

**Recra LabNet Philadelphia Analytical Report**

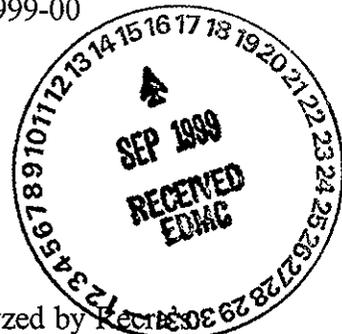
Client : TNU -HANFORD B99-070  
RFW# : 9906L226  
SDG/SAF#: H0439/B99-070

W.O #: 10985-001-010-9999-00  
Date Received: 06-15-99

**DIESEL RANGE ORGANICS**

The set of samples consisted of four (4) soil samples collected on 06-11-99.

The samples and their associated QC samples were prepared on 06-17-99 and analyzed by Recra procedures based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 06-28,30-99. The analysis met the intent of method WTPH-D.



1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis were met.
3. All initial calibrations associated with this data set were within acceptance criteria.
4. All diesel continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
5. All obtainable surrogate recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. Matrix Spike recoveries were unobtainable due to dilution required for analysis.
8. All samples required instrument dilution due to high concentrations of Motor oil range organics.

*J. Michael Taylor*  
\_\_\_\_\_  
J. Michael Taylor  
Vice President

*7-2-99*  
Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 6 pages.

## GLOSSARY OF DIESEL DATA

### DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

### ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

DIESEL RANGE ORGANICS BY GC

Report Date: 07/02/99 09:30

RFW Batch Number: 9906L226

Client: TNU-HANFORD B99-070

Work Order: 10985-001-001-9999-00

Page: 1

	Cust ID:	B0VN02	B0VN02	B0VN02	B0VN03	B0VN04	B0VN05
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	10.0	10.0	10.0	100	100	10.0
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	D %	D %	D %	D %	D %	D %
		=====fl=====	=====fl=====	=====fl=====	=====fl=====	=====fl=====	=====fl=====
Diesel Range Organics		42 U	D %	D %	4100 U	410 U	42 U
Motor Oil		1700	2100	470	28000	4400	1700

003

	Cust ID:	BLK	BLK BS
Sample Information	RFW#:	99LE0725-MB1	99LE0725-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
Surrogate:	p-Terphenyl	87 %	96 %
		=====fl=====	=====fl=====
Diesel Range Organics		4.0 U	90 %
Motor Oil		42 U	42 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

*gw*  
070299

Recra LabNet - Lionville Laboratory  
DRO ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD B99-070

DATE RECEIVED: 06/15/99

RFW LOT # :9906L226

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOVN02	001	S	99LE0725	06/11/99	06/17/99	06/30/99
BOVN02	001 MS	S	99LE0725	06/11/99	06/17/99	06/30/99
BOVN02	001 MSD	S	99LE0725	06/11/99	06/17/99	06/30/99
BOVN03	002	S	99LE0725	06/11/99	06/17/99	06/28/99
BOVN04	003	S	99LE0725	06/11/99	06/17/99	06/28/99
BOVN05	004	S	99LE0725	06/11/99	06/17/99	06/30/99

LAB QC:

BLK	MB1	S	99LE0725	N/A	06/17/99	06/28/99
BLK	MB1 BS	S	99LE0725	N/A	06/17/99	06/28/99

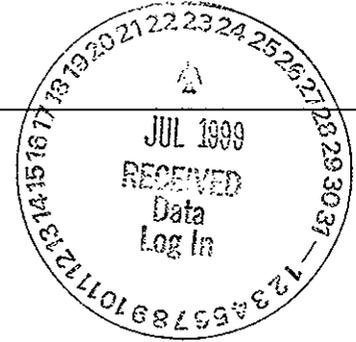
*gw*  
0702-99



Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-070-1	Page 1 of 1
Collector R Fahberg		Company Contact Dave Smith		Telephone No. 531-0646		Project Coordinator TRENT, SJ	
Project Designation 384 Day Tank Sampling - Soil		Sampling Location 300/384 Day Tank		SAF No. B99-070		Price Code 8K Data Turnaround <b>15 Days</b>	
Ice Chest No. 567		Field Logbook No. EL 1435		Method of Shipment Federal Express			
Shipped To TMA RECREATION DIVISION		Offsite Property No. A990163		Bill of Lading/Air Bill No. 423579526860-4.2			
COA XE 9033 PHMC							

POSSIBLE SAMPLE HAZARDS/REMARKS  Special Handling and/or Storage	Preservation	None	Cool 4C	None						
	Type of Container	P	aG	aG						
	No. of Container(s)	1	1	1						
	Volume	20mL	125mL	250mL						
SAMPLE ANALYSIS	Activity Scan	TPH-Diesel Range - WTPH-D	ICP Metals - 6010A (TAL) {Barium}							
	Sample No.	Matrix *	Sample Date	Sample Time						
B0VN02	Soil	6.11.99	1050	X	X	X				
B0VN03	Soil	6.11.99	1058	X	X	X				
B0VN04	Soil	6.11.99	1230	X	X	X				
B0VN05	Soil	6.11.99	1243	X	X	X				

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By	Date/Time	Received By	Date/Time					Soil	
REGG / R. G. Wilson	6.11.99	REGG / R. G. Wilson	6.11.99					Water	
Relinquished By	Date/Time	Received By	Date/Time					Vapor	
REGG / R. G. Wilson	6.14.99	R. Nielson	6.14.99					Other Solid	
Relinquished By	Date/Time	Received By	Date/Time					Other Liquid	
R. Nielson	6.14.99	Fred W							
Relinquished By	Date/Time	Received By	Date/Time						
Deeley		S. G. Wilson	6/15/99						
LABORATORY SECTION	Received By	Title						Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By				Date/Time		



**Recra LabNet Philadelphia  
Analytical Report**

**Client :** TNU-HANFORD B99-070  
**RFW# :** 9906L226  
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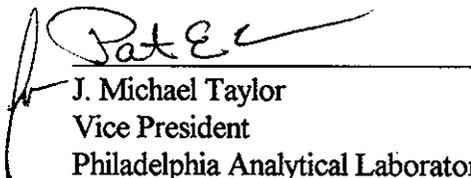
**W.O.# :** 10985-001-001-9999-00  
**Date Received:** 06-15-99

**METALS CASE NARRATIVE**

1. This narrative covers the analyses of 4 soil samples.
2. Samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. The preparation/method blank was within method criteria (less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value). Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. The laboratory control sample (LCS) was within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recovery was within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analysis was within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

  
\_\_\_\_\_  
J. Michael Taylor  
Vice President  
Philadelphia Analytical Laboratory  
jjv/m06-226

6-29-99  
\_\_\_\_\_  
Date



# METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

Recra Lot#: 9906L226

Leaching Procedure:   1310  1311  1312  Other:\_\_\_\_\_

CLP Metals    Digestion and    Analysis Methods:   ILM03.0  ILM04.0

Metals Digestion Methods:   3005A  3010A  3015  3020A  3050A  3051  200.7  SS17  
  Other: \_\_\_\_\_

## Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Antimony	<u>  6010B  7041<sup>5</sup></u>	<u>  200.7  204.2</u>			<u>  99</u>
Arsenic	<u>  6010B  7060A<sup>5</sup></u>	<u>  200.7  206.2</u>	<u>  3113B</u>		<u>  99</u>
Barium	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Beryllium	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Bismuth	<u>  6010B<sup>1</sup></u>	<u>  200.7<sup>1</sup></u>		<u>  1620</u>	<u>  99</u>
Boron	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Cadmium	<u>  6010B  7131A<sup>5</sup></u>	<u>  200.7  213.2</u>			<u>  99</u>
Calcium	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Chromium	<u>  6010B  7191<sup>5</sup></u>	<u>  200.7  218.2</u>			<u>  SS17</u>
Cobalt	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Copper	<u>  6010B  7211<sup>5</sup></u>	<u>  200.7  220.2</u>			<u>  99</u>
Iron	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Lead	<u>  6010B  7421<sup>5</sup></u>	<u>  200.7  239.2</u>	<u>  3113B</u>		<u>  99</u>
Lithium	<u>  6010B  7430<sup>4</sup></u>	<u>  200.7</u>		<u>  1620</u>	<u>  99</u>
Magnesium	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Manganese	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Mercury	<u>  7470A<sup>3</sup>  7471A<sup>3</sup></u>	<u>  245.1<sup>2</sup>  245.5<sup>2</sup></u>			<u>  99</u>
Molybdenum	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Nickel	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Potassium	<u>  6010B  7610<sup>4</sup></u>	<u>  200.7  258.1<sup>4</sup></u>			<u>  99</u>
Rare Earths	<u>  6010B<sup>1</sup></u>	<u>  200.7<sup>1</sup></u>		<u>  1620</u>	<u>  99</u>
Selenium	<u>  6010B  7740<sup>5</sup></u>	<u>  200.7  270.2</u>	<u>  3113B</u>		<u>  99</u>
Silicon	<u>  6010B<sup>1</sup></u>	<u>  200.7</u>		<u>  1620</u>	<u>  99</u>
Silica	<u>  6010B</u>	<u>  200.7</u>		<u>  1620</u>	<u>  99</u>
Silver	<u>  6010B  7761<sup>5</sup></u>	<u>  200.7  272.2</u>			<u>  99</u>
Sodium	<u>  6010B  7770<sup>4</sup></u>	<u>  200.7  273.1<sup>4</sup></u>			<u>  99</u>
Strontium	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Thallium	<u>  6010B  7841<sup>5</sup></u>	<u>  200.7  279.2  200.9</u>			<u>  99</u>
Tin	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Titanium	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Uranium	<u>  6010B<sup>1</sup></u>	<u>  200.7<sup>1</sup></u>		<u>  1620</u>	<u>  99</u>
Vanadium	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Zinc	<u>  6010B</u>	<u>  200.7</u>			<u>  99</u>
Zirconium	<u>  6010B<sup>1</sup></u>	<u>  200.7<sup>1</sup></u>		<u>  1620</u>	<u>  99</u>

Other: \_\_\_\_\_

Method: \_\_\_\_\_

# METHOD REFERENCES AND DATA QUALIFIERS

## DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

\* = Indicates that the original sample result is greater than 4x the spike amount added.

## ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

## ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 06/28/99

CLIENT: TNU-HANFORD B99-070

RECRA LOT #: 9906L226

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
-001	B0VN02	Barium, Total	76.4	MG/KG	0.41	1.0
-002	B0VN03	Barium, Total	55.1	MG/KG	0.39	1.0
-003	B0VN04	Barium, Total	75.4	MG/KG	0.38	1.0
-004	B0VN05	Barium, Total	81.3	MG/KG	0.40	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/28/99

CLIENT: TNU-HANFORD B99-070

RECRA LOT #: 9906L226

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0416-MB1	Barium, Total	0.40 u	MG/KG	0.40	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 06/28/99

CLIENT: TNU-HANFORD B99-070

RECRA LOT #: 9906L226

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B0VN02	Barium, Total	254	76.4	198	89.7	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 06/28/99

CLIENT: TNU-HANFORD B99-070  
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9906L226

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	BOVN02	Barium, Total	76.4	80.2	4.9	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/28/99

CLIENT: TNU-HANFORD B99-070

RECRA LOT #: 9906L226

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
-----	-----	-----	-----	-----	-----	-----
LCS1	99L0416-LC1	Barium, LCS	496	500	MG/KG	99.2

Recra LabNet - Lionville Laboratory  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNU-HANFORD B99-070

DATE RECEIVED: 06/15/99

RFW LOT # :9906L226

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
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BOVN02

BARIUM, TOTAL	001	S	99L0416	06/11/99	06/18/99	06/23/99
BARIUM, TOTAL	001 REP	S	99L0416	06/11/99	06/18/99	06/23/99
BARIUM, TOTAL	001 MS	S	99L0416	06/11/99	06/18/99	06/23/99

BOVN03

BARIUM, TOTAL	002	S	99L0416	06/11/99	06/18/99	06/23/99
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BOVN04

BARIUM, TOTAL	003	S	99L0416	06/11/99	06/18/99	06/23/99
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BOVN05

BARIUM, TOTAL	004	S	99L0416	06/11/99	06/18/99	06/23/99
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LAB QC:

BARIUM LABORATORY	LC1 BS	S	99L0416	N/A	06/18/99	06/23/99
BARIUM, TOTAL	MB1	S	99L0416	N/A	06/18/99	06/23/99



Collector R Fahlberg	Company Contact Dave Smith	Telephone No. 531-0646	Project Coordinator TRENT, SJ	Price Code 8K	Data Turnaround 15 Days
Project Designation 384 Day Tank Sampling - Soil	Sampling Location 300/384 Day Tank	SAF No. B99-070			
Ice Chest No. 567	Field Logbook No. EL 1435	Method of Shipment Federal Express			
Shipped To TMS/RECRA DN/610/PA	Offsite Property No. A990163	Bill of Lading/Air Bill No. 423579526860-4.0			
			COA XE 9033 PHMC		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None									
	Type of Container	P	aG	aG									
	No. of Container(s)	1	1	1									
	Special Handling and/or Storage 226P	Volume	20mL	125mL	250mL								

SAMPLE ANALYSIS				Activity Scan	TPH-Diesel Range - WTPH-D	ICP Metals - 6010A (TAL) (Barium)							
Sample No.	Matrix *	Sample Date	Sample Time										
BOVN02	Soil	6-11-99	1050	X	X	X							
BOVN03	Soil	6-11-99	1058	X	X	X							
BOVN04	Soil	6-11-99	1230	X	X	X							
BOVN05	Soil	6-11-99	1243	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By R Fahlberg	Date/Time 6-11-99 1300	Received By Ref. 1-A	Date/Time 6-11-99 1300
Relinquished By Ref 1-A	Date/Time 6-14-99 1030	Received By R. Nielson	Date/Time 6-14-99 1030
Relinquished By R. Nielson	Date/Time 6-14-99 1330	Received By Fred [unclear]	Date/Time
Relinquished By Dee Lee	Date/Time	Received By Stover	Date/Time 6/15/99 0430
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time