	1314	2010	177	369	
INM40301	09/16/03	1031	2130	178	457	
INM40302	09/16/03	1031	2480	184	454	
RAA00301	10/07/03	1244	2130	159	321	

TAN-37A

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN00901	11/05/02	1533	2940	131	193	
INM02501	12/10/02	1024	2680	180	309	
INM04101	01/14/03	1453	2820	146	370	
INM05701	02/11/03	1539	2500	139	357	
INM07301	03/04/03	1529	1990	137	253	
INM15901	04/08/03	1028	2220	126	194	
INM20901	05/06/03	1335	2050	114	265	

TAN-31 Cont'd

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
INM20802	05/06/03	1151	1380	103	263	
INM23801	06/17/03	1033	1630	163	381	
INM35801	08/20/03	951	1670	166	367	
INM40801	09/17/03	1026	2250	380	399	
RAA00801	10/07/03	938	1630	144	317	
RAA00802	10/07/03	938	1630	139	299	

TAN-37C

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN01101	11/05/02	1631	2540	122	192	
INM02701	12/10/02	959	2540	179	316	
INM04301	01/14/03	1407	3040	152	378	
INM05901	02/11/03	1517	2630	145	370	
INM07501	03/04/03	1644	2170	143	256	
INM16101	04/08/63	931	1880	102	180	
INM21101	05/06/03	1518	2350	128	293	
INM31101	07/29/03	1159	2160	128	327	
INM31102	07/29/03	1159	1730	115	303	
INM36101	08/18/03	1656	2300	191	388	
INM41101	09/18/03	945	2150	370	391	
INM41102	09/18/03	945	2260	160	284	
RAA01101	10/07/03	1457	2540	178	349	

TAN-28

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN00501	11/04/02	929	5070	167	194	
IAN00502	11/04/02	929	5430	172	191	
INM02101	12/09/02	934	4510	225	313	
INM03701	01/13/03	1014	5290	180	386	
INM05301	02/10/03	1022	5160	172	360	
INM06901	03/03/03	949	4560	189	244	
INM06902	03/03/03	949	4740	195	250	

TAN-37A Cont'd

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
INM23901	06/17/03	1127	2560	189	383	
INM30901	07/29/03	1033	1890	120	312	
INM35901	08/18/03	1505	1990	176	370	
INM40901	09/18/03	840	1970	344	391	
RAA00901	10/07/03	1543	2250	156	304	

TAN-37B

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN01001	11/05/02	1515	2800	129	197	
INM02601	12/10/02	852	2650	181	315	
INM04201	01/14/03	1438	3390	157	381	
INM05801	02/11/03	1557	2540	142	362	
INM07401	03/04/03	1548	2540	146	239	
INM16001	04/08/03	1001	2210	109	182	
INM16002	04/08/03	1001	2250	112	186	
INM21001	05/06/03	1415	2220	120	275	
INM24001	06/17/03	1150	2090	176	381	
INM31001	07/29/03	1056	2130	135	351	
INM36001	08/18/03	1549	2060	181	378	
INM41001	09/18/03	1025	1960	152	284	
RAA01001	10/07/03	1523	2260	166	332	

TAN-28 Cont'd

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
INM15501	04/07/03	1042	4330	146	182	
INM20501	05/05/03	925	4330	153	282	
INM30501	07/28/03	941	4490	226	560	
INM35501	08/18/03	1027	4970	257	389	
INM40501	09/15/03	1115	5510	242	480	
INM40502	09/15/03	1115	5000	232	473	
RAA00501	10/06/03	951	4210	195	293	
RAA00502	10/06/03	951	5300	225	318	

TAN-30A

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN00701	11/04/02	1018	3100	133	191	
INM02301	12/09/02	1007	3380	200	316	
INM03901	01/13/03	1048	3240	161	399	
INM05501	02/10/03	1059	3140	151	367	
INM07101	03/03/03	1039	2960	162	258	
INM15701	04/07/03	1119	2560	117	185	
INM20701	05/05/03	1007	2930	133	283	
INM30701	07/28/03	1010	2820	132	311	
INM35701	08/18/03	1117	3200	209	371	
INM40701	09/15/03	1156	3320	206	477	
RAA00701	10/06/03	1039	3150	185	327	

TAN-1860

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
INM37301	08/20/03	1131	2150	180	367	
INM41501	09/17/03	1227	1990	348	389	
RAA01501	10/06/03	1628	2020	163	342	

TAN-D2

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN01301	11/05/02	1434	524	73.9	194	
INM02901	12/09/02	1207	533	114	317	
INM04501	01/13/03	1319	399	111	356	
INM06101	02/11/03	1213	471	112	354	
INM07701	03/04/03	1452	484	932	259	
INM16301	04/08/03	1140	401	66.5	184	
INM21301	05/05/03	1323	461	92.1	282	
INM31301	07/28/03	1553	126	94.3	312	
INM31302	07/28/03	1553	264	102	330	
INM36301	08/19/03	1522	202	109	355	U
INM41301	09/16/03	1159	443	131	345	
RAA01301	10/07/03	850	84.7	101	342	

TAN-29

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN00601	11/04/02	1120	3150	134	193	
INM02201	12/09/02	1100	3060	190	311	
INM03801	01/13/03	1136	3080	151	374	
INM05401	02/10/03	1200	2960	148	365	
INM05402	02/10/03	1200	2980	149	367	
INM07001	03/03/03	1133	3250	167	254	
INM15601	04/07/03	1646	2740	120	182	
INM20601	05/05/03	1101	2760	134	293	
INM20602	05/05/03	1101	2870	136	293	
INM30601	07/28/03	1106	2900	141	338	

TAN-1861

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
INM37401	08/20/03	1600	730	130	400	
INM37402	08/20/03	1600	600	128	400	
INM41601	09/15/03	1019	586	152	474	

TAN-10A

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN01201	11/04/02	1502	381	68.6	191	
INM02801	12/09/02	1511	279	102	315	UJ
INM04401	01/13/03	1537	413	118	377	
INM06001	02/10/03	1549	639	118	367	
INM07601	03/03/03	1503	529	94.5	257	
INM16201	04/07/03	1526	325	65.9	190	
INM21201	05/05/03	1611	278	89.4	285	
INM31201	07/28/03	1453	363	98.4	313	
INM36201	08/20/03	1448	261	120	391	UJ
INM41201	09/15/03	1552	64.4	122	335	U
RAA01201	10/06/03	1434	370	110	334	

TAN-27

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
IAN00401	11/04/02	1409	868	83.2	191	
INM02001	12/09/02	1424	851	127	321	
INM03601	01/13/03	1447	874	123	374	
INM03602	01/13/03	1447	715	121	373	
INM05201	02/10/03	1454	746	114	349	
INM06801	03/03/03	1415	845	101	244	
INM15401	04/07/01	1430	687	75.8	187	
INM20401	05/05/03	1517	727	100	292	
INM30401	0728/03	1407	621	104	319	
INM35401	08/20/03	1334	698	135	373	
INM40401	09/15/03	1451	579	147	458	

TAN-29 Cont'd

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
INM35601	08/18/03	1331	3050	207	375	
INM35602	08/18/03	1331	2900	202	372	
INM40601	09/16/03	1343	3540	172	354	
RAA00601	10/06/03	1147	2910	187	350	

TAN-27 Cont'd

Sample ID	Date	Time	H-3 (pCi/L)	+/-	MDA	Flags
RAA00401	10/06/03	1335	601	113	318	
U = No radioactivity detected						
UJ = False positive						

TSF-05A

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN00001	11/04/02	ND	<10	60.0	410.6	ND	24.5	207.1	ND
INM01601	12/12/02	ND	<10	136.3	389.9	ND	19.5	97.0	ND
INM03201	01/13/03	ND	191.9	310.2	428.0	10.6	48.1	197.3	ND
INM04801	02/10/03	ND	<10	147.8	394.7	<10	59.8	253.3	trace
INM06401	03/03/03	ND	192.1	326.7	348.6	<10	65.4	132.9	ND
INM15001	04/07/03	ND	<10	117.8	382.5	<10	77.8	513.6	ND
INM15002	04/07/03	ND	<10	128.8	380.4	<10	84.4	523.9	ND
INM20001	05/05/03	ND	<10	26.8	329.6	<10	33.2	252.9	trace
INM30001	07/28/03	ND	24.1	149.7	<10	<10	31.8	113.5	trace
INM35001	08/19/03	ND	<10	73.9	284.8	<10	27.6	184.1	trace
INM40001	09/15/03	ND	20.6	106.9	354.3	13.0	51.3	138.1	trace
RAA00001	10/06/03	ND	<10	14.1	269.1	ND	18.4	161.2	trace

TSF-05B

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN00101	11/05/02	ND	<10	74.0	408.8	ND	11.1	203.4	ND
INM01701	12/12/02	ND	11.7	202.2	386.8	<10	12.5	128.3	ND
INM03301	01/14/03	ND	41.3	177.0	316.1	13.8	24.1	297.7	ND
INM04901	02/11/03	ND	<10	130.9	363.4	<10	15.9	196.7	ND
INM06501	03/04/03	<10	128.4	129.8	297.8	<10	47.4	174.5	ND
INM15101	04/08/03	ND	<10	46.9	374.0	<10	16.7	279.1	ND
INM20101	05/06/03	ND	<10	66.5	349.4	ND	10.9	166.3	trace
INM30101	07/29/03	ND	<10	326.5	259.5	17.5	10.1	103.3	trace
INM35101	08/20/03	ND	<10	119.9	311.6	ND	17.8	155.1	trace
INM40101	09/16/03	ND	13.6	111.5	276.3	<10	12.7	100.7	trace
RAA00101	10/07/03	<10	<10	46.2	292.7	ND	12.9	145.3	trace
RAA00101	10/07/03							129.6	trace

TAN-1859

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethen (mg/L)	Ethane (mg/L)
INM37201	08/19/03	<10	32.6	30.3	227.4	<10	31.7	13.4	Trace
INM41401	09/17/03	<10	28.2	38.5	252.8	<10	33.4	11.4	Trace
RAA01401	10/08/03	<10	22.3	25.0	243.6	ND	31.5	ND	Trace

TAN-25

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethen (mg/L)	Ethane (mg/L)
IAN00201	11/05/02	ND	<10	110.6	250.1	ND	<10	15.2	ND
INM01801	12/10/02	ND	<10	169.3	231.0	<10	<10	9.4	ND
INM03401	01/14/03	ND	<10	299.6	184.2	10.1	11.0	7.3	ND
INM03401	01/14/03							9.4	ND
INM05001	02/11/03	ND	<10	161.5	214.8	ND	<10	9.2	Trace
INM05003	02/11/03	ND	<10	169.4	216.6	ND	<10	9.0	Trace
INM06601	03/04/03	ND	10.4	84.3	179.5	<10	10.6	15.8	ND
INM06602	03/04/03	ND	10.3	82.2	179.6	<10	10.0	17.5	ND
INM15201	04/08/03	ND	<10	26.2	226.7	<10	<10	18.1	ND
INM20201	05/06/03	ND	<10	125.9	176.3	<10	11.5	10.0	Trace
INM23201	06/17/03	ND	<10	79.3	165.6	ND	<10	8.0	Trace
INM23202	06/17/03	ND	<10	80.1	176.7	ND	<10	10.8	Trace
INM30201	07/29/03	ND	<10	245.7	143.9	<10	11.8	10.2	Trace
INM35201	08/19/03	ND	<10	68.5	192.1	ND	10.8	13.3	Trace
INM35202	08/19/03	ND	<10	69.0	199.7	ND	10.8	13.2	Trace
INM40201	09/16/03	ND	<10	71.6	182.1	<10	<10	8.5	Trace
RAA00201	10/07/03	<10	<10	31.3	<10	ND	<10	10.5	Trace

TAN-31

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN00801	11/05/02	ND	<10	<10	278.8	ND	<10	11.5	ND
IAN00801	11/05/02	ND	<10	<10	280.1	ND	<10		
INM02401	12/10/02	ND	<10	34.8	241.6	<10	<10	3.7	ND
INM02402	12/10/02	ND	<10	34.6	242.1	<10	<10	5.3	ND
INM04001	01/14/03	ND	<10	152.5	229.8	10.5	<10	5.9	ND
INM05601	02/11/03	ND	<10	<10	260.7	<10	<10	7.2	ND
INM07201	03/04/03	ND	<10	17.0	207.4	<10	<10	7.1	ND
INM15801	04/08/03	ND	<10	<10	255.5	ND	<10	12.0	ND
INM20801	05/06/03	ND	<10	<10	223.6	<10	<10	5.8	trace
INM20802	05/06/03	ND	<10	<10	226.7	<10	<10	6.4	trace
INM23801	06/17/03	ND	<10	<10	210.4	<10	<10	2.4	trace
INM35801	08/20/03	ND	<10	<10	242.3	ND	<10	7.0	trace
INM40801	09/17/03	<10	<10	<10	208.3	ND	25.3	2.6	trace
RAA00801	10/07/03	ND	<10	<10	244.1	ND	<10	10.4	trace
RAA00802	10/07/03	ND	<10	<10	241.5	ND	<10	12.3	trace

TAN-26

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN00301	11/05/02	ND	<10	<10	62.1	<10	10.2	4.6	ND
INM01901	12/10/02	ND	<10	<10	59.8	<10	<10	3.9	ND
INM03501	01/14/03	ND	<10	<10	50.9	<10	<10	3.0	ND
INM03502	01/14/03	ND	<10	<10	49.8	<10	<10	3.0	ND
INM05101	02/11/03	ND	<10	<10	51.1	<10	ND	ND	ND
INM06701	03/04/03	ND	<10	ND	44.8	ND	ND	1.9	ND
INM15301	04/08/03	ND	<10	<10	43.6	<10	ND	ND	ND
INM20301	05/06/03	ND	<10	ND	32.6	ND	ND	ND	trace
INM30301	07/29/03	ND	<10	<10	57.9	<10	<10	ND	trace
INM35301	08/19/03	<10	<10	<10	49.5	ND	13.4	11.6	trace
INM40301	09/16/03	ND	<10	<10	68.6	ND	11.2	25.1	trace
INM40302	09/16/03	ND	<10	<10	71.1	ND	11.0	29.4	trace
RAA00301	10/07/03	<10	<10	<10	60.9	ND	<10	ND	trace

TAN-37C

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN01101	11/05/02	ND	<10	<10	98.1	ND	<10	7.2	ND
INM02701	12/10/02	ND	<10	11.0	132.1	ND	<10	8.2	ND
INM04301	01/14/03	ND	<10	47.4	139.9	ND	24.9	8.6	ND
INM05901	02/11/03	ND	<10	<10	131.0	ND	<10	10.9	ND
INM07501	03/04/03	ND	<10	<10	131.5	ND	<10	14.2	ND
INM16101	04/08/03	ND	<10	<10	128.2	ND	<10	10.1	ND
INM21101	05/06/03	ND	<10	<10	108.8	<10	15.9	8.5	trace
INM31101	07/29/03	ND	13.6	18.8	128.0	ND	13.2	6.7	trace
INM31102	07/29/03	ND	11.9	15.7	116.9	ND	11.8	6.9	trace
INM36101	08/18/03	<10	13.6	10.0	109.7	<10	31.9	5.2	trace
INM41101	09/18/03	ND	<10	13.0	125.8	ND	36.3	7.0	trace
INM41102	09/18/03	ND	<10	10.5	111.9	ND	37.6	7.8	trace
RAA01101	10/07/03	<10	12.8	25.6	136.1	ND	39.6	ND	trace

TAN-37A

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN00901	11/05/02	<10	209.3	35.7	106.9	<10	<10	ND	ND
INM02501	12/10/02	11.1	153.9	29.9	118.5	<10	<10	6.4	ND
INM04101	01/14/03	ND	98.7	19.6	119.5	ND	14.3	17.7	ND
INM05701	02/11/03	ND	68.6	47.8	118.7	<10	12.0	12.0	trace
INM07301	03/04/03	<10	68.3	23.0	109.9	<10	<10	11.4	ND
INM15901	04/08/03	ND	39.1	68.5	143.6	<10	15.2	15.1	trace
INM20901	05/06/03	<10	62.6	33.7	105.6	<10	<10	9.3	trace
INM23901	06/17/03	<10	242.7	35.6	99.8	ND	<10	10.2	trace
INM23901	06/17/03							9.8	trace
INM30901	07/29/03	<10	110.5	16.5	116.2	<10	<10	11.6	trace
INM35901	08/18/03	<10	116.4	18.2	116.7	<10	11.4	7.2	trace
INM40901	09/18/03	<10	138.7	18.7	133.0	<10	27.1	10.8	trace
RAA00901	10/07/03	<10	173.7	17.8	117.9	ND	<10	14.6	trace

TAN-37B

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN01001	11/05/02	11.3	<10	28.8	107.8	<10	<10	ND	ND
IAN01001	11/05/02							ND	ND
INM02601	12/10/02	<10	145.4	26.5	111.3	<10	<10	4.0	trace
INM02601	12/10/02							trace	trace
INM04201	01/14/03	<10	135.7	29.9	131.1	<10	<10	14.1	ND
INM05801	02/11/03	ND	70.8	37.3	110.0	<10	11.7	12.5	trace
INM07401	03/04/03	ND	30.3	95.5	145.1	<10	12.8	12.6	ND
INM16001	04/08/03	ND	34.8	77.1	153.5	ND	17.6	16.1	ND
INM16002	04/08/03	ND	35.6	78.3	154.8	ND	17.5	19.0	ND
INM21001	05/06/03	<10	54.0	35.1	113.1	<10	13.2	8.4	trace
INM24001	06/17/03	<10	199.8	32.5	105.6	ND	<10	7.9	trace
INM31001	07/29/03	<10	100.7	17.8	120.7	ND	<10	10.8	trace
INM36001	08/18/03	<10	109.7	18.5	127.9	<10	10.3	9.6	trace
INM41001	09/18/03	ND	129.6	19.3	142.0	ND	34.4	11.3	trace
RAA01001	10/07/03	<10	130.0	16.1	132.3	ND	13.3	ND	trace

TAN-1860

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
INM37301	08/20/03	<10	191.6	<10	18.1	<10	<10	ND	trace
INM41501	09/17/03	<10	168.1	<10	21.5	<10	<10	ND	trace
INM41501	09/17/03							ND	trace
RAA01501	10/06/03	<10	123.4	<10	22.4	ND	<10	ND	trace

TAN-28

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN00501	11/04/02	21.7	1135.8	147.1	162.8	<10	<10	6.2	ND
IAN00503	11/04/02	21.2	1103.4	143.3	159.6	<10	<10	10.5	ND
INM02101	12/09/02	15.9	762.4	110.0	130.1	<10	<10.	ND	ND
INM02101	12/09/02	14.2	803.8	115.9	135.3	<10	<10		
INM03701	01/13/03	<10	1036.7	167.0	168.4	<10	<10	ND	ND
INM05301	02/10/03	12.9	1226.7	155.4	154.7	<10	<10	ND	ND
INM06901	03/03/03	11.4	1009.6	150.9	160.7	<10	<10	ND	ND
INM06902	03/03/03	13.3	1002.0	149.3	159.7	<10	<10	ND	ND
INM15501	04/07/03	<10	1031.9	159.2	162.4	<10	<10	ND	ND
INM20501	05/05/03	<10	79.2	140.5	158.1	<10	<10	ND	trace
INM30501	07/28/03	10.5	1078.7	138.3	86.4	<10	<10	ND	trace
INM35501	08/18/03	<10	895.2	118.0	79.0	<10	<10	ND	trace
INM40501	09/15/03	12.8	<10	124.9	80.6	<10	<10	ND	trace
INM40502	09/15/03	13.6	<10	134.3	83.7	<10	<10	ND	trace
RAA00501	10/06/03	ND	917.8	125.5	78.3	ND	<10	ND	trace
RAA00502	10/06/03	<10	991.2	130.9	74.4	ND	<10	ND	trace

TAN-30A

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN00701	11/04/02	13.8	80.2	<10	48.0	<10	<10	ND	ND
INM02301	12/09/02	11.8	75.6	<10	49.1	<10	<10	ND	ND
INM03901	01/13/03	<10	97.3	<10	51.1	<10	<10	ND	ND
INM05501	02/10/03	<10	79.3	<10	44.9	<10	<10	ND	ND
INM07101	03/03/03	<10	78.9	<10	44.1	<10	<10	ND	ND
INM15701	04/07/03	<10	92.1	<10	47.5	<10	<10	ND	trace
INM20701	05/05/03	<10	69.8	<10	45.6	ND	<10	ND	trace
INM30701	07/28/03	<10	83.7	<10	82.6	<10	<10	ND	trace
INM35701	08/18/03	<10	82.0	<10	81.6	<10	21.1	ND	trace
INM40701	09/15/03	<10	84.8	<10	96.9	<10	<10	ND	trace
RAA00701	10/06/03	<10	97.6	<10	89.0	ND	23.6	ND	trace
RAA00701	10/06/03							ND	trace

TAN-1861

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
INM37401	08/20/03	<10	42.2	<10	20.2	ND	ND	ND	trace
INM37402	08/20/03	<10	41.8	<10	22.5	ND	ND	ND	trace
INM41601	09/15/03	<10	55.0	<10	21.5	ND	ND	ND	trace

TAN-D2

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN01301	11/05/02	ND	11.2	<10	118.2	<10	<10	10.0	ND
INM02901	12/09/02	ND	<10	<10	137.5	<10	<10	ND	ND
INM04501	01/13/03	ND	20.6	<10	132.1	<10	<10	3.7	ND
INM06101	02/11/03	ND	<10	<10	113.6	<10	<10	trace	ND
INM06101	02/11/03							4.6	ND
INM07701	03/04/03	ND	<10	<10	128.4	<10	<10	5.5	ND
INM16301	04/08/03	ND	<10	<10	112.2	<10	<10	5.5	ND
INM21301	05/05/03	ND	<10	<10	92.8	<10	<10	4.8	trace
INM21301	05/05/03							3.1	trace
INM31301	07/28/03	<10	<10	<10	70.0	<10	<10	ND	trace
INM31302	07/28/03	<10	<10	<10	70.3	<10	<10	ND	trace
INM36301	08/19/03	ND	<10	<10	59.6	<10	<10	ND	trace
INM36301	08/19/03							ND	trace
INM41301	09/16/03	<10	<10	<10	42.3	ND	<10	ND	trace
RAA01301	10/07/03	ND	<10	<10	19.7	ND	<10	ND	trace

TAN-29

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN00601	11/04/02	23.1	782.3	129.8	83.3	<10	<10	3.4	ND
INM02201	12/09/02	15.8	634.8	113.0	97.8	<10	<10	ND	ND
INM03801	01/13/03	<10	780.8	138.8	106.6	<10	<10	ND	ND
INM05401	02/10/03	<10	765.7	121.9	100.5	<10	<10	ND	ND
INM05403	02/10/03	10.2	757.9	120.1	98.9	<10	<10	ND	ND
INM07001	03/03/03	<10	620.4	109.4	97.2	<10	<10	ND	ND
INM15601	04/07/03	<10	736.1	126.3	107.3	<10	<10	ND	trace
INM20601	05/05/03	<10	602.9	113.2	99.4	<10	<10	ND	trace
INM20602	05/05/03	<10	578.5	105.6	94.7	<10	<10	ND	trace
INM30601	07/28/03	10.3	834.2	132.9	86.3	<10	<10	1.6	trace
INM35601	08/18/03	<10	711.9	116.1	90.3	<10	<10	ND	trace
INM35602	08/18/03	10.3	745.5	126.7	96.3	<10	<10	ND	trace
INM40601	09/16/03	<10	718.7	126.7	102.1	<10	<10	ND	trace
RAA00601	10/06/03	16.7	547.0	67.6	18.3	ND	ND	ND	trace

TAN-27

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN00401	11/04/02	16.6	44.6	<10	<10	<10	ND	ND	ND
INM02001	12/09/02	16.8	32.0	<10	<10	ND	ND	ND	ND
INM03601	01/13/03	<10	47.9	<10	<10	<10	ND	ND	ND
INM03602	01/13/03	<10	47.3	<10	<10	<10	ND	ND	ND
INM04401	01/13/03	<10	<10	<10	<10	ND	<10	ND	ND
INM05201	02/10/03	<10	44.6	<10	<10	<10	ND	9.7	trace
INM06801	03/03/03	<10	45.0	<10	<10	<10	ND	ND	ND
INM06801	03/03/03							ND	ND
INM15401	04/07/03	<10	35.3	<10	<10	ND	ND	ND	trace
INM15401	04/07/03							ND	trace
INM20401	05/05/03	<10	32.6	<10	<10	ND	ND	ND	trace
INM30401	07/28/03	<10	36.4	<10	<10	<10	<10	ND	trace
INM35401	08/20/03	<10	38.2	<10	<10	ND	ND	ND	trace
INM40401	09/15/03	ND	42.3	<10	<10	ND	ND	ND	trace
INM40401	09/15/03							ND	trace
RAA00401	10/06/03	<10	<10	<10	<10	ND	ND	ND	trace

TAN-10A

Sample ID	Date	PCE (mg/L)	TCE (mg/L)	cis-DCE (mg/L)	trans-DCE (mg/L)	1,1 DCE (mg/L)	VC (mg/L)	Ethene (mg/L)	Ethane (mg/L)
IAN01201	11/04/02	<10	<10	ND	<10	ND	ND	ND	trace
INM02801	12/09/02	<10	<10	<10	<10	ND	ND	ND	trace
INM04401	01/13/03	<10	<10	<10	<10	ND	<10	ND	ND
INM06001	02/10/03	<10	12.4	<10	<10	ND	ND	6.5	ND
INM07601	03/03/03	<10	12.2	<10	<10	ND	ND	ND	ND
INM16201	04/07/03	<10	<10	ND	<10	ND	ND	ND	trace
INM21201	05/05/03	<10	<10	ND	<10	ND	ND	ND	trace
INM31201	07/28/03	<10	<10	<10	<10	<10	ND	ND	trace
INM36201	08/20/03	<10	<10	<10	<10	<10	<10	ND	trace
INM41201	09/15/03	ND	<10	10.5	<10	ND	<10	ND	trace
RAA01201	10/06/03	<10	<10	ND	<10	ND	ND	ND	trace

Appendix E

Quality Assurance Details

Appendix E

Quality Assurance Details

E-1. IN SITU BIOREMEDIATION DATA QUALITY ASSURANCE

General quality assurance (QA) requirements for Idaho National Engineering and Environmental Laboratory (INEEL) Environmental Restoration (ER) projects are established in the ER *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites* (DOE-ID 2002) and the "Project Execution Plan for the Balance of INEEL Cleanup Project" (PLN-694). Specific accuracy, precision, and completeness requirements for this reporting period are defined in the *In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B* (GWMP) (INEEL 2003a) and supporting documents. Duplicates, field blanks, and trip blanks are used, as specified in the Quality Assurance Project Plan (QAPjP) (DOE-ID 2002). Results for accuracy, precision, and completeness are provided in this appendix.

All data collected during this reporting period were to be used to monitor performance of the ISB system in order to determine whether or not operational changes were required; thus, no single sample was critical to the interpretation. The quality level defined for all sampling activities in this plan was screening data in accordance with the QAPjP (DOE-ID 2002); however, the GWMP stated that most of the quality assurance/quality control (QA/QC) elements required for definitive data were to be used. The GWMP further stated that definitive confirmation was to be provided for the volatile organic compound (VOC) data and the ethene/ethane/methane data by sending splits to an off-Site laboratory. Definitive data underwent Level A validation by the INEEL Sample and Analysis Management (SAM) Program; all other data from off-Site laboratories received completeness and quality control (QC) checks.

E-1.1 Accuracy

Accuracy is a measure of bias in the sampling and analysis program. It can be affected by the methods used for sampling preservation and handling, by the sample matrix, and by analytical methods. During this reporting period, accuracy was assessed through analysis of standards, standard additions, splits, performance evaluation (PE) samples, blanks, and matrix spike and matrix spike duplicate (MS/MSD) data.

Standards—Standards were used to determine the accuracy of analyses conducted in the ISB field laboratory, including COD, sulfate, iron, phosphate, and ammonia. A COD standard was analyzed with each set of COD samples during this reporting period. Standards for sulfate, iron, phosphate, and ammonia were analyzed each day the analyses were conducted. Table E-1 presents accuracy results for standards, including the type of analyte, the date the standard was analyzed, the standard and observed concentration, recovery percentages, target recovery percentages, and whether the target recovery criteria were met. Target recovery percentages are stated in Technical Procedure (TPR) -166, "In Situ Bioremediation Field Laboratory Procedure." The corrective action for standards reported outside of the target range is to repeat the standard once. If the recovery is still not within the target range, then the data will be flagged and a procedural review will be performed to determine where in the process the error is being introduced. Percent recovery was calculated as:

Table E-1. Accuracy of in situ bioremediation field laboratory standards.

Analyte	Standard Date	Standard (mg/L)	Observed (mg/L)	Recovery (%)	Target Recovery (%)	Criteria Met?
COD	11/07/02	800	771	96	90-110	Yes
COD	12/11/02	800	862	108	90-110	Yes
COD	01/15/03	800	794	99	90-110	Yes
COD	02/10/03	800	783	98	90-110	Yes
COD	03/05/03	800	815	102	90-110	Yes
COD	04/09/03	800	822	103	90-110	Yes
COD	05/07/03	800	829	104	90-110	Yes
COD	05/07/03	800	738	92	90-110	Yes
COD	06/17/03	800	863	108	90-110	Yes
COD	07/29/03	800	789	99	90-110	Yes
COD	08/21/03	800	760	95	90-110	Yes
COD	09/18/03	800	802	100	90-110	Yes
COD	10/08/03	800	847	106	90-110	Yes
Sulfate	11/04/02	50	55	110	90-110	Yes
Sulfate	11/05/02	50	53	106	90-110	Yes
Sulfate	12/09/02	50	49	98	90-110	Yes
Sulfate	12/10/02	50	50	100	90-110	Yes
Sulfate	12/11/02	50	55	110	90-110	Yes
Sulfate	01/13/03	50	52	104	90-110	Yes
Sulfate	01/13/03	50	55	110	90-110	Yes
Sulfate	01/14/03	50	60	120	90-110	No, Repeated
Sulfate	01/14/03	50	55	110	90-110	Yes
Sulfate	02/10/03	50	59	118	90-110	No, Not Repeated
Sulfate	02/11/03	50	58	116	90-110	No, Repeated
Sulfate	02/11/03	50	52	104	90-110	Yes
Sulfate	03/03/03	50	59	118	90-110	No, Not Repeated
Sulfate	03/04/03	50	56	112	90-110	No, Not Repeated
Sulfate	04/08/03	50	52	104	90-110	Yes
Sulfate	04/09/03	50	53	106	90-110	Yes
Sulfate	05/05/03	50	53	106	90-110	Yes

Table E-1. (continued).

Analyte	Standard Date	Standard (mg/L)	Observed (mg/L)	Recovery (%)	Target Recovery (%)	Criteria Met?
Sulfate	05/06/03	50	53	106	90-110	Yes
Sulfate	06/18/03	50	23	46	90-110	No, Not Repeated
Sulfate	07/28/03	50	54	108	90-110	Yes
Sulfate	07/29/03	50	53	106	90-110	Yes
Sulfate	08/18/03	50	49	98	90-110	Yes
Sulfate	08/19/03	50	51	102	90-110	Yes
Sulfate	08/19/03	50	46	92	90-110	Yes
Sulfate	08/20/03	50	48	96	90-110	Yes
Sulfate	09/15/03	50	51	102	90-110	Yes
Sulfate	09/15/03	50	52	104	90-110	Yes
Sulfate	09/16/03	50	51	102	90-110	Yes
Sulfate	09/16/03	50	50	100	90-110	Yes
Sulfate	09/17/03	50	52	104	90-110	Yes
Sulfate	09/17/03	50	49	98	90-110	Yes
Sulfate	09/18/03	50	51	102	90-110	Yes
Sulfate	09/18/03	50	53	106	90-110	Yes
Sulfate	10/06/03	50	55	110	90-110	Yes
Sulfate	10/06/03	50	50	100	90-110	Yes
Sulfate	10/07/03	50	52	104	90-110	Yes
Sulfate	10/07/03	50	50	100	90-110	Yes
Sulfate	10/08/03	50	50	100	90-110	Yes
Iron	01/13/03	1.00	0.82	82	75-125	Yes
Iron	01/14/03	1.00	0.84	84	75-125	Yes
Iron	02/10/03	1.00	0.99	99	75-125	Yes
Iron	02/11/03	1.00	0.89	89	75-125	Yes
Iron	03/03/03	1.00	0.82	82	75-125	Yes
Iron	03/04/03	1.00	0.82	82	75-125	Yes
Iron	04/08/03	1.00	0.82	82	75-125	Yes
Iron	04/09/03	1.00	0.72	72	75-125	No, Not Repeated
Iron	05/05/03	1.00	0.89	89	75-125	Yes

Table E-1. (continued).

Analyte	Standard Date	Standard (mg/L)	Observed (mg/L)	Recovery (%)	Target Recovery (%)	Criteria Met?
Iron	05/06/03	1.00	0.67	67	75-125	No, Repeated
Iron	05/06/03	1.00	0.77	77	75-125	Yes
Iron	07/28/03	1.00	0.24	24	75-125	No, Repeated
Iron	07/28/03	1.00	0.84	84	75-125	Yes
Iron	07/29/03	1.00	0.82	82	75-125	Yes
Iron	08/18/03	1.00	0.88	88	75-125	Yes
Iron	08/19/03	1.00	0.87	87	75-125	Yes
Iron	08/20/03	1.00	0.82	82	75-125	Yes
Iron	08/20/03	1.00	0.82	82	75-125	Yes
Iron	09/15/03	1.00	0.72	72	75-125	No, Not Repeated
Iron	09/16/03	1.00	0.76	76	75-125	Yes
Iron	09/17/03	1.00	0.77	77	75-125	Yes
Iron	09/18/03	1.00	0.77	77	75-125	Yes
Iron	10/06/03	1.00	0.64	64	75-125	No, Not Repeated
Iron	10/07/03	1.00	0.82	82	75-125	Yes
Iron	10/08/03	1.00	0.88	88	75-125	Yes
Phosphate	11/04/02	2.00	2.03	102	90-110	Yes
Phosphate	11/05/02	2.00	2.52	126	90-110	No, Not Repeated
Phosphate	05/05/03	2.00	2.13	107	90-110	Yes
Phosphate	05/06/03	2.00	2.06	103	90-110	Yes
Ammonia	11/04/02	2.00	2.11	106	90-110	Yes
Ammonia	11/05/02	1.00	1.03	103	90-110	Yes

$$\% \, Recovery = \frac{Observed\ Value}{Standard\ Value} \, x \, 100\% \, . \qquad (1)$$

where

Observed Value = result of analysis

Standard Value = value of standard solution.

The target recovery was met for all COD standards analyzed with each set of samples during this reporting period. For sulfate, the target recovery was met on 32 of 36 sampling days; this includes two

days when corrective actions were performed. The target recovery was not met and the standard was not repeated for the remaining four sampling days. For iron, the target recovery was met on 20 of 23 sampling days; this includes two days when corrective actions were performed. The target recovery was not met and the standard was not repeated for three sampling days. Iron standards were not performed during the November 2002 and December 2002 sampling rounds because the standard reagent was not available, and also not performed during the June 2003 sampling round because it was forgotten. For phosphate, the target recovery was met on three of four sampling days. The target recovery was not met for one sampling day and the standard was not repeated. For ammonia, the target recovery was met for two sampling days. Ammonia standards were not performed during the May 2003 sampling event because no standard was available.

Standard Addition—Standard additions (matrix spikes) were used to determine the accuracy of analyses conducted in the ISB field laboratory. Standard additions were conducted once during each sampling event for sulfate, alkalinity, phosphate, and ammonia. A sulfate standard concentration of 1,000 mg/L was used to perform standard additions at three different volumes during each sampling event (Table E-2). During the December 2002, March 2003, April 2003, and July 2003 sampling events, the well chosen for performing standard additions had a sample concentration of 0 mg/L; therefore, standard additions could not be accurately performed. All other standard additions were within the target recovery percentage range. For alkalinity standard additions, 0.1 mg/L of a 0.500 N alkalinity standard solution and a titrant with a concentration of 1.600 N H_2SO_4 were used to perform three standard additions during each sampling event (Table E-3). All alkalinity standard additions were within the target recovery percentage range. For phosphate (Table E-4) and ammonia (Table E-5), three different volumes of standard additions were performed during the semiannual sampling events. Standard solutions with concentrations of 50 mg/L were used for both phosphate and ammonia. All phosphate and ammonia standard additions were within the target recovery percentage range.

Splits—During this reporting period, VOC and ethene/ethane/methane splits were collected quarterly in November 2002, February 2003, May 2003, and August 2003. Split samples from all ISB wells were sent both to the INEEL Research Center (IRC) and to an off-Site laboratory for definitive confirmation. The off-Site laboratories used EPA Method 8260B (EPA 1996) for independent verification of the IRC solid-phase microextraction (SPME) results. The off-Site and IRC split data for VOCs (Table E-6) and ethene/ethane/methane (Table E-7) are presented with the relative percent difference (RPD) calculated between the two results. The RPD is calculated as:

$$RPD = \frac{|C_1 - C_2|}{\left[\frac{C_1 + C_2}{2}\right]} \times 100\% . \qquad (2)$$

where

C_1, C_2 = analyte concentrations determined for duplicate or split samples.

Table E-2. Accuracy of in situ bioremediation field laboratory standard additions for sulfate.

Sulfate Standard Date	Sample (mg/L)	Added Volume (mL)	Actual (mg/L)	Observed (mg/L)	Recovery (%)	Target Recovery (%)	Criteria Met?
11/04/02	25	0.1	35	34	97	75-125	Yes
		0.2	45	44	98	75-125	Yes
		0.3	55	58	105	75-125	Yes
12/10/02	0	0.1	10	0	0	75-125	Not applicable
		0.2	20	0	0	75-125	Not applicable
		0.3	30	0	0	75-125	Not applicable
01/13/03	37	0.1	47	47	100	75-125	Yes
		0.2	57	61	107	75-125	Yes
		0.3	67	68	101	75-125	Yes
02/10/03	42	0.1	52	62	119	75-125	Yes
		0.2	62	69	111	75-125	Yes
		0.3	72	76	106	75-125	Yes
03/04/03	0	0.1	10	0	0	75-125	Not applicable
		0.2	20	0	0	75-125	Not applicable
		0.3	30	0	0	75-125	Not applicable
04/08/03	0	0.1	10	0	0	75-125	Not applicable
		0.2	20	0	0	75-125	Not applicable
		0.3	30	0	0	75-125	Not applicable
05/05/03	41	0.1	51	51	100	75-125	Yes
		0.2	61	60	98	75-125	Yes
		0.3	71	74	104	75-125	Yes
06/18/03	23	0.1	33	38	115	75-125	Yes
		0.2	43	47	109	75-125	Yes
		0.3	53	54	102	75-125	Yes
07/29/03	0	0.1	10	0	0	75-125	Not applicable
		0.2	20	0	0	75-125	Not applicable
		0.3	30	0	0	75-125	Not applicable

Table E-2. (continued).

Sulfate Standard Date	Sample (mg/L)	Added Volume (mL)	Actual (mg/L)	Observed (mg/L)	Recovery (%)	Target Recovery (%)	Criteria Met?
08/20/03	45	0.1	55	52	95	75-125	Yes
		0.2	65	65	100	75-125	Yes
		0.3	75	80	107	75-125	Yes
09/16/03	38	0.1	48	49	102	75-125	Yes
		0.2	58	58	100	75-125	Yes
		0.3	68	75	110	75-125	Yes
10/06/03	49	0.1	59	61	103	75-125	Yes
		0.2	69	73	106	75-125	Yes
		0.3	79	83	105	75-125	Yes

Table E-3. Accuracy of in situ bioremediation field laboratory standard additions for alkalinity.

Alkalinity Standard Date	Titration Range (mg/L)	Sample (mg/L)	Theoretical Endpoint (digits)	Observed Endpoint (digits)	Recovery (%)	Target Recovery (%)	Criteria Met?
11/04/02	100-400	333	25	28	112	75-125	Yes
			25	26	104	75-125	Yes
			25	23	92	75-125	Yes
12/10/02	100-400	336	25	25	100	75-125	Yes
			25	25	100	75-125	Yes
			25	25	100	75-125	Yes
01/13/03	100-400	253	25	22	88	75-125	Yes
			25	22	88	75-125	Yes
			25	25	100	75-125	Yes
02/10/03	100-400	219	25	24	96	75-125	Yes
			25	26	104	75-125	Yes
			25	25	100	75-125	Yes
03/03/03	1000-4000	5580	25	33	132	75-125	Yes
			25	25	100	75-125	Yes
			25	27	108	75-125	Yes

Table E-3. (continued).

Alkalinity Standard Date	Titration Range (mg/L)	Sample (mg/L)	Theoretical Endpoint (digits)	Observed Endpoint (digits)	Recovery (%)	Target Recovery (%)	Criteria Met?
04/08/03	1000-4000	5730	25	26	104	75-125	Yes
			25	27	108	75-125	Yes
			25	24	96	75-125	Yes
05/05/03	100-400	223	25	24	96	75-125	Yes
			25	27	108	75-125	Yes
			25	24	96	75-125	Yes
06/18/03	200-800	488	25	28	112	75-125	Yes
			25	25	100	75-125	Yes
			25	25	100	75-125	Yes
07/29/03	1000-4000	1900	25	25	100	75-125	Yes
			25	24	96	75-125	Yes
			25	27	108	75-125	Yes
08/20/03	100-400	192	25	25	100	75-125	Yes
			25	24	96	75-125	Yes
			25	23	92	75-125	Yes
9/16/2003	100-400	257	25	25	100	75-125	Yes
			25	26	104	75-125	Yes
			25	25	100	75-125	Yes
10/06/03	100-400	193	25	24	96	75-125	Yes
			25	26	104	75-125	Yes
			25	24	96	75-125	Yes

Table E-4. Accuracy of in situ bioremediation field laboratory standard additions for phosphate.

Phosphate Standard Date	Sample (mg/L)	Added Volume (mL)	Theoretical (mg/L)	Observed (mg/L)	Recovery (%)	Target Recovery (%)	Criteria Met?
11/04/02	1.27	0.1	1.37	1.11	81	75-125	Yes
		0.2	1.47	1.19	81	75-125	Yes
		0.3	1.57	1.46	93	75-125	Yes
11/04/02	0.46	0.1	0.56	0.91	163	75-125	Yes
		0.2	0.66	1.07	162	75-125	Yes
		0.3	0.76	1.27	167	75-125	Yes
05/05/03	0.92	0.1	1.02	1.36	133	75-125	Yes
		0.2	1.12	1.65	147	75-125	Yes
		0.3	1.22	1.92	157	75-125	Yes

Table E-5. Accuracy of in situ bioremediation field laboratory standard additions for ammonia.

Ammonia Standard Date	Sample (mg/L)	Added Volume (mg/L)	Theoretical (mg/L)	Observed (mg/L)	Recovery (%)	Target Recovery (%)	Criteria Met?
04/29/02	0.25	0.1	0.45	0.43	96	75-125	Yes
		0.2	0.65	0.64	98	75-125	Yes
		0.3	0.85	0.85	100	75-125	Yes
11/04/02	0.39	0.1	0.59	0.43	73	75-125	Yes
		0.2	0.79	0.62	78	75-125	Yes
		0.3	0.99	0.8	81	75-125	Yes

Table E-6. Relative percent differences for volatile organic compound split analyses.

Well	Date	Off-Site PCE (µg/L)	Flag	IRC PCE (µg/L)	RPD (%)	Off-Site TCE (µg/L)	Flag	IRC TCE (µg/L)	RPD (%)	Off-Site trans-DCE (µg/L)	Flag	IRC trans-DCE (µg/L)	RPD (%)	Off-Site cis-DCE (µg/L)	Flag	IRC cis-DCE (µg/L)	RPD (%)	Off-Site VC (µg/L)	Flag	IRC VC (µg/L)	RPD (%)
TSF-05A	11/04/02	ND	U	ND	NA	0.5	J	<10	NA	460.0		410.6	11	13.0		60.0	129	17.0		24.5	36
TSF-05A	02/10/03	5.0	U	ND	NA	1.0	J	<10	NA	400.0	D	394.7	1	67.0		147.8	75	41.0		59.8	37
TSF-05A	05/05/03	10.0	U	ND	NA	10.0	U	<10	NA	390.0	D	329.6	17	45.0		26.8	51	38.0		33.2	13
TSF-05A	08/19/03	10.0	U	ND	NA	2.0	J	<10	NA	310.0	D	284.8	8	43.0		73.9	53	25.0		27.6	10
TSF-05B	11/05/02	5.0	U	ND	NA	1.1	J	<10	NA	430.0		408.8	5	14.0		74.0	136	11.0		11.1	1
TSF-05B	02/11/03	5.0	U	ND	NA	0.5	J	<10	NA	370.0	D	363.4	2	13.0		130.9	164	9.5		15.9	50
TSF-05B	05/06/03	10.0	U	ND	NA	10.0	U	<10	NA	350.0	D	349.4	0	12.0		66.5	139	6.3	J	10.9	53
TSF-05B	08/20/03	10.0	U	ND	NA	10.0	U	<10	NA	380.0	D	311.6	20	26.0		119.9	129	15.0		17.8	17
TAN-25	11/05/02	5.0	U	ND	NA	2.6	J	<10	NA	270		250.1	8	3.5	J	110.6	188	2.4	J	<10	NA
TAN-25	02/11/03	5.0	U	ND	NA	2.9	J	<10	NA	170		214.8	23	0.88	J	161.5	198	0.98	J	<10	NA
TAN-25	02/11/03	5.0	U	ND	NA	3.1	J	<10	NA	180		216.6	18	0.99	J	169.4	198	1.1	J	<10	NA
TAN-25	05/06/03	10.0	U	ND	NA	10	U	<10	NA	190		176.7	7	10	U	80.1	NA	10	U	<10	NA
TAN-25	08/19/03	10.0	U	ND	NA	4	J	<10	NA	210	D	192.1	9	6	J	68.5	168	5	J	10.8	73
TAN-25	08/19/03	50.0	U	ND	NA	10	U	<10	NA	220		199.7	10	5	J	69	173	5	J	10.8	73
TAN-31	11/05/02	5.0	U	ND	NA	0.5	J	<10	NA	260.0		279.5	7	1.5	J	<10	NA	1.5	J	<10	NA
TAN-31	02/11/03	5.0	U	ND	NA	1.3	J	<10	NA	230.0	D	260.7	13	1.4	J	<10	NA	1.0	J	<10	NA
TAN-31	05/06/03	10.0	U	ND	NA	10.0	U	<10	NA	250.0	D	223.6	11	10.0	U	<10	NA	10.0	U	<10	NA
TAN-31	05/06/03	10.0	U	ND	NA	10.0	U	<10	NA	250.0	D	226.7	10	10.0	U	<10	NA	10.0	U	<10	NA
TAN-31	08/20/03	50.0	U	ND	NA	50.0	U	<10	NA	320.0		242.3	28	50.0	U	<10	NA	50.0	U	<10	NA
TAN-26	11/05/02	5.0	U	ND	NA	5.0	U	<10	NA	600		62.1	3	5.0	U	<10	NA	5.0	U	10.2	NA
TAN-26	02/11/03	5.0	U	ND	NA	1.7	J	<10	NA	44.0		51.1	15	6.0	U	<10	NA	5.0	U	<10	NA

Table E-6. (continued).

Well	Date	Off-Site PCE (µg/L)	Flag	IRC PCE (µg/L)	RPD (%)	Off-Site TCE (µg/L)	Flag	IRC TCE (µg/L)	RPD (%)	Off-Site trans-DCE (µg/L)	Flag	IRC trans-DCE (µg/L)	RPD (%)	Off-Site cis-DCE (µg/L)	Flag	IRC cis-DCE (µg/L)	RPD (%)	Off-Site VC (µg/L)	Flag	IRC VC (µg/L)	RPD (%)
TAN-26	05/06/03	10.0	U	ND	NA	10.0	U	<10	NA	37.0		32.6	13	10.0	U	ND	NA	10.0	U	ND	NA
TAN-26	08/19/03	10.0	U	ND	NA	10.0	U	<10	NA	72.0		49.5	37	10.0	U	<10	NA	10.0	U	13.4	NA
TAN-37C	11/05/02	5.0	U	ND	NA	1.5	J	<10	NA	81.0		98.1	19	3.6	J	<10	NA	3.8	J	<10	NA
TAN-37C	02/11/03	5.0	U	ND	NA	1.0	J	<10	NA	120.0		131.0	9	5.2		<10	NA	2.9	J	<10	NA
TAN-37C	05/06/03	10.0	U	ND	NA	10.0	U	<10	NA	120.0		108.8	10	5.8	J	<10	NA	10.0	U	15.9	NA
TAN-37C	08/18/03	10.0	U	<10	NA	17.0		13.6	22	140.0		109.7	24	22.0		10.0	75	6.0	J	31.9	137
TAN-37A	11/05/02	1.5	J	<10	NA	160.0		209.3	27	94.0		106.9	13	36.0		35.7	1	3.7	J	<10	NA
TAN-37A	02/11/03	5.0	U	ND	NA	59.0		68.6	15	110.0		118.7	8	49.0		47.8	2	6.7		12.0	57
TAN-37A	05/06/03	10.0	U	<10	NA	64.0		62.6	2	120.0		105.6	13	42.0		33.7	22	4.7	J	<10	NA
TAN-37A	08/18/03	0.9	J	<10	NA	120.0		116.4	3	140.0		116.7	18	29.0		18.2	46	5.0	J	11.4	78
TAN-37B	11/05/02	1.0	J	11.3	167	130.0		<10	NA	91.0		107.8	17	29.0		28.8	1	3.8	J	<10	NA

Table E-7. Relative percent differences for ethene/ethane/methane split analyses.

Well	Date	Off-Site Ethane (µg/L)	Flag	IRC Ethane (µg/L)	RPD (%)	Off-Site Ethene (µg/L)	Flag	IRC Ethene (µg/L)	RPD (%)	Off-Site Methane (µg/L)	Flag	IRC Methane (µg/L)	RPD (%)
TSF-05A	11/04/02	1.9	U	ND	NA	110		207.1	61	3300	D	9366.1	96
TSF-05A	02/10/03	3.69	U	Trace	NA	237		253.3	7	6040	D	8668.4	36
TSF-05A	05/05/03	1000	U	Trace	NA	1200		252.9	130	9700	D	11251	15
TSF-05A	08/19/03	12		Trace	NA	600		184.1	106	15000	D	8876.3	51
TSF-05B	11/05/02	1.9	U	ND	NA	110		203.4	60	5300	D	13825.7	89
TSF-05B	02/11/03	3.69	U	ND	NA	127		196.7	43	8100	D	12377.7	42
TSF-05B	05/06/03	500	U	Trace	NA	500	U	166.3	NA	22000	D	11984.8	59
TSF-05B	08/20/03	1000	U	Trace	NA	1000	U	155.1	NA	30000	D	10007.6	100
TAN-25	11/05/02	1.9	U	ND	NA	7.8		15.2	64	2900	D	9615.2	107
TAN-25	02/11/03	3.69	U	Trace	NA	3.43	U	9.2	NA	6150	D	7073.9	14
TAN-25	02/11/03	3.69	U	Trace	NA	11		9	20	7730	D	8316.6	7
TAN-25	05/06/03	350	J	Trace	NA	500	U	10	NA	14000		10147.4	32
TAN-25	08/19/03	10	U	Trace	NA	31		13.3	80	6000	D	8782.5	38
TAN-25	08/19/03	10	U	Trace	NA	20		13.2	41	6400	D	9188	36
TAN-31	11/05/02	1.9	U	ND	NA	5		11.5	79	6200	D	15846.1	88
TAN-31	02/11/03	3.69	U	ND	NA	3.43	U	7.2	71	5450	D	11893.9	74
TAN-31	05/06/03	1	U	Trace	NA	1	U	5.8	NA	1	U	11758.3	200
TAN-31	05/06/03	500	U	Trace	NA	500	U	6.4	NA	43000	D	10946.8	119
TAN-31	08/20/03	10	U	Trace	NA	16		7	78	10000	D	9390.3	6
TAN-26	11/05/02	9.3		ND	NA	2.7		4.6	52	5800	D	14188.5	84

Table E-7. (Continued).

Well	Date	Off-Site Ethane (µg/L)	Flag	IRC Ethane (µg/L)	RPD (%)	Off-Site Ethene (µg/L)	Flag	IRC Ethene (µg/L)	RPD (%)	Off-Site Methane (µg/L)	Flag	IRC Methane (µg/L)	RPD (%)
TAN-26	02/11/03	3.69	U	ND	NA	3.43	U	ND	NA	5600	D	11346.1	68
TAN-26	05/06/03	1	U	Trace	NA	1	U	ND	NA	1	U	13066.5	200
TAN-26	08/19/03	100		Trace	NA	29		11.6	86	17000	D	12245.2	33
TAN-37C	11/05/02	17		ND	NA	5.5		7.2	27	13000	D	16389.1	23
TAN-37C	02/11/03	3.69	U	ND	NA	3.43	U	8.2	NA	12300	D	14448.1	16
TAN-37C	05/06/03	1	U	Trace	NA	1	U	8.5	NA	1	U	16439.3	200
TAN-37C	08/18/03	10	U	Trace	NA	9	J	5.2	54	7700	D	9146.1	17
TAN-37A	11/05/02	1.9	U	ND	NA	1.8	U	ND	NA	6700	D	17261.8	88
TAN-37A	02/11/03	3.69	U	Trace	NA	9.43		12	24	10200	D	13356.4	27
TAN-37A	05/06/03	1	U	Trace	NA	1	U	9.3	NA	1	U	14099.5	200
TAN-37A	08/18/03	10	U	Trace	NA	8	J	7.2	11	5800	D	8207.1	34
TAN-37B	11/05/02	1.9	U	ND	NA	2.6		ND	NA	8400	D	17273.6	69
TAN-37B	02/11/03	3.69	U	ND	NA	10.8		12.5	15	10700	D	9996.8	7
TAN-37B	05/06/03	1000	U	Trace	NA	1000	U	8.4	NA	9000		13380	39
TAN-37B	08/18/03	10	U	Trace	NA	6	J	9.6	46	4800	D	13015.4	92
TAN-28	11/04/02	2.7		ND	NA	2.6		6.2	82	2300		4819	71
TAN-28	11/04/02	1.9	U	ND	NA	1.8	U	10.5	141	2100	D	4496.8	73
TAN-28	02/10/03	3.69	U	ND	NA	3.43	U	ND	NA	3140	D	13816.7	126
TAN-28	05/05/03	200	U	Trace	NA	200	U	ND	NA	4400		5521.4	23
TAN-28	08/18/03	10	U	Trace	NA	10	U	ND	NA	1400	D	1579.6	12
TAN-30A	11/04/02	1.9	U	ND	NA	1.8	U	ND	NA	5100	D	10031.3	65

Table E-7. (Continued).

Well	Date	Off-Site Ethane (µg/L)	Flag	IRC Ethane (µg/L)	RPD (%)	Off-Site Ethene (µg/L)	Flag	IRC Ethene (µg/L)	RPD (%)	Off-Site Methane (µg/L)	Flag	IRC Methane (µg/L)	RPD (%)
TAN-30A	02/10/03	3.69	U	ND	NA	3.43	U	ND	NA	9270	D	10707.6	14
TAN-30A	05/05/03	500	U	Trace	NA	500	U	ND	NA	12000		9754.7	21
TAN-30A	08/18/03	10	U	Trace	NA	10	U	ND	NA	6400	D	12814.8	67
TAN-29	11/04/02	1.9	U	ND	NA	1.8	U	3.4	62	1900		3013.3	45
TAN-29	02/10/03	3.69	U	ND	NA	3.43	U	ND	NA	4000	D	11178.1	95
TAN-29	02/10/03	3.69	U	ND	NA	3.43	U	ND	NA	4020	D	13810.8	110
TAN-29	05/05/03	200	U	Trace	NA	200	U	ND	NA	6200		5154.1	18
TAN-29	05/05/03	200	U	Trace	NA	200	U	ND	NA	6300		4899.2	25
TAN-29	08/18/03	10	U	Trace	NA	10	U	ND	NA	150	D	4026.6	186
TAN-29	08/18/03	10	U	Trace	NA	10	U	ND	NA	180	D	3022.1	178
TAN-27	11/04/02	1.9	U	ND	NA	1.8	U	ND	NA	570		1437	86
TAN-27	02/10/03	3.69	U	Trace	NA	3.43	U	9.7	NA	830		1788.8	73
TAN-27	05/05/03	200	U	Trace	NA	200	U	ND	NA	2300		2287.2	1
TAN-27	08/20/03	10	U	Trace	NA	10	U	ND	NA	140	D	2092.1	175
TAN-10A	11/04/02	1.9	U	Trace	NA	1.8	U	ND	NA	260		621.4	82
TAN-10A	02/10/03	3.69	U	ND	NA	3.43	U	6.5	NA	650		981.8	41
TAN-10A	05/05/03	100	U	Trace	NA	100	U	ND	NA	380		1250.9	107
TAN-10A	08/20/03	10	U	Trace	NA	10	U	ND	NA	120	D	1481.7	170

Percentages of split samples with RPDs less than 25%, less than 50%, and greater than 50% are shown in Table E-8. RPDs were not calculated when IRC results were reported as not detected or trace and are not included Table 8, as was the case for all ethane splits. RPDs were calculated using off-Site laboratory results that had been flagged as an estimated or undetected value.

Table E-8. Percentages of relative percent differences for split analyses.

Analyte	Percentage of Samples with <25% RPD	Percentage of Samples with <50% RPD	Percentage of Samples with >50% RPD
TCE	35	45	1.6
trans-DCE	76	87	0
cis-DCE	22	32	22
PCE	0	7.9	6.3
Vinyl Chloride	6.3	11	16
Ethene	7	13	23
Methane	20	34	43

For all analytes except trans-DCE, the majority of split samples did not fall within a 50% RPD range. Splits provide no way to determine which laboratory is reporting the more accurate results; therefore, performance evaluation (PE) results and duplicate sample were examined for both laboratories to determine individual accuracy and precision at both the on-Site and off-Site laboratories. As recommended in the last ISB Annual Performance Report (INEEL 2003b), the frequency of VOC split samples will be reduced from quarterly to semiannually and ethene/ethane/methane splits will be eliminated altogether.

Performance Evaluation Samples—Performance evaluation samples were analyzed for VOCs using the SPME method at the IRC and the EPA 8260B method (EPA 1996) at an off-Site laboratory. During this reporting period, the off-Site laboratory was Severn Trent Laboratories. The PE program was administered by the INEEL SAM using commercially supplied certified standards. PE samples were purchased and prepared by Environmental Resource Associates and shipped directly from this vendor to the INEEL ISB Field Team. Field team members included the PE samples with the other ISB samples collected during that sampling event, which were all sent together to the IRC and Severn Trent Laboratories.

During this reporting period, PE samples were sent monthly to the IRC from April 2003 to September 2003 for both high (>100 ppb) and low (<100 ppb) range VOC concentrations. Two PE samples (one low range in May 2003 and one high range in August 2003) were sent to Severn Trent Laboratories for analysis. Tables E-9 and E-10 present the results for the SPME and EPA 8260B methods. These tables include the analyte type, dates of analysis, certified concentrations, observed concentrations, accepted performance limits established by Environmental Resource Associates, and whether or not the observed concentration falls within the accepted performance limits. All SPME results fell within the accepted performance limits for TCE, cis-DCE, and trans-DCE. Three out of seven high range PCE results and eight out of 12 low range VC results did not fall within the accepted performance limits. All EPA 8260B low range results fell within the accepted performance limits, but are limited since only one low range result is reported for each analyte. The high range TCE, PCE and VC results were within range, but cis-DCE and trans-DCE high range results were biased high.

Table E-9. INEEL Research Center solid-phase microextraction performance evaluation results.

Analyte	Date	Certified (µg/L)	Observed (µg/L)	Accepted Performance Limits (µg/L)	Within Accepted Performance Limits?
PCE	April-03	40.6	32.4	25.8 - 48.8	Yes
PCE	April-03	40.6	29.1	25.8 - 48.8	Yes
PCE	April-03	209	177.7	133 - 251	Yes
PCE	April-03	209	162.6	133 - 251	Yes
PCE	May-03	49.2	39.4	31.2 - 59.1	Yes
PCE	May-03	49.2	34.2	31.2 - 59.1	Yes
PCE	May-03	0.00	<10 (ND)	NA	Yes
PCE	June-03	55.3	49	35.1-66.4	Yes
PCE	June-03	55.3	55.9	35.1-66.4	Yes
PCE	June-03	800	470.6	508-960	No
PCE	July-03	15.4	9.8	9.76-18.5	Yes
PCE	July-03	15.4	11.1	9.76-18.6	Yes
PCE	July-03	603	388.3	383-725	Yes
PCE	July-03	603	396.6	383-725	Yes
PCE	August-03	769	391.1	488-924	No
PCE	August-03	769	401.7	488-924	No
PCE	August-03	17.2	11.5	10.9-20.7	Yes
PCE	August-03	17.2	11.4	10.9-20.7	Yes
PCE	September-03	0.00	<10 (ND)	NA	Yes
PCE	September-03	86.1	77.3	54.7-104	Yes
PCE	September-03	86.1	83.0	54.7-104	Yes
TCE	April-03	26.6	24.6	18.8 - 32.6	Yes
TCE	April-03	26.6	22.4	18.8 - 32.6	Yes
TCE	April-03	326	323.5	230 - 399	Yes
TCE	April-03	326	300.4	230 - 399	Yes
TCE	May-03	22.9	16.9	16.2 - 28.1	Yes
TCE	May-03	22.9	17.1	16.2 - 28.1	Yes
TCE	May-03	0.00	<10	NA	Yes
TCE	June-03	86.3	101.5	60.8-106	Yes
TCE	June-03	86.3	100.1	60.8-106	Yes

Table E-9. (continued).

Analyte	Date	Certified (µg/L)	Observed (µg/L)	Accepted Performance Limits (µg/L)	Within Accepted Performance Limits?
TCE	June-03	518	420.6	365-637	Yes
TCE	July-03	22.2	20.2	15.7-27.2	Yes
TCE	July-03	22.2	22.3	15.7-27.2	Yes
TCE	July-03	222	191.1	157-272	Yes
TCE	July-03	222	188.3	157-272	Yes
TCE	August-03	444	317.2	313-544	Yes
TCE	August-03	444	325.8	313-544	Yes
TCE	August-03	33.6	31.6	23.7-41.1	Yes
TCE	August-03	33.6	31	23.7-41.1	Yes
TCE	September-03	0.00	<10 (ND)	NA	Yes
TCE	September-03	19.7	17.2	13.9-24.2	Yes
TCE	September-03	19.7	17.3	13.9-24.2	Yes
cis-DCE	April-03	22.3	20.2	16.5 - 27.7	Yes
cis-DCE	April-03	22.3	19	16.5 - 27.7	Yes
cis-DCE	April-03	121	123.6	89.5 - 151	Yes
cis-DCE	April-03	121	118	89.5 - 151	Yes
cis-DCE	May-03	81.4	83.3	60.1 - 101	Yes
cis-DCE	May-03	81.4	76.7	60.1 - 101	Yes
cis-DCE	May-03	0.00	<10	NA	Yes
cis-DCE	June-03	77.6	90	57.2-96.2	Yes
cis-DCE	June-03	77.6	86.3	57.2-96.2	Yes
cis-DCE	June-03	242	215.5	178-300	Yes
cis-DCE	July-03	41.7	42.5	30.8-51.9	Yes
cis-DCE	July-03	41.7	49	30.8-51.9	Yes
cis-DCE	July-03	301	266.1	222-374	Yes
cis-DCE	July-03	301	265.5	222-374	Yes
cis-DCE	August-03	136	100.5	100-169	Yes
cis-DCE	August-03	136	107.3	100-169	Yes
cis-DCE	August-03	89.7	94.4	66.2-112	Yes
cis-DCE	August-03	89.7	98.9	66.2-112	Yes

Table E-9. (continued).

Analyte	Date	Certified (µg/L)	Observed (µg/L)	Accepted Performance Limits (µg/L)	Within Accepted Performance Limits?
cis-DCE	September-03	0.00	<10 (ND)	NA	Yes
cis-DCE	September-03	72.7	78.9	53.7-90.5	Yes
cis-DCE	September-03	72.7	87.0	53.7-90.5	Yes
trans-DCE	April-03	32.4	33.6	23.0 - 41.2	Yes
trans-DCE	April-03	32.4	31.3	23.0 - 41.2	Yes
trans-DCE	April-03	147	147.9	105 - 187	Yes
trans-DCE	April-03	147	138.1	105 - 187	Yes
trans-DCE	May-03	35.3	32.7	25.1 - 44.9	Yes
trans-DCE	May-03	35.3	30.1	25.1 - 44.9	Yes
trans-DCE	May-03	0.00	<10	NA	Yes
trans-DCE	June-03	24.8	20.8	17.6-31.5	Yes
trans-DCE	June-03	24.8	20.1	17.6-31.5	Yes
trans-DCE	June-03	334	300.3	237-424	Yes
trans-DCE	July-03	54.9	55.2	39.0-69.8	Yes
trans-DCE	July-03	54.9	62.6	39.0-69.8	Yes
trans-DCE	July-03	478	392.4	340-607	Yes
trans-DCE	July-03	478	387.3	340-607	Yes
trans-DCE	August-03	510	435.2	363-648	Yes
trans-DCE	August-03	510	418.7	363-648	Yes
trans-DCE	August-03	71.6	72.1	50.9-91.1	Yes
trans-DCE	August-03	71.6	74.9	50.9-91.1	Yes
trans-DCE	September-03	0.00	<10 (ND)	NA	Yes
trans-DCE	September-03	47.8	49.8	34.0-60.7	Yes
trans-DCE	September-03	47.8	49.6	34.0-60.7	Yes
VC	April-03	30	67.1	15.6 - 46.9	No
VC	April-03	30	62.9	15.6 - 46.9	No
VC	April-03	110	151.4	57.3 - 172	Yes
VC	April-03	110	145.8	57.3 - 172	Yes
VC	May-03	62.4	87.6	32.5 - 97.6	Yes
VC	May-03	62.4	84.8	32.5 - 97.6	Yes

Table E-9. (continued).

Analyte	Date	Certified (µg/L)	Observed (µg/L)	Accepted Performance Limits (µg/L)	Within Accepted Performance Limits?
VC	May-03	0.00	<10	NA	Yes
VC	June-03	15	28.5	7.82-23.4	No
VC	June-03	15	25.4	7.82-23.4	No
VC	June-03	200	180.4	104-312	Yes
VC	July-03	33	60	17.2-51.6	No
VC	July-03	33	63.8	17.2-51.6	No
VC	July-03	300	178.5	156-469	Yes
VC	July-03	300	167.3	156-469	Yes
VC	August-03	380	222.4	198-594	Yes
VC	August-03	380	217.4	198-594	Yes
VC	August-03	82	110.7	42.7-128	Yes
VC	August-03	82	117.8	42.7-128	Yes
VC	September-03	0.00	<10 (ND)	NA	Yes
VC	September-03	27	44.1	14.4-42.2	No
VC	September-03	27	43.7	14.4-42.2	No

Table E-10. EPA 8260B performance evaluation sample results from Severn Trent Laboratories.

Analyte	Date	Certified (µg/L)	Observed (µg/L)	Accepted Performance Limits (µg/L)	Within Accepted Performance Limits?
PCE	May-03	24.6	18	15.6 - 29.6	Yes
PCE	August-03	769	720	488-924	Yes
TCE	May-03	11.4	11	8.07 – 14	Yes
TCE	August-03	444	490	313-544	Yes
cis-DCE	May-03	40.7	43	30.1 - 50.5	Yes
cis-DCE	August-03	136	180	100-169	No
trans-DCE	May-03	17.7	19	12.6 - 22.5	Yes
trans-DCE	August-03	510	690	363-648	No
VC	May-03	31.2	35	16.3 - 48.8	Yes
VC	August-03	380	390	198-594	Yes

Blanks—The GWMP Revision 1 (INEEL 2003a) requirements, effective January 2003, include collecting one trip blank per sample cooler for VOCs and ethene/ethane/methane samples and collecting one field blank per 20 samples (or one sample per day if number of monitoring locations is <20) for all analytes. During November and December 2003, the GWMP Revision 0 (INEEL 2003a) requirements included one trip blank per sample cooler for VOCs and ethene/ethane/methane samples and collecting one field blank per sampling week for all analytes. Deviations from these requirements included not collecting field blank samples on September 17, 2003, due to weather conditions. For the trip and field blanks collected during this reporting period, no false positive values were reported.

Matrix Spike and Matrix Spike Duplicate—Requirements for MS/MSD data define laboratory QA requirements for matrix spike data percent recovery to be between 71 to 120%, as defined by the QAPjP (DOE-ID 2002). IRC MS/MSD data are shown in Table E-11 and off-Site laboratory data are listed in Table E-12. MS/MSD data was collected from February through October 2003 at the IRC for all VOCs. The target percent recovery was not met for two out of 22 PCE recoveries, three out of 21 TCE, two out of 20 cis-DCE, and six out of 22 VC matrix spike recoveries performed at the IRC. All 22 trans-DCE recoveries met the criteria. Off-Site laboratory MS/MSD data was collected less frequently than at the IRC and included PCE, TCE, VC, and ethene/ethane/methane. The target percent recovery was met for all 4 PCE and 8 TCE recoveries, 2 out of 4 VC recoveries, 4 out of 8 ethane recoveries, 3 out of 8 ethene recoveries, and none of the recoveries were met for methane.

Table E-11. INEEL Research Center matrix spike/matrix spike duplicate data.

Analyte	Date	Well	Spike Added (mg/L)	Sample (µg/L)	MS (µg/L)	MS Recovery (%)	Criteria Met?	MSD (µg/L)	MSD Recovery (%)	Criteria Met?
PCE	2/10/2003	TAN-10A	50	<10	52.8	100.1	Yes	52.0	98.6	Yes
PCE	3/3/2003	TAN-30A	50	<10	46.4	93.2	Yes	47.7	95.9	Yes
PCE	4/7/2003	TAN-30A	50	<10	54.6	109.7	Yes	54.0	108.5	Yes
PCE	5/5/2003	TAN-10A	50	<10	50.1	100.7	Yes	49.0	98.5	Yes
PCE	6/17/2003	TAN-37B	50	<10	65.9	132.5	No	70.8	142.3	No
PCE	7/28/2003	TAN-30A	50	<10	55.1	102.1	Yes	49.7	99.9	Yes
PCE	8/20/2003	TAN-10A	50	<10	51.2	102.9	Yes	49.8	100.1	Yes
PCE	9/15/2003	TAN-30A	50	<10	55.7	102.9	Yes	55.0	102.9	Yes
PCE	9/16/2003	TAN-D2	50	<10	53.2	106.9	Yes	43.3	87.0	Yes
PCE	10/6/2003	TAN-29	50	16.7	63.0	93.0	Yes	61.4	89.7	Yes
PCE	10/7/2003	TAN-26	50	<10	54.4	109.2	Yes	58.7	117.9	Yes
TCE	2/10/2003	TAN-10A	50	12.4	63.9	103.6	Yes	65.7	107.3	Yes
TCE	3/3/2003	TAN-30A	50	78.9	124.7	92.0	Yes	125.3	93.2	Yes
TCE	4/7/2003	TAN-30A	50	92.1	147.3	110.8	Yes	144.9	106.1	Yes
TCE	5/5/2003	TAN-10A	50	<10	59.1	108.7	Yes	56.5	103.5	Yes
TCE	6/17/2003	TAN-37B	50	199.8	255.6	112.2	Yes	237.0	74.9	Yes
TCE	7/28/2003	TAN-30A	50	83.7	141.8	111.8	Yes	137.4	108.2	Yes

Table E-11. (continued).

Analyte	Date	Well	Spike Added (mg/L)	Sample (µg/L)	MS (µg/L)	MS Recovery (%)	Criteria Met?	MSD (µg/L)	MSD Recovery (%)	Criteria Met?
TCE	8/20/2003	TAN-10A	50	<10	66.3	121.8	No	62.8	114.6	Yes
TCE	9/15/2003	TAN-30A	50	84.8	157.2	145.5	No	136.9	104.7	Yes
TCE	9/16/2003	TAN-D2	50	<10	54.9	110.4	Yes	43.1	86.6	Yes
TCE	10/6/2003	TAN-29	50	547.0	602.4	111.4	Yes	NO MSD		NA
TCE	10/7/2003	TAN-26	50	<10	55.4	111.3	Yes	61.7	124.0	No
cis-DCE	2/10/2003	TAN-10A	50	<10	49.4	99.3	Yes	50.4	101.4	Yes
cis-DCE	3/3/2003	TAN-30A	50	<10	55.5	105.1	Yes	55.7	105.5	Yes
cis-DCE	4/7/2003	TAN-30A	50	<10	61.0	116.5	Yes	60.6	115.7	Yes
cis-DCE	5/5/2003	TAN-10A	50	ND	48.0	96.5	Yes	49.1	98.7	Yes
cis-DCE	7/28/2003	TAN-30A	50	<10	66.6	108.9	Yes	63.6	103.9	Yes
cis-DCE	8/20/2003	TAN-10A	50	<10	51.7	103.9	Yes	49.3	99.1	Yes
cis-DCE	9/15/2003	TAN-30A	50	<10	63.4	127.4	No	60.5	121.6	No
cis-DCE	9/16/2003	TAN-D2	50	<10	51.3	103.1	Yes	39.7	79.8	Yes
cis-DCE	10/6/2003	TAN-29	50	67.6	110.0	87.2	Yes	103.6	72.4	Yes
cis-DCE	10/7/2003	TAN-26	50	<10	49.9	100.3	Yes	55.3	111.2	Yes
trans-DCE	2/10/2003	TAN-10A	50	<10	48.1	96.6	Yes	50.1	100.6	Yes
trans-DCE	3/3/2003	TAN-30A	50	44.1	90.7	93.7	Yes	91.0	94.4	Yes
trans-DCE	4/7/2003	TAN-30A	50	47.5	96.8	99.1	Yes	95.9	97.2	Yes
trans-DCE	5/5/2003	TAN-10A	50	<10	50.3	101.1	Yes	51.0	102.5	Yes
trans-DCE	6/17/2003	TAN-37B	50	105.6	158.3	117.6	Yes	145.6	92.0	Yes
trans-DCE	7/28/2003	TAN-30A	50	82.6	131.6	98.5	Yes	129.3	93.8	Yes
trans-DCE	8/20/2003	TAN-10A	50	<10	55.6	111.7	Yes	50.6	101.8	Yes
trans-DCE	9/15/2003	TAN-30A	50	96.9	137.8	82.2	Yes	145.4	97.5	Yes
trans-DCE	9/16/2003	TAN-D2	50	42.3	96.0	107.9	Yes	83.3	82.4	Yes
trans-DCE	10/6/2003	TAN-29	50	18.3	70.1	104.3	Yes	70.3	104.6	Yes
trans-DCE	10/7/2003	TAN-26	50	60.9	112.0	102.7	Yes	111.2	101.0	Yes
VC	2/10/2003	TAN-10A	50	ND	57.9	116.3	Yes	63.9	128.4	No
VC	3/3/2003	TAN-30A	50	<10	55.2	104.3	Yes	54.9	103.8	Yes
VC	4/7/2003	TAN-30A	50	<10	66.9	134.6	No	66.6	133.9	No
VC	5/5/2003	TAN-10A	50	ND	57.0	114.6	Yes	71.8	144.3	No
VC	6/17/2003	TAN-37B	50	<10	58.3	100.4	Yes	57.1	98.0	Yes

Table E-11. (continued).

Analyte	Date	Well	Spike Added (mg/L)	Sample (µg/L)	MS (µg/L)	MS Recovery (%)	Criteria Met?	MSD (µg/L)	MSD Recovery (%)	Criteria Met?
VC	7/28/2003	TAN-30A	50	<10	48.5	97.6	Yes	43.5	87.5	Yes
VC	8/20/2003	TAN-10A	50	<10	61.7	124.1	No	53.1	106.7	Yes
VC	9/15/2003	TAN-30A	50	<10	49.8	100.1	Yes	54.9	110.4	Yes
VC	9/16/2003	TAN-D2	50	<10	56.5	113.6	Yes	46.8	94.1	Yes
VC	10/6/2003	TAN-29	50	ND	44.5	89.4	Yes	44.4	89.3	Yes
VC	10/7/2003	TAN-26	50	<10	50.7	102.0	Yes	69.0	138.6	No

Table E-12. Off-Site laboratory matrix spike/matrix spike duplicate data.

Analyte	Date	Spike Added (µg/L)	Sample (µg/L)	MS (µg/L)	MS Recovery (%)	Criteria Met?	MSD (µg/L)	MSD Recovery (%)	Criteria Met?
PCE	11/05/02	50	ND	41	82	Yes	40.3	81	Yes
PCE	02/10/03	50	2.4	48.3	92	Yes	47.7	91	Yes
TCE	11/05/02	50	0.52	39.8	79	Yes	39.5	75	Yes
TCE	02/10/03	50	12	57.6	91.0	Yes	57.1	90.0	Yes
TCE	05/05/03	50	8.8	57	96	Yes	56	94	Yes
TCE	08/20/03	50	9	57	96	Yes	57	96	Yes
VC	11/05/02	50	1.5	35.1	67	No	33.6	64	No
VC	02/10/03	50	ND	52	104	Yes	52.7	105	Yes
Ethane	11/05/02	187	0	110	59	No	81	43	No
Ethane	02/11/03	188	0	163	87	Yes	139	74	Yes
Ethane	05/05/03	3000	360	2300	65	No	4000	121	No
Ethane	08/19/03	60	0	56	93	Yes	66	110	Yes
Ethene	11/05/02	176	0	98	56	No	72	41	No
Ethene	02/11/03	176	0	148	84	Yes	147	84	Yes
Ethene	05/05/03	3000	0	1600	53	No	2800	93	Yes
Ethene	08/19/03	60	0	52	87	Yes	61	102	Yes
Methane	11/05/02	100	8400	8100	-300	No	7000	-1400	No
Methane	02/11/03	100	13000	13400	400	No	13000	0	No
Methane	05/05/03	1500	18000	19000	67	No	20000	133	No
Methane	08/19/03	30	9500	11000	5000	No	11000	5000	No

E-1.2 Precision

Precision is an assessment of reproducibility of measurements under a given set of conditions. Overall precision was assessed through collection and analysis of duplicate samples at the ISB field laboratory, IRC, and off-Site laboratories. Duplicate samples are defined as two samples collected for the same analyses during a single mobilization. If one or both of the duplicate samples are reported below the method detection limit, then an RPD was not calculated. Target RPDs for duplicate samples analyzed in the ISB field laboratory are stated in TPR-166, "In Situ Bioremediation Field Laboratory Procedure." Relative percent differences are not specified for analyses conducted at the IRC or off-Site laboratories, except for TCE, which has a target RPD of 14%. Relative percent differences for ISB field laboratory duplicates are presented in Table E-13, IRC duplicates in Table E-14, off-Site VOCs and ethene/ethane/methane in Table E-15, and tritium and Sr-90 in Table E-16.

Table E-13. Relative percent differences for in situ bioremediation field laboratory duplicates.

Analyte	Date	Well	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Target RPD (%)	Criteria Met?
COD	11/04/02	TAN-28	13	18	NA	NA	NA
COD	12/10/02	TAN-31	576	486	17	25	Yes
COD	01/15/03	TAN-27	0	0	NA	NA	NA
COD	01/15/03	TAN-26	2	20	NA	NA	NA
COD	02/10/03	TAN-29	19	12	NA	NA	NA
COD	02/11/03	TAN-25	445	432	3	25	Yes
COD	03/03/03	TAN-28	9	0	NA	NA	NA
COD	03/04/03	TAN-25	5508	5553	1	25	Yes
COD	04/07/03	TSF-05A	77	67	14	50	Yes
COD	04/08/03	TAN-37B	21	18	NA	NA	NA
COD	05/05/03	TAN-29	15	29	NA	NA	NA
COD	05/06/03	TAN-31	43	40	7	50	Yes
COD	06/17/03	TAN-25	2523	2571	2	25	Yes
COD	07/28/03	TAN-D2	0	8	NA	NA	NA
COD	07/29/03	TAN-37C	26	14	NA	NA	NA
COD	08/18/03	TAN-29	0	1	NA	NA	NA
COD	08/19/03	TAN-25	139	139	0	25	Yes
COD	08/20/03	TAN-1861	0	0	NA	NA	NA
COD	09/15/03	TAN-28	0	0	NA	NA	NA
COD	09/16/03	TAN-26	25	32	25	50	Yes

Table E-13. (continued).

Analyte	Date	Well	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Target RPD (%)	Criteria Met?
COD	09/18/03	TAN-37C	27	11	NA	NA	NA
COD	10/06/03	TAN-28	0	8	NA	NA	NA
COD	10/07/03	TAN-31	35	39	11	50	Yes
Iron	11/04/02	TAN-28	0	0.02	NA	NA	NA
Iron	12/10/02	TAN-31	3.8	3.8	0	25	Yes
Iron	01/13/03	TAN-27	0.05	0.03	NA	NA	NA
Iron	01/14/03	TAN-26	3.90	3.90	0	25	Yes
Iron	02/10/03	TAN-29	0.04	0.03	29	50	Yes
Iron	02/11/03	TAN-25	3.10	2.75	12	25	Yes
Iron	03/03/03	TAN-28	0.02	0.02	NA	NA	NA
Iron	03/04/03	TAN-25	2.30	2.03	12	25	Yes
Iron	04/07/03	TSF-05A	2.92	2.15	30	25	No
Iron	04/08/03	TAN-37B	1.97	2.00	2	25	Yes
Iron	05/05/03	TAN-29	0.01	0.02	NA	NA	NA
Iron	05/06/03	TAN-31	3.3	2.93	12	25	Yes
Iron	06/17/03	TAN-25	3.80	4.0	5	25	Yes
Iron	07/28/03	TAN-D2	3.8	4.1	8	25	Yes
Iron	07/29/03	TAN-37C	2.69	2.7	0	25	Yes
Iron	08/18/03	TAN-29	0.02	0.02	NA	NA	NA
Iron	08/19/03	TAN-25	2.62	2.72	4	25	Yes
Iron	08/20/03	TAN-1861	0.05	0.06	18	50	Yes
Iron	09/15/03	TAN-28	0.02	0.01	NA	NA	NA
Iron	09/16/03	TAN-26	3.2	3.3	3	25	Yes
Iron	09/18/03	TAN-37C	3.2	3.1	3	25	Yes
Iron	10/06/03	TAN-28	0.01	0	NA	NA	NA
Iron	10/07/03	TAN-31	3.9	4	3	25	Yes
Sulfate	11/04/02	TAN-28	38	40	5	25	Yes
Sulfate	12/10/02	TAN-31	0	0	NA	NA	NA
Sulfate	01/15/03	TAN-27	43	44	2	25	Yes
Sulfate	01/15/03	TAN-26	0	0	NA	NA	NA
Sulfate	02/10/03	TAN-29	42	41	2	25	Yes

Table E-13. (continued).

Analyte	Date	Well	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Target RPD (%)	Criteria Met?
Sulfate	02/11/03	TAN-25	0	0	NA	NA	NA
Sulfate	03/03/03	TAN-28	39	39	0	25	Yes
Sulfate	03/04/03	TAN-25	0	0	NA	NA	NA
Sulfate	04/07/03	TSF-05A	5	0	NA	NA	NA
Sulfate	04/08/03	TAN-37B	16	15	6	25	Yes
Sulfate	05/05/03	TAN-29	38	35	8	25	Yes
Sulfate	05/06/03	TAN-31	0	0	NA	NA	NA
Sulfate	06/17/03	TAN-25	0	0	NA	NA	NA
Sulfate	07/28/03	TAN-D2	0	0	NA	NA	NA
Sulfate	07/29/03	TAN-37C	0	0	NA	NA	NA
Sulfate	08/18/03	TAN-29	39	38	3	25	Yes
Sulfate	08/19/03	TAN-25	0	0	NA	NA	NA
Sulfate	08/20/03	TAN-1861	40	40	0	25	Yes
Sulfate	09/15/03	TAN-28	35	39	11	25	Yes
Sulfate	09/16/03	TAN-26	0	0	NA	NA	NA
Sulfate	09/18/03	TAN-37C	0	0	NA	NA	NA
Sulfate	10/06/03	TAN-28	40	39	3	25	Yes
Sulfate	10/07/03	TAN-31	0	0	NA	NA	NA
Alkalinity	11/04/02	TAN-28	296	298	1	25	Yes
Alkalinity	12/10/02	TAN-31	2880	2740	5	25	Yes
Alkalinity	01/15/03	TAN-27	205	199	3	25	Yes
Alkalinity	01/15/03	TAN-26	3370	3200	5	25	Yes
Alkalinity	02/10/03	TAN-29	272	268	1	25	Yes
Alkalinity	02/11/03	TAN-25	6780	6990	3	25	Yes
Alkalinity	03/03/03	TAN-28	365	317	14	25	Yes
Alkalinity	03/04/03	TAN-25	5050	5580	10	25	Yes
Alkalinity	04/07/03	TSF-05A	3920	3630	8	25	Yes
Alkalinity	04/08/03	TAN-37B	480	476	1	25	Yes
Alkalinity	05/05/03	TAN-29	267	274	3	25	Yes
Alkalinity	05/06/03	TAN-31	2670	2550	5	25	Yes

Table E-13. (continued).

Analyte	Date	Well	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Target RPD (%)	Criteria Met?
Alkalinity	06/17/03	TAN-25	5760	5660	2	25	Yes
Alkalinity	07/28/03	TAN-D2	458	448	2	25	Yes
Alkalinity	07/29/03	TAN-37C	1700	1780	5	25	Yes
Alkalinity	08/18/03	TAN-29	249	250	0	25	Yes
Alkalinity	08/19/03	TAN-25	5600	6040	8	25	Yes
Alkalinity	08/20/03	TAN-1861	365	376	3	25	Yes
Alkalinity	09/15/03	TAN-28	307	310	1	25	Yes
Alkalinity	09/16/03	TAN-26	2200	2260	3	25	Yes
Alkalinity	09/18/03	TAN-37C	1900	1910	1	25	Yes
Alkalinity	10/06/03	TAN-28	312	314	1	25	Yes
Alkalinity	10/07/03	TAN-31	1850	1810	2	25	Yes
Ammonia	11/04/02	TAN-28	0.76	0.78	NA	NA	NA
Ammonia	05/05/03	TAN-29	0.86	0.84	2	50	Yes
Ammonia	05/06/03	TAN-31	0.02	0	NA	NA	NA
Phosphate	11/04/02	TAN-28	0.61	0.48	NA	NA	NA
Phosphate	05/05/03	TAN-29	0.55	0.46	NA	NA	NA
Phosphate	05/06/03	TAN-31	2.54	2.42	5	25	Yes

Table E-14. Relative percent differences for INEEL Research Center duplicates.

Analyte	Date	Well	Sample (µg/L)	Duplicate (µg/L)	RPD (%)
PCE	11/04/02	TAN-28	21.7	21.2	2
PCE	12/10/02	TAN-31	ND	ND	NA
PCE	01/13/03	TAN-27	5.0	5.0	NA
PCE	01/14/03	TAN-26	ND	ND	NA
PCE	02/10/03	TAN-29	5.0	10.2	NA
PCE	02/11/03	TAN-25	ND	ND	NA
PCE	03/03/03	TAN-28	11.4	13.3	15
PCE	03/04/03	TAN-25	ND	ND	NA
PCE	04/07/03	TSF-05A	ND	ND	NA
PCE	04/08/03	TAN-37B	ND	ND	NA

Table E-14. (continued).

Analyte	Date	Well	Sample (µg/L)	Duplicate (µg/L)	RPD (%)
PCE	05/06/03	TAN-31	ND	ND	NA
PCE	05/05/03	TAN-29	5.0	5.0	NA
PCE	06/17/03	TAN-25	ND	ND	NA
PCE	07/28/03	TAN-D2	5.0	5.0	NA
PCE	07/29/03	TAN-37C	ND	ND	NA
PCE	08/18/03	TAN-29	5.0	10.3	NA
PCE	08/19/03	TAN-25	ND	ND	NA
PCE	08/20/03	TAN-1861	5.0	5.0	NA
PCE	09/15/03	TAN-28	12.8	13.6	6
PCE	09/16/03	TAN-26	ND	ND	NA
PCE	09/18/03	TAN-37C	ND	ND	NA
PCE	10/06/03	TAN-28	ND	5.0	NA
PCE	10/07/03	TAN-31	ND	ND	NA
TCE	11/04/02	TAN-28	1135.8	1103.4	3
TCE	12/10/02	TAN-31	5.0	5.0	NA
TCE	01/13/03	TAN-27	47.9	47.3	1
TCE	01/14/03	TAN-26	5.0	5.0	NA
TCE	02/10/03	TAN-29	765.7	757.9	1
TCE	02/11/03	TAN-25	5.0	5.0	NA
TCE	03/03/03	TAN-28	1009.6	1002.0	1
TCE	03/04/03	TAN-25	10.4	10.3	1
TCE	04/07/03	TSF-05A	5.0	5.0	NA
TCE	04/08/03	TAN-37B	34.8	35.6	2
TCE	05/06/03	TAN-31	5.0	5.0	NA
TCE	05/05/03	TAN-29	602.9	578.5	4
TCE	06/17/03	TAN-25	5.0	5.0	NA
TCE	07/28/03	TAN-D2	5.0	5.0	NA
TCE	07/29/03	TAN-37C	13.6	11.9	13
TCE	08/18/03	TAN-29	711.9	745.5	5
TCE	08/19/03	TAN-25	5.0	5.0	NA
TCE	08/20/03	TAN-1861	42.2	41.8	1

Table E-14. (continued).

Analyte	Date	Well	Sample (µg/L)	Duplicate (µg/L)	RPD (%)
TCE	09/15/03	TAN-28	5.0	5.0	NA
TCE	09/16/03	TAN-26	5.0	5.0	NA
TCE	09/18/03	TAN-37C	5.0	5.0	NA
TCE	10/06/03	TAN-28	917.8	991.2	8
TCE	10/07/03	TAN-31	5.0	5.0	NA
cis-DCE	11/04/02	TAN-28	147.1	143.3	3
cis-DCE	12/10/02	TAN-31	34.8	34.6	1
cis-DCE	01/13/03	TAN-27	5.0	5.0	NA
cis-DCE	01/14/03	TAN-26	5.0	5.0	NA
cis-DCE	02/10/03	TAN-29	121.9	120.1	1
cis-DCE	02/11/03	TAN-25	161.5	169.4	5
cis-DCE	03/03/03	TAN-28	150.9	149.3	1
cis-DCE	03/04/03	TAN-25	84.3	82.2	3
cis-DCE	04/07/03	TSF-05A	117.8	128.8	9
cis-DCE	04/08/03	TAN-37B	77.1	78.3	2
cis-DCE	05/06/03	TAN-31	5.0	5.0	NA
cis-DCE	05/05/03	TAN-29	113.2	105.6	7
cis-DCE	06/17/03	TAN-25	79.3	80.1	1
cis-DCE	07/28/03	TAN-D2	5.0	5.0	NA
cis-DCE	07/29/03	TAN-37C	18.8	15.7	18
cis-DCE	08/18/03	TAN-29	116.1	126.7	9
cis-DCE	08/19/03	TAN-25	68.5	69	1
cis-DCE	08/20/03	TAN-1861	5.0	5.0	NA
cis-DCE	09/15/03	TAN-28	124.9	134.3	7
cis-DCE	09/16/03	TAN-26	5.0	5.0	NA
cis-DCE	09/18/03	TAN-37C	13	10.5	21
cis-DCE	10/06/03	TAN-28	125.5	130.9	4
cis-DCE	10/07/03	TAN-31	5.0	5.0	NA
trans-DCE	11/04/02	TAN-28	162.8	159.6	2
trans-DCE	12/10/02	TAN-31	241.6	242.1	0
trans-DCE	01/13/03	TAN-27	5.0	5.0	NA

Table E-14. (continued).

Analyte	Date	Well	Sample (µg/L)	Duplicate (µg/L)	RPD (%)
trans-DCE	01/14/03	TAN-26	50.9	49.8	2
trans-DCE	02/10/03	TAN-29	100.5	98.9	2
trans-DCE	02/11/03	TAN-25	214.8	216.6	1
trans-DCE	03/03/03	TAN-28	160.7	159.7	1
trans-DCE	03/04/03	TAN-25	179.5	179.6	0
trans-DCE	04/07/03	TSF-05A	382.5	380.4	1
trans-DCE	04/08/03	TAN-37B	153.5	154.8	1
trans-DCE	05/06/03	TAN-31	223.6	226.7	1
trans-DCE	05/05/03	TAN-29	99.4	94.7	5
trans-DCE	06/17/03	TAN-25	165.6	176.7	6
trans-DCE	07/28/03	TAN-D2	70.0	70.3	0
trans-DCE	07/29/03	TAN-37C	128.0	116.9	9
trans-DCE	08/18/03	TAN-29	90.3	96.3	6
trans-DCE	08/19/03	TAN-25	192.1	199.7	4
trans-DCE	08/20/03	TAN-1861	20.2	22.5	11
trans-DCE	09/15/03	TAN-28	80.6	83.7	4
trans-DCE	09/16/03	TAN-26	68.6	71.1	4
trans-DCE	09/18/03	TAN-37C	125.8	111.9	12
trans-DCE	10/06/03	TAN-28	78.3	74.4	5
trans-DCE	10/07/03	TAN-31	244.1	241.5	1
VC	11/04/02	TAN-28	5.0	5.0	NA
VC	12/10/02	TAN-31	5.0	5.0	NA
VC	01/13/03	TAN-27	ND	ND	NA
VC	01/14/03	TAN-26	5.0	5.0	NA
VC	02/10/03	TAN-29	5.0	5.0	NA
VC	02/11/03	TAN-25	5.0	5.0	NA
VC	03/03/03	TAN-28	5.0	5.0	NA
VC	03/04/03	TAN-25	10.6	10.0	6
VC	04/07/03	TSF-05A	77.8	84.4	8
VC	04/08/03	TAN-37B	17.6	17.5	1
VC	05/06/03	TAN-31	5.0	5.0	NA

Table E-14. (continued).

Analyte	Date	Well	Sample (µg/L)	Duplicate (µg/L)	RPD (%)
VC	05/05/03	TAN-29	5.0	5.0	NA
VC	06/17/03	TAN-25	5.0	5.0	NA
VC	07/28/03	TAN-D2	5.0	5.0	NA
VC	07/29/03	TAN-37C	13.2	11.9	11
VC	08/18/03	TAN-29	5.0	5.0	NA
VC	08/19/03	TAN-25	10.8	10.8	0
VC	08/20/03	TAN-1861	ND	ND	NA
VC	09/15/03	TAN-28	5.0	5.0	NA
VC	09/16/03	TAN-26	11.2	11.0	2
VC	09/18/03	TAN-37C	36.3	37.6	4
VC	10/06/03	TAN-28	5.0	5.0	NA
VC	10/07/03	TAN-31	5.0	5.0	NA
Ethene	11/04/02	TAN-28	6.2	10.5	51
Ethene	12/10/02	TAN-31	3.7	5.3	36
Ethene	01/13/03	TAN-27	ND	ND	NA
Ethene	01/14/03	TAN-26	3.0	3.0	0
Ethene	02/10/03	TAN-29	ND	ND	NA
Ethene	02/11/03	TAN-25	9.2	9.0	2
Ethene	03/03/03	TAN-28	ND	ND	NA
Ethene	03/04/03	TAN-25	15.8	17.5	10
Ethene	04/07/03	TSF-05A	513.6	523.9	2
Ethene	04/08/03	TAN-37B	16.1	19.0	17
Ethene	05/06/03	TAN-31	5.8	6.4	10
Ethene	05/05/03	TAN-29	5.0	5.0	NA
Ethene	06/17/03	TAN-25	8.0	10.8	30
Ethene	07/28/03	TAN-D2	ND	ND	NA
Ethene	07/29/03	TAN-37C	6.7	6.9	3
Ethene	08/18/03	TAN-29	ND	ND	NA
Ethene	08/19/03	TAN-25	13.3	13.2	1
Ethene	08/20/03	TAN-1861	ND	ND	NA
Ethene	09/15/03	TAN-28	ND	ND	NA

Table E-14. (continued).

Analyte	Date	Well	Sample (µg/L)	Duplicate (µg/L)	RPD (%)
Ethene	09/16/03	TAN-26	25.1	29.4	16
Ethene	09/18/03	TAN-37C	7	7.8	11
Ethene	10/06/03	TAN-28	ND	ND	NA
Ethene	10/07/03	TAN-31	10.4	12.3	17
Ethane	11/04/02	TAN-28	ND	ND	NA
Ethane	12/10/02	TAN-31	ND	ND	NA
Ethane	01/13/03	TAN-27	ND	ND	NA
Ethane	01/14/03	TAN-26	ND	ND	NA
Ethane	02/10/03	TAN-29	ND	ND	NA
Ethane	02/11/03	TAN-25	ND	ND	NA
Ethane	03/03/03	TAN-28	ND	ND	NA
Ethane	03/04/03	TAN-25	ND	ND	NA
Ethane	04/07/03	TSF-05A	ND	ND	NA
Ethane	04/08/03	TAN-37B	ND	ND	NA
Ethane	05/06/03	TAN-31	trace	trace	NA
Ethane	05/05/03	TAN-29	trace	trace	NA
Ethane	06/17/03	TAN-25	trace	trace	NA
Ethane	07/28/03	TAN-D2	trace	trace	NA
Ethane	07/29/03	TAN-37C	trace	trace	NA
Ethane	08/18/03	TAN-29	trace	trace	NA
Ethane	08/19/03	TAN-25	trace	trace	NA
Ethane	08/20/03	TAN-1861	trace	trace	NA
Ethane	09/15/03	TAN-28	trace	trace	NA
Ethane	09/16/03	TAN-26	trace	trace	NA
Ethane	09/18/03	TAN-37C	trace	trace	NA
Ethane	10/06/03	TAN-28	trace	trace	NA
Ethane	10/07/03	TAN-31	trace	trace	NA
Methane	11/04/02	TAN-28	4819.0	4496.8	7
Methane	12/10/02	TAN-31	11029.3	12348.2	11
Methane	01/13/03	TAN-27	2013.8	19823.9	163
Methane	01/14/03	TAN-26	13291.9	14490.3	9

Table E-14. (continued).

Analyte	Date	Well	Sample (µg/L)	Duplicate (µg/L)	RPD (%)
Methane	02/10/03	TAN-29	11178.1	13810.8	21
Methane	02/11/03	TAN-25	7073.9	8316.6	16
Methane	03/03/03	TAN-28	5060.3	4812.1	5
Methane	03/04/03	TAN-25	4378.7	6515.4	39
Methane	04/07/03	TSF-05A	11808.8	11615.4	2
Methane	04/08/03	TAN-37B	12858.3	13008.8	1
Methane	05/06/03	TAN-31	11758.3	10946.8	7
Methane	05/05/03	TAN-29	4899.2	8328.8	52
Methane	06/17/03	TAN-25	6698.5	10090.2	40
Methane	07/28/03	TAN-D2	6750.7	7677.5	13
Methane	07/29/03	TAN-37C	16738.6	15933.6	5
Methane	08/18/03	TAN-29	4026.6	3022.1	29
Methane	08/19/03	TAN-25	8782.5	9188	5
Methane	08/20/03	TAN-1861	10467.8	7561.8	32
Methane	09/15/03	TAN-28	1664.4	1796.2	8
Methane	09/16/03	TAN-26	7019.4	8998.9	25
Methane	09/18/03	TAN-37C	14404.7	14710.7	2
Methane	10/06/03	TAN-28	1260.1	1219.3	3
Methane	10/07/03	TAN-31	19757.2	20860.2	5
Propionate	11/04/02	TAN-28	2.5	2.5	NA
Propionate	12/10/02	TAN-31	197.7	191.8	3
Propionate	01/13/03	TAN-27	2.5	2.5	NA
Propionate	01/14/03	TAN-26	2.5	2.5	NA
Propionate	02/10/03	TAN-29	2.5	2.5	NA
Propionate	02/11/03	TAN-25	33.4	44.7	29
Propionate	03/03/03	TAN-28	2.5	2.5	NA
Propionate	03/04/03	TAN-25	1164.4	1568.3	30
Propionate	04/07/03	TSF-05A	7.1	2.5	NA
Propionate	04/08/03	TAN-37B	2.5	2.5	NA
Propionate	05/06/03	TAN-31	15.3	17.6	14
Propionate	05/05/03	TAN-29	2.5	2.5	NA

Table E-14. (continued).

Analyte	Date	Well	Sample (µg/L)	Duplicate (µg/L)	RPD (%)
Propionate	06/17/03	TAN-25	870.9	557.3	44
Propionate	07/28/03	TAN-D2	2.5	2.5	NA
Propionate	07/29/03	TAN-37C	2.5	2.5	NA
Propionate	08/18/03	TAN-29	2.5	2.5	NA
Propionate	08/19/03	TAN-25	27.3	23.8	14
Propionate	08/20/03	TAN-1861	2.5	2.5	NA
Propionate	09/15/03	TAN-28	2.5	2.5	NA
Propionate	09/16/03	TAN-26	2.5	2.5	NA
Propionate	09/18/03	TAN-37C	2.5	2.5	NA
Propionate	10/06/03	TAN-28	2.5	2.5	NA
Propionate	10/07/03	TAN-31	7.2	2.5	NA
Butyrate	11/04/02	TAN-28	ND	ND	NA
Butyrate	12/10/02	TAN-31	7.7	7.5	3
Butyrate	01/13/03	TAN-27	2.5	2.5	NA
Butyrate	01/14/03	TAN-26	2.5	2.5	NA
Butyrate	02/10/03	TAN-29	2.5	2.5	NA
Butyrate	02/11/03	TAN-25	6.1	7.8	24
Butyrate	03/03/03	TAN-28	2.5	2.5	NA
Butyrate	03/04/03	TAN-25	16.7	21.3	24
Butyrate	04/07/03	TSF-05A	2.5	2.5	NA
Butyrate	04/08/03	TAN-37B	2.5	2.5	NA
Butyrate	05/06/03	TAN-31	2.5	2.5	NA
Butyrate	05/05/03	TAN-29	2.5	2.5	NA
Butyrate	06/17/03	TAN-25	60.4	38.8	44
Butyrate	07/28/03	TAN-D2	2.5	2.5	NA
Butyrate	07/29/03	TAN-37C	2.5	2.5	NA
Butyrate	08/18/03	TAN-29	2.5	2.5	NA
Butyrate	08/19/03	TAN-25	2.5	2.5	NA
Butyrate	08/20/03	TAN-1861	2.5	2.5	NA
Butyrate	09/15/03	TAN-28	2.5	2.5	NA
Butyrate	09/16/03	TAN-26	2.5	2.5	NA

Table E-14. (continued).

Analyte	Date	Well	Sample (µg/L)	Duplicate (µg/L)	RPD (%)
Butyrate	09/18/03	TAN-37C	2.5	2.5	NA
Butyrate	10/06/03	TAN-28	2.5	2.5	NA
Butyrate	10/07/03	TAN-31	2.5	2.5	NA
Acetate	11/04/02	TAN-28	2.5	2.5	NA
Acetate	12/10/02	TAN-31	167.8	163.1	3
Acetate	01/13/03	TAN-27	2.5	2.5	NA
Acetate	01/14/03	TAN-26	2.5	2.5	NA
Acetate	02/10/03	TAN-29	2.5	2.5	NA
Acetate	02/11/03	TAN-25	113.5	165.4	37
Acetate	03/03/03	TAN-28	2.5	2.5	NA
Acetate	03/04/03	TAN-25	1382.6	1832.0	28
Acetate	04/07/03	TSF-05A	31.9	35.8	12
Acetate	04/08/03	TAN-37B	2.5	2.5	NA
Acetate	05/06/03	TAN-31	10.4	18.5	56
Acetate	05/05/03	TAN-29	2.5	2.5	NA
Acetate	06/17/03	TAN-25	1397.5	910.3	42
Acetate	07/28/03	TAN-D2	2.5	2.5	NA
Acetate	07/29/03	TAN-37C	2.5	2.5	NA
Acetate	08/18/03	TAN-29	2.5	2.5	NA
Acetate	08/19/03	TAN-25	139.7	123.3	12
Acetate	08/20/03	TAN-1861	2.5	2.5	NA
Acetate	09/15/03	TAN-28	2.5	2.5	NA
Acetate	09/16/03	TAN-26	2.5	2.5	NA
Acetate	09/18/03	TAN-37C	2.5	2.5	NA
Acetate	10/06/03	TAN-28	2.5	2.5	NA
Acetate	10/07/03	TAN-31	8.1	2.5	NA
Lactate	11/04/02	TAN-28	0.117	0.117	NA
Lactate	12/10/02	TAN-31	2.512	2.514	0
Lactate	01/13/03	TAN-27	0.117	0.117	NA
Lactate	01/14/03	TAN-26	0.117	0.117	NA
Lactate	02/10/03	TAN-29	0.117	0.117	NA

Table E-14. (continued).

Analyte	Date	Well	Sample (µg/L)	Duplicate (µg/L)	RPD (%)
Lactate	02/11/03	TAN-25	3.3	3.3	0
Lactate	03/03/03	TAN-28	0.117	0.117	NA
Lactate	03/04/03	TAN-25	2763.6	2778.6	1
Lactate	04/07/03	TSF-05A	0.117	0.117	NA
Lactate	04/08/03	TAN-37B	0.117	0.117	NA
Lactate	05/06/03	TAN-31	0.117	0.117	NA
Lactate	05/05/03	TAN-29	0.117	0.117	NA
Lactate	06/17/03	TAN-25	19.022	19.307	1
Lactate	07/28/03	TAN-D2	0.117	0.117	NA
Lactate	07/29/03	TAN-37C	0.117	0.117	NA
Lactate	08/18/03	TAN-29	0.117	0.117	NA
Lactate	08/19/03	TAN-25	0.117	0.117	NA
Lactate	08/20/03	TAN-1861	0.117	0.117	NA
Lactate	09/15/03	TAN-28	0.117	0.117	NA
Lactate	09/16/03	TAN-26	0.117	0.117	NA
Lactate	09/18/03	TAN-37C	0.117	0.117	NA
Lactate	10/06/03	TAN-28	0.117	0.117	NA
Lactate	10/07/03	TAN-31	3.428	3.447	1

Table E-15. Off-Site volatile organic compounds and ethene/ethane/methane duplicates.

Analyte	Date	Well	Sample (µg/L)	Flag	Duplicate (µg/L)	Flag	RPD (%)
PCE	11/04/02	TAN-28	14		14		0
PCE	02/10/03	TAN-29	8.0		7.4		8
PCE	02/11/03	TAN-25	5	U	5	U	NA
PCE	05/05/03	TAN-29	7.7		7.8		1
PCE	05/06/03	TAN-31	10.0	U	10.0	U	NA
PCE	08/18/03	TAN-29	13.0	J	14.0	J	7
PCE	08/19/03	TAN-25	10.0	U	50.0	U	NA
TCE	11/04/02	TAN-28	1100		1100		0
TCE	02/10/03	TAN-29	600.0	D	610.0	D	2
TCE	02/11/03	TAN-25	2.9	J	3.1	J	7

Table E-15. (continued).

Analyte	Date	Well	Sample (µg/L)	Flag	Duplicate (µg/L)	Flag	RPD (%)
TCE	05/05/03	TAN-29	740.0	D	790.0	D	7
TCE	05/06/03	TAN-31	10.0	U	10.0	U	NA
TCE	08/18/03	TAN-29	980.0		1000.0	D	2
TCE	08/19/03	TAN-25	4.0	J	50.0	U	NA
cis-DCE	11/04/02	TAN-28	160		160		0
cis-DCE	02/10/03	TAN-29	130.0		120.0		8
cis-DCE	02/11/03	TAN-25	0.88	J	0.99	J	12
cis-DCE	05/05/03	TAN-29	130.0		130.0		0
cis-DCE	05/06/03	TAN-31	10.0	U	10.0	U	NA
cis-DCE	08/18/03	TAN-29	170.0		170.0		0
cis-DCE	08/19/03	TAN-25	6.0	J	5.0	J	18
trans-DCE	11/04/02	TAN-28	160		160		0
trans-DCE	02/10/03	TAN-29	100.0		100.0		0
trans-DCE	02/11/03	TAN-25	170		180		6
trans-DCE	05/05/03	TAN-29	110.0		110.0		0
trans-DCE	05/06/03	TAN-31	250.0	D	250.0	D	0
trans-DCE	08/18/03	TAN-29	130.0		130.0		0
trans-DCE	08/19/03	TAN-25	210.0	D	220.0		5
VC	11/04/02	TAN-28	5.3		5		6
VC	02/10/03	TAN-29	3.5	J	3.5	J	0
VC	02/11/03	TAN-25	0.98	J	1.1	J	12
VC	05/05/03	TAN-29	10.0	U	10.0	U	NA
VC	05/06/03	TAN-31	10.0	U	10.0	U	NA
VC	08/18/03	TAN-29	3.0	J	50.0	U	NA
VC	08/19/03	TAN-25	5.0	J	5.0	J	0
Ethene	11/04/02	TAN-28	2.6		1.8	U	NA
Ethene	02/10/03	TAN-29	3.43	U	3.43	U	NA
Ethene	02/11/03	TAN-25	3.43	U	11	J	NA
Ethene	05/05/03	TAN-29	200	U	200	U	NA
Ethene	05/06/03	TAN-31	1	U	500	U	NA
Ethene	08/18/03	TAN-29	11	U	10	U	NA

Table E-15. (continued).

Analyte	Date	Well	Sample (µg/L)	Flag	Duplicate (µg/L)	Flag	RPD (%)
Ethene	08/19/03	TAN-25	31		20		43
Ethane	11/04/02	TAN-28	2.7		1.9	U	NA
Ethane	02/10/03	TAN-29	3.69	UJ	3.69	UJ	NA
Ethane	02/11/03	TAN-25	3.69	UJ	3.69	UJ	NA
Ethane	05/05/03	TAN-29	200	U	200	U	NA
Ethane	05/06/03	TAN-31	1	U	500	U	NA
Ethane	08/18/03	TAN-29	10	U	10	U	NA
Ethane	08/19/03	TAN-25	10	U	10	U	NA
Methane	11/04/02	TAN-28	2300		2100	D	9
Methane	02/10/03	TAN-29	4000	J	4020	J	0
Methane	02/11/03	TAN-25	6150	J	7730	J	23
Methane	05/05/03	TAN-29	6200		6300		2
Methane	05/06/03	TAN-31	1	U	43000		NA
Methane	08/18/03	TAN-29	150	D	180	D	18
Methane	08/19/03	TAN-25	6000	D	6400	D	6

Table E-16. Tritium and Sr-90 duplicates.

Analyte	Date	Well	Sample (pCi/L)	+/-	MDA	Duplicate (pCi/L)	+/-	MDA	RPD (%)
Tritium	11/04/02	TAN-28	5070	167	194	5430	172	191	7
Tritium	12/10/02	TAN-31	2120	164	308	1910	157	303	10
Tritium	01/13/03	TAN-27	874	123	374	715	121	373	20
Tritium	01/14/03	TAN-26	2730	153	393	2850	153	390	4
Tritium	02/10/03	TAN-29	2960	148	365	2980	149	367	1
Tritium	02/11/03	TAN-25	3620	150	348	3410	146	343	6
Tritium	03/03/03	TAN-28	4560	189	244	4740	195	250	4
Tritium	03/04/03	TAN-25	2100	139	251	1720	132	258	20
Tritium	04/07/03	TSF-05A	2660	119	185	2880	124	186	8
Tritium	04/08/03	TAN-37B	2210	109	182	2250	112	186	2
Tritium	05/05/03	TAN-29	2760	134	293	2870	136	293	4
Tritium	05/06/03	TAN-31	1590	108	267	1380	103	263	14

Table E-16. (continued).

Analyte	Date	Well	Sample (pCi/L)	+/-	MDA	Duplicate (pCi/L)	+/-	MDA	RPD (%)
Tritium	06/17/03	TAN-25	2310	186	395	2420	189	369	5
Tritium	07/28/03	TAN-D2	126	94.3	312	264	102	330	71
Tritium	07/29/03	TAN-37C	2160	128	327	1730	115	303	22
Tritium	08/18/03	TAN-29	3050	207	375	2900	202	372	5
Tritium	08/19/03	TAN-25	3020	210	387	2890	203	377	4
Tritium	09/15/03	TAN-28	5510	242	480	5000	232	473	10
Tritium	09/16/03	TAN-26	2130	178	457	2480	184	454	15
Tritium	09/18/03	TAN-37C	2150	370	391	2260	160	284	5
Tritium	10/06/03	TAN-28	4210	195	293	5300	225	318	23
Tritium	10/07/03	TAN-31	1630	144	317	1630	139	299	0
Sr-90	02/10/03	TAN-29	46.3	4.95	0.488	51.3	5.77	0.6	10
Sr-90	05/05/03	TAN-29	58.2	7.45	0.585	57.1	7.22	0.574	2
Sr-90	08/18/03	TAN-29	48.9	5.69	0.339	52.2	6.43	0.307	7

All target RPDs for analyses performed in the ISB field laboratory were met except one iron duplicate sample on April 7, 2003. All IRC and off-Site laboratory TCE duplicates met the target RPD of 14%. Percentages of duplicates samples RPDs less than 25%, less than 50%, and greater than 50% are shown in Table E-17 for the IRC and Table E-18 for off-Site laboratories. Relative percent differences were not calculated when results were reported as not detected or trace and are not included Table E-17 and E-18, as was the case for all ethane duplicates. Relative percent differences were calculated using off-Site laboratory results that had been flagged as an estimated or undetected value.

Table E-17. Percentages of relative percent differences for INEEL Research Center duplicate samples.

Analyte	Percentage of Samples with <25% RPD	Percentage of Samples with <50% RPD	Percentage of Samples with >50% RPD
PCE	100	100	0
TCE	100	100	0
cis-DCE	100	100	0
trans-DCE	100	100	0
VC	100	100	0
Ethene	79	93	7
Methane	74	91	9
Propionate	33	100	0
Butyrate	75	100	0
Acetate	43	86	14
Lactate	100	100	0

Table E-18. Percentages of relative percent differences for off-Site laboratory duplicate samples.

Analyte	Percentage of Samples with <25% RPD	Percentage of Samples with <50% RPD	Percentage of Samples with >50% RPD
PCE	100	100	0
TCE	100	100	0
cis-DCE	100	100	0
trans-DCE	100	100	0
VC	100	100	0
Ethene	0	100	0
Methane	100	100	0
Tritium	95	95	5
Sr-90	100	100	0

E-2. COMPLETENESS

Completeness is calculated by comparing the number of samples planned (as listed in the SAP table for each sampling event) to the number of samples actually collected, as shown in the following equation:

$$\%C = \frac{Sn}{St} x100\%. \quad (3)$$

where

%C = percent completeness

Sn = number of samples collected

St = number of samples planned in the SAP table.

Completeness results are presented in Table E-19. This table shows the number of samples planned, the number of samples collected, and percent completeness. The values in the table include samples planned to be collected according to the GWMP. It does not include nonroutine samples (e.g., microbiological) or samples collected for quality assurance (e.g., duplicates, performance evaluation, trip blanks and field blanks). As is shown in Table E-19, a percent completeness of 93.5% was achieved for the reporting period. Details are provided in the comments column.

Table E-19. Sample completeness for the reporting period.

Date	Number of Samples Planned	Number of Samples Collected	Percent (%) Completeness	Comments
November 4-5, 2002	113	113	100	
December 9-10 and 12, 2002	104	104	100	
January 13-14, 2003	104	104	100	
February 10-11, 2003	106	106	100	
March 3-4, 2003	104	104	100	
April 7-9, 2003	104	104	100	
May 5-7, 2003	106	106	100	
June 16, 2003	104	31	29.8	Samples not collected from TSF-05A, TSF-05B, TAN-26, TAN-27, TAN-28, TAN-29, TAN-30A, TAN-37C, TAN-10A, and TAN-D2 in order to limit purge water generation. Large volumes of purge water were generated at this time during well drilling.

Table E-19. (continued).

Date	Number of Samples Planned	Number of Samples Collected	Percent (%) Completeness	Comments
July 28-29, 2003	104	96	92.3	Samples not collected from TAN-31 due to construction activities.
August 18-20, 2003	106	106	100	
September 15-18, 2003	104	104	100	
October 6-8, 2003	104	104	100	
Average			93.5	

E-3. REFERENCES

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INEEL, 2003a, *In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B*, INEEL/EXT-02-00779, Revision 1, Idaho National Engineering and Environmental Laboratory, January 2003.

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