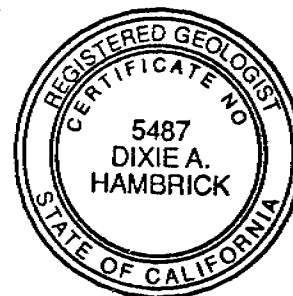


Bell Canyon Area Soil Sampling Report Ventura County, California Volume II - Appendices

Prepared for
Residents of Bell Canyon

Prepared by
Ogden Environmental and Energy Services Co., Inc.
Project Manager, Dixie A. Hambrick, R.G.
(818) 842-0373

Provided by
Boeing North American, Inc.
Rocketdyne Propulsion and Power
(818) 586-6004



A handwritten signature in cursive script that reads "Dixie A. Hambrick". The signature is written over a horizontal line.

October 1998
Project No. 313150002

APPENDIX A
SOIL BORING LOGS

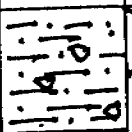
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SOIL BORINGS LOGS
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OGDEN**Surface and Shallow Soil Sample Log**

ect Number	313150002	Project Name	Bel Lenyon	Date	6/10/98	Time	1047+1050
Sample Identification Number and Time				Checked by			
RH002 / BCSS&IS&ID&A							
Sampled by				Recorded by			
DSB/KJ							
Method of Collection							
DRIVE & GRAB							
Surface Description							
VEGETATED DRAINAGE BEHIND BACKYARD							
Notes							

Soil Sample Data

Location		RESIDENCE 1					
Coordinates			Elevation				
Lithology	Depth (ft.)	Soil Description	Est. % of			Comments	
			G	S	F		
	0.5	0.5'; SILTY SAND (SM); DK. YEL. BRN (10 YR 3/6); MOIST; LOOSE; FINE-MED. GRAINED; CONTAINS ~10% ANGULAR SANDSTONE FRAGS. UP TO 2". DTSC SPLIT COLLECTED @ 0.5-1' BCS.	10	75	15	010:47+10:50 BCSS&IS&ID&A RH002 PID = 1.1 PPM AMBIENT AIR = 1.0 PPM	
	1.0	0.5'; SILTY SAND (SM), AS ABOVE					
	1.5	T.D. 1.0'					
	2.0	BACKFILLED W/LOTTINGS					
	2.5						
	3.0						
	3.5						
	4.0						
	4.5						
	5.0						
NOTE: SPLIT COLLECTED FOR DTSC.							

□ □ □ □ □

Surface and Shallow Soil Sample Log

ect Number	31315442	Project Name	Bel Canyon	Date	6/10/98	Time	1155/1244
Sample Identification Number and Time	BLSS42941244/RH443			Checked by			
Sampled by	KJ			Recorded by	D. BARRIE		
Method of Collection	DRIVE/GRAB						
Surface Description	BEDROCK SWALE						
Notes							

Soil Sample Data

Location		RESIDENCE 1
Coordinates		Elevation

Lithology	Depth (in.) ft.	Soil Description	Est. % of			Comments
			G	S	F	
						RH443/
			10	50	40	BCSS42541DA.4
	1	@ 4'; SILTY FINE SAND / SANDY SILT [SM/M]; DK. YEL. BRN [10 YR 3/4]; DRY-MOIST; LOOSE; CONTAINS ABUNDANT ROOTS UP TO 1/4" IN UPPER 3"; CONTAINS SCATTERED, ANGULAR BEDROCK FRAGS. & A 2" FRAG. OF PARTICLE BOARD. T.D. 4.5' BACKFILLED W/ COTTINGS NOTE: @ 1220, DTSC COLLECTED SPLIT FOR RADIONUCLIDES.				PID = 2 ppm [Ambient Air = 1.8 ppm]

□ □ □ □ □

Surface and Shallow Soil Sample Log

Project Number 313150002	Project Name Bell Canyon	Date 6/10/98	Time 1630/1635
Sample Identification Number and Time BCSS03501000/RH006		Checked by	
Sampled by D. BARRIE		Recorded by D. BARRIE	
Method of Collection DRIVE/GRAB			
Surface Description			

Notes Sample Collected From Center of Swale

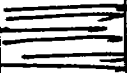
Soil Sample Data

Location		RESIDENCE 3	
Coordinates		Elevation	

Lithology	Depth (ft.) FT.	Soil Description	Est. % of			Comments
			G	S	F	
	X	0-0.5'; LEAN CLAY [CL]; DK. Yel. BRN. (IDYR 3/6); MOIST; MED. STIFF-STIFF; SCATTERED ROOTLETS IN UPPER 2"; CONTAINS SOME FINE SAND	-	10	90	BLSS#3S#1D#1A RH#46 PID = 1.1 ppm [AMBIENT AIR = #.6]
	1	T.D. 0.5'				
		BK Filled w/ CUTTINGS				
		NOTE: BEDROCK OUTCROP ~ 35' W. OF Sample Loc.; Thin-Bedded, Fine-Grained Sandstone. Bedding is Vertical.				

☐ ☐ ☐ ☐ ☐

Surface and Shallow Soil Sample Log

Project Number 313150002		Project Name Bell Canyon		Date 6/15/98	Time 1645/1650	
Sample Identification Number and Title BCSSP3SAP / RH#34 & RH#35				Checked by		
Sampled by KMT				Recorded by D. Barrie		
Method of Collection DRIVE & GRAB DB						
Surface Description						
Notes RE-occupy Sample Loc. D.T. insufficient						
Sample Vol. 1 st TIME Soil Sample Data						
Location Collect 3 2" x 6" sleeves						
Coordinates				Elevation		
Lithology	Depth (in.) ft.	Soil Description	Est. % of			Comments
			G	S	F	
	X	@ 0' ; LEAN clay [CL] ; BRN. [IDYR 5/3] ; DRY-MOIST ; SOFT - MED. STIFF ; MED. PLAST. ; ABUNDANT ROOTS IN UPPER 2".	-	595		BCSSP3SAP ID RH#34 & RH#35
		T.D. @ 5'				BACKFILLED w/ CUTTINGS

■ ■ ■ ■ ■

Surface and Shallow Soil Sample Log

ect Number 313150002	Project Name Bell Canyon	Date 6/10/98	Time 1744/1745
Sample Identification Number and Time BCSS4454124.4/RH447		Checked by	
Sampled by KMS		Recorded by D. Barrie	
Method of Collection DRIVE/GRAB			
Surface Description			
Notes			

Soil Sample Data

Location		RESIDENCE 3	
Coordinates		Elevation	

[illegible]

1. 2. 3. 4.

Project Name

Project Number

3,315,000 Z

Project Name

^e Bell Canyon

Date _____

6 | 11 | 98

Time

1345 | 1314

Sample Identification Number and Time

2H412

BCSS ϕ 55 ϕ 17 ϕ . ϕ

Checked by

Sampled by

D. BARRIE

Recorded by

D. BARRIE

Method of Collection

PUSH / GRAB

Surface Description

Sandy Soils adjacent to Creek

Notes

APPROX. 5' FROM CREEK EDGE.

Soil Sample Data

Location

Chastain Falls Trail / Bell Creek

Coordinates

Elevation

Lithology	Depth (in.) (ft.)	Soil Description	Est. % of			Comments
			G	S	F	
		0.5'; DK. Yel. BRN (10YR 3/4)	-	90	10	BCSS & SS & ID & A
		& BLACK (10YR 2/1); WET;	-	75	25	RAH 12
		Loose; Poorly-sorted				PID = & PPM
		Sand w/ silt (sp-sm);				AKER. = & PPM
		med. GR.; DK. Yel. BRN.				
		From 0 - 0.25'; Black				
		Below 0.25'; Black soils				
		contain more silt than				
		above (~25%); & have				
		slight organic odor.				
		T.D. 1.0'				
		Backfilled w/ cuttings				
		NOTE: EPA sp. silt collected				

Surface and Shallow Soil Sample Log

Project Number 313150002

Project Name Bell Canyon

Date 6/11/98

Time 1500/1505

Sample Identification Number and Time
RH014 / BC5546501D0.0

Checked by

Sampled by D. BARRIE

Recorded by D. BARRIE

Method of Collection Push/Grab

Surface Description *SANDY BANK ON W. SIDE OF CREEK*

Notes

Soil Sample Data

Location Chastain Falls Trail / Bell Creek

Coordinates	Elevation
-------------	-----------

[illegible]

OGDEN**Surface and Shallow Soil Sample Log**

Project Number 313150002	Project Name BELL CANYON	Date 6/11/98	Time 1654/1655
Sample Identification Number and Time BC5507501D00/RH015		Checked by	
Sampled by D. BARRIE		Recorded by D. BARRIE	
Method of Collection PUSH/GRAB			
Surface Description			
Notes CREEK-BANK SEDIMENTS ADJACENT TO CHANNEL			
Soil Sample Data			
Location Chastain Falls Trail / Bell Creek			
Coordinates		Elevation	

Lithology	Depth (ft)	Soil Description	Est. % of			Comments
			G	S	F	
X	1.5	0.5'; Poorly GRADED SAND	15	5	80	BC5507501D00
	1	w/Gravel (SP); DK. Yel. BRN (10YR 3/4); moist; Loose; Gravels = Predom. SANDST. + siltst., angular - subangular; few roots; @ 2"; becomes organic - rich silt w/sand (DL); Black (10YR 2/1); soft-med. stiff; more roots than above (2" to 4"); low plasticity; organic odor	20	75	5	PID = 0 RH015
		T.D. = 4.5'				
		Backfilled w/cuttings				
		NOTE: COLLECTED split for EPA				

☐ ☐ ☐ ☐ ☐

Surface and Shallow Soil Sample Log

Project Number	313150002	Project Name	Bell Canyon	Date	6/12/98	Time	1155/1200
Sample Identification Number and Time	5 RHO21/BL85AB501		Checked by				
Sampled by	D. ^{JR} BARRIE		Recorded by D. BARRIE				
Method of Collection	PUSH / GRAB						
Surface Description	Bottom of Drainage, EDGE OF						
Notes	Creek BED.						

Soil Sample Data

Location	DOWNSTREAM OF NPDES POINT (EASTERN PT.)	
Coordinates		Elevation

Lithology	Depth ft.	Soil Description	Est. % of			Comments
			G	S	F	
		0' - 1' POORLY GRADED SAND	95	5		BLB54854/DK. A
	1	[5'] DK. YEL. BRN.;				RH 21
		[10 YR 3/6]; WET; LOOSE;				PID = 7.0 PPM
		FINE - COARSE GR.; QTZ. +				BKGR. = 6.0 PPM
		FELDSPAR; MINOR MICA				
		NOTE: FREE WATER @ 4.5'				
		T.D. 4.5'				
		BACKFILLED w/ CUTTINGS				
		NOTE: SPLIT COLLECTED FOR				
		DTSC				



Project Number 313150002	Project Name 212 Bell Canyon	Date 6/15/98	Time 1335/1344
Sample Identification Number and Time RHQ32/BC85105AIDA.4		Checked by	
Sampled by KMS		Recorded by D. BARRIE	
Method of Collection Push/Grab			
Surface Description Sandy AREA ADJACENT TO FLOWING CREEK			
Notes channeled, E. SIDE OF CREEK			

Soil Sample Data

Location	
Coordinates	Elevation

[illegible]

Surface and Shallow Soil Sample Log

ect Number 31315442	Project Name Bell Canyon	Date 6/15/98	Time 1535/1544
Sample Identification Number and Time BESS11541D.F/RH432		Checked by	
Sampled by D. BARRIE		Recorded by D. BARRIE	
Method of Collection Drive/Grab			
Surface Description Grassy, shrubby slope ~ 100' ft. N. of			
Notes Hilltop Road			

Soil Sample Data

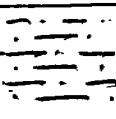
Location	
Coordinates	Elevation

[illegible]

■ ■ ■ ■ ■

Soil Sample Data

	Depth	Est % of
--	-------	----------

Lithology	Depth (ft)	Soil Description	Est. % of			Comments
			G	S	F	
	0	0.0'; SILTY SAND (SM); DK. BRN (10YR 3/3); MOIST; LOOSE-MED. DENSE; FINE GR.; SEATT. ROOTLETS	-	70	30	BLESS125 Φ 12 Φ 36 RH Φ 36 NO PID READING [PID MALFUNCTIONING]
	1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					

Surface and Shallow Soil Sample Log

Project Number 313150002	Project Name Bell Canyon	Date 6/16/98	Time 0945/1040
Sample Identification Number and Time RH441 / 065513501040		Checked by	
Sampled by D. BARRIE		Recorded by D. BARRIE	
Method of Collection DRIVE / GRAB			
Surface Description BASE OF SLOPE, ~ 8' NW of TRAIL -			
Notes SANDSTONE MEMBER, CHATSWORTH FM.			
Soil Sample Data			
Location			
Coordinates		Elevation	

Lithology	Depth (in.)	Soil Description	Est. % of			Comments
			G	S	F	
		(w) GRAVEL				
		@ 4'; SILTY SAND (SM); BROWN;	20	60	20	BLSS 135 41 D4. 4
		(10 YR 4/3); MOIST; LOOSE; FINE-				RH 41
		MED. GR.; ABUN. ROOTLETS;				PID = 4.5 PPM
		GRAVELS = BRN. SANDSTONE,				BKGR. = 4.2 PPM
		ANGULAR CRESTS; POORLY				
		COMPACTED; CONTAINS SMALL				
		(≤ 1 mm) BLACK CARBON FRAGS.				
		NOTE: DTSC SPLIT				
		COLLECTED				
		T.D. 4.5'				
		BACKFILLED w/ CUTTINGS				
		NOTE: SPLIT COLLECTED FOR				
		DTSC				

OGDEN

Surface and Shallow Soil Sample Log

Project Number 31315	Project Name Bell Canyon	Date 6/16/98	Time 1545/1600
Sample Identification Number and Time RH047 / 0651450100.0		Checked by D. BARRIE	
Sampled by D. BARRIE		Recorded by D. BARRIE	
Method of Collection DRIVE / GRAB			
Surface Description CREEK BANK, ~ 2.5' UPSLOPE FROM CENTER OF			
Notes CREEK CHANNEL			

Soil Sample Data

Location SEDIMENT SAMPLE, EASTERNMOST BUFFER ZONE
Coordinates
Elevation

Lithology	Depth (in.)	Soil Description	Est. % of			Comments
			G	S	F	
0-10'	0-10'	0-10'; SILTY SAND w/ GRAVEL (SM);	20	65	15	0651450100.0
		DARK Yel. BRN (10 YR 3/4);				0651450100.0
		MOIST; LOOSE; GRA ^{DB} FINE GR.;				RH047 9
		GRAVELS = SUBANGULAR - SUBROUNDED				RH047 3
		CLASTS UP TO SEVERAL INCHES;				
		COMPOSED OF SANDSTONE;				PID = NO
		GRANITES, METAVOLCANICS				READING
		T.D. 0.5'				
		Backfilled w/ CUTTINGS				
		NOTE: FLOAT OF LINDEPO				
		CANYON FM. (?) - LIMPY				
		CONGLOMERATE - NOTED IN				
		DRAINAGE				
		NOTE: SPLIT COLLECTED FOR				
		DTSC				



ect Number	313150002	Project Name	Bell Canyon	Date	6/10/98	Time	1335
Sample Identification Number and Time	BCBS01501DI.0 / RHP04			Checked by			
Sampled by	KMTJ/DSB			Recorded by	D. BARRIE		
Method of Collection	HAND Push (Sleeve) + GRAB (Jars)						
Surface Description	WET SAND ~ 3' FROM CREEK WATER						
Notes							

Soil Sample Data

Location	RESIDENCE 2	
Coordinates		Elevation

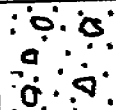
Lithology	Depth (ft.)	Soil Description	Est. % of			Comments
			G	S	F	
	1.0'	POORLY GRADED SAND w/ GRAVEL (SP); DK. YEL. BRN. (10 YR 4/6); WET; LOOSE; MED. GR.; CONTAINS SUBSEQUAL AMOUNTS OF QUARTZ & FELDSPAR; MINOR MILT; SUBROUND GRAINS	15	85	5	BCBS & 15 & 1.0 RH & 4 PID = 2 ppm (AMBIENT AIR = 1.8 ppm)
	1.5'	AS ABOVE BUT ABUNDANT ROOTS				
		NOTE: FREE WATER @ 2.5' BGS. SPLT COLLECTED FOR DTSC				

Surface and Shallow Soil Sample Log

Project Number 313150002	Project Name Bell Canyon	Date 6/16/98	Time 1205 @ 1210
Sample Identification Number and Time GLBS41541D1.4 / RH42 & RH43		Checked by	
Sampled by D. BARRIE		Recorded by D. BARRIE	
Method of Collection GRAB			
Surface Description			
Notes RE-OCCUPATION TO COLLECT ADD'L. Sample VOL.			
Soil Sample Data			
Location RESIDENCE 2			
Coordinates		Elevation	

[illegible]

OGDEN**Surface and Shallow Soil Sample Log**

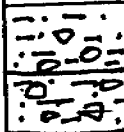
Project Number 313150002	Project Name Bell Canyon	Date 6/10/98	Time 1440/1450	
Sample Identification Number and Time BCBS02501DI.0/RH005		Checked by		
Sampled by D. BARRIE		Recorded by		
Method of Collection PUSH (SLEEVES) & GRAB (TERR)				
Surface Description WET SOILS ADJACENT TO N. SIDE OF CREEK				
Notes				
Soil Sample Data				
Location RESIDENCE 2				
Coordinates		Elevation		
Lithology	Depth 0.5	Soil Description	Est. % of G S F	Comments
	1	0.5'; POORLY GRADED SAND	100	BCBS02501DI.0
		w/Gravel (SP); DK. OLIVE BRN.		RH005
		[2.5 Y 3/3]; WET; LOOSE;		PI = 2.2 PPM
		FINE-MED. GR.; SUBBROWNED;		OKER. = 2.0
		GRAVELS & LOBBLES = GRANITIC		PPM
		ROCK; WHITE PLASTIC FRAG.		
		NOTED @ 1' BGS; SOILS		
		APPEAR DARKER IN COLOR		
		~ 0.5-1' BGS; SLIGHT		
		DRENNIC ODOR		
		T.D. 1.0		
		BACKFILLED w/CLAYING		
		FREE WATER @ 0.25'		
		NOTE: SPLIT COLLECTED FOR		
		DTSC		

OGDEN

Surface and Shallow Soil Sample Log

ect Number	313150002	Project Name	Bel Canyon	Date	6/16/98	Time	1115/1120
Sample Identification Number and Time		Checked by					
RH44 & RH45/BCB5Q2SD1D1.8		Recorded by					
Sampled by		D. BARRIE					
Method of Collection		GRAB					
Surface Description		CREEK BANK ON N. SIDE OF CREEK					
Notes		RE-OCCUPATION TO COLLECT ADD'L. Sample Volume					

Soil Sample Data

Location		RESIDENCE 2				
Coordinates		Elevation				
Lithology	Depth (ft.)	Soil Description	Est. % of			Comments
			G	S	F	
	1.0	0.0'; Silty Sand w/ Gravel				
	1.0	(5M); DK. OLIVE GRN (2.5 Y 3/3)	40	45	15	BCB5Q2SD1D1.8
	1.0	WET; LOOSE; MED. GR.;				RH44 &
	1.0	ABUN. SUBANGULAR TO SUBROUNDED				RH45
	1.0	COBBLES UP TO 8"; ORGANIC				
	1.0	ODOR;				
	1.0	T.D. 1.0'				
	1.0	BACKFILLED w/ CUTTINGS				
	1.0	FREE WATER @ 0.25'				
	1.0	NOTE: SPLIT COLLECTED FOR				
1.0	DTSC					

Surface and Shallow Soil Sample Log

Project Number 313150002		Project Name Bell Canyon		Date 6/11/98		Time 11:00/11:05	
Sample Identification Number and Time RH011 / 060503501D10				Checked by			
Sampled by D. BARRIE				Recorded by D. BARRIE			
Method of Collection DRIVE/GRAB							
Surface Description OVERBANK DEPOSITS ADJACENT TO							
Notes BELL CREEK, SOUTH OF EQUESTRIAN CENTER							
Soil Sample Data							
Location APPROX. 1.5' SOUTH OF EDGE OF SOUTHERN CREEK BANK							
Coordinates				Elevation			
Lithology	Depth (ft)	Soil Description	Est. % of			Comments	
			G	S	F		
	0 - 1.5'	ORGANIC SILT (OL); BLACK (N2.5); WET; SOFT; MED. PLASTICITY; RAPID DILATANCY; CONTAINS ~20% - ABUNDANT ROOTS & DECAYING ORGANICS; STRONG ORGANIC & HYDROGEN SULFIDE ODOR; LOOSENS w/ DEPTH TO SILTY SAND (SM). T.D. 1.0' BACKFILLED w/ CUTTINGS	-	10	90	060503501D1.0 RH011 PID = 0 BULK = 0	
	1.5 - 2.0'						
	2.0 - 2.5'						
	2.5 - 3.0'						
	3.0 - 3.5'						
	3.5 - 4.0'						
	4.0 - 4.5'						
	4.5 - 5.0'						
	5.0 - 5.5'						
	5.5 - 6.0'						
NOTE: FREE WATER @ 1.5' BEG. IN ADJACENT TEST HOLE.							

□ □ □ □ □

Surface and Shallow Soil Sample Log

Project Number 313150002		Project Name Bell Canyon		Date 6/11/98		Time 1414/1415	
Sample Identification Number and Time RH413 / BCBS4541D1.4				Checked by			
Sampled by D. Barrie				Recorded by D. Barrie			
Method of Collection Push/Grab							
Surface Description Sandy Bank ~ 2' FROM EDGE OF Creek							
Notes							
Soil Sample Data							
Location Chastain Falls Trail / Bell Creek							
Coordinates				Elevation			
Lithology	Depth (ft)	Soil Description	Est. % of			Comments	
			G	S	F		
[Symbol]	1.5	DD; Poorly Graded Sand				BCBS4541D1.4 RH413 PID = 4 ppm	
		LSP; Olive BRN / 2.5 Y 4/4; Wet; Loose; Fine-Med. Grained; Qtz. + Feldspar + minor mica; subangular - subrounded clasts;					
		NOTE: FREE WATER @ 0.5'					
		T.D. 1.4'					
		Backfilled w/ cuttings					

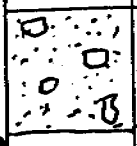
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Lithology	Depth (ft)	Soil Description	Est. % of			Comments
			G	S	F	
		0.5'; Poorly Graded Sand - 90%				BLBS & 5S & 10
		w/ Gravel (SP-SM); Silt <u>dy</u>				RH & 16 PED = & P _u
		V. Dark Greyish Brown (10 YR 3/2); WET; LOOSE; CONTAINS Qtz, Feldspar, + Rock FRAGS.; OR ^{2.5'}				
		3' OR				
		T.D. 1. &				
		Backfilled w/ CUTTINGS				
		NOTE: FREE WATER @ 0.5'				

NOTE: Free water @ $\Phi.51$

■ ■ ■ ■ ■

Surface and Shallow Soil Sample Log

Project Number 313150002		Project Name Bell Canyon		Date 6/12/98		Time 1514/1515	
Sample Identification Number and Time RH025/6CB506501D1.0				Checked by			
Sampled by D. BARRIE				Recorded by D. BARRIE			
Method of Collection Push/Grab							
Surface Description ABANDONED MEANDER w/in CREEK							
Notes Channel, Bell Canyon Park							
Soil Sample Data							
Location South side of channel, North side of meander							
Coordinates 25				Elevation			
Lithology	Depth ft.	Soil Description	Est. % of			Comments	
			G	S	F		
	1	0.0'; Well-Graded Sand w/	35	65	TA.	6CB506501D1.0 RH025 PID = 3.4 ppm BXGR = 2.4 ppm	
		Gravel (SW); Brown (10 yr 4/3);					
		Wet; Loose; F-C GR.; Gravels					
		= Volcanic, Granitic, &					
		sltst.; Gravels angular to					
		subrounded.					
		NOTE: Sample collected					
		from below water line					
		T.D. 1.0					
		'Backfilled w/ cuttings					
NOTE: Split collected for							
DTSE USEPA							



Surface and Shallow Soil Sample Log

Project Number <u>213150002</u>		Project Name <u>Bell Canyon</u>		Date <u>6/15/98</u>	Time <u>1015/1020</u>	
Sample Identification Number and Time <u>BCBS47541/RH434</u>			Checked by			
Sampled by <u>D. BARRIE</u>			Recorded by <u>D. BARRIE</u>			
Method of Collection <u>POSTH/GRAB 4.5'</u>						
Surface Description <u>APPROX. 100' UPSTREAM TRIBUTARY</u>						
Notes <u>TO MAIN DRAINAGE</u>						
Soil Sample Data						
Location <u>WEST SIDE OF CHANNEL</u>						
Coordinates			Elevation			
Lithology	Depth (ft.)	Soil Description	Est. % of			Comments
			G	S	F	
	<u>0.0'</u>	<u>WELL-GRADED SAND</u>	<u>TR 95</u>	<u>5</u>	<u>BCBS47541(D). #</u>	
	<u>1.0'</u>	<u>DK. YEL. BRN (10YR 3/4);</u> <u>WET; LOOSE; MED -</u> <u>LOWEST GR.; ANGULAR -</u> <u>SUBROUNDED GRAINS; COMPOSED</u> <u>OF Qtz, FELDSPAR & ROCK</u> <u>FRAGS.</u>	<u>-</u>	<u>20</u>	<u>80</u> <u>RH434</u> <u>PID = 4.8 ppm</u> <u>BKER = 4.2 ppm</u>	
	<u>4.5'</u>	<u>SILT w/ SAND (M);</u> <u>DK. YEL. BRN (10YR 3/4);</u> <u>WET; V. SOFT; NON-PLASTIC;</u> <u>SCATTERED Fe-ox. STAINING</u>				
	<u>T.D. 1.4'</u>	<u>BACKFILLED w/ CLAYINGS</u> <u>FREE WATER @ 4.75'</u>				

■ ■ ■ ■ ■

Surface and Shallow Soil Sample Log

Project Number 31315 44 2	Project Name Bell Canyon	Date 6/15/98	Time 12 44 /12 45
Sample Identification Number and Time 6C650854 D. 1/24/031		Checked by	
Sampled by Kmt		Recorded by D. BARRIE	
Method of Collection Push/Grab			
Surface Description South Side of Creek			
Notes Sample Location ~ 40' Downstream of Beehive, Shaded Area			

Soil Sample Data

Location	
Coordinates	Elevation

[illegible]



Surface and Shallow Soil Sample Log

Project Number 31315 xxxx2	Project Name Bell CYN.	Date 6/16/98	Time 1420/1425
Sample Identification Number and Time RH046 / 31315 xxxx2	Checked by		
Sampled by D. BARRIE	Recorded by D. BARRIE		
Method of Collection DRIVE/GRAB			
Surface Description GRASSY HILL JUST UPSLOPE OF TRAIL			
Notes BACKGROUND SOIL SAMPLE LOC. IN SHALE/STST. MEMBER OF CHATSWORTH FM.			

Location
Coordinates
Elevation

Lithology	Depth (in.)	Soil Description	Est. % of			Comments
			G	S	F	
	0' - 1.5'	LEAN CLAY (CL); DK. YEL. BAN (10YR 3/6); MOIST; SOFT; MED PLAST.; [SOIL DEVELOPED ON SHALE/STST. MEMBER OF CHATSWORTH FM.]; CONTAINS SCATTERED ROOTS.	-	5	95	31315 xxxx2 DI. 4 RH046 PID = 2.4 ppm BGR. = 1.1 ppm
	1.5' - 2.0'	T.D. 1.4'				
	2.0' - 2.5'	Backfilled w/ cuttings				
	2.5' - 3.0'	split collected for DTSC				
	3.0' - 3.5'					
	3.5' - 4.0'					
	4.0' - 4.5'					
	4.5' - 5.0'					
	5.0' - 5.5'					
	5.5' - 6.0'					
	6.0' - 6.5'					
	6.5' - 7.0'					
	7.0' - 7.5'					
	7.5' - 8.0'					
	8.0' - 8.5'					
	8.5' - 9.0'					
	9.0' - 9.5'					
	9.5' - 10.0'					

APPENDIX B

PHOTOGRAPHS OF SAMPLING LOCATIONS

APPENDIX B
PHOTOGRAPHS OF SAMPLING LOCATIONS
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<u>PHOTOGRAPH</u>	<u>PAGE</u>
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B-5: BCSS09	B-5
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B-9: BCSS13	B-9
B-10: BCSS14	B-10
B-11: BCBS03	B-11
B-12: BCBS04	B-12
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B-14: BCBS06	B-14
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B-17: BCBS09	B-17

Note: Photographs of residential sampling locations not included at request of the residents to maintain confidentiality.

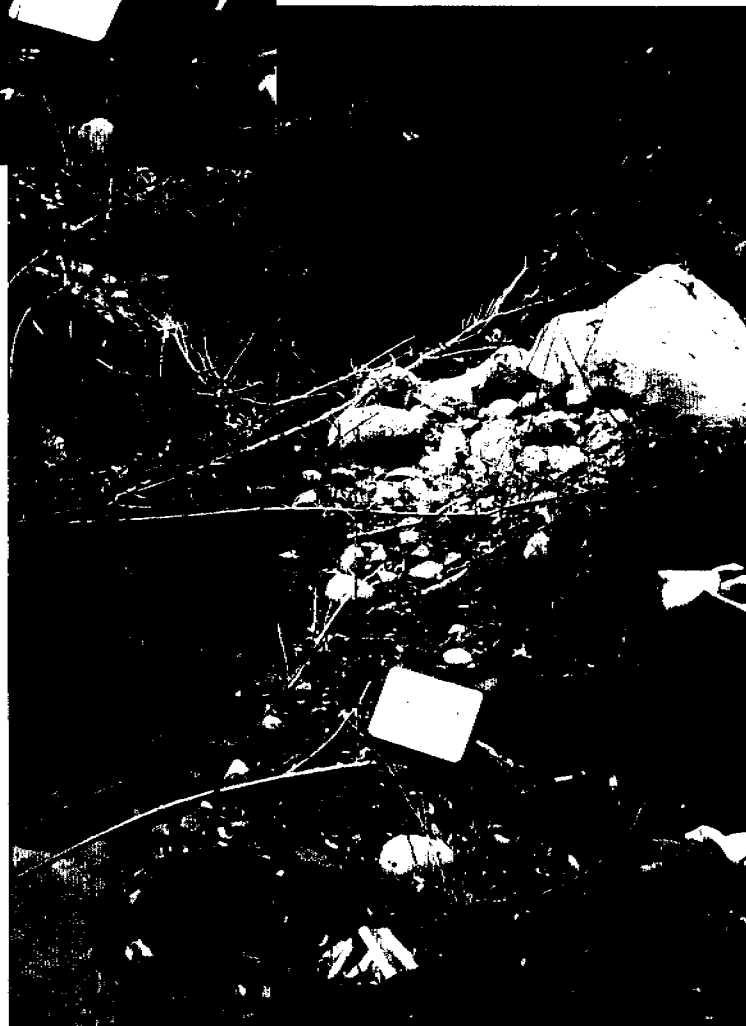


Figure B-1: Bell Canyon Surface Sample Number BCSS05



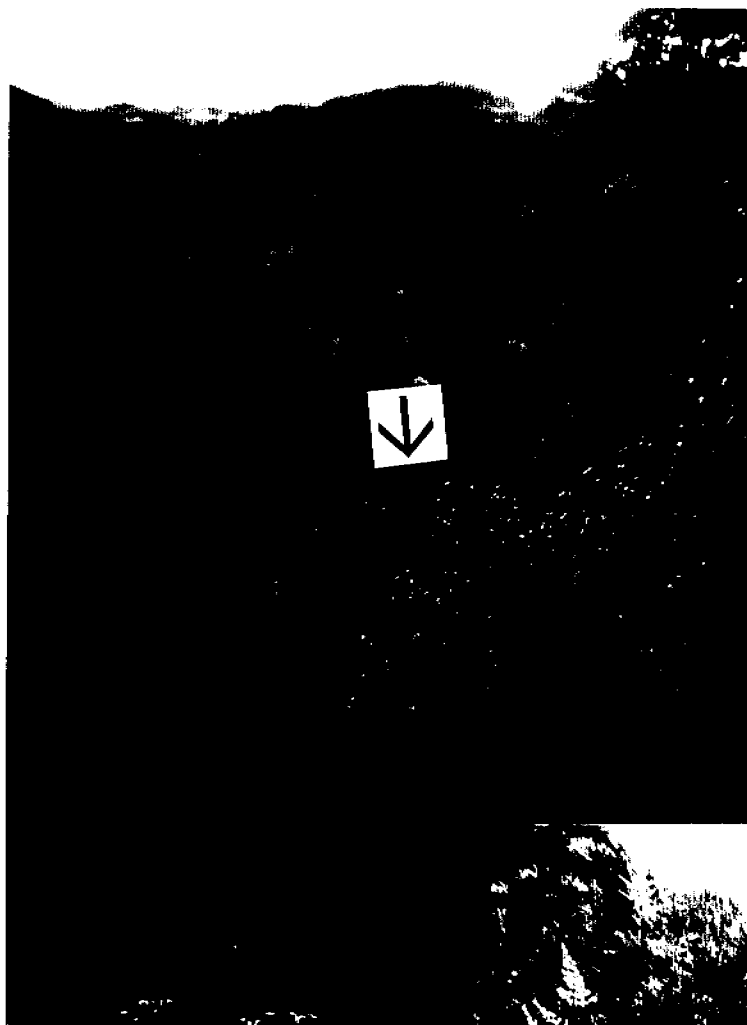
Figure B-2: Bell Canyon Surface Sample Number BCSS06



Figure B-3: Bell Canyon Surface Sample Number BCSS07



Figure B-4: Bell Canyon Surface Sample Number BCSS08



**Figure B-5: Bell Canyon Surface Sample Number BCSS09,
Not BSS09 as Labeled in Picture**



Figure B-6: Bell Canyon Surface Sample Number BCSS10



Figure B-7: Bell Canyon Surface Sample Number BCSS11



Figure B-8: Bell Canyon Surface Sample Number BCSS12

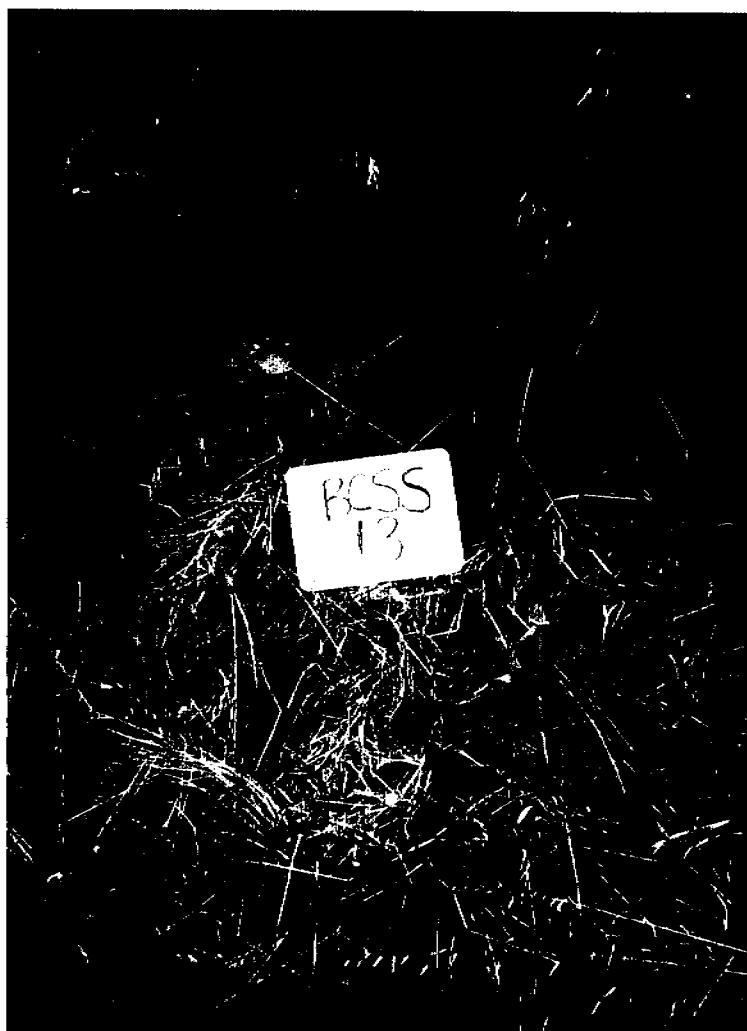


Figure B-9: Bell Canyon Surface Sample Number BCSS13



Figure B-10: Bell Canyon Surface Sample Number BCSS14



Figure B-11: Bell Canyon Boring Sample Number BCBS03

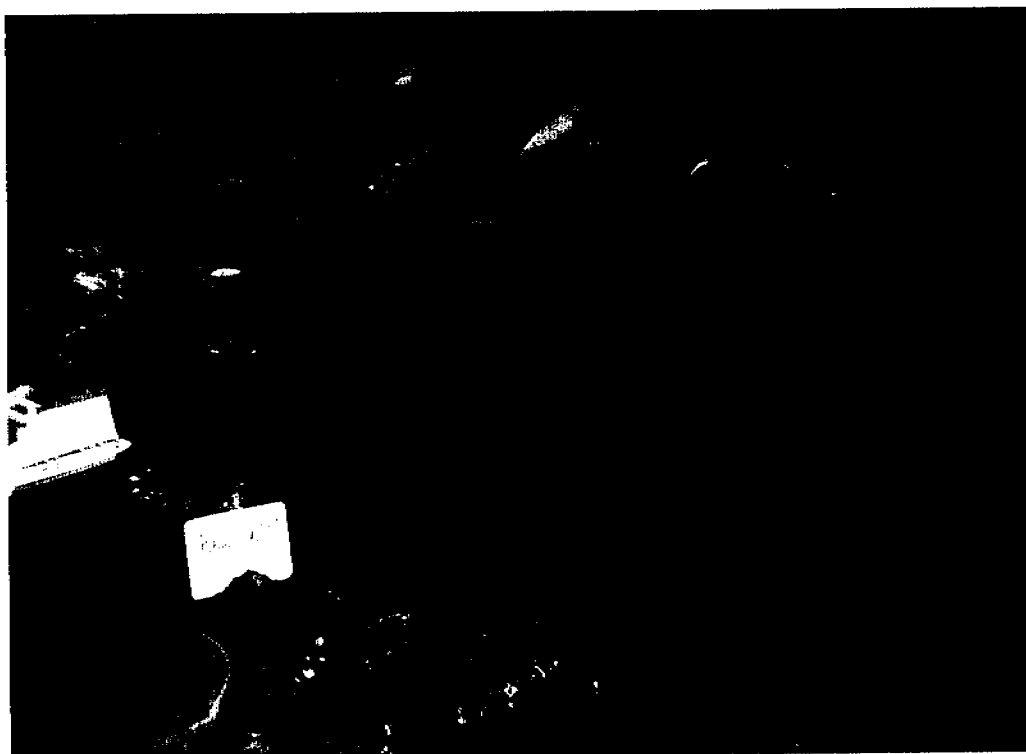


Figure B-12: Bell Canyon Boring Sample Number BCBS04



Figure B-13: Bell Canyon Surface Sample Number BCBS05



Figure B-14: Bell Canyon Surface Sample Number BCBS06



Figure B-15: Bell Canyon Surface Sample Number BCBS07



Figure B-16: Bell Canyon Surface Sample Number BCBS08



Figure B-17: Bell Canyon Surface Sample Number BCBS09

APPENDIX C

CHEMICAL LABORATORY RESULTS

APPENDIX C
CHEMICAL LABORATORY RESULTS
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Chemistry Data, Chain-of-Custody Forms

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Chemistry Data, Data Validation Reports

Table C-1 Data Qualifier Reference Table

Table C-2 Qualification Code Reference Table

**CHEMISTRY DATA
CHAIN-OF-CUSTODY FORMS**

Chain of Custody

Control Number: **COC 24425**
Date **6 / 12/98** Page 1 of 1

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyna
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Cooler No: CP-9731	TAT: 28 - Day
QC Level: Level 4	

Bill To: **Mark Dettley—** **PURCHASING**
 Company: **Ogden Environmental**
 Address: **5510 Morehouse Drive, San Diego, CA 92121**

Sample Disposal Instructions: Laboratory Disposal Shipment Method: Federal Express Comment: FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER
--

[illegible][illegible]

Field Data	SWMS	Matrix
Sampling Method	6	Soil
	-	Water
		Product
		Sludge

80000	VOC	X	
80150	HYDROCARBON	X	
8270	PAH	X	
8270	SVOC	X	
80000	DIOXIN	X	
8001C	PCBS	X	
80000	FORMALDEHYDE	X	
8330	ORDNANCE	X	
8010/700	METAL SR	X	
8010	METAL SA(LB)	X	
7196	CM	X	
3402	FLUORIDE	X	
300	ANIONS	X	
9045/9040	pH	X	
HYDRAZINE		X	
PER ALDOSTE		X	
Extra Volume	MSMSD		
	HOLD		
	Total # of Bottles	1	

Samplers Signature	KM/ammer	Date	6/12/98	Time	15:15
Relinquished By:	KM/ammer	Date	6/12/98	Time	19:15
Received By:	[Signature]	Date	6/12/98	Time	19:15
Relinquished By:	[Signature]	Date	6/12/98	Time	19:55
Received By (LAB):	[Signature]	Date	6/11/98	Time	19:55

Lab Number: 19801888

Does COC match samples ☒ Y or ☐ N

Broken container: Y or ☒ N

Received within holding time: ☒ Y or ☐ N

COC seal intact: Y or ☒ N

Any other problems: Y or ☒ N

If any YES, Ogdén contacted: Y or ☐ N

Date contacted: ___/___/___

Temperature °C 13

**5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044**

Chain of Custody

Control Number: COC R14002
Date 6 / 10 / 98 Page 1 of 1

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyne
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Bill To:	Mark Demey PURCHASING
Company:	Ogden Environmental
Address:	5510 Morehouse Drive, San Diego, CA 92121

Sample Disposal Instructions:	Laboratory Disposal
Shipment Method:	Federal Express
Comment:	

* FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

Date 9 / 10 / 18 Page 1 of 1

[illegible]

Sample Data				Field Data	
Sample ID	Description (for Ogen use only)	Date Collected	Time Collected	Lab ID	
RIH002	BCSS02.S01	6/10/98	1047	2	
RIH003	BCSS02.S01	6/10/98	1155	3	
RTH 5					

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Matrix		Field Data	
Soil	Water	Product	Sludge
X			

Samplers Signature		Date	Time
KM. bomieson		6/10/98	1055
Relinquished By:		Date	Time
KM. bomieson		6/10/98	1110
Received By:		Date	Time
		6/10/98	1910
Relinquished By:		Date	Time
		6/10/98	1959
Received By (LAB):		Date	Time
		6/11/98	1959

Lab Number: **L9801888**

Does COC match samples ☒ or N

Broken container: Y or ☒ N

Received within holding time: ☒ or N

COC seal intact ☒ or N ~~NA~~

Any other problems: Y or ☒ N

If any YES, Ogden contacted: Y or N

Date contacted: 6/11 / 1 / 98

Temperature °C 14

5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044

Chain of Custody

Control Number: **COC R4004**
Date **6 / 10 / 98** Page 1 of 1

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyne
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Bill To:	Mart-Bentley ^{SA} PURCHASING
Company:	Ogden Environmental
Address:	5510 Morehouse Drive, San Diego, CA 92121

Sample Disposal Instructions: Laboratory Disposal Shipment Method: Federal Express Comment: FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER
--

Cooler No:	R6	
QC Level:	Level 4	TAT: 28 - Day

Preservatives

[illegible]

Sample Data					
Sample ID	Description (for Order use only)	Depth	Date Collected	Time Collected	Lab ID
RH004	BC-8508 SP1 g	1.0	6/10/98	1335	4
RH005	BC-B303 SP1	1.0	6/10/98	1440	S-

Field Data	Matrix
Soil	X
Water	
Product	
Sludge	

[illegible]

Samplers Signature	Date	Time
KM Gamison	6/10/98	1345
Relinquished By:	Date	Time
KM Gamison	6/10/98	1910
Received By:	Date	Time
[Signature]	6/10/98	1910
Relinquished By:	Date	Time
[Signature]	6/10/98	1959
Received By (Use):	Date	Time
Paul C. Davis	6/10/98	1959

For Lab Use	
Lab Number: L9801888	Does COC match samples: ☒ Y or ☐ N Broken container: Y or ☒ N Received within holding time: ☒ Y or ☐ N COC seal intact: ☒ Y or ☐ N Any other problems: Y or ☒ N If any YES, Ogden contacted: Y or ☐ N Date contacted: <u> </u> / <u> </u> / <u> </u>

Original, 2 Lab Copy, 3 Field Copy

REV. 1

**5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044**

Chain of Custody

Control Number: **COC R4446**
Date **6 / 10 / 98** Page **1 of 1**

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyne
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Bill To:	Mark Denny PURCHASING
Company:	Ogden Environmental
Address:	5510 Morehouse Drive, San Diego, CA 92121

Sample Disposal Instructions: Laboratory Disposal
Shipment Method: Federal Express
Comment:
* FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

Cooler No: <u>RL0</u>	TAT: 28 - Day
QC Level: <u>Level 4</u>	

[illegible][illegible]

Field Date	SWMU
HA	X
HA	X

2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	16
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Sampler's Signature	KMJ	Date	6/10/98	Time	1720
Relinquished By:	KMJ	Date	6/10/98	Time	1710
Received By:		Date	6/10/98	Time	1710
Relinquished By:		Date	6/10/98	Time	1959
Received By (LAB):		Date	6/10/98	Time	1959

For Lab Use	
Lab Number: 88810867	Does COC match samples ☒ Y or ☐ N Broken container: Y or ☒ N Received within holding time ☒ Y or ☐ N COC seal intact ☒ Y or ☐ N Any other problems: Y or ☒ N If any YES, Ogden contacted: Y or ☐ N Date contacted: 1/1/14 Temperature °C 14



Deliver results to the address above or as stated in contract

TAT: 28 - Day[illegible]

Chain of Custody

Control Number: **COC R4421**
Date **6 / 12 / 98** Page **1 of 1**

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyne
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Bill To:	Mark Doherty	PURCHASING
Company:	Ogden Environmental	
Address:	5510 Morehouse Drive, San Diego, CA 92121	

Sample Disposal Instructions: Laboratory Disposal
Shipment Method: Federal Express
Comment:
* FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

Cooler No:	9731	TAT:	28 - Day
QC Level:	Level 4		

[illegible]

Field Data	SWMU	Matrix
Sampling Method	SWMU	Soil
		Water
		Product
		Sludge

8001	VOC	X	X	X
801503	HYDROCARBON	X	X	X
827088M	PAH	X	X	X
8270R	SVOC	X	X	X
8270R	DIOXIN	X	X	X
8081C	PCB	X	X	X
8081C	PCB	X	X	X
80107003	METAL SRIT	X	X	X
8010	METAL SA (AL, B)	X	X	X
7198	Cd	X	X	X
3402	FLUORIDE	X	X	X
300	AMMONS	X	X	X
9045/9040	pH	X	X	X
HYDRAZINE		X	X	X
PERCHLORATE		X	X	X
EXTRA Volume	MS/MSD			
HOLD				
Total # of Bottles				

Sampler's Signature	KM bmicron	Date	6/12/98	Time	12:15
Relinquished By:	KM bmicron	Date	6/12/98	Time	19:15
Received By:		Date	6/12/98	Time	19:15
Relinquished By:		Date	6/12/98	Time	19:15
Received By (LAB)	Worth A. Dorer	Date	6/12/98	Time	19:15

For Lab Use	
Lab Number: 69801888	Does COC match samples: (Y) or N Broken container: Y or (N) Received within holding time: (Y) or N COC seal intact: Y or N NA Any other problems: Y or (N) If any YES, Ogden contacted: Y or N Date contacted: 1-1 Temperature °C: 13

5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044

Control Number: **COC R4434**
Date **6 / 15 / 98** Page **1 of 1**

012

**5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044**

Chain of Custody

Control Number: **COC** *RH4030*
Date *6/15/98* Page 1 of 1

Date	6/15/78	Page	1 of 1
Sample Disposal Instructions: Laboratory Disposal			
Shipment Method: Federal Express			
Comment:			
FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER			

Bill To: Mark Burnett **PURCHASING**
Company: Ogden Environmental
Address: 5510 Morehouse Drive, San Diego, CA 92121

[illegible][illegible]

Lab Number: 19801888	Does COC match samples: (Y) or N
	Broken container: Y or (N)
	Received within holding time: (Y) or N
	COC seal intact: Y or N NA
	Any other problems: Y or (N)
	Any YES, Ogden contacted: Y or N
	Date contacted: ___/___/___
	Temperature °C: 11

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyne
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Cooler No:	R6	
QC Level:	Level 4	TAT: 28 - Day

[illegible]

Samplers Signature <i>KM Gammon</i>	Date 6/15/98	Time 0830
Relinquished By: <i>KM Gammon</i>	Date 6/15/98	Time 2040
Received By: <i>W. Porter C. Jones</i>	Date 6/15/98	Time 2040
Relinquished By:	Date	Time
Received By (LAB):	Date	Time



5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044

Chain of Custody

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyne
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Cooler No: CP9030	TAT: 28 - Day
QC Level: Level 4	

Bill To:	Mart-Betty ²	PURCHASING
Company:	Ogden Environmental	
Address:	5510 Morehouse Drive, San Diego, CA 92121	

Sample Disposal Instructions: Laboratory Disposal
Shipment Method: Federal Express
Comment:

' FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

[illegible]

Sample Data				
Sample ID	Description (for Oyster use only)	Depth	Date Collected	Time Collected
241010	BCQW04T01	-	10/11/12	1000
241019	BCQW04T02		↓	1300
241019 ↑ RH019				

[illegible][illegible]

Samplers Signature	KM Jamieson	Date	6/11/98	Time	1000
Relinquished By:	KM Jamieson	Date	6/11/98	Time	2150
Received By:	Robert G. Brown	Date	6/11/98	Time	2150
Relinquished By:		Date		Time	
Received By (LAB):		Date		Time	

For Lab Use	
Lab Number:	Does COC match samples: Y or <u>N</u> Broken container: Y or <u>N</u> Received within holding time: <u>Y</u> or N COC seal intact: <u>Y</u> or N Any other problems: Y or <u>N</u> If any YES, Ogden contacted: Y or N Date contacted: <u>1</u> / <u>1</u> / <u>93</u> Temperature °C: <u>13</u>

**5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044**

Chain of Custody

Control Number: COC R4001
Date 6/10/98 Page 1 of 1

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyne
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Bill To: Mark-Dorland PURCHASING
Company: Ogden Environmental
Address: 5510 Morehouse Drive, San Diego, CA 92121

Sample Disposal Instructions: Laboratory Disposal
Shipment Method: Federal Express
Comment: FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

Cooler No: R6	TAT: 28 - Day
QC Level: Level4	

Preservatives

[illegible][illegible][illegible]

8021	X
8020A	
VOC	
80150G	
HYDROCARBON	
8270SM	
PYH	
8270R	
SVOC	
8290	
DIOXIN	
8061C	
PCBs	
8300	
FORMALDEHYDE	
8330	
ORPANCE	
8010/7000	
METALSRT	
8010	
METALSA(P.L.B)	
7186	
CW	
340.2	
FLUORIDE .	
300	
AMMONS.	
8045/8040	
pH	
Extra Volume	
MS&SD	
HOLD	
Total # of Bottles	2

Samplers Signature	Date	Time
KM Tamara	6/10/98	0805
Relinquished By: KM Tamara	6/10/98	1110
Received By: [Signature]	6/10/98	1914
Relinquished By: [Signature]	6/10/98	1959
Received BY (LAB): [Signature]	6/10/98	1959

For Lab Use	
Lab Number: <u>L9801888</u>	1906-6 Jan 6/12
Does COC match samples ☒ or N Broken container: Y or ☒ Received within holding time ☒ or N COC seal intact ☒ or N Any other problems: Y or ☒ If any YES, Ogden contacted: Y or N Date contacted: ___/___/___ Temperature °C : 14	

Chain of Custody

Control Number: **COC R14622**
Date **6 / 12 / 98** Page **1 of 1**

Project Manager:	Dixie Hambrick	Bill To:	Mark Bennett	RECHASING
Project Name:	Rocketdyne	Company:	Ogden Environmental	
Project Number:	313150002	Address:	5510 Morehouse Drive, San Diego, CA 92121	
Deliver results to the address above or as stated in contract				

Sample Disposal Instructions:	Laboratory Disposal
Shipment Method:	Federal Express
Comment:	* FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

[illegible][illegible]

For Lab Use	
* TRIP BLANKS WERE CARRIED IN PORTABLE COOLER - CP-115 - DURING THE DAY. (0612TB1) 22416	
Lab Number: L9801906	Does COC match sample: ☒ Y or ☐ N Broken container: Y or ☒ N Received within holding time: ☒ Y or ☐ N COC seal intact: Y or ☒ N Any other problems: Y or ☒ N If any YES, Ogden contacted: Y or ☐ N Date contacted: ___/___/___ Temperature °C: 13

Samplers Signature	KM Jamieson	Date	6/12/98	Time	0915
Relinquished By:	KM Jamieson	Date	6/12/98	Time	1915
Received By:	[Signature]	Date	6/12/98	Time	1915
Relinquished By:	[Signature]	Date	6/12/98	Time	1955
Received By (LAB):	Norman A. Asher	Date	6/12/98	Time	1955



5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044

Chain of Custody

Control Number: **COC RHP20**
Date **6/15/98** Page 1 of 1

Project Manager:	Dixie Hambrick	Bill To:	Mark Dettling - PURCHASING
Project Name:	Rocketdyne	Company:	Ogden Environmental
Project Number:	313150002	Address:	5510 Morehouse Drive, San Diego, CA 92121
Deliver results to the address above or as stated in contract		Sample Disposal Instructions: Laboratory Disposal	
		Shipment Method: Federal Express	
		Comment:	

Cooler No:	CAS-42	TAT:	28 - Day
QC Level:	Level 4		

Sample Data				Field Data		Matrix		Preservatives																	
Sample ID	Description (for Ogden use only)	Depth	Date Collected	Time Collected	SWMU	Soil	Water	Product	Sludge	HCL PH2	H2SO4 PH2	H2SO4 PH2	HNO3 PH2	HNO3 PH2	HNO3 PH2	7190	7190	340.2	308	ANIONS	9045/9040	PERCHLORATE	Extra Volume	Total # of Bottles	
RHP20	ROCKETDYNE EFF	-	6/15/98	0745	-	X																			15
RHP23	ROCKETDYNE EFF	-	6/15/98	0745	-	X																			2

Samplers Signature: <i>KM Hambrick</i>		Date:	6/15/98	Time:	0800
Relinquished By: <i>KM Hambrick</i>		Date:	6/15/98	Time:	0910
Received By: <i>D. Hambrick</i>		Date:	6/15/98	Time:	0910
Relinquished By: <i>D. Hambrick</i>		Date:	6/15/98	Time:	1630
Received By (LAB): <i>Joe C. Pool</i>		Date:	6/15/98	Time:	1630

Lab Number: **19801906**

Does COC match samples? **(Y)** or **(N)**

Broken container: **(Y)** or **(N)**

Received within holding time: **(Y)** or **(N)**

COC seal intact: **(Y)** or **(N)**

Any other problems: **(Y)** or **(N)**

If any YES, Ogden contacted: **(Y)** or **(N)**

Date contacted: **6/15/98**

Temperature °C: **7**

**5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044**

Control Number: **COC RH037**
Date **6/15/98** Page **1 of 1**

For Lab Use	
Lab Number: <u>L9801906</u>	Does COC match samples: <u>(Y)</u> or N Broken container: Y or <u>(N)</u> Received within holding time: <u>(Y)</u> or N COC seal intact: Y or N <u>NA</u> Any other problems: Y or <u>(N)</u> If any YES, Ogden contacted: Y or N Date contacted: <u> </u> / <u> </u> / <u> </u> Temperature °C <u>17</u>

Samplers Signature <u>KMI</u>	Date <u>6/15/98</u>	Time <u>1930</u>
Relinquished By: <u>KMI</u>	Date <u>6/15/98</u>	Time <u>2040</u>
Received By: <u>Walter H. [Signature]</u>	Date <u>6/15/98</u>	Time <u>20:40</u>
Relinquished By:	Date	Time
Received By (LAB):	Date	Time

REV: 1



Control Number: **COC RH029**
Date **6 / 15 / 98** Page 1 of 1

Sample Disposal Instructions: Laboratory Disposal
Shipment Method: Federal Express
Comment: FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

[illegible][illegible]

	80150G VOC	X
	80150G HYDROCARBON	
	8270SM PAH	
	8270R SVOC	
	8280R DIOXIN	
	8081C PCBs	
	FORMALDEHYDE	
	ORDNANCE	
	8019/7000 METALSRT	
	8010 METALS(A,L,B)	
	7196 CM	
	340.2 FLUORIDE .	
	300 ANIONS-	
	9045/9040 pH	
	EXTRA VOLUME	
	MSP/MISO	
	HOLD	
	Total # of Bottles	1

For Lab Use		* THIS TRIP BLANK WAS USED IN TRANSPORT (SMALLER) COOLER (CP-115)
Lab Number: L9801906	Does COC match samples (Y) or N Broken container: Y or (N) Received within holding time: (Y) or N COC seal intact: Y or N NA Any other problems: Y or (N) If any YES, Ogden contacted: Y or N Date contacted: -1- / 7 / 77 Temperature °C 77	

Chain of Custody

Control Number: COC R4039

Date 6/16/98 Page 1 of 1

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyne
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Bill To:	Mark Bentley	PURCHASING
Company:	Ogden Environmental	
Address:	5510 Morehouse Drive, San Diego, CA 92121	

Sample Disposal Instructions: Laboratory Disposal
Shipment Method: Federal Express
Comment:
FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

Cooler No: KJDB	TAT: 28 - Day
QC Level: Level 4	

[illegible]

Sample Data					
Sample ID	Description (for Ogden use only)	Depth	Date Collected	Time Collected	Lab ID
BR14039	ECQU111701	-	6/11/08	0800	15
BR14040	ECQU111702	-	✓ 6/11/08	0800	16

[illegible]

Sampplers Signature	Date	Time
<i>[Signature]</i>	10/16/98	0810
Received By:	Date	Time
<i>[Signature]</i>	11/11/98	1855
Received By:	Date	Time
<i>[Signature]</i>	11/16/98	1855
Received By:	Date	Time
<i>[Signature]</i>		
Received By:	Date	Time
<i>[Signature]</i>		

Lab Number: L9801906	For Lab Use
Does COC match samples: Y or N Broken container: Y or N Received within holding time: Y or N COC seal intact: Y or N Any other problems: Y or N If any YES, Ogden contacted: Y or N Date contacted: ___/___/___ Temperature °C: 4	* RH04D WAS PLACED IN SMALLER TRANSPORT COOLER CP-115

**5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044**

71610867

Control Number: **COC RHΦ11**

Date 6/11/98 Page 1 of 1

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyne
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Bill To:	Mark Dennis PURCHASING
Company:	Ogden Environmental
Address:	5510 Morehouse Drive, San Diego, CA 92121

Sample Disposal Instructions: Laboratory Disposal
Shipment Method: Federal Express
Comment:
* FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

Cooler No:	CP9838	
QC Level:	Level4	TAT: 28 - Day

[illegible][illegible]

Field Data	Matrix
SWIRU	
Sampling Method	
1	Soil
2	Water
3	Product
4	Sludge

[illegible]

Samplers Signature	KM Jamieson	Date	6/11/08	Time	1030
Relinquished By:		Date		Time	
Received By:	KM Jamieson	Date	6/11/08	Time	2145
Relinquished By:	Mark A. Rose	Date	6/11/08	Time	82145
Relinquished By:		Date		Time	6/14
Received By (LAB):		Date		Time	

Lab Number: L9801914	Does COC match samples: (Y) or N Broken container: Y or (N) Received within holding time: (N) COC seal intact: Y or N NONE Any other problems: Y or (N) If any YES, Ogeen contacted: Y or N Date contacted: 1/1/80 Temperature °C: 130
For Lab Use	+ Hold all analyses except 8021, Others will be not ^{others will be not} and 719b will be not 719b (hex), 9045 (pH)

Control Number: **COC RHØ411**

Date 6/16/98 Page 1 of 1

Bill To:	Mark Boffo
Company:	Ogden Environmental
Address:	5510 Morehouse Drive, San Diego, CA 92121

Sample Disposal Instructions: Laboratory Disposal
Shipment Method: Federal Express
Comment:
FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

Preservatives

[illegible][illegible]

Material	QTY	UNIT	PRICE	TOTAL	REMARKS
801100 HYDROCARBON	1	KG	10.00	10.00	
801100 VOC	1	KG	10.00	10.00	
827000 PMH	1	KG	10.00	10.00	
827000 SVOC	1	KG	10.00	10.00	
827000 DIOLIN	1	KG	10.00	10.00	
801100 PCBs	1	KG	10.00	10.00	
801100 FORMALDEHYDE	1	KG	10.00	10.00	
8330 ORDNANCE	1	KG	10.00	10.00	
80107000 METAL SHIT	1	KG	10.00	10.00	
8010 METAL (SAL. B)	1	KG	10.00	10.00	
7198 C-11	1	KG	10.00	10.00	
360.2 FLUORIDE	1	KG	10.00	10.00	
300 ANIONS	1	KG	10.00	10.00	
8046/8040 PM	1	KG	10.00	10.00	
HYDRAZINE	1	KG	10.00	10.00	
PERHMPH	1	KG	10.00	10.00	
Extra Volume					
HOLD					
Total # of Bottles	12				

For Lab Use	Lab Number: L9801914
	Does COC match samples: ☒ Y or N Broken container: Y or ☒ N Received within holding time: ☒ Y or N COC seal intact: Y or N NA Any other problems: Y or ☒ N If any YES, Ogen contacted: Y or N Date contacted: ___/___/___ Temperature °C .4

**5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044**

Control Number: **COC RA042**
Date **6/16/98** Page **1 of 1**

Bill To: Mark DeMey PURCHASING
Company: Ogden Environmental
Address: 5510 Morehouse Drive, San Diego, CA 92121

[illegible][illegible]

Lab Number: L9801914	Do COC match samples (Y) or N Broken container: Y or (N) Received within holding time: (Y) or N COC seal intact: Y or N NA Any other problems: Y or (N) If any YES, Ogden contacted: Y or N Date contacted: — / — / — Temperature °C 4
For Lab Use	
* ON HOLD PER ELIZABETH WESSLING; EXTRA VOLUME FOR RH004 X ON HOLD PER E.W.'S AUTHORIZATION; EXTRA VOLUME FOR RH005	

Project Manager:	Dixie Hambrick
Project Name:	Rocketdyne
Project Number:	313150002
Deliver results to the address above or as stated in contract	

Cooler No:	VJDB
QC Level:	Level 4
TAT:	35 - Day

[illegible]

Sampers Signature	Date	Time
KM Gamison	6/11/98	1015
Relinquished By	Date	Time
[Signature]	6/11/98	1855
Received By:	Date	Time
[Signature]	6/11/98	1855
Relinquished By:	Date	Time
Received By (LAB):	Date	Time

Control Number: COC RH047
Date 6 / 16 / 98 Page 1 of 1

Sample Disposal Instructions: Laboratory Disposal
Shipment Method: Federal Express
Comment:
CHLORIDE & NITRATE WILL USE ONE CONTAINER

[illegible][illegible]

For Lab Use	Lab Number: <u>L9801914</u> Do COC match samples: <u>(Y)</u> or N Broken container: Y or <u>(N)</u> Received within holding time: <u>(Y)</u> or N COC seal intact: Y or N <u>NA</u> Any other problems: Y or <u>(N)</u> If any YES, Ogdan contacted: Y or N Date contacted: <u> </u> / <u> </u> / <u> </u> Temperature °C <u> 4 </u>

**5510 MOREHOUSE DRIVE
SAN DIEGO, CA 92121
(619) 458-9044**

Control Number: COC

Date 6, 12, 1988 Page 1 of 1

Sample Disposal Instructions: Laboratory Disposal
Shipment Method: Federal Express
Comment:
* FLUORIDE, ANIONS, AND PH WILL USE ONE AQUEOUS CONTAINER

[illegible][illegible]

	820M	VOC	
	801SOG	HYDROCARBON	
	8270SM	PAYH	
	8270R	SVOC	
	8290	DIOXIN	
	8081C	PCBS	
H	3600	FORMALDEHYDE	
4	8330	ORDNANCE	
4	6010/7000	METALSRT	
H	6010	METALS(AI,B)	
4	7186	CYM	
4	3402	FLUORIDE	
4	300	ANIONS	
4	8045/9040	pH	
	*CDMMBAT		
	EXTRA VOLUME	MS/MSSO	
	HOLD		
	Total # of Bottles		

Lab Number: L9801914	For Lab Use
Does COC match samples: (Y) or N Broken container: Y or (N) Resolved within holding time: (Y) or N COC seal intact: Y or N NA Any other problems: Y or (N) If any YES, Ogden contacted: Y or N Date contacted: 1/13 Temperature °C 13	* SAMPLE WAS INADVERTANTLY LEFT OUT OF THE 6/11/98 SAMPLE DELIVERY. SEE COC # RH011, SAMPLE ID RH011. RUN ANALYSES ACCORDING TO THIS CHAIN.

**CHEMISTRY DATA
CASE NARRATIVES**



September 28, 1998

Anne Freed
Ogden
5510 Morehouse Drive
San Diego, CA 92121

**Re: Rocketdyne SSFL / Project No. 313150002 / CAS SDG No. L9801888
Revised Report**

Dear Anne:

Enclosed are the revised results for sample RH002. The following methods had the wrong moisture correction factor applied have been updated: 8270R+TIC, 8270SIM, 8080PCB & 8021VOC.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

A handwritten signature in dark ink, appearing to read "Leo Raab", written in a cursive style.

Leo Raab
Project Chemist

A handwritten signature in dark ink, appearing to read "Euphie Schurtyfer" (likely Stuart Sigman), written in a cursive style.

Stuart Sigman
Quality Assurance Chemist

xc:
Elizabeth Wessling
Ogden
550 S. Wadsworth Blvd., Suite 500
Lakewood, CO 80226



August 3, 1998

Anne Freed
Ogden
5510 Morehouse Drive
San Diego, CA 92121

Re: Rocketdyne SSFL / Project No. 313150002 / CAS SDG No. L9801888

Dear Anne:

Enclosed are the results of the samples submitted to our laboratory on 6/10-15/98.

All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply only to the samples analyzed. Columbia Analytical Services is not responsible for use of less than the complete report.

Columbia Analytical Services is certified for environmental analyses by the California Department of Health Services (certificate number: 1296, expiration August 1998).

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

A handwritten signature in cursive script, appearing to read 'Leo Raab'.

Leo Raab
Project Chemist

A handwritten signature in cursive script, appearing to read 'Stuart Sigman'.

Stuart Sigman
Quality Assurance Chemist

xc:
Elizabeth Wessling
Ogden
550 S. Wadsworth Blvd., Suite 500
Lakewood, CO 80226

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Ogden
Project: Rocketdyne SSFL 313150002
Sample Matrix: Soil

Service Request No.: L9801888
Date Received: 6/10-15/98

CASE NARRATIVE

All analyses were performed in accordance with our laboratory's quality assurance program. This report contains analytical results for sample(s) designated for Tier III data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix Spike (MS), Duplicate Matrix Spike (DMS) and Laboratory Control Sample (LCS).

All EPA recommended holding times have been met for analyses in this sample delivery group.

Refer to the "Internal Login Summary Report" form for a listing of Ogden (EPA) Sample ID's versus Columbia Analytical Services' SDG/Service Request numbers, sample dates, received dates, matrix and requested analyses. Tests sub-contracted to the following laboratories:

Formaldehyde	Columbia Analytical Services, Kelso, WA.
Perchlorate	Weck Laboratories, Industry, CA.
Dioxins/Furans/EPA 8290	Alta Analytical, El Dorado Hills, CA.
Explosives/EPA 8330	Paragon Analytical, Fort Collins, CO.
Hydrazines	West Coast Analytical Service, Santa Fe Springs, CA

Subcontracted test results, case narratives and data packages are included as an appendix to this report.

Laboratory Control Samples are liquids. For solid SDGs, data is calculated and reported in solid units.

The following difficulties were experienced during analysis of this batch:

Surrogate for 8270SIM was slightly above range for Nitrobenzene-d5 for RH004, RH006, RH026 & RH030.

Surrogate for 8270R was slightly above range for Phenol-d6 for RH005, RH006, RH021 & Method Blank.

Surrogate for 8270R was slightly above range for 2,4,6-Tribromophenol for RH002, RH003, RH004, RH005, RH006, RH007, RH026.

MS/MSD recoveries not calculated for Aluminum due to high concentration of target analyte present in sample matrix.

Hydrazines analysis not performed due to inability to meet detection limits desired.

Data Qualifier Flags are: U = Not Detected, E = Estimated Value above calibration range, J = Estimated Value between MDL and PQL.

Approved by: J. Raol Date: 8/3/98

OGDEN
 ENVIRONMENTAL AND ENERGY SERVICES

 5510 Morehouse Drive
 San Diego, CA 92121-1709
 (619) 458-9044
 fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
 Fax No.: (818) 587-5555

From: Lisa L. Arrasmith sign: *Lisa L. Arrasmith*

Date: 6/12/98 There is 1 Page to transmit including this cover page

Subject: Chain-of-Custody Form Analytical Request Change

Please make the changes listed below to the chain-of-custody analytical request form.
 Include this form with the final data deliverables for these samples.

COC No.	EPA Sample ID	Date Collected	Method (s) Originally Requested ^(a)	Method (s) Now Requested ^(a)
RH011	RH011	6/11/98	V, Cr & pH	V, Cr, pH, S ²⁻ & TOC
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, Fl, A, pH, H & ClO	V(rush), OG, S(rush), R(rush), D, PCBs, F, OR, M, Cr, Fl, A, pH, H, ClO & MBAS *

(a) M=Metals RT

A = Anions, 300

D = 8290, Dioxin/furan

OR = 8330, Ordinance

OG = 8015 OG, TPH

R = SVOCs, 8270R

H = Hydrazine

S²⁻ = Sulfide

PCBs = Polychlorinated Biphenyls, 8080

The reason for these changes is:

Incorrectly marked on COC form

Lack of sample volume

Ogden office personnel require this change

Other: Containers mislabeled _____

Thank you.

Cr = Hexavalent Chromium

F = Formaldehyde, ASTM D19

S = SVOCs, 8270SIM

ClO = Perchlorate

V = 8021, Volatiles

Fl = 340.2, Fluoride

MBAS = Methylene Blue Active Substance

TOC = Total Organic Carbon

* MBAS Rush per

Lisa also 6/12/98

@ 1115 JRL



Post-It® Fax Note	7671	Date	6/15	# of pages	2
To	ELIZ. WESSLING		From	LEO RAAB	
Co./Dept.			Co.	COLUMBIA	
Phone #			Phone #	818 587 5550	
Fax #	303 935 6575		Fax #		

5510 Morehouse Drive
San Diego, CA 92121-1709
(619) 458-9044
fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
Fax No.: (818) 587-5555

From: Debra Y. Loza sign: *Debra Y. Loza*

Date: 6/12/98 There are 2 Pages to transmit including this cover page

Subject: Chain-of-Custody Form Analytical Request Change(Revision A)

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final data deliverables for these samples.
These changes supersede the previous C-O-C Analysis Request Change 6/12/98.

COC No.	EPA Sample ID	Date Collected	Method (s) Originally Requested ^(a)	Method (s) Now Requested ^(a)
RH011	RH011 RH012 RH013 RH014 RH015 RH016	6/11/98	V, Cr & pH <i>SEE REVISION FROM E. WESSLING 6/15</i>	V, Cr, pH, F, H, ClO, & OG (HOLD on S ² & TOC)
RH018	RH018	6/11/98	V, Cr & pH	V, Cr, pH, F, H, ClO, & OG (HOLD on S ² & TOC)
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, Fl, A, pH, H & ClO	V(rush), S(rush), R(rush), OG, D, PCBs, F, OR, M, Cr, Fl, A, pH, H, ClO & MBAS(rush)

(a) M=MetalsRT

A= Anions, 300

D = 8290, Dioxin/furan

OR = 8330, Ordinance

OG= 8015OG, TPH

R = SVOCs, 8270R

H = Hydrazine

S²= Sulfide

PCBs= Polychlorinated Biphenyls, 8080

Cr = Hexavalent Chromium

F = Formaldehyde, ASTM D19

S = SVOCs, 8270SIM

ClO = Perchlorate

V = 8021, Volatiles

Fl = 340.2, Fluoride

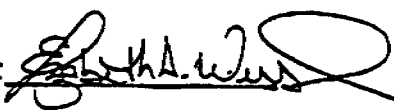
MBAS = Methylene Blue Active Substance

TOC = Total Organic Carbon

rush = 5 day TAT

5510 Morehouse Drive
San Diego, CA 92121-1709
(619) 458-9044
fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
Fax No.: (818) 587-5555
From: Elizabeth A. Wessling sign: 
Date: 6/15/98
Subject: Chain-of-Custody Form Analytical Request Change(Revision A)

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final data deliverables for these samples. There are 2 Pages to transmit including this cover page
These changes supersede the previous C-O-C Analysis Request Change 6/12/98.

COG No.	EPA Sample ID	Date Collected	Method(s) Originally Requested ^(a)	Method(s) Now Requested ^(a)
RH011	RH011	6/11/98	V, Cr & pH	Please analyze S ² & TOC V CR PH FH CLO OG *
RH011	RH012 RH013 RH014 RH015 RH016	6/11/98	V, Cr & pH	Remove S ² & TOC ↓
RH018	RH018	6/11/98	V, Cr, pH	V, Cr, pH, OG, F, OR, H, & CLO Remove TOC
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, Fl, A, pH, H & CLO	V(rush), S(rush), R(rush), OG, F, OR, Cr, H, CLO & MBAS(rush)

- ^(a) M = MetalsRT Cr = Hexavalent Chromium
A = Anions, 300F = Formaldehyde, ASTM D19
D = 1613B, Dioxin/furan S = SVOCs, 8270SIM
OR = 8330, Ordinance CLO = Perchlorate
OG = 8015OG, TPH V = 8021, Volatiles
R = SVOCs, 8270R Fl = 340.2, Fluoride
H = Hydrazine MBAS = Methylene Blue Active Substance
S² = Sulfide TOC = Total Organic Carbon

rush = 5 day TAT

* CLAMIFICATION
PER. E. WESSLING
6/15/98 @ 1410
-lck

PCBs= Polychlorinated Biphenyls, 8080

The reason for these changes is:

Incorrectly marked on COC form

Lack of sample volume

Ogden office personnel require this change

Other: Containers mislabeled

_____ X

SAW

Thank you.

OGDEN ENVIRONMENTAL AND ENERGY SERVICES

5510 Morehouse Drive
 San Diego, CA 92121-1709
 (619) 458-9044
 fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
 Fax No.: (818) 587-5555

From: Elizabeth A. Wessling sign: *Elizabeth A. Wessling*

Date: 6/18/98

Subject: Chain-of-Custody Form Analytical Request Change(Revision A)

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final data deliverables for these samples. There are two pages to this fax. These changes supersede the previous C-O-C Analysis Request Change 6/15/98.

COC No.	EPA Sample ID	Date Collected	Method (s) Originally Requested ^(a)	Method (s) Now Requested ^(a)
RH011	RH011,RH012 RH013,RH014 RH015,RH016	6/11/98	V, Cr & pH	Please remove all remaining holds.
RH018	RH018	6/11/98	V, Cr & pH	Please remove all remaining holds.
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, Fl, A, pH, H & CIO	Please remove all remaining holds.

- ^(a) M = MetalsRT Cr = Hexavalent Chromium
 A = Anions, 300F = Formaldehyde, ASTM D19
 D = 8290, Dioxin/furan S = SVOCs, 8270SIM
 OR = 8330, Ordinance CIO = Perchlorate
 OG = 8015OG, TPH V = 8021, Volatiles
 R = SVOCs, 8270R Fl = 340.2, Fluoride
 H = Hydrazine MBAS = Methylene Blue Active Substance
 S²⁻ = Sulfide TOC = Total Organic Carbon
 PCBs = Polychlorinated Biphenyls, 8080

rush = 5 day TAT

The reason for these changes is:

Incorrectly marked on COC form

Lack of sample volume

Ogden office personnel require this change

Other: Containers mislabeled

X _____ *Guido A. White for E. Wessling*

Thank you.



Monday, August 17, 1998

Anne Freed
Ogden
5510 Morehouse Drive
San Diego, CA 92121



Re: Rocketdyne SSFL / Project No. 313150002 / CAS SDG No. L9801906

Dear Anne:

Enclosed are the results of the samples submitted to our laboratory on 6/10-16/98.

All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply only to the samples analyzed. Columbia Analytical Services is not responsible for use of less than the complete report.

Columbia Analytical Services is certified for environmental analyses by the California Department of Health Services (certificate number: 1296, expiration August 1998).

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.


Leo Raab
Project Chemist


Stuart Sigman
Quality Assurance Chemist

xc:

Elizabeth Wessling
Ogden
550 S. Wadsworth Blvd., Suite 500
Lakewood, CO 80226

001

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Ogden
Project: Rocketdyne SSFL 313150002
Sample Matrix: Water

Service Request No.: L9801906
Date Received: 6/10-16/98

CASE NARRATIVE

All analyses were performed in accordance with our laboratory's quality assurance program. This report contains analytical results for sample(s) designated for Tier III data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix Spike (MS), Duplicate Matrix Spike (DMS) and Laboratory Control Sample (LCS).

All EPA recommended holding times have been met for analyses in this sample delivery group.

Refer to the "Internal Login Summary Report" form for a listing of Ogden (EPA) Sample ID's versus Columbia Analytical Services' SDG/Service Request numbers, sample dates, received dates, matrix and requested analyses. Tests sub-contracted to the following laboratories:

Formaldehyde	Columbia Analytical Services, Kelso, WA.
Perchlorate	Weck Laboratories, Industry, CA.
Dioxins/Furans/EPA 8290	Alta Analytical, El Dorado Hills, CA.
Explosives/EPA 8330	Paragon Analytical, Fort Collins, CO.

Subcontracted test results, case narratives and data packages are included as an appendix to this report.

The following difficulties were experienced during analysis of this batch:

Due to multiple changes in sample testing instructions, some test procedures were missed. For Sample RH008 Metals analysis was not performed. For Sample RH018 the following were not performed: 8270R, 8027SIM, 8080PCB and Metals. See attached change orders: one fax from Debra Loza 6/12/98, one from Lisa Arrasmith 6/12/98, two from Elizabeth Wessling one on 6/15/98 and the other on 6/18/98.

MS/MSD analysis for 8270R was performed on non-Ogden sample GRAB from SDG L9801858.
LCS/LCSD analyzed for 8080PCB due to insufficient sample volume submitted to perform MS/MSD.
Confirmations for 8021 VOC performed by either 8021 or 8060 or both.

Data Qualifier Flags are: U = Not Detected, E = Estimated Value above calibration range, J = Estimated Value between MDL and PQL.

Approved by:

Eydie Schwartz

Date:

8/17/98

003



Post-It* Fax Note	7671	Date	6/15	# of pages	2
To	EUIZ. WESSUNG		From	LEO RAAB	
Co./Dept.			Co.	COLUMBIA	
Phone #			Phone #	818 587 5550	
Fax #	303 935 6575		Fax #		

5510 Morehouse Drive
San Diego, CA 92121-1709
(619) 458-9044
fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
Fax No.: (818) 587-5555

From: Debra Y. Loza sign: *Debra Y. Loza*

Date: 6/12/98 There are 2 Pages to transmit including this cover page

Subject: Chain-of-Custody Form Analytical Request Change(Revision A)

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final data deliverables for these samples.

These changes supersede the previous C-O-C Analysis Request Change 6/12/98.

COC No.	EPA Sample ID	Date Collected	Method (s) Originally Requested ^(a)	Method (s) Now Requested ^(a)
RH011	RH011 RH012 RH013 RH014 RH015 RH016	6/11/98	V, Cr & pH <i>SEE REVISION FROM E. WESSUNG</i>	V, Cr, pH, F, H, ClO, & OG (HOLD on S ² & TOC) <i>LP 6/15</i>
RH018	RH018	6/11/98	V, Cr & pH	V, Cr, pH, F, H, ClO, & OG (HOLD on S ² & TOC)
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, Fl, A, pH, H & ClO	V(rush), S(rush), R(rush), OG, D, PCBs, F, OR, M, Cr, Fl, A, pH, H, ClO & MBAS(rush)

(a) M=MetalsRT

A= Anions, 300

D = 8290, Dioxin/furan

OR = 8330, Ordinance

OG= 8015OG, TPH

R = SVOCs, 8270R

H = Hydrazine

S²= Sulfide

PCBs= Polychlorinated Biphenyls, 8080

Cr = Hexavalent Chromium

F = Formaldehyde, ASTM D19

S = SVOCs, 8270SIM

ClO = Perchlorate

V = 8021, Volatiles

Fl = 340.2, Fluoride

MBAS = Methylene Blue Active Substance

TOC = Total Organic Carbon

rush = 5 day TAT

OGDEN ENVIRONMENTAL AND ENERGY SERVICES

5510 Morehouse Drive
San Diego, CA 92121-1709
(619) 458-9044
fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
Fax No.: (818) 587-5555

From: Lisa L. Arrasmith sign: *Lisa L. Arrasmith*

Date: 6/12/98 There is 1 Page to transmit including this cover page

Subject: Chain-of-Custody Form Analytical Request Change

Please make the changes listed below to the chain-of-custody analytical request form.
Include this form with the final data deliverables for these samples.

COC No.	EPA Sample ID	Date Collected	Method (s) Originally Requested ^(a)	Method (s) Now Requested ^(a)
RH011	RH011	6/11/98	V, Cr & pH	V, Cr, pH, S ²⁻ & TOC
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, Fl, A, pH, H & ClO	V(rush), OG, S(rush), R(rush), D, PCBs, F, OR, M, Cr, Fl, A, pH, H, ClO & MBAS *

(a) M=MetalsRT

A = Anions, 300

D = 8290, Dioxin/furan

OR = 8330, Ordinance

OG= 8015OG, TPH

R = SVOCs, 8270R

H = Hydrazine

S²⁻ = Sulfide

PCBs= Polychlorinated Biphenyls, 8080

The reason for these changes is:

Incorrectly marked on COC form

Lack of sample volume

Ogden office personnel require this change

Other: Containers mislabeled

Thank you.

Cr = Hexavalent Chromium

F = Formaldehyde, ASTM D19

S = SVOCs, 8270SIM

ClO = Perchlorate

V = 8021, Volatiles

Fl = 340.2, Fluoride

MBAS = Methylene Blue Active Substance

TOC = Total Organic Carbon

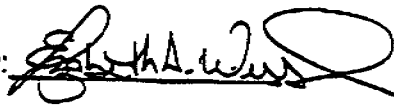
* MBAS Rush per

LISA also 6/12/98

@1115 JRL

5510 Morehouse Drive
San Diego, CA 92121-1709
(619) 458-9044
fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
Fax No.: (818) 587-5555
From: Elizabeth A. Wessling sign: 
Date: 6/15/98
Subject: Chain-of-Custody Form Analytical Request Change(Revision A)

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final data deliverables for these samples. There are 2 Pages to transmit including this cover page
These changes supersede the previous C-O-C Analysis Request Change 6/12/98.

COC No.	EPA Sample ID	Date Collected	Method (s) Originally Requested ^(a)	Method (s) Now Requested ^(a)
RH011	RH011	6/11/98	V, Cr & pH	Please analyze S ² & TOC V CR PH F H CLO OG *
RH011	RH012 RH013 RH014 RH015 RH016	6/11/98	V, Cr & pH	Remove S ² & TOC ↓
RH018	RH018	6/11/98	V, Cr, pH	V, Cr, pH, OG, F, OR, H, & CIO Remove TOC
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, FI, A, pH, H & CIO	V(rush), S(rush), R(rush), OG, F, OR, Cr, H, CIO & MBAS(rush)

- ^(a) M = MetalsRT Cr = Hexavalent Chromium
A = Anions, 300F = Formaldehyde, ASTM D19
D = 1613B, Dioxin/furan S = SVOCs, 8270SIM
OR = 8330, Ordinance CIO = Perchlorate
OG = 8015OG, TPH V = 8021, Volatiles
R = SVOCs, 8270R FI = 340.2, Fluoride
H = Hydrazine MBAS = Methylene Blue Active Substance
S² = Sulfide TOC = Total Organic Carbon

rush = 5 day TAT

* CLARIFICATION
PER. E. WESSLING
6/15/98 @ 1410
-lck

PCBs= Polychlorinated Biphenyls, 8080

The reason for these changes is:

Incorrectly marked on COC form

Lack of sample volume

Ogden office personnel require this change

Other: Containers mislabeled

X

EAJ

Thank you.



5510 Morehouse Drive
San Diego, CA 92121-1709
(619) 458-9044
fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
Fax No.: (818) 587-5555

From: *for* Elizabeth A. Wessling sign: *Heidi A. White*

Date: 6/18/98

Subject: Chain-of-Custody Form Analytical Request Change(Revision A)

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final data deliverables for these samples. There are two pages to this fax. These changes supersede the previous C-O-C Analysis Request Change 6/15/98.

COC No.	EPA Sample ID	Date Collected	Method (s) Originally Requested ^(a)	Method (s) Now Requested ^(a)
RH011	RH011,RH012 RH013,RH014 RH015,RH016	6/11/98	V, Cr & pH	Please remove all remaining holds.
RH018	RH018	6/11/98	V, Cr & pH	Please remove all remaining holds.
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, Fl, A, pH, H & ClO	Please remove all remaining holds.

- ^(a) M = MetalsRT Cr = Hexavalent Chromium rush = 5 day TAT
 A = Anions, 300F = Formaldehyde, ASTM D19
 D = 8290, Dioxin/furan S = SVOCs, 8270SIM
 OR = 8330, Ordinance ClO = Perchlorate
 OG = 8015OG, TPH V = 8021, Volatiles
 R = SVOCs, 8270R Fl = 340.2, Fluoride
 H = Hydrazine MBAS = Methylene Blue Active Substance
 S² = Sulfide TOC = Total Organic Carbon
 PCBs = Polychlorinated Biphenyls, 8080

The reason for these changes is:

Incorrectly marked on COC form

Lack of sample volume

Ogden office personnel require this change

Other: Containers mislabeled

X *Heidi A. White for E. Wessling*

Thank you.



August 5, 1998

Anne Freed
Ogden
5510 Morehouse Drive
San Diego, CA 92121

Re: Rocketdyne SSFL / Project No. 313150002 / CAS SDG No. L9801914

Dear Anne:

Enclosed are the results of the samples submitted to our laboratory on 6/11-16/98.

All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply only to the samples analyzed. Columbia Analytical Services is not responsible for use of less than the complete report.

Columbia Analytical Services is certified for environmental analyses by the California Department of Health Services (certificate number: 1296, expiration August 1998).

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Leo Raab
Project Chemist

Stuart Sigman
Quality Assurance Chemist

xc:

Elizabeth Wessling
Ogden
550 S. Wadsworth Blvd., Suite 500
Lakewood, CO 80226

001

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Ogden
Project: Rocketdyne SSFL 313150002
Sample Matrix: Soil

Service Request No.: L9801914
Date Received: 6/11-16/98

CASE NARRATIVE

All analyses were performed in accordance with our laboratory's quality assurance program. This report contains analytical results for sample(s) designated for Tier III data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix Spike (MS), Duplicate Matrix Spike (DMS) and Laboratory Control Sample (LCS).

All EPA recommended holding times have been met for analyses in this sample delivery group.

Refer to the "Internal Login Summary Report" form for a listing of Ogden (EPA) Sample ID's versus Columbia Analytical Services' SDG/Service Request numbers, sample dates, received dates, matrix and requested analyses. Tests sub-contracted to the following laboratories:

Formaldehyde	Columbia Analytical Services, Kelso, WA.
Perchlorate	Weck Laboratories, Industry, CA.
Dioxins/Furans/EPA 8290	Alta Analytical, El Dorado Hills, CA.
Explosives/EPA 8330	Paragon Analytical, Fort Collins, CO.
Hydrazines	West Coast Analytical Service, Santa Fe Springs, CA

Subcontracted test results, case narratives and data packages are included as an appendix to this report.

The following changes were requested via fax from Lisa Arrasmith on 6/12/98:

Add Sulfide and Total Organic Carbon to RH011.

The following changes were requested via fax & phone from Elizabeth Wessling on 6/15/98:

Remove 'holds' on RH011, RH012, RH013, RH014, RH015, RH016 for Formaldehyde, Hydrazine, Perchlorate and TPH.

The following changes were requested via fax from Elizabeth Wessling on 6/18/98:

All remaining 'holds' on RH011, RH012, RH013, RH014, RH015, RH016 were removed.

Laboratory Control Samples are liquids. For solid SDGs, data is calculated and reported in solid units.

The following difficulties were experienced during analysis of this batch:

MS/MSD recoveries for Phenanthrene & Pyrene were slightly above range for 8270SIM while all other spike compounds were acceptable and LCS was within limits.

Surrogate for 8270R was slightly above range for 2,4,6-Tribromophenol for RH048MS.

MS/MSD recoveries for Phenol & Pyrene were slightly above range for 8270R while all other spike compounds were acceptable. LCS recoveries were within limits except Pyrene was one percent above range. No target compounds were detected in any samples therefore data was approved.

Confirmation of 8021VOC results for sample RH011 was performed by method 8260 GC/MS.

Hydrazines analysis not performed due to inability to meet detection limits desired.

Data Qualifier Flags are: U = Not Detected, E = Estimated Value above calibration range, J = Estimated Value between MDL and PQL.

Approved by: _____

Date: _____

Joe Chock

8/5/98

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Ogden
Project: Rocketdyne SSFL 313150002
Sample Matrix: Soil

Service Request No.: L9801914
Date Received: 6/11-16/98

CASE NARRATIVE

All analyses were performed in accordance with our laboratory's quality assurance program. This report contains analytical results for sample(s) designated for Tier III data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix Spike (MS), Duplicate Matrix Spike (DMS) and Laboratory Control Sample (LCS).

All EPA recommended holding times have been met for analyses in this sample delivery group.

Refer to the "Internal Login Summary Report" form for a listing of Ogden (EPA) Sample ID's versus Columbia Analytical Services' SDG/Service Request numbers, sample dates, received dates, matrix and requested analyses. Tests sub-contracted to the following laboratories:

Formaldehyde	Columbia Analytical Services, Kelso, WA.
Perchlorate	Weck Laboratories, Industry, CA.
Dioxins/Furans/EPA 8290	Alta Analytical, El Dorado Hills, CA.
Explosives/EPA 8330	Paragon Analytical, Fort Collins, CO.
Hydrazines	West Coast Analytical Service, Santa Fe Springs, CA

Subcontracted test results, case narratives and data packages are included as an appendix to this report.

The following changes were requested via fax from Lisa Arrasmith on 6/12/98:

Add Sulfide and Total Organic Carbon to RH011.

The following changes were requested via fax & phone from Elizabeth Wessling on 6/15/98:

Remove 'holds' on RH011, RH012, RH013, RH014, RH015, RH016 for Formaldehyde, Hydrazine, Perchlorate and TPH.

The following changes were requested via fax from Elizabeth Wessling on 6/18/98:

All remaining 'holds' on RH011, RH012, RH013, RH014, RH015, RH016 were removed.

Laboratory Control Samples are liquids. For solid SDGs, data is calculated and reported in solid units.

The following difficulties were experienced during analysis of this batch:

MS/MSD recoveries for Phenanthrene & Pyrene were slightly above range for 8270SIM while all other spike compounds were acceptable and LCS was within limits.

Surrogate for 8270R was slightly above range for 2,4,6-Tribromophenol for RH048MS.

MS/MSD recoveries for Phenol & Pyrene were slightly above range for 8270R while all other spike compounds were acceptable and LCS was within limits.

Confirmation of 8021VOC results for sample RH011 was performed by method 8260 GC/MS. *

Hydrazines analysis not performed due to inability to meet detection limits desired.

Data Qualifier Flags are: U = Not Detected, E = Estimated Value above calibration range, J = Estimated Value between MDL and PQL.

Approved by:

Eydie Schwart

Date:

8/3/98

OGDEN ENVIRONMENTAL AND ENERGY SERVICES
 ■ ■ ■ ■ ■

 5510 Morehouse Drive
 San Diego, CA 92121-1709
 (619) 458-9044
 fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
 Fax No.: (818) 587-5555

From: Lisa L. Arrasmith sign: *Lisa L. Arrasmith*

Date: 6/12/98 There is 1 Page to transmit including this cover page

Subject: Chain-of-Custody Form Analytical Request Change

Please make the changes listed below to the chain-of-custody analytical request form.
 Include this form with the final data deliverables for these samples.

COC No.	EPA Sample ID	Date Collected	Method (s) Originally Requested ^(a)	Method (s) Now Requested ^(a)
RH011	RH011	6/11/98	V, Cr & pH	V, Cr, pH, S ² & TOC
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, Fl, A, pH, H & ClO	V(rush), OG, S(rush), R(rush), D, PCBs, F, OR, M, Cr, Fl, A, pH, H, ClO & MBAS *

(a) M=MetalsRT

A = Anions, 300

D = 8290, Dioxin/furan

OR = 8330, Ordinance

OG= 8015OG, TPH

R = SVOCs, 8270R

H = Hydrazine

S²= Sulfide

PCBs= Polychlorinated Biphenyls, 8080

The reason for these changes is:

Incorrectly marked on COC form

Lack of sample volume

Ogden office personnel require this change

Other: Containers mislabeled ____

Thank you.

Cr = Hexavalent Chromium

F = Formaldehyde, ASTM D19

S = SVOCs, 8270SIM

ClO = Perchlorate

V = 8021, Volatiles

Fl = 340.2, Fluoride

MBAS = Methylene Blue Active Substance

TOC = Total Organic Carbon

* MBAS RUSH per

LISA ALSO 6/12/98

@1115 JRL



Post-It® Fax Note	7671	Date	6/15	# of pages	2
To	ELIZ. WESSLING		From	LEO RAAB	
Co./Dept.			Co.	COLUMBIA	
Phone #			Phone #	818 587 5550	
Fax #	303 935 6575		Fax #		

5510 Morehouse Drive
San Diego, CA 92121-1709
(619) 458-9044
fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
Fax No.: (818) 587-5555

From: Debra Y. Loza sign: *Debra Y. Loza*

Date: 6/12/98 There are 2 Pages to transmit including this cover page

Subject: Chain-of-Custody Form Analytical Request Change(Revision A)

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final data deliverables for these samples.
These changes supersede the previous C-O-C Analysis Request Change 6/12/98.

COC No.	EPA Sample ID	Date Collected	Method (s) Originally Requested ^(a)	Method (s) Now Requested ^(a)
RH011	RH011 RH012 RH013 RH014 RH015 RH016	6/11/98	V, Cr & pH <i>SEE REVISION FROM E. WESSLING</i>	V, Cr, pH, F, H, ClO, & OG (HOLD on S ² & TOC) <i>LP 6/15</i>
RH018	RH018	6/11/98	V, Cr & pH	V, Cr, pH, F, H, ClO, & OG (HOLD on S ² & TOC)
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, Fl, A, pH, H & ClO	V(rush), S(rush), R(rush), OG, D, PCBs, F, OR, M, Cr, Fl, A, pH, H, ClO & MBAS(rush)

(a) M=MetalsRT

A= Anions, 300

D = 8290, Dioxin/furan

OR = 8330, Ordinance

OG= 8015OG, TPH

R = SVOCs, 8270R

H = Hydrazine

S= Sulfide

PCBs= Polychlorinated Biphenyls, 8080

Cr = Hexavalent Chromium

F = Formaldehyde, ASTM D19

S = SVOCs, 8270SIM

ClO = Perchlorate

V = 8021, Volatiles

Fl = 340.2, Fluoride

MBAS = Methylene Blue Active Substance

TOC = Total Organic Carbon

rush = 5 day TAT

5510 Morehouse Drive
 San Diego, CA 92121-1709
 (619) 458-9044
 Fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
 Fax No.: (818) 587-5555

From: Elizabeth A. Wessling sign: *Elizabeth A. Wessling*

Date: 6/15/98

Subject: Chain-of-Custody Form Analytical Request Change(Revision A)

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final data deliverables for these samples. There are 2 Pages to transmit including this cover page
 These changes supersede the previous C-O-C Analysis Request Change 6/12/98.

COC No.	EPA Sample ID	Date Collected	Method(s) Originally Requested ^(*)	Method(s) Now Requested ^(*)
RH011	RH011	6/11/98	V, Cr & pH	Please analyze S ² & TOC V CR PH FH CLO OG *
RH011	RH012 RH013 RH014 RH015 RH016	6/11/98	V, Cr & pH	Remove S ² & TOC ↓
RH018	RH018	6/11/98	V, Cr, pH	V, Cr, pH, OG, F, OR, H, & CIO Remove TOC
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, FI, A, pH, H & CIO	V(rush), S(rush), R(rush), OG, F, OR, Cr, H, CIO & MBAS(rush)

- (*) M = MetalsRT Cr = Hexavalent Chromium
 A = Anions, 300F = Formaldehyde, ASTM D19
 D = 1613B, Dioxin/furan S = SVOCs, 8270SIM
 OR = 8330, Ordinance CIO = Perchlorate
 OG = 8015OG, TPH V = 8021, Volatiles
 R = SVOCs, 8270R FI = 340.2, Fluoride
 H = Hydrazine MBAS = Methylene Blue Active Substance
 S² = Sulfide TOC = Total Organic Carbon

rush = 5 day TAT

* CLARIFICATION
 PER. E. WESSLING
 6/15/98 @ 1410
hcr

PCBs= Polychlorinated Biphenyls, 8080

The reason for these changes is:

Incorrectly marked on COC form

Lack of sample volume

Ogden office personnel require this change

Other: Containers mislabeled

X EAD

Thank you.

OGDEN ENVIRONMENTAL AND ENERGY SERVICES

5510 Morehouse Drive
 San Diego, CA 92121-1709
 (619) 458-9044
 fax: (619) 458-0943

FACSIMILE

To: Mr. Leo Raab/Columbia Analytical Services
 Fax No.: (818) 587-5555

From: Elizabeth A. Wessling sign: *Elizabeth A. Wessling*

Date: 6/18/98

Subject: Chain-of-Custody Form Analytical Request Change(Revision A)

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final data deliverables for these samples. There are two pages to this fax. These changes supersede the previous C-O-C Analysis Request Change 6/15/98.

COC No.	EPA Sample ID	Date Collected	Method (s) Originally Requested ^(a)	Method (s) Now Requested ^(a)
RH011	RH011,RH012 RH013,RH014 RH015,RH016	6/11/98	V, Cr & pH	Please remove all remaining holds.
RH018	RH018	6/11/98	V, Cr & pH	Please remove all remaining holds.
RH009	RH008	6/11/98	V, OG, S, R, D, PCBs, F, OR, M, Cr, Fl, A, pH, H & ClO	Please remove all remaining holds.

- ^(a) M = MetalsRT Cr = Hexavalent Chromium rush = 5 day TAT
 A = Anions, 300F = Formaldehyde, ASTM D19
 D = 8290, Dioxin/furan S = SVOCs, 8270SIM
 OR = 8330, Ordinance ClO = Perchlorate
 OG = 8015OG, TPH V = 8021, Volatiles
 R = SVOCs, 8270R Fl = 340.2, Fluoride
 H = Hydrazine MBAS = Methylene Blue Active Substance
 S²⁻ = Sulfide TOC = Total Organic Carbon
 PCBs = Polychlorinated Biphenyls, 8080

The reason for these changes is:

Incorrectly marked on COC form

Lack of sample volume

Ogden office personnel require this change

Other: Containers mislabeled

X *Freddie A. White for E. Wessling*

Thank you.

**CHEMISTRY DATA
DATA VALIDATION REPORTS**

The following are Level V data validation reports for the chemical analyses performed on the Bell Canyon area samples. These reports are presented by analytical method (dioxins/furans, ordnance, volatile organic compounds, metals, etc.), and then by sample delivery group within each analytical method. Analytical sheets from the laboratory are included after each assessment form; data qualifiers and qualification codes have been hand-written by the Ogden reviewer next to each result. Definitions of the data qualifiers and qualification codes are provided in Tables C-1 and C-2.

Table C-1
Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present.)

Table C-2
Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D was not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
#	Unusual problems found with the data that have been described in Section 1, "Data Validation Findings." The number following the asterisk () indicates the subsection where a description of the problem can be found.	Unusual problems found with the data that have been described in Section 1, "Data Validation Findings." The number following the asterisk (*) indicates the subsection where a description of the problem can be found.

550 South Wadsworth Blvd. Suite. 500
Lakewood, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 1613B

No. of Samples: 14

Date Reviewed: 09/03/98

Reviewer: K. McNeill

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994), Alta Analytical Laboratory Analytical Procedure for Polychlorinated Dibenzo Dioxins/Furans USEPA Method 1613B (Revision 1, 2/10/98), and USEPA Method 1613 Revision B (10/94).

SDG: L9801888

Samples Reviewed: RH002, RH003, RH0094, RH005, RH006, RH007, RH021, RH025, RH026, RH030, RH031, RH032, RH033, RH036.

Matrix: Soil

EPA Level V- Dioxin/Furan Assessment Form

	Problems	Qualifications
1. Sample Management	The D/F analyses were subcontracted to Alta Analytical. The sample shipment to Columbia Analytical Services (CAS) laboratory from the field had high cooler temperatures for all samples, which were 11°C, 13°C, and 14°C. The high cooler temperatures were acceptable because the samples were delivered to the laboratory the day of sampling via a courier, and would not have time to cool to the required temperatures of 4°C ± 2°C. The Ogden field generated COCs noted no problems and had all applicable information provided requesting method 1613B. All other sample receipt conditions at CAS were acceptable. The shipment of the samples from CAS to Alta also had high cooler temperatures of 7°C and 10°C upon receipt. All samples were shipped overnight with blue ice via FedEx to Alta.	No qualifications were required due to the nonvolatile nature of the samples.

1. <u>Sample Management (cont)</u>	The sample containers and cooler were noted as not having custody seals present upon arrival from Columbia. No other information from CAS regarding the samples were provided to Alta. The case narrative provided by CAS noted that the dioxins were analyzed under EPA method 8290. The Dioxin analyses were initially analyzed by method 1613A. The data were reprocessed by Method 1613B protocols and were resubmitted.	
4. <u>Method Blanks</u>	The method blank had nondetects for all compounds.	No qualifications were required.
5. <u>LCS/BS</u>	The %Rs for all compounds were acceptable.	No qualifications were required.
6. <u>MS/MSDs</u>	No MS/MSD was performed with this SDG.	No qualifications were required.
7. <u>Field QC Samples</u> ER: RH018, RH037 (L9801906) FB: RH008, RH020 (L9801906) Field Duplicates: None	Both equipment rinsates had nondetects for all compounds. RH008 had nondetects for all compounds. RH020 had three detects for OCDD, 1,2,3,4,6,7,8-HpCDF, and total HpCDF. N/A	No qualifications were required. Sample RH030 had the compounds OCDD and Total HpCDF qualified "J" for the field blank detect. OCDD was qualified "J" in samples RH031, RH032, RH033, and RH036 due to the field blank detect. No other qualifications were required. N/A
9. <u>Surrogates/Internal Standards</u>	The internal standards and surrogates had acceptable %R values.	No qualifications were required.



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH002
Lab ID: 5072-0002-SA
Matrix: Soil
% Solids: 65

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 11.81 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	1.3				U	
Total TCDD	ND	1.3					
1,2,3,7,8-PeCDD	ND	6.5					
Total PeCDD	ND	6.5					
1,2,3,4,7,8-HxCDD	ND	6.5					
1,2,3,6,7,8-HxCDD	ND	6.5					
1,2,3,7,8,9-HxCDD	ND	6.5					
Total HxCDD	ND	6.5					
1,2,3,4,6,7,8-HpCDD	ND	6.5					
Total HpCDD	ND	6.5					
OCDD	16	13	0.90	>10:1			
2,3,7,8-TCDF	ND	1.3				U	
Total TCDF	ND	1.3					
1,2,3,7,8-PeCDF	ND	6.5					
2,3,4,7,8-PeCDF	ND	6.5					
Total PeCDF	ND	6.5					
1,2,3,4,7,8-HxCDF	ND	6.5					
1,2,3,6,7,8-HxCDF	ND	6.5					
2,3,4,6,7,8-HxCDF	ND	6.5					
1,2,3,7,8,9-HxCDF	ND	6.5					
Total HxCDF	ND	6.5					
1,2,3,4,6,7,8-HpCDF	ND	6.5					
1,2,3,4,7,8,9-HpCDF	ND	6.5					
Total HpCDF	ND	6.5					
OCDF	ND	13					

Analyst: AM

Page 1 of 2

Reviewer: AM

OGDEN VALIDATED LEVEL V



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH003
Lab ID: 5072-0003-SA
Matrix: Soil
% Solids: 95

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 10.57 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	1.0				U	
Total TCDD	ND	1.0					
1,2,3,7,8-PeCDD	ND	5.0					
Total PeCDD	ND	5.0					
1,2,3,4,7,8-HxCDD	ND	5.0					
1,2,3,6,7,8-HxCDD	ND	5.0					
1,2,3,7,8,9-HxCDD	ND	5.0					
Total HxCDD	ND	5.0					
1,2,3,4,6,7,8-HpCDD	ND	5.0					
Total HpCDD	ND	5.0					
OCDD	ND	10					
2,3,7,8-TCDF	ND	1.0					
Total TCDF	ND	1.0					
1,2,3,7,8-PeCDF	ND	5.0					
2,3,4,7,8-PeCDF	ND	5.0					
Total PeCDF	ND	5.0					
1,2,3,4,7,8-HxCDF	ND	5.0					
1,2,3,6,7,8-HxCDF	ND	5.0					
2,3,4,6,7,8-HxCDF	ND	5.0					
1,2,3,7,8,9-HxCDF	ND	5.0					
Total HxCDF	ND	5.0					
1,2,3,4,6,7,8-HpCDF	ND	5.0					
1,2,3,4,7,8,9-HpCDF	ND	5.0					
Total HpCDF	ND	5.0					
OCDF	ND	10					

Analyst: AY

Page 1 of 2

Reviewer: [Signature]

OGDEN VALIDATED LEVEL V

**PCDD & PCDF
EPA METHOD 1613B**

Sample ID: RH004
Lab ID: 5072-0004-SA
Matrix: Soil
% Solids: 25

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 10.57 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	1.0				U	
Total TCDD	ND	1.0					
1,2,3,7,8-PeCDD	ND	5.0					
Total PeCDD	ND	5.0					
1,2,3,4,7,8-HxCDD	ND	5.0					
1,2,3,6,7,8-HxCDD	ND	5.0					
1,2,3,7,8,9-HxCDD	ND	5.0					
Total HxCDD	ND	5.0					
1,2,3,4,6,7,8-HpCDD	ND	5.0				U	
Total HpCDD	ND 6.2	5.0	1.02	>10:1			-
OCDD	44	10	0.90	>10:1			
2,3,7,8-TCDF	ND	1.0				U	
Total TCDF	ND	1.0					
1,2,3,7,8-PeCDF	ND	5.0					
2,3,4,7,8-PeCDF	ND	5.0					
Total PeCDF	ND	5.0					
1,2,3,4,7,8-HxCDF	ND	5.0					
1,2,3,6,7,8-HxCDF	ND	5.0					
2,3,4,6,7,8-HxCDF	ND	5.0					
1,2,3,7,8,9-HxCDF	ND	5.0					
Total HxCDF	ND	5.0					
1,2,3,4,6,7,8-HpCDF	ND	5.0					
1,2,3,4,7,8,9-HpCDF	ND	5.0					
Total HpCDF	ND	5.0					
OCDF	ND	10				U	

Analyst: GM

Page 1 of 2

Reviewer: MF

OGDEN VALIDATED

LEVEL V



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH005
Lab ID: 5072-0005-SA
Matrix: Soil
% Solids: 86

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 11.73 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	0.99				U	
Total TCDD	ND	0.99					
1,2,3,7,8-PeCDD	ND	4.9					
Total PeCDD	ND	4.9					
1,2,3,4,7,8-HxCDD	ND	4.9					
1,2,3,6,7,8-HxCDD	ND	4.9					
1,2,3,7,8,9-HxCDD	ND	4.9					
Total HxCDD	ND	4.9					
1,2,3,4,6,7,8-HpCDD	8.4	4.9	1.05	>10:1			
Total HpCDD	17	4.9	1.18	>10:1			
OCDD	100	9.9	0.89	>10:1			
2,3,7,8-TCDF	ND	0.99				U	
Total TCDF	1.6	0.99	0.78	>10:1			
1,2,3,7,8-PeCDF	ND	4.9				U	
2,3,4,7,8-PeCDF	ND	4.9					
Total PeCDF	ND	4.9					
1,2,3,4,7,8-HxCDF	ND	4.9					
1,2,3,6,7,8-HxCDF	ND	4.9					
2,3,4,6,7,8-HxCDF	ND	4.9					
1,2,3,7,8,9-HxCDF	ND	4.9					
Total HxCDF	ND	4.9					
1,2,3,4,6,7,8-HpCDF	ND	4.9					
1,2,3,4,7,8,9-HpCDF	ND	4.9					
Total HpCDF	ND 5.7	4.9	0.99	>10:1			-
OCDF	ND	9.9				U	

KM
9-3-98

Analyst: [Signature]

Page 1 of 2

Reviewer: [Signature]

OGDEN VALIDATED
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OGDEN VAL

LEVEL V



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH006
Lab ID: 5072-0006-SA
Matrix: Soil
% Solids: 88

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 11.44 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	0.99				U	
Total TCDD	ND	0.99					
1,2,3,7,8-PeCDD	ND	5.0					
Total PeCDD	ND	5.0					
1,2,3,4,7,8-HxCDD	ND	5.0					
1,2,3,6,7,8-HxCDD	ND	5.0					
1,2,3,7,8,9-HxCDD	ND	5.0					
Total HxCDD	ND	5.0					
1,2,3,4,6,7,8-HpCDD	ND	5.0					
Total HpCDD	ND	5.0					
OCDD	15	9.9	0.93	>10:1			
2,3,7,8-TCDF	ND	0.99				U	
Total TCDF	ND 5.3	0.99	0.82	>10:1			-
1,2,3,7,8-PeCDF	ND	5.0				U	
2,3,4,7,8-PeCDF	ND	5.0				U	
Total PeCDF	ND 6.4	5.0	1.40	>10:1			-
1,2,3,4,7,8-HxCDF	ND	5.0					
1,2,3,6,7,8-HxCDF	ND	5.0					
2,3,4,6,7,8-HxCDF	ND	5.0					
1,2,3,7,8,9-HxCDF	ND	5.0					
Total HxCDF	ND	5.0					
1,2,3,4,6,7,8-HpCDF	ND	5.0					
1,2,3,4,7,8,9-HpCDF	ND	5.0					
Total HpCDF	ND	5.0					
OCDF	ND	9.9					

Analyst: SL

Page 1 of 2

Reviewer: SL

OGDEN VALIDATED

LEVEL V



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH007
Lab ID: 5072-0007-SA
Matrix: Soil
% Solids: 21

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 11.03 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	1.0				U	
Total TCDD	ND	1.0					
1,2,3,7,8-PeCDD	ND	5.0					
Total PeCDD	ND	5.0					
1,2,3,4,7,8-HxCDD	ND	5.0					
1,2,3,6,7,8-HxCDD	ND	5.0					
1,2,3,7,8,9-HxCDD	ND	5.0					
Total HxCDD	ND	5.0					
1,2,3,4,6,7,8-HpCDD	ND	5.0					
Total HpCDD	ND	5.0					
OCDD	ND	10					
2,3,7,8-TCDF	ND	1.0					
Total TCDF	ND	1.0					
1,2,3,7,8-PeCDF	ND	5.0					
2,3,4,7,8-PeCDF	ND	5.0					
Total PeCDF	ND	5.0					
1,2,3,4,7,8-HxCDF	ND	5.0					
1,2,3,6,7,8-HxCDF	ND	5.0					
2,3,4,6,7,8-HxCDF	ND	5.0					
1,2,3,7,8,9-HxCDF	ND	5.0					
Total HxCDF	ND	5.0					
1,2,3,4,6,7,8-HpCDF	ND	5.0					
1,2,3,4,7,8,9-HpCDF	ND	5.0					
Total HpCDF	ND	5.0					
OCDF	ND	10					

Analyst: SL

Page 1 of 2

Reviewer: MP

OGDEN VALIDATED

LEVEL V



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH021
Lab ID: 5072-0008-SA
Matrix: Soil
% Solids: 92

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 11.02 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	0.99				U	
Total TCDD	ND	0.99					
1,2,3,7,8-PeCDD	ND	5.0					
Total PeCDD	ND	5.0					
1,2,3,4,7,8-HxCDD	ND	5.0					
1,2,3,6,7,8-HxCDD	ND	5.0					
1,2,3,7,8,9-HxCDD	ND	5.0					
Total HxCDD	ND	5.0					
1,2,3,4,6,7,8-HpCDD	6.4	5.0	1.02	>10:1			
Total HpCDD	12	5.0	1.19	>10:1			
OCDD	69	9.9	0.89	>10:1			
2,3,7,8-TCDF	ND	0.99				U	
Total TCDF	ND	0.99					
1,2,3,7,8-PeCDF	ND	5.0					
2,3,4,7,8-PeCDF	ND	5.0					
Total PeCDF	ND	5.0					
1,2,3,4,7,8-HxCDF	ND	5.0					
1,2,3,6,7,8-HxCDF	ND	5.0					
2,3,4,6,7,8-HxCDF	ND	5.0					
1,2,3,7,8,9-HxCDF	ND	5.0					
Total HxCDF	ND	5.0					
1,2,3,4,6,7,8-HpCDF	ND	5.0					
1,2,3,4,7,8,9-HpCDF	ND	5.0					
Total HpCDF	ND 5.6	5.0	0.92	>10:1			
OCDF	ND	9.9				U	

Analyst: KM

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Reviewer: CV

OGDEN VALIDATED LEVEL V



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH025
Lab ID: 5072-0001-SA
Matrix: Soil
% Solids: 87

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 11.62 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Lab Qual	Qual Code
2,3,7,8-TCDD	ND	0.99				U	
Total TCDD	ND	0.99					
1,2,3,7,8-PeCDD	ND	4.9					
Total PeCDD	ND	4.9					
1,2,3,4,7,8-HxCDD	ND	4.9					
1,2,3,6,7,8-HxCDD	ND	4.9					
1,2,3,7,8,9-HxCDD	ND	4.9					
Total HxCDD	ND	4.9					
1,2,3,4,6,7,8-HpCDD	ND	4.9					
Total HpCDD	ND	4.9					
OCDD	11	9.9	0.85	>10:1			
2,3,7,8-TCDF	ND	0.99				U	
Total TCDF	ND	0.99					
1,2,3,7,8-PeCDF	ND	4.9					
2,3,4,7,8-PeCDF	ND	4.9					
Total PeCDF	ND	4.9					
1,2,3,4,7,8-HxCDF	ND	4.9					
1,2,3,6,7,8-HxCDF	ND	4.9					
2,3,4,6,7,8-HxCDF	ND	4.9					
1,2,3,7,8,9-HxCDF	ND	4.9					
Total HxCDF	ND	4.9					
1,2,3,4,6,7,8-HpCDF	ND	4.9					
1,2,3,4,7,8,9-HpCDF	ND	4.9					
Total HpCDF	ND	4.9					
OCDF	ND	9.9					

Analyst: RJ

Page 1 of 2

Reviewer: AV

OGDEN VALIDATED

LEVEL V



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH026
Lab ID: 5072-0009-SA
Matrix: Soil
% Solids: 97

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 10.37 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Anal	Qual Code
2,3,7,8-TCDD	ND	0.99				U	
Total TCDD	ND	0.99					
1,2,3,7,8-PeCDD	ND	5.0					
Total PeCDD	ND	5.0					
1,2,3,4,7,8-HxCDD	ND	5.0					
1,2,3,6,7,8-HxCDD	ND	5.0					
1,2,3,7,8,9-HxCDD	ND	5.0					
Total HxCDD	ND	5.0					
1,2,3,4,6,7,8-HpCDD	ND	5.0					
Total HpCDD	ND	5.0					
OCDD	ND	9.9					
2,3,7,8-TCDF	ND	0.99					
Total TCDF	ND	0.99					
1,2,3,7,8-PeCDF	ND	5.0					
2,3,4,7,8-PeCDF	ND	5.0					
Total PeCDF	ND	5.0					
1,2,3,4,7,8-HxCDF	ND	5.0					
1,2,3,6,7,8-HxCDF	ND	5.0					
2,3,4,6,7,8-HxCDF	ND	5.0					
1,2,3,7,8,9-HxCDF	ND	5.0					
Total HxCDF	ND	5.0					
1,2,3,4,6,7,8-HpCDF	ND	5.0					
1,2,3,4,7,8,9-HpCDF	ND	5.0					
Total HpCDF	ND	5.0					
OCDF	ND	9.9					

Analyst: by

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Reviewer: MS

OGDEN VALIDATED LEVEL V



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH030
Lab ID: 5072-0011-SA
Matrix: Soil
% Solids: 85

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 11.88 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	D.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	0.99				U	
Total TCDD	ND	0.99					
1,2,3,7,8-PeCDD	ND	5.0					
Total PeCDD	ND	5.0					
1,2,3,4,7,8-HxCDD	ND	5.0					
1,2,3,6,7,8-HxCDD	ND	5.0					
1,2,3,7,8,9-HxCDD	ND	5.0					
Total HxCDD	ND 6.1	5.0	1.33	>10:1			-
1,2,3,4,6,7,8-HpCDD	12	5.0	1.06	>10:1			
Total HpCDD	23	5.0	1.09	>10:1			
OCDD	150	9.9	0.93	>10:1		J	F
2,3,7,8-TCDF	ND	0.99				U	
Total TCDF	ND	0.99					
1,2,3,7,8-PeCDF	ND	5.0					
2,3,4,7,8-PeCDF	ND	5.0					
Total PeCDF	ND	5.0					
1,2,3,4,7,8-HxCDF	ND	5.0					
1,2,3,6,7,8-HxCDF	ND	5.0					
2,3,4,6,7,8-HxCDF	ND	5.0					
1,2,3,7,8,9-HxCDF	ND	5.0					
Total HxCDF	ND 7.5	5.0	1.41	>10:1			-
1,2,3,4,6,7,8-HpCDF	ND	5.0				U	
1,2,3,4,7,8,9-HpCDF	ND	5.0				U	
Total HpCDF	7.1	5.0	1.04	>10:1	D	J	*10, F
OCDF	ND	9.9				U	

Analyst: LM

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Reviewer: [Signature]

KM
9.3.98

OGDEN VALIDATED LEVEL V

PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH031
Lab ID: 5072-0012-SA
Matrix: Soil
% Solids: 84

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 12.07 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	0.99				U	
Total TCDD	ND	0.99				U	
1,2,3,7,8-PeCDD	ND	4.9				U	
Total PeCDD	ND	4.9				U	
1,2,3,4,7,8-HxCDD	ND	4.9				U	
1,2,3,6,7,8-HxCDD	ND	4.9				U	
1,2,3,7,8,9-HxCDD	ND	4.9				U	
km Total HxCDD	ND 5.4	4.9	1.39	>10:1			-
1,2,3,4,6,7,8-HpCDD	12	4.9	1.06	>10:1			
Total HpCDD	25	4.9	1.09	>10:1			
OCDD	190	9.9	0.91	>10:1		J	F
2,3,7,8-TCDF	ND	0.99				U	
Total TCDF	2.2	0.99	0.66	>10:1		U	
1,2,3,7,8-PeCDF	ND	4.9				U	
2,3,4,7,8-PeCDF	ND	4.9				U	
Total PeCDF	ND	4.9				U	
1,2,3,4,7,8-HxCDF	ND	4.9				U	
1,2,3,6,7,8-HxCDF	ND	4.9				U	
2,3,4,6,7,8-HxCDF	ND	4.9				U	
1,2,3,7,8,9-HxCDF	ND	4.9				U	
km Total HxCDF	ND 5.8	4.9	1.31	>10:1	D	J	*10, -
1,2,3,4,6,7,8-HpCDF	ND	4.9				U	
1,2,3,4,7,8,9-HpCDF	ND	4.9				U	
km Total HpCDF	ND 7.1	4.9	0.94	>10:1	D	J	*10, -
OCDF	ND	9.9				U	

Analyst: RH

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Reviewer: [Signature]

km
9.3-98

OGDEN VALIDATED LEVEL V



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH032
Lab ID: 5072-0013-SA
Matrix: Soil
% Solids: 82

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 12.26 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	1.0				U	
Total TCDD	ND	1.0					
1,2,3,7,8-PeCDD	ND	5.0					
Total PeCDD	ND	5.0					
1,2,3,4,7,8-HxCDD	ND	5.0					
1,2,3,6,7,8-HxCDD	ND	5.0					
1,2,3,7,8,9-HxCDD	ND	5.0					
Total HxCDD	ND	5.0					
1,2,3,4,6,7,8-HpCDD	ND	5.0					
Total HpCDD	ND 9.7	5.0	1.03	>10:1			-
OCDD	93	10	0.90	>10:1		J	F
2,3,7,8-TCDF	ND	1.0				U	
Total TCDF	ND	1.0					
1,2,3,7,8-PeCDF	ND	5.0					
2,3,4,7,8-PeCDF	ND	5.0					
Total PeCDF	ND	5.0					
1,2,3,4,7,8-HxCDF	ND	5.0					
1,2,3,6,7,8-HxCDF	ND	5.0					
2,3,4,6,7,8-HxCDF	ND	5.0					
1,2,3,7,8,9-HxCDF	ND	5.0					
Total HxCDF	ND	5.0					
1,2,3,4,6,7,8-HpCDF	ND	5.0					
1,2,3,4,7,8,9-HpCDF	ND	5.0					
Total HpCDF	ND	5.0					
OCDF	ND	10					

Analyst: SL

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Reviewer: SL

LEVEL V

OGDEN VALIDATED
OGDEN VAL

PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH033
Lab ID: 5072-0014-SA
Matrix: Soil
% Solids: 90

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 11.21 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	D.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	1.0				U	
Total TCDD	ND	1.0					
1,2,3,7,8-PeCDD	ND	5.0					
Total PeCDD	ND	5.0					
1,2,3,4,7,8-HxCDD	ND	5.0					
1,2,3,6,7,8-HxCDD	ND	5.0					
1,2,3,7,8,9-HxCDD	ND	5.0					
Total HxCDD	ND	5.0					
1,2,3,4,6,7,8-HpCDD	ND	5.0				U	
Total HpCDD	ND	5.0					
OCDD	46	10	0.89	>10:1		J	F
2,3,7,8-TCDF	ND	1.0				U	
Total TCDF	ND 3.1	1.0	0.73	>10:1	D	J	—, *10
1,2,3,7,8-PeCDF	ND	5.0				U	
2,3,4,7,8-PeCDF	ND	5.0					
Total PeCDF	ND	5.0					
1,2,3,4,7,8-HxCDF	ND	5.0					
1,2,3,6,7,8-HxCDF	ND	5.0					
2,3,4,6,7,8-HxCDF	ND	5.0					
1,2,3,7,8,9-HxCDF	ND	5.0					
Total HxCDF	ND	5.0					
1,2,3,4,6,7,8-HpCDF	ND	5.0					
1,2,3,4,7,8,9-HpCDF	ND	5.0					
Total HpCDF	ND	5.0					
OCDF	ND	10				U	

KM
9.3.98

Analyst: AK

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Reviewer: R

LEVEL V

OGDEN VALIDATED

PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH036
Lab ID: 5072-0015-SA
Matrix: Soil
% Solids: 25

Date Received: 6/18/98
Date Extracted: 6/30/98
Sample Amount: 10.60 g

QC Lot: LC0630S
Units: pg/g

Compound	Conc.	R.L	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	0.99				U	
Total TCDD	ND	0.99					
1,2,3,7,8-PeCDD	ND	5.0					
Total PeCDD	ND	5.0					
1,2,3,4,7,8-HxCDD	ND	5.0					
1,2,3,6,7,8-HxCDD	ND	5.0					
1,2,3,7,8,9-HxCDD	ND	5.0					
Total HxCDD	ND	5.0					
1,2,3,4,6,7,8-HpCDD	ND	5.0					
Total HpCDD	ND	5.0					
OCDD	17	9.9	0.94	>10:1		J	F
2,3,7,8-TCDF	ND	0.99				U	
Total TCDF	ND	0.99					
1,2,3,7,8-PeCDF	ND	5.0					
2,3,4,7,8-PeCDF	ND	5.0					
Total PeCDF	ND	5.0					
1,2,3,4,7,8-HxCDF	ND	5.0					
1,2,3,6,7,8-HxCDF	ND	5.0					
2,3,4,6,7,8-HxCDF	ND	5.0					
1,2,3,7,8,9-HxCDF	ND	5.0					
Total HxCDF	ND	5.0					
1,2,3,4,6,7,8-HpCDF	ND	5.0					
1,2,3,4,7,8,9-HpCDF	ND	5.0					
Total HpCDF	ND	5.0					
OCDF	ND	9.9					

Analyst: gll

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Reviewer: 4

OGDEN VALIDATED

LEVEL V



ENVIRONMENTAL AND ENERGY SERVICES

550 South Wadsworth Blvd. Suite. 500
Lakewood, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 1613B

No. of Samples: 4

Date Reviewed: 08/24/98

Reviewer: K. McNeill

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994), Alta Analytical Laboratory Analytical Procedure for Polychlorinated Dibenzo Dioxins/Furans USEPA Method 1613B (Revision 1, 2/10/98), and USEPA Method 1613 Revision B (10/94).

SDG: L9801906

Samples Reviewed: RH008, RH018, RH020, and RH037.

Matrix: Water

EPA Level V- Dioxin/Furan Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	The D/F analyses were subcontracted to Alta Analytical. The sample shipment to Columbia Analytical Services (CAS) laboratory from the field had high cooler temperatures for RH018 (13°C), RH020 (7°C), and RH037 (17°C). Sample RH008 had an acceptable cooler temperature. The high cooler temperatures were acceptable because the samples were delivered to the laboratory the day of sampling via a courier, and would not have time to cool to required temperatures of 4°C ± 2°C. All other sample receipt conditions at CAS were acceptable.	No qualifications were required.

1. <u>Sample Management (cont)</u>	The shipment of the samples from CAS to Alta also had high cooler temperatures upon receipt. Sample RH008 was received at 10°C. Samples RH018, RH020, and RH037 were received at 7°C. All samples were shipped overnight via FedEx. The original COCs noted no problems and had all applicable information provided. Samples RH008 and RH018 also had a acceptable transfer COC, generated by CAS for shipment to Alta. The COC requested the correct method and no discrepancies were noted. Samples RH020 and RH037 did not have a transfer COC from CAS. The signed sample receipt log was sent to Alta, requesting only "Dioxins" for the two samples. No other information from CAS regarding sample RH020 and RH037 was provided. The case narrative provided by CAS noted that the dioxins were analyzed under EPA method 8290. The Dioxin analyses were initially analyzed under method 1613A, but were reprocessed and resubmitted following Method 1613B protocols.	
4. <u>Method Blanks</u>	The method blank had nondetects for all compounds.	No qualifications were required.
5. <u>LCS/BS</u>	The %Rs and RPDs were acceptable.	No qualifications were required.
6. <u>MS/MSDs</u>	No MS/MSD was performed with this SDG.	No qualifications were required.
7. <u>Field QC Samples</u> ER: None FB: RH008, RH020 Field Duplicates: None	a) N/A b) RH008 had nondetects for all compounds. RH020 had three detects, but they were not detected in the associated sample. c) N/A	a) N/A b) No qualifications were required. c) N/A

9. <u>Surrogates/Internal Standards</u>	The internal standards had acceptable %R values. Surrogates are not applicable.	No qualifications were required.
10. <u>Other</u>	The cleanup recovery standard had acceptable recoveries for all samples.	No qualifications were required.
11. <u>Comments</u>	N/A	N/A

**PCDD & PCDF
EPA METHOD 1613B**

Sample ID: RH008
Lab ID: 5071-0003-SA
Matrix: Aqueous

Date Received: 6/21/98
Date Extracted: 6/22/98
Sample Amount: 0.724 L

QC Lot: LC0622A
Units: pg/L

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N</u> <u>Ratio</u>	<u>Qualifier</u>	<u>Rev</u> <u>Qual</u>	<u>Qual</u> <u>Code</u>
2,3,7,8-TCDD	ND	14				U	
Total TCDD	ND	69					
1,2,3,7,8-PeCDD	ND	69					
Total PeCDD	ND	69					
1,2,3,4,7,8-HxCDD	ND	69					
1,2,3,6,7,8-HxCDD	ND	69					
1,2,3,7,8,9-HxCDD	ND	69					
Total HxCDD	ND	69					
1,2,3,4,6,7,8-HpCDD	ND	69					
Total HpCDD	ND	69					
OCDD	ND	138					
2,3,7,8-TCDF	ND	14					
Total TCDF	ND	69					
1,2,3,7,8-PeCDF	ND	69					
2,3,4,7,8-PeCDF	ND	69					
Total PeCDF	ND	69					
1,2,3,4,7,8-HxCDF	ND	69					
1,2,3,6,7,8-HxCDF	ND	69					
2,3,4,6,7,8-HxCDF	ND	69					
1,2,3,7,8,9-HxCDF	ND	69					
Total HxCDF	ND	69					
1,2,3,4,6,7,8-HpCDF	ND	69					
1,2,3,4,7,8,9-HpCDF	ND	69					
Total HpCDF	ND	69					
OCDF	ND	138				U	

Analyst: W/2

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Reviewer: SM

LEVEL V

OGDEN VALIDATED

**PCDD & PCDF
EPA METHOD 1613B**

Sample ID: RH018
Lab ID: 5071-0004-SA
Matrix: Aqueous

Date Received: 6/18/98
Date Extracted: 6/22/98
Sample Amount: 1.002 L

QC Lot: LC0622A
Units: pg/L

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N</u> <u>Ratio</u>	<u>Qualifier</u>	<u>Rev</u> <u>Qual</u>	<u>Qual</u> <u>Code</u>
2,3,7,8-TCDD	ND	10				U	
Total TCDD	ND	50					
1,2,3,7,8-PeCDD	ND	50					
Total PeCDD	ND	50					
1,2,3,4,7,8-HxCDD	ND	50					
1,2,3,6,7,8-HxCDD	ND	50					
1,2,3,7,8,9-HxCDD	ND	50					
Total HxCDD	ND	50					
1,2,3,4,6,7,8-HpCDD	ND	50					
Total HpCDD	ND	50					
OCDD	ND	100					
2,3,7,8-TCDF	ND	10					
Total TCDF	ND	50					
1,2,3,7,8-PeCDF	ND	50					
2,3,4,7,8-PeCDF	ND	50					
Total PeCDF	ND	50					
1,2,3,4,7,8-HxCDF	ND	50					
1,2,3,6,7,8-HxCDF	ND	50					
2,3,4,6,7,8-HxCDF	ND	50					
1,2,3,7,8,9-HxCDF	ND	50					
Total HxCDF	ND	50					
1,2,3,4,6,7,8-HpCDF	ND	50					
1,2,3,4,7,8,9-HpCDF	ND	50					
Total HpCDF	ND	50					
OCDF	ND	100				U	

Analyst: [Signature]

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Reviewer: [Signature]

LEVEL V

OGDEN VALIDATED

PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH020
Lab ID: 5071-0001-SA
Matrix: Aqueous

Date Received: 6/18/98
Date Extracted: 6/22/98
Sample Amount: 1.007 L

QC Lot: LC0622A
Units: pg/L

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N Ratio</u>	<u>Qualifier</u>	<u>Rev Qual</u>	<u>Qual Code</u>
2,3,7,8-TCDD	ND	9.9				U	
Total TCDD	ND	50					
1,2,3,7,8-PeCDD	ND	50					
Total PeCDD	ND	50					
1,2,3,4,7,8-HxCDD	ND	50					
1,2,3,6,7,8-HxCDD	ND	50					
1,2,3,7,8,9-HxCDD	ND	50					
Total HxCDD	ND	50					
1,2,3,4,6,7,8-HpCDD	ND	50					
Total HpCDD	ND	50					
OCDD	300	99	0.92	>10:1			
2,3,7,8-TCDF	ND	9.9				U	
Total TCDF	ND	50					
1,2,3,7,8-PeCDF	ND	50					
2,3,4,7,8-PeCDF	ND	50					
Total PeCDF	ND	50					
1,2,3,4,7,8-HxCDF	ND	50					
1,2,3,6,7,8-HxCDF	ND	50					
2,3,4,6,7,8-HxCDF	ND	50					
1,2,3,7,8,9-HxCDF	ND	50					
Total HxCDF	ND	50					
1,2,3,4,6,7,8-HpCDF	55	50	1.07	>10:1			
1,2,3,4,7,8,9-HpCDF	ND	50				U	
Total HpCDF	55	50	1.07	>10:1			
OCDF	ND	99				U	

Analyst: MZ

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Reviewer: 8/24

LEVEL V

OGDEN VALIDATED

**PCDD & PCDF
EPA METHOD 1613B**

Sample ID: RH037
Lab ID: 5071-0002-SA
Matrix: Aqueous

Date Received: 6/18/98
Date Extracted: 6/22/98
Sample Amount: 1.022 L

QC Lot: LC0622A
Units: pg/L

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N</u> <u>Ratio</u>	<u>Qualifier</u>	<u>Rev</u> <u>Qual</u>	<u>Qual</u> <u>Code</u>
2,3,7,8-TCDD	ND	9.8				U	
Total TCDD	ND	49					
1,2,3,7,8-PeCDD	ND	49					
Total PeCDD	ND	49					
1,2,3,4,7,8-HxCDD	ND	49					
1,2,3,6,7,8-HxCDD	ND	49					
1,2,3,7,8,9-HxCDD	ND	49					
Total HxCDD	ND	49					
1,2,3,4,6,7,8-HpCDD	ND	49					
Total HpCDD	ND	49					
OCDD	ND	98					
2,3,7,8-TCDF	ND	9.8					
Total TCDF	ND	49					
1,2,3,7,8-PeCDF	ND	49					
2,3,4,7,8-PeCDF	ND	49					
Total PeCDF	ND	49					
1,2,3,4,7,8-HxCDF	ND	49					
1,2,3,6,7,8-HxCDF	ND	49					
2,3,4,6,7,8-HxCDF	ND	49					
1,2,3,7,8,9-HxCDF	ND	49					
Total HxCDF	ND	49					
1,2,3,4,6,7,8-HpCDF	ND	49					
1,2,3,4,7,8,9-HpCDF	ND	49					
Total HpCDF	ND	49					
OCDF	ND	98				U	

Analyst: MF

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Reviewer: RM

LEVEL V

OGDEN VALIDATED



ENVIRONMENTAL AND ENERGY SERVICES

550 South Wadsworth Blvd. Ste. 500
Lakewood, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 1613B

No. of Samples: 12

Date Reviewed: 08/31/98

Reviewer: K. McNeill

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994), Alta Analytical Laboratory Analytical Procedure for Polychlorinated Dibenzo Dioxins/Furans USEPA Method 1613B (Revision 1, 2/10/98), and USEPA Method 1613 Revision B (10/94).

SDG: L9801914

Samples Reviewed: RH011, RH012, RH013, RH014, RH015, RH016, RH041, RH046, RH047, RH048.

Matrix: Soil

EPA Level V- Dioxin/Furan Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	The D/F analyses were subbed to Alta Analytical Laboratories. The samples arrived at Columbia Analytical Services (CAS) with cooler temperatures of 4°C and 13°C. The high cooler temperatures were acceptable because the samples were delivered to the laboratory the day of sampling via a courier, and would not have time to cool to the required temperatures of 4°C ± 2°C. All other sample receipt conditions at CAS were acceptable. Custody seals were not required from the field to CAS because the samples were delivered directly to the laboratory. The shipment of the samples from CAS to Alta also had high cooler temperatures of 7°C and 10°C upon receipt. Custody seals were absent on the samples and coolers from Columbia. All samples were shipped overnight via FedEx.	No qualifications were required due to the nonvolatile nature of the samples.

	The samples did not have a transfer COC from CAS. The signed sample receipt log was sent to Alta, signed by Alta requesting only "Dioxins" for the samples. No other information from CAS regarding samples were provided. The case narrative provided by CAS noted that the dioxins were analyzed under EPA Method 8290. The Dioxin analyses were initially analyzed under Method 1613A. The samples were reprocessed by Method 1613B protocols.	
4. <u>Method Blanks</u>	The method blank had nondetects for all compounds.	No qualifications were required.
5. <u>LCS/BS</u>	The LCS had acceptable recoveries for all spiked compounds.	No qualifications were required.
9. <u>Surrogates/Internal Standards</u>	All samples had acceptable internal standard recoveries. Surrogates were not applicable.	No qualifications were required.
6. <u>MS/MSDs</u>	No MS/MSD were performed with this SDG.	None
7. <u>Field QC Samples</u> ER: RH018, RH037 (L9801906) FB: RH008, RH020 (L9801906) Field Duplicates: RH047/RH048	Both equipment rinsates, RH018 and RH037, had nondetects for all compounds. The field blank RH008 had nondetects for all compounds. Field blank RH020 had three detects for OCDD, total HpCDF, and 1,2,3,4,6,7,8-HpCDF. Both samples had nondetects for all compounds.	None OCDD was qualified "J" in sample RH048. No other qualifications were required. N/A

10. <u>Other</u>	False negatives were reported in samples RH011 (Total HpCDD), RH016 (Total HpCDF), RH014 (Total HpCDD), and RH048 (OCDD). The compounds listed above were reported on the initial 1613A analysis, but were not reported on the 1613B analysis when the SDG was resubmitted.	The associated form Is were corrected to report the missing compounds.
11. <u>Comments</u>	No transfer COCs were included from Columbia Analytical Services to Alta Analytical laboratory, only the laboratories signed internal log-in sheet was provided. No analytical method for the dioxins analyses were specified, only "dioxins" was requested. The COC from the field requested EPA method 1613B.	

PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH011
Lab ID: 5073-0001-SA
Matrix: Soil
% Solids: 62

Date Received: 6/18/98
Date Extracted: 7/1/98
Sample Amount: 2.62 g

QC Lot: LC0701S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Anal	Qual Code
2,3,7,8-TCDD	ND	6.1				U	
Total TCDD	ND	6.1					
1,2,3,7,8-PeCDD	ND	31					
Total PeCDD	ND	31					
1,2,3,4,7,8-HxCDD	ND	31					
1,2,3,6,7,8-HxCDD	ND	31					
1,2,3,7,8,9-HxCDD	ND	31					
Total HxCDD	ND	31					
1,2,3,4,6,7,8-HpCDD	ND	31					
Total HpCDD	ND 55	31	1.09	>10:1			-
OCDD	320	61	0.92	>10:1			
2,3,7,8-TCDF	ND	6.1				U	
Total TCDF	ND	6.1					
1,2,3,7,8-PeCDF	ND	31					
2,3,4,7,8-PeCDF	ND	31					
Total PeCDF	ND	31					
1,2,3,4,7,8-HxCDF	ND	31					
1,2,3,6,7,8-HxCDF	ND	31					
2,3,4,6,7,8-HxCDF	ND	31					
1,2,3,7,8,9-HxCDF	ND	31					
Total HxCDF	ND	31					
1,2,3,4,6,7,8-HpCDF	ND	31					
1,2,3,4,7,8,9-HpCDF	ND	31					
Total HpCDF	ND	31					
OCDF	ND	61					

Analyst: PL

Reviewer: [Signature]

LEVEL V

OGDEN VALIDATED

**PCDD & PCDF
EPA METHOD 1613B**

Sample ID: RH012
Lab ID: 5073-0002-SA
Matrix: Soil
% Solids: 81

Date Received: 6/18/98
Date Extracted: 7/1/98
Sample Amount: 5.23 g

QC Lot: LC0701S
Units: pg/g

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N Ratio</u>	<u>Qualifier</u>	<u>Per Qual</u>	<u>Qual Code</u>
2,3,7,8-TCDD	ND	2.4				U	
Total TCDD	ND	2.4					
1,2,3,7,8-PeCDD	ND	12					
Total PeCDD	ND	12					
1,2,3,4,7,8-HxCDD	ND	12					
1,2,3,6,7,8-HxCDD	ND	12					
1,2,3,7,8,9-HxCDD	ND	12					
Total HxCDD	ND	12					
1,2,3,4,6,7,8-HpCDD	ND	12					
Total HpCDD	ND	12					
OCDD	47	24	0.93	>10:1			
2,3,7,8-TCDF	ND	2.4				U	
Total TCDF	ND	2.4					
1,2,3,7,8-PeCDF	ND	12					
2,3,4,7,8-PeCDF	ND	12					
Total PeCDF	ND	12					
1,2,3,4,7,8-HxCDF	ND	12					
1,2,3,6,7,8-HxCDF	ND	12					
2,3,4,6,7,8-HxCDF	ND	12					
1,2,3,7,8,9-HxCDF	ND	12					
Total HxCDF	ND	12					
1,2,3,4,6,7,8-HpCDF	ND	12					
1,2,3,4,7,8,9-HpCDF	ND	12					
Total HpCDF	ND	12					
OCDF	ND	24					

Analyst: AM

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Reviewer: AL

LEVEL V

OGDEN VALIDATED

PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH013
Lab ID: 5073-0003-SA
Matrix: Soil
% Solids: 86

Date Received: 6/18/98
Date Extracted: 7/1/98
Sample Amount: 4.97 g

QC Lot: LC0701S
Units: pg/g

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N</u> <u>Ratio</u>	<u>Qualifier</u>	<u>Rev</u> <u>Qual</u>	<u>Qual</u> <u>Code</u>
2,3,7,8-TCDD	ND	2.3				U	
Total TCDD	ND	2.3					
1,2,3,7,8-PeCDD	ND	12					
Total PeCDD	ND	12					
1,2,3,4,7,8-HxCDD	ND	12					
1,2,3,6,7,8-HxCDD	ND	12					
1,2,3,7,8,9-HxCDD	ND	12					
Total HxCDD	ND	12					
1,2,3,4,6,7,8-HpCDD	ND	12					
Total HpCDD	ND	12					
OCDD	34	23	0.84	>10:1			
2,3,7,8-TCDF	ND	2.3				U	
Total TCDF	ND	2.3					
1,2,3,7,8-PeCDF	ND	12					
2,3,4,7,8-PeCDF	ND	12					
Total PeCDF	ND	12					
1,2,3,4,7,8-HxCDF	ND	12					
1,2,3,6,7,8-HxCDF	ND	12					
2,3,4,6,7,8-HxCDF	ND	12					
1,2,3,7,8,9-HxCDF	ND	12					
Total HxCDF	ND	12					
1,2,3,4,6,7,8-HpCDF	ND	12					
1,2,3,4,7,8,9-HpCDF	ND	12					
Total HpCDF	ND	12					
OCDF	ND	23					

Analyst: BA

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Reviewer: SR

LEVEL V

OGDEN VALIDATED

**PCDD & PCDF
EPA METHOD 1613B**

Sample ID: RH014
Lab ID: 5073-0004-SA
Matrix: Soil
% Solids: 84

Date Received: 6/18/98
Date Extracted: 7/1/98
Sample Amount: 6.14 g

QC Lot: LC0701S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	1.9				U	
Total TCDD	ND	1.9					
1,2,3,7,8-PeCDD	ND	9.7					
Total PeCDD	ND	9.7					
1,2,3,4,7,8-HxCDD	ND	9.7					
1,2,3,6,7,8-HxCDD	ND	9.7					
1,2,3,7,8,9-HxCDD	ND	9.7					
Total HxCDD	ND	9.7					
1,2,3,4,6,7,8-HpCDD	ND	9.7					
Total HpCDD	ND 13	9.7	1.11	>10:1			-
OCDD	110	19	0.90	>10:1			
2,3,7,8-TCDF	ND	1.9				U	
Total TCDF	ND	1.9					
1,2,3,7,8-PeCDF	ND	9.7					
2,3,4,7,8-PeCDF	ND	9.7					
Total PeCDF	ND	9.7					
1,2,3,4,7,8-HxCDF	ND	9.7					
1,2,3,6,7,8-HxCDF	ND	9.7					
2,3,4,6,7,8-HxCDF	ND	9.7					
1,2,3,7,8,9-HxCDF	ND	9.7					
Total HxCDF	ND	9.7					
1,2,3,4,6,7,8-HpCDF	ND	9.7					
1,2,3,4,7,8,9-HpCDF	ND	9.7					
Total HpCDF	ND	9.7					
OCDF	ND	19					

Analyst: AM

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Reviewer: MM

LEVEL V OGDEN VALIDATED

**PCDD & PCDF
EPA METHOD 1613B**

Sample ID: RH015
Lab ID: 5073-0005-SA
Matrix: Soil
% Solids: 76

Date Received: 6/19/98
Date Extracted: 7/1/98
Sample Amount: 4.20 g

QC Lot: LC0701S
Units: pg/g

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N</u> <u>Ratio</u>	<u>Qualifier</u>	<u>Rev</u> <u>Qual</u>	<u>Qual</u> <u>Code</u>
2,3,7,8-TCDD	ND	3.1				U	
Total TCDD	ND	3.1					
1,2,3,7,8-PeCDD	ND	16					
Total PeCDD	ND	16					
1,2,3,4,7,8-HxCDD	ND	16					
1,2,3,6,7,8-HxCDD	ND	16					
1,2,3,7,8,9-HxCDD	ND	16					
Total HxCDD	ND	16					
1,2,3,4,6,7,8-HpCDD	ND	16					
Total HpCDD	ND	16					
OCDD	ND	31					
2,3,7,8-TCDF	ND	3.1					
Total TCDF	ND	3.1					
1,2,3,7,8-PeCDF	ND	16					
2,3,4,7,8-PeCDF	ND	16					
Total PeCDF	ND	16					
1,2,3,4,7,8-HxCDF	ND	16					
1,2,3,6,7,8-HxCDF	ND	16					
2,3,4,6,7,8-HxCDF	ND	16					
1,2,3,7,8,9-HxCDF	ND	16					
Total HxCDF	ND	16					
1,2,3,4,6,7,8-HpCDF	ND	16					
1,2,3,4,7,8,9-HpCDF	ND	16					
Total HpCDF	ND	16					
OCDF	ND	31					

Analyst: BM

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Reviewer: [Signature]

LEVEL V **OGDEN VALIDATED**



PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH016
Lab ID: 5073-0006-SA
Matrix: Soil
% Solids: 77

Date Received: 6/19/98
Date Extracted: 7/1/98
Sample Amount: 4.44 g

QC Lot: LC0701S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Lab Qual	Qual Code
2,3,7,8-TCDD	ND	2.9				U	
Total TCDD	ND	2.9					
1,2,3,7,8-PeCDD	ND	15					
Total PeCDD	ND	15					
1,2,3,4,7,8-HxCDD	ND	15					
1,2,3,6,7,8-HxCDD	ND	15					
1,2,3,7,8,9-HxCDD	ND	15					
Total HxCDD	ND	15				U	
1,2,3,4,6,7,8-HpCDD	21	15	1.12	>10:1			
Total HpCDD	38	15	0.89	>10:1			
OCDD	340	29	0.91	>10:1			
2,3,7,8-TCDF	ND	2.9				U	
Total TCDF	ND	2.9					
1,2,3,7,8-PeCDF	ND	15					
2,3,4,7,8-PeCDF	ND	15					
Total PeCDF	ND	15					
1,2,3,4,7,8-HxCDF	ND	15					
1,2,3,6,7,8-HxCDF	ND	15					
2,3,4,6,7,8-HxCDF	ND	15					
1,2,3,7,8,9-HxCDF	ND	15					
Total HxCDF	ND	15					
1,2,3,4,6,7,8-HpCDF	ND	15					
1,2,3,4,7,8,9-HpCDF	ND	15				U	
Total HpCDF	ND 18	15	1.00	>10:1			
OCDF	ND	29				U	

Analyst: AM

Page 1 of 2

Reviewer: AM

LEVEL V OGDEN VALIDATED

PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH041
Lab ID: 5073-0007-SA
Matrix: Soil
% Solids: 94

Date Received: 6/18/98
Date Extracted: 7/1/98
Sample Amount: 10.21 g

QC Lot: LC0701S
Units: pg/g

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N</u> <u>Ratio</u>	<u>Qualifier</u>	<u>Rev</u> <u>Qual</u>	<u>Qual</u> <u>Code</u>
2,3,7,8-TCDD	ND	1.0				U	
Total TCDD	ND	1.0					
1,2,3,7,8-PeCDD	ND	5.2					
Total PeCDD	ND	5.2					
1,2,3,4,7,8-HxCDD	ND	5.2					
1,2,3,6,7,8-HxCDD	ND	5.2					
1,2,3,7,8,9-HxCDD	ND	5.2					
Total HxCDD	ND	5.2					
1,2,3,4,6,7,8-HpCDD	ND	5.2					
Total HpCDD	ND	5.2					
OCDD	ND	10					
2,3,7,8-TCDF	ND	1.0					
Total TCDF	ND	1.0					
1,2,3,7,8-PeCDF	ND	5.2					
2,3,4,7,8-PeCDF	ND	5.2					
Total PeCDF	ND	5.2					
1,2,3,4,7,8-HxCDF	ND	5.2					
1,2,3,6,7,8-HxCDF	ND	5.2					
2,3,4,6,7,8-HxCDF	ND	5.2					
1,2,3,7,8,9-HxCDF	ND	5.2					
Total HxCDF	ND	5.2					
1,2,3,4,6,7,8-HpCDF	ND	5.2					
1,2,3,4,7,8,9-HpCDF	ND	5.2					
Total HpCDF	ND	5.2					
OCDF	ND	10					

Analyst: MA

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Reviewer: [Signature]

LEVEL V

OGDEN VALIDATED

PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH042
Lab ID: 5073-0009-SA
Matrix: Soil
% Solids: 22

Date Received: 6/18/98
Date Extracted: 7/1/98
Sample Amount: 13.03 g

QC Lot: LC0701S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	0.83				U	
Total TCDD	ND	0.83					
1,2,3,7,8-PeCDD	ND	4.2					
Total PeCDD	ND	4.2					
1,2,3,4,7,8-HxCDD	ND	4.2					
1,2,3,6,7,8-HxCDD	ND	4.2					
1,2,3,7,8,9-HxCDD	ND	4.2					
Total HxCDD	ND	4.2					
1,2,3,4,6,7,8-HpCDD	ND	4.2					
Total HpCDD	7.7 ND 3.9	4.2	1.00	> 10:1			
OCDD	65	8.3	0.94	> 10:1			F
2,3,7,8-TCDF	ND	0.83				U	
Total TCDF	ND	0.83					
1,2,3,7,8-PeCDF	ND	4.2					
2,3,4,7,8-PeCDF	ND	4.2					
Total PeCDF	ND	4.2					
1,2,3,4,7,8-HxCDF	ND	4.2					
1,2,3,6,7,8-HxCDF	ND	4.2					
2,3,4,6,7,8-HxCDF	ND	4.2					
1,2,3,7,8,9-HxCDF	ND	4.2					
Total HxCDF	ND	4.2					
1,2,3,4,6,7,8-HpCDF	ND	4.2					
1,2,3,4,7,8,9-HpCDF	ND	4.2					
Total HpCDF	ND	4.2					
OCDF	ND	8.3					

Analyst: DU

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Reviewer: 21

LEVEL V

OGDEN VALIDATED

**PCDD & PCDF
EPA METHOD 1613B**

Sample ID: RH044
Lab ID: 5073-0011-SA
Matrix: Soil
% Solids: 82

Date Received: 6/18/98
Date Extracted: 7/1/98
Sample Amount: 5.85 g

QC Lot: LC0701S
Units: pg/g

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N Ratio</u>	<u>Qualifier</u>	<u>Rev Qual</u>	<u>Qual Code</u>
2,3,7,8-TCDD	ND	2.1				U	
Total TCDD	ND	2.1					
1,2,3,7,8-PeCDD	ND	10					
Total PeCDD	ND	10					
1,2,3,4,7,8-HxCDD	ND	10					
1,2,3,6,7,8-HxCDD	ND	10					
1,2,3,7,8,9-HxCDD	ND	10					
Total HxCDD	ND	10					
1,2,3,4,6,7,8-HpCDD	ND	10					
Total HpCDD	ND 14	10	1.12	>10:1			-
OCDD	97	21	0.94	>10:1		U	F
2,3,7,8-TCDF	ND	2.1				U	
Total TCDF	ND	2.1					
1,2,3,7,8-PeCDF	ND	10					
2,3,4,7,8-PeCDF	ND	10					
Total PeCDF	ND	10					
1,2,3,4,7,8-HxCDF	ND	10					
1,2,3,6,7,8-HxCDF	ND	10					
2,3,4,6,7,8-HxCDF	ND	10					
1,2,3,7,8,9-HxCDF	ND	10					
Total HxCDF	ND	10					
1,2,3,4,6,7,8-HpCDF	ND	10					
1,2,3,4,7,8,9-HpCDF	ND	10					
Total HpCDF	ND	10					
OCDF	ND	21				U	

Analyst: SM

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Reviewer: 67

LEVEL V OGDEN VALIDATED

PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH046
Lab ID: 5073-0008-SA
Matrix: Soil
% Solids: 83

Date Received: 6/18/98
Date Extracted: 7/1/98
Sample Amount: 6.01 g

QC Lot: LC0701S
Units: pg/g

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N</u> <u>Ratio</u>	<u>Qualifier</u>	<u>Rev</u> <u>Qual</u>	<u>Qual</u> <u>Code</u>
2,3,7,8-TCDD	ND	2.0				U	
Total TCDD	ND	2.0					
1,2,3,7,8-PeCDD	ND	10					
Total PeCDD	ND	10					
1,2,3,4,7,8-HxCDD	ND	10					
1,2,3,6,7,8-HxCDD	ND	10					
1,2,3,7,8,9-HxCDD	ND	10					
Total HxCDD	ND	10					
1,2,3,4,6,7,8-HpCDD	ND	10					
Total HpCDD	ND	10					
OCDD	ND	20					
2,3,7,8-TCDF	ND	2.0					
Total TCDF	ND	2.0					
1,2,3,7,8-PeCDF	ND	10					
2,3,4,7,8-PeCDF	ND	10					
Total PeCDF	ND	10					
1,2,3,4,7,8-HxCDF	ND	10					
1,2,3,6,7,8-HxCDF	ND	10					
2,3,4,6,7,8-HxCDF	ND	10					
1,2,3,7,8,9-HxCDF	ND	10					
Total HxCDF	ND	10					
1,2,3,4,6,7,8-HpCDF	ND	10					
1,2,3,4,7,8,9-HpCDF	ND	10					
Total HpCDF	ND	10					
OCDF	ND	20					

Analyst: JK

Page 1 of 2

Reviewer: JK

LEVEL V

OGDEN VALIDATED

PCDD & PCDF
EPA METHOD 1613B

Sample ID: RH047
Lab ID: 5073-0013-SA
Matrix: Soil
% Solids: 88

Date Received: 6/18/98
Date Extracted: 7/1/98
Sample Amount: 8.38 g

QC Lot: LC0701S
Units: pg/g

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Ratio</u>	<u>S/N</u> <u>Ratio</u>	<u>Qualifier</u>	<u>Rev</u> <u>Qual</u>	<u>Qual</u> <u>Code</u>
2,3,7,8-TCDD	ND	1.4				U	
Total TCDD	ND	1.4					
1,2,3,7,8-PeCDD	ND	6.8					
Total PeCDD	ND	6.8					
1,2,3,4,7,8-HxCDD	ND	6.8					
1,2,3,6,7,8-HxCDD	ND	6.8					
1,2,3,7,8,9-HxCDD	ND	6.8					
Total HxCDD	ND	6.8					
1,2,3,4,6,7,8-HpCDD	ND	6.8					
Total HpCDD	ND	6.8					
OCDD	ND	14					
2,3,7,8-TCDF	ND	1.4					
Total TCDF	ND	1.4					
1,2,3,7,8-PeCDF	ND	6.8					
2,3,4,7,8-PeCDF	ND	6.8					
Total PeCDF	ND	6.8					
1,2,3,4,7,8-HxCDF	ND	6.8					
1,2,3,6,7,8-HxCDF	ND	6.8					
2,3,4,6,7,8-HxCDF	ND	6.8					
1,2,3,7,8,9-HxCDF	ND	6.8					
Total HxCDF	ND	6.8					
1,2,3,4,6,7,8-HpCDF	ND	6.8					
1,2,3,4,7,8,9-HpCDF	ND	6.8					
Total HpCDF	ND	6.8					
OCDF	ND	14					

Analyst: M

Page 1 of 2

Reviewer: [Signature]

LEVEL V

OGDEN VALIDATED

PCDD & PCDF EPA METHOD 1613B

Sample ID: RH048
Lab ID: 5073-0014-SA
Matrix: Soil
% Solids: 89

Date Received: 6/18/98
Date Extracted: 7/1/98
Sample Amount: 8.81 g

QC Lot: LC0701S
Units: pg/g

Compound	Conc.	R.L.	Ratio	S/N Ratio	Qualifier	Rev Qual	Qual Code
2,3,7,8-TCDD	ND	1.3				U	
Total TCDD	ND	1.3					
1,2,3,7,8-PeCDD	ND	6.4					
Total PeCDD	ND	6.4					
1,2,3,4,7,8-HxCDD	ND	6.4					
1,2,3,6,7,8-HxCDD	ND	6.4					
1,2,3,7,8,9-HxCDD	ND	6.4					
Total HxCDD	ND	6.4					
1,2,3,4,6,7,8-HpCDD	ND	6.4					
Total HpCDD	ND	6.4					
OCDD	ND 13	13				U	-F
2,3,7,8-TCDF	ND	1.3				U	
Total TCDF	ND	1.3					
1,2,3,7,8-PeCDF	ND	6.4					
2,3,4,7,8-PeCDF	ND	6.4					
Total PeCDF	ND	6.4					
1,2,3,4,7,8-HxCDF	ND	6.4					
1,2,3,6,7,8-HxCDF	ND	6.4					
2,3,4,6,7,8-HxCDF	ND	6.4					
1,2,3,7,8,9-HxCDF	ND	6.4					
Total HxCDF	ND	6.4					
1,2,3,4,6,7,8-HpCDF	ND	6.4					
1,2,3,4,7,8,9-HpCDF	ND	6.4					
Total HpCDF	ND	6.4					
OCDF	ND	13				U	

Analyst: SM

Page 1 of 2

Reviewer: LR

LEVEL V

OGDEN VALIDATED

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/COC Method: EPA Method 8330

No. of Samples: 14

Date Reviewed: 8/13/98

Reviewer: H. White

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994) and Paragon Analytical, Inc. Laboratories SOPs, "Determination of Nitroaromatics and Nitroamines by Method 8330," SW-846, 3rd Edition.

SDG: L9801888

Samples Reviewed: RH025, RH002, RH003, RH004, RH005, RH006, RH007, RH021, RH026, RH030, RH031, RH032, RH033, RH036

Matrix: Soil

EPA Level V- Explosives Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received intact above the temperature limits of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ at cooler temperatures ranging from 11°C - 14°C . Samples were transported, in ice-filled coolers, directly from the field to the laboratory by field personnel; therefore, no custody seals were necessary on the coolers. All samples were received intact and no problems were noted during sample handling and transport. The COCs were signed by field and laboratory personnel. No COC discrepancies were noted. There were some crossouts on the COCs without dates. The samples were transferred to Paragon Analytics, Inc. Cooler temperatures were within the limits upon arrival at Paragon. The samples were analyzed within 14 days of the sampling dates.	Due to the nonvolatile nature of the target compounds, no qualifications were required.

	Problems	Qualifications
4. <u>Method Blanks</u>	Three method blanks were analyzed with this SDG. No target compounds were detected in the method blanks.	No qualifications were required.
5. <u>LCS/BS</u>	Three blank spikes were analyzed with this SDG. All recoveries were within the laboratory QC limits.	No qualifications were required.
6. <u>Surrogates</u>	1,4-Dinitrobenzene was used as the surrogate. Surrogate recoveries were within the laboratory established QC limits of 50%-150%.	No qualifications were required.
7. <u>MS/MSDs</u> Performed on samples other than Rocketdyne	Since sample matrix may vary from sites, the MS/MSD samples were not assessed.	No qualifications were required.
8. <u>Field QC Samples</u> ER: RH018, RH037 (SDG L9801906) FB: RH008, RH020(SDG L9801906) There were no field duplicates.	No target compounds were detected in the field QC samples.	No qualifications were required.
9. <u>Other</u>	These samples were analyzed on HPLC instrumentation with LC-C18 column. The reporting limits were properly adjusted with sample preparatory weight.	None
10. <u>Comments</u>	None	None

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Suite 500
Lakewood, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 8270-SIM

No. of Samples: 10

Date Reviewed: 08/14/98

Reviewer: K. McNeill

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994), and Columbia Analytical Services SOP 97-SOA-SIM-00M (Revision 1, 10/14/97).

SDG: L9801914

Samples Reviewed: RH011, RH012, RH013, RH014, RH015, RH016, RH041, RH046, RH047, RH048.

Matrix: Soil

EPA Level V- Polynuclear Aromatic Hydrocarbons Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	All samples were received with cooler temperatures of 13°C and 4°C. The samples were all received intact and no other shipping/receipt problems were noted.	No qualifications were required due to the nonvolatile nature of the samples. Because the samples were collected by Ogden personnel, placed in coolers containing ice, and delivered to the Columbia laboratory, the samples had not yet cooled to acceptable temperatures. No custody seals were present on the coolers, but because they were transported directly to the laboratory by field personnel, this was acceptable.
4. <u>Method Blanks</u>	One method blank was analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with this SDG. The LCS had acceptable recovery values for all compounds.	No qualifications were required.
6. <u>Surrogates</u>	The surrogate recoveries were acceptable for all samples.	No qualifications were required.

	Problems	Qualifications
7. <u>MS/MSDs</u> Sample RH048 was the MS/MSD associated with this SDG.	The MS had acceptable recoveries for all compounds. The MSD had %R values above the 140% QC limit for phenanthrene (141%) and pyrene (147%). All remaining compounds in the MSD had acceptable recoveries. The RPD values between the MS and MSD were also acceptable.	No qualifications were required for the high MSD %R values because the only one fraction had the outlier recoveries.
8. <u>Field QC Samples</u> ER: RH037 (L9801906); RH018 (L9801906) FB: RH008 (L9801906); RH020 (L9801906) Duplicates: RH047/RH048.	Equipment rinsate RH037 had nondetects for all compounds. Sample RH018, an equipment rinsate, was requested to have a PAH analysis, but was not performed. The sample was initially submitted to the laboratory on hold on 6/11/98, and the hold was removed on 6/18/98 and approved for analysis. Both field blanks had nondetects for all compounds. Nondetects for all compounds are reported in both samples.	No qualifications were required. No qualifications were required. No qualifications were required.
9. <u>Other</u>	N/A	N/A
10. <u>Comments</u>	N/A	N/A

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

RH002

9806150-2

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 10-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

REV
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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.44	mg/kg	2.5	98	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000012

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

Client/Project ID: 313150002

Reported on: Thursday, July 16, 1998

RH003

9806150-3

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 10-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.46	mg/kg	2.5	98	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000013

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

RH004
9806150-4

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 10-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.51	mg/kg	2.5	100	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000014

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

RH005
9806150-5

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 10-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Allquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
806-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.79	mg/kg	2.5	112	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000015

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

Client/Project ID: 313150002

Reported on: Thursday, July 16, 1998

RH006

9806150-6

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 10-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Allquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.56	mg/kg	2.5	102	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000016

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

RH007

9806150-7

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 10-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.51	mg/kg	2.5	100	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000017

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

RH0021
9806150-8

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 12-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.53	mg/kg	2.5	101	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000018

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Friday, July 17, 1998

RH025

9806150-1

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 12-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Allquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

Rev Qual Qual Code

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.46	mg/kg	2.5	98	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000011

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

Client Project ID: 313150002

Reported on: Thursday, July 16, 1998

RH0026

9806150-9

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 12-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.55	mg/kg	2.5	102	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000019

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

Sample ID	RH030
Project ID	9806150-12

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 15-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.52	mg/kg	2.5	101	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000020

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

Client Project ID: 313150002

Reported on: Thursday, July 16, 1998

RH031
9806150-13

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 15-Jun-98

Date Extracted: 26-Jun-98

Date Analyzed: 30-Jun-98

Prep Batch: EX980626-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.49	mg/kg	2.5	100	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000025

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

Client/Project ID: 313150002

Reported on: Thursday, July 16, 1998

RH032
9806150-14

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 15-Jun-98

Date Extracted: 26-Jun-98

Date Analyzed: 30-Jun-98

Prep Batch: EX980626-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.53	mg/kg	2.5	101	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL 1

000026

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

RH033
9806150-15

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 15-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2

Sample Allquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.56	mg/kg	2.5	102	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000021

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806150

Client Name: Columbia Analytical

Client Project ID: 313150002

Reported on: Thursday, July 16, 1998

RH036
9806150-16

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 15-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2-2

Sample Allquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.47	mg/kg	2.5	99	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000023

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/COC Method: EPA Method 8330

No. of Samples: 4

Date Reviewed: 8/21/98

Reviewer: H. White

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994) and Paragon Analytical, Inc. Laboratories SOPs, "Determination of Nitroaromatics and Nitroamines by Method 8330," SW-846, 3rd Edition.

SDG: L9801906

Samples Reviewed: RH008, RH018, RH020, RH037

Matrix: Water

EPA Level V- Explosives Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received intact with temperatures of 5°C - 17°C. Samples were transported, in ice-filled coolers, directly from the field to the laboratory by field personnel; therefore, no custody seals were necessary on the coolers. All samples were received intact and no problems were noted during sample handling and transport. The COCs were signed by field and laboratory personnel. No COC discrepancies were noted. The samples were extracted within 14 days of the sampling dates and analyzed within 40 days of extraction.	Due to the nonvolatile nature of the target compounds, no qualifications were required.
4. <u>Method Blanks</u>	One method blank was analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One blank spike was analyzed with this SDG. Recoveries were within the laboratory QC limits for all compounds.	No qualifications were required.

	Problems	Qualifications
6. <u>Surrogates</u>	1,4-Dinitrobenzene was used as the surrogate. Surrogate recoveries were within the laboratory established QC limits of 50%-150%.	No qualifications were required.
7. <u>MS/MSDs</u> None	No data was assessed for this criteria.	No qualifications were required.
8. <u>Field QC Samples</u> ER: None FB: None Field Duplicates: None	All samples in this SDG were identified as field QC samples.	No qualifications were required.
9. <u>Other -</u>	These samples were analyzed on HPLC instrumentation with LC-C18 column. The reporting limits were properly adjusted with sample preparatory weight.	None
<u>Comments</u>	None	None

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806132

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

Sample ID:	RH008
Project ID:	9806132-1

Sample Matrix: liquid

% Moisture: N/A

Cleanup Method: NONE

Report Basis: AS RECEIVED

Date Collected: 11-Jun-98

Date Extracted: 17-Jun-98

Date Analyzed: 14-Jul-98

Prep Batch: EX980617-9

Sample Aliquot: 350

Final Volume: 3

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	1	ug/L	1	U	
121-82-4	RDX	0.84	ug/L	0.84	U	
99-35-4	1,3,5-TRINITROBENZENE	0.26	ug/L	0.26	U	
99-65-0	1,3-DINITROBENZENE	0.25	ug/L	0.25	U	
479-45-8	TETRYL	1	ug/L	1	U	
98-95-3	NITROBENZENE	1	ug/L	1	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	ug/L	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	ug/L	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	ug/L	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.25	ug/L	0.25	U	
121-14-2	2,4-DINITROTOLUENE	0.25	ug/L	0.25	U	
88-72-2	2-NITROTOLUENE	1	ug/L	1	U	
99-99-0	4-NITROTOLUENE	1	ug/L	1	U	
99-08-1	3-NITROTOLUENE	1	ug/L	1	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	3.42	ug/l	4.29	80	34 - 106

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000005

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806132

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

Sample ID:	RH0018
Work Order:	9806132-2

Sample Matrix: liquid

% Moisture: N/A

Cleanup Method: NONE

Report Basis: AS RECEIVED

Date Collected: 11-Jun-98

Date Extracted: 17-Jun-98

Date Analyzed: 14-Jul-98

Prep Batch: EX980617-9

Sample Aliquot: 350

Final Volume: 3

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	1	ug/L	1	U	
121-82-4	RDX	0.84	ug/L	0.84	U	
99-35-4	1,3,5-TRINITROBENZENE	0.26	ug/L	0.26	U	
99-65-0	1,3-DINITROBENZENE	0.25	ug/L	0.25	U	
479-45-8	TETRYL	1	ug/L	1	U	
98-95-3	NITROBENZENE	1	ug/L	1	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	ug/L	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	ug/L	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	ug/L	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.25	ug/L	0.25	U	
121-14-2	2,4-DINITROTOLUENE	0.25	ug/L	0.25	U	
88-72-2	2-NITROTOLUENE	1	ug/L	1	U	
99-99-0	4-NITROTOLUENE	1	ug/L	1	U	
99-08-1	3-NITROTOLUENE	1	ug/L	1	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	3.85	ug/l	4.29	90	34 - 106

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000006

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806132

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

150000	RH0020
150000	9806132-3

Sample Matrix: liquid

% Moisture: N/A

Cleanup Method: NONE

Report Basis: AS RECEIVED

Date Collected: 15-Jun-98

Date Extracted: 23-Jun-98

Date Analyzed: 30-Jun-98

Prep Batch: EX980623-6

Sample Aliquot: 350

Final Volume: 3

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	1	ug/L	1	U	
121-82-4	RDX	0.84	ug/L	0.84	U	
99-35-4	1,3,5-TRINITROBENZENE	0.26	ug/L	0.26	U	
99-65-0	1,3-DINITROBENZENE	0.25	ug/L	0.25	U	
479-45-8	TETRYL	1	ug/L	1	U	
98-95-3	NITROBENZENE	1	ug/L	1	U	
110-96-7	2,4,6-TRINITROTOLUENE	0.25	ug/L	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	ug/L	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	ug/L	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.25	ug/L	0.25	U	
121-14-2	2,4-DINITROTOLUENE	0.25	ug/L	0.25	U	
88-72-2	2-NITROTOLUENE	1	ug/L	1	U	
99-99-0	4-NITROTOLUENE	1	ug/L	1	U	
99-08-1	3-NITROTOLUENE	1	ug/L	1	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	3.41	ug/l	4.29	80	34 - 106

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000008

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806132

Client Name: Columbia Analytical

Client Project ID: 313150002

Reported on: Thursday, July 16, 1998

RH0037
9806132-4

Sample Matrix: liquid

% Moisture: N/A

Cleanup Method: NONE

Report Basis: AS RECEIVED

Date Collected: 15-Jun-98

Date Extracted: 23-Jun-98

Date Analyzed: 30-Jun-98

Prep Batch: EX980623-6

Sample Aliquot: 350

Final Volume: 3

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	1	ug/L	1	U	
121-82-4	RDX	0.84	ug/L	0.84	U	
99-35-4	1,3,5-TRINITROBENZENE	0.26	ug/L	0.26	U	
99-65-0	1,3-DINITROBENZENE	0.25	ug/L	0.25	U	
479-45-8	TETRYL	1	ug/L	1	U	
98-95-3	NITROBENZENE	1	ug/L	1	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	ug/L	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	ug/L	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	ug/L	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.25	ug/L	0.25	U	
121-14-2	2,4-DINITROTOLUENE	0.25	ug/L	0.25	U	
88-72-2	2-NITROTOLUENE	1	ug/L	1	U	
99-99-0	4-NITROTOLUENE	1	ug/L	1	U	
99-08-1	3-NITROTOLUENE	1	ug/L	1	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	3.62	ug/l	4.29	84	34 - 106

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

000009

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/COC Method: EPA Method 8330

No. of Samples: 10

Date Reviewed: 8/13/98

Reviewer: H. White

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994) and Paragon Analytical, Inc. Laboratories SOPs, "Determination of Nitroaromatics and Nitroamines by Method 8330," SW-846, 3rd Edition.

SDG: L9801914

Samples Reviewed: RH011, RH012, RH013, RH014, RH015, RH016, RH041, RH046, RH047, RH048

Matrix: Soil

EPA Level V- Explosives Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received intact within the temperature limits of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ at 4°C , with the exception of samples RH011-RH016, which were received at 13°C . Samples were transported, in ice-filled coolers, directly from the field to the laboratory by field personnel; therefore, no custody seals were necessary on the coolers. All samples were received intact and no problems were noted during sample handling and transport. The COCs were signed by field and laboratory personnel. No COC discrepancies were noted. Some corrections on the COCs were scribbled rather than lined out, and there were some crossouts on the COCs without dates. The samples were analyzed within 14 days of the sampling dates.	Due to the nonvolatile nature of the target compounds, no qualifications were required.
4. <u>Method Blanks</u>	One method blank was analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.

	Problems	Qualifications
5. <u>LCS/BS</u>	One blank spike was analyzed with this SDG. Recoveries were within the laboratory QC limits for all compounds.	No qualifications were required.
6. <u>Surrogates</u>	1,4-Dinitrobenzene was used as the surrogate. Surrogate recoveries were within the laboratory established QC limits of 50%-150%.	No qualifications were required.
7. <u>MS/MSDs</u> Performed on sample RH041	Recoveries were within the laboratory QC limits for all compounds.	No qualifications were required.
8. <u>Field QC Samples</u> ER: RH037, RH018 (SDG L9801906) FB: RH008, RH020 (SDG L9801906) Field Duplicates: RH047/RH048	No target compounds were detected in the field QC samples. No target compounds were detected in either duplicate sample.	No qualifications were required.
9. <u>Other</u>	These samples were analyzed on HPLC instrumentation with LC-C18 column. The reporting limits were properly adjusted with sample preparatory weight.	None
<u>Comments</u>	None	None

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806151

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

File #	RH011
Lab #	9806151-1

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 11-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote	Rel Qual	Qual Code
2691-41-0	HMX	2.2	mg/kg	2.2	U		U	
121-82-4	RDX	1	mg/kg	1	U			
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U			
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U			
479-45-8	TETRYL	0.65	mg/kg	0.65	U			
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U			
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U			
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U			
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U			
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U			
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U			
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U			
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U			
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U			

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.55	mg/kg	2.5	102	50 - 150

U = Less than the Reporting Limit

**OGDEN VALIDATED
LEVEL V**

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806151

Client Name: Columbia Analytical

Client/Project ID: 313150002

Reported on: Thursday, July 16, 1998

Field ID: RH012
Lab ID: 9806151-2

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 11-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.45	mg/kg	2.5	98	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806151

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

Field ID: RH013
Lab ID: 9806151-3

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 11-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.53	mg/kg	2.5	101	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806151

Client Name: Columbia Analytical

Client/Project ID: 313150002

Reported on: Thursday, July 16, 1998

Project ID: RH014
Lab ID: 9806151-4

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 11-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.54	mg/kg	2.5	102	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806151

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

Field ID: RH015

Lab ID: 9806151-5

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 11-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.52	mg/kg	2.5	101	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806151

Client Name: Columbia Analytical

Client/Project ID: 313150002

Reported on: Thursday, July 16, 1998

Field ID: RH016
Lab ID: 9806151-6

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 11-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.55	mg/kg	2.5	102	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806151

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

Field ID: RH041
Lab ID: 9806151-7

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 16-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 01-Jul-98

Prep Batch: EX980624-2-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.54	mg/kg	2.5	102	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806151

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

Field ID: RH046
Lab ID: 9806151-8

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 16-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 02-Jul-98

Prep Batch: EX980624-2-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.5	mg/kg	2.5	100	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806151

Client Name: Columbia Analytical

Client/Project ID: 313150002

Reported on: Thursday, July 16, 1998

Lab ID: RH047
Lab ID: 9806151-13

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 16-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 02-Jul-98

Prep Batch: EX980624-2-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.48	mg/kg	2.5	99	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

LEVEL V

Nitroaromatics And Nitramines

Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9806151

Client Name: Columbia Analytical

ClientProject ID: 313150002

Reported on: Thursday, July 16, 1998

RH048
9806151-14

Sample Matrix: Solid

% Moisture: 0

Cleanup Method: NONE

Report Basis: DRY WEIGHT

Date Collected: 16-Jun-98

Date Extracted: 24-Jun-98

Date Analyzed: 02-Jul-98

Prep Batch: EX980624-2-2

Sample Aliquot: 2

Final Volume: 20

Dilution: 1

CASNO	Target Analyte	Result	Units	Reporting Limit	Result Qualifier	Result Footnote
2691-41-0	HMX	2.2	mg/kg	2.2	U	
121-82-4	RDX	1	mg/kg	1	U	
99-35-4	1,3,5-TRINITROBENZENE	0.25	mg/kg	0.25	U	
99-65-0	1,3-DINITROBENZENE	0.25	mg/kg	0.25	U	
479-45-8	TETRYL	0.65	mg/kg	0.65	U	
98-95-3	NITROBENZENE	0.26	mg/kg	0.26	U	
118-96-7	2,4,6-TRINITROTOLUENE	0.25	mg/kg	0.25	U	
1946-51-0	4-AMINO-2,6-DNT	0.25	mg/kg	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	0.25	mg/kg	0.25	U	
606-20-2	2,6-DINITROTOLUENE	0.26	mg/kg	0.26	U	
121-14-2	2,4-DINITROTOLUENE	0.25	mg/kg	0.25	U	
88-72-2	2-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-99-0	4-NITROTOLUENE	0.25	mg/kg	0.25	U	
99-08-1	3-NITROTOLUENE	0.25	mg/kg	0.25	U	

Ref Qual
Qual Code

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Units	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.44	mg/kg	2.5	98	50 - 150

U = Less than the Reporting Limit

OGDEN VALIDATED

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Ste. 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/Method: Formaldehyde

No. of Samples: 14

Date Completed: August 13, 1998

Reviewer: K. Chapman

Ref: *USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994) and ASTM D-19 Proposal p 216*

SDG: L9801888

Samples Reviewed: RH025, RH002, RH003, RH004, RH005, RH006, RH007, RH021, RH026, RH030, RH031, RH032, RH033, RH036

EPA Level V- General Minerals Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	Holding time exceeded for formaldehyde analysis. These samples were shipped from the Columbia Canoga Park California laboratory to the Columbia Kelso Washington laboratory without a proper COC. An internal signed login sheet was shipped with the samples. The sample temperatures upon receipt at the Columbia Kelso laboratory were above the control limit of 4 ± 2 degrees at 7.6 and 13.3 degrees, and the custody seals were noted as not being present.	The site sample formaldehyde results qualified as estimated, "UJ." Qualifications are not routinely assigned for temperatures above the control limit; therefore, no qualifications were deemed necessary.
2. <u>Method Blanks</u>	Acceptable as reviewed.	None
3. <u>LCS/BS</u>	Acceptable as reviewed.	None
4. <u>Duplicates</u>	None performed.	None

5. <u>MS/MSDs</u> Performed on sample RH030	Acceptable as reviewed.	None
6. <u>Field QC Samples</u> ER: RH018 and RH037 FB: RH008 and RH020	No detects were reported in any of the field QC samples.	None
7. <u>Other</u>	None	None
8. <u>Comments</u>	The reporting basis for these samples was incorrectly noted as N/A on the Form I. The reviewer hand corrected the Form I to reflect the dry weight basis of reporting.	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: K9803933
 Date Collected: 6/10 - 6/15/98
 Date Received: 6/10/98

Formaldehyde

Prep Method: NONE
 Analysis Method: ASTM D-19 Proposal P 216
 Test Notes:

Units: MG/KG
 Basis: ~~NA~~ Dry

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev Qual	Qua Code
RH025	K9803933-001	3	1	NA	6/24/98	3	U	uJ	H
RH002	K9803933-002	4	1	NA	6/24/98	4	U		
RH003	K9803933-003	3	1	NA	6/24/98	3	U		
RH004	K9803933-004	3	1	NA	6/24/98	3	U		
RH005	K9803933-005	3	1	NA	6/24/98	3	U		
RH006	K9803933-006	3	1	NA	6/24/98	3	U		
RH007	K9803933-007	3	1	NA	6/24/98	3	U		
RH021	K9803933-008	3	1	NA	6/24/98	3	U		
RH026	K9803933-009	3	1	NA	6/24/98	3	U		
RH030	K9803933-012	3	1	NA	6/24/98	3	U		
RH031	K9803933-013	3	1	NA	6/24/98	3	U		
RH032	K9803933-014	3	1	NA	6/24/98	3	U		
RH033	K9803933-015	3	1	NA	6/24/98	3	U		
RH036	K9803933-016	3	1	NA	6/24/98	3	U	uJ	H
WBLK980624-1	K980624-MB	3	1	NA	6/24/98	3	U	*	

LEVEL V

*Analysis Not Validated

OGDEN VALIDATED

Joe Rod for Howard Boersz 8/5/98

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Ste. 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/Method: Formaldehyde

No. of Samples: 4

Date Completed: August 24, 1998

Reviewer: K. Chapman

Ref: *USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994) and ASTM D-19 Proposal p 216*

SDG: L9801906

Samples Reviewed: RH008, RH018, RH020, RH037

EPA Level V- General Minerals Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	Holding time exceeded for formaldehyde analysis. Two of these samples were shipped from the Columbia Canoga Park California laboratory to the Columbia Kelso Washington laboratory without a proper COC. An internal signed login sheet with the date relinquished and the date received written on it was shipped with the samples. The sample temperatures upon receipt at the Columbia Kelso laboratory were above the control limit of 4 ± 2 degrees at 7.6 and 7.1 degrees, and the custody seals were noted as not being present.	None, as all four samples were identified as field QC samples, which are not qualified based on holding time. Qualifications are not routinely assigned for temperatures above the control limit; therefore, no qualifications were deemed necessary.
2. <u>Method Blanks</u>	Acceptable as reviewed.	None
3. <u>LCS/BS</u>	Acceptable as reviewed.	None

4. <u>Duplicates</u>	None performed.	None
5. <u>MS/MSDs</u> Performed on sample RH008	Acceptable as reviewed.	None
6. <u>Field QC Samples</u> None	All four samples were identified as field QC samples, and as such are not evaluated against other field QC samples.	None
7. <u>Other</u>	None	None
8. <u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water

Service Request: K9803899
Date Collected: 6/11,15/98
Date Received: 6/11/98
Date Extracted: NA
Date Analyzed: 6/16,18/98

Formaldehyde
ASTM D-19 Proposal P 216
Units: mg/L (ppm)

Sample Name	Lab Code	MRL	Result	Rev	Qual
				Qual	Code
RH008	K9803899-001	0.2	ND	u	
RH018	K9803899-002	0.2	ND	u	
RH020	K9803899-003	0.2	ND	u	
RH037	K9803899-004	0.2	ND	u	
Method Blank	K9803899-MB	0.2	ND	✕	

LEVEL V**OGDEN VALIDATED**

*Analysis Not Validated

Approved By: arp Date: 6/24/98

1AMRL/102594

03899WET.LJ1 - 1AMRL 6/24/98

Page No.:



ENVIRONMENTAL AND ENERGY SERVICES

550 South Wadsworth Blvd. Ste. 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/Method: Formaldehyde

No. of Samples: 10

Date Completed: August 13, 1998

Reviewer: K. Chapman

Ref: *USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994) and ASTM D-19 Proposal p 216*

SDG: L9801914

Samples Reviewed: RH011, RH012, RH013, RH014, RH015, RH016, RH041, RH046, RH047, RH048

EPA Level V- General Minerals Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	Holding time exceeded for formaldehyde analysis. These samples were shipped from the Columbia Canoga Park California laboratory to the Columbia Kelso Washington laboratory without a proper COC. An internal signed login sheet with the date relinquished and the date received written on it was shipped with the samples. The sample temperatures upon receipt at the Columbia Kelso laboratory were above the control limit of 4 ± 2 degrees at 7.6 and 13.3 degrees, and the custody seals were noted as not being present.	The site sample formaldehyde results qualified as estimated, "UJ." Qualifications are not routinely assigned for temperatures above the control limit; therefore, no qualifications were deemed necessary.
2. <u>Method Blanks</u>	Acceptable as reviewed.	None
3. <u>LCS/BS</u>	Acceptable as reviewed.	None
4. <u>Duplicates</u>	None performed.	None

5. <u>MS/MSDs</u> Performed on sample RH046	Acceptable as reviewed.	None
6. <u>Field QC Samples</u> ER: RH018 and RH037 FB: RH008 and RH020	No detects were reported in any of the field QC sample.	None
7. <u>Other</u>	None	None
8. <u>Comments</u>	The reporting basis for these samples was incorrectly noted as wet weight on the Form I. The reviewer hand corrected the Form I to reflect the dry weight basis of reporting.	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: K9803932
Date Collected: 6/11 - 6/16/98
Date Received: 6/12/98

Formaldehyde

Prep Method: NONE
Analysis Method: ASTM D-19 Proposal P 216
Test Notes:

Units: MG/KG
Basis: ~~Wet~~ Dry

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev Anal	Anal Ad
RH011	K9803932-001	4	1	NA	6/26/98	4	U	U	H
RH012	K9803932-002	3	1	NA	6/26/98	3	U		
RH013	K9803932-003	3	1	NA	6/26/98	3	U		
RH014	K9803932-004	3	1	NA	6/26/98	3	U		
RH015	K9803932-005	3	1	NA	6/26/98	3	U		
RH016	K9803932-006	3	1	NA	6/26/98	3	U		
RH041	K9803932-007	3	1	NA	6/26/98	3	U		
RH046	K9803932-008	3	1	NA	6/26/98	3	U		
RH047	K9803932-013	3	1	NA	6/26/98	3	U		
RH048	K9803932-014	3	1	NA	6/26/98	3	U		
WBLK980626-1	K980626-MB	3	1	NA	6/26/98	3	U	*	

LEVEL V

*Analysis Not Validated

OGDEN VALIDATED

John for Howard Bourse 8/5/98

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Ste. 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: 6010/7000

No. of Samples: 14

Date Completed: August 19, 1998

Reviewer: K. Okonzak-Lowry

Ref: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994), Columbia Analytical Services, Inc. - Canoga Park, Determination of Trace Elements by Inductively Coupled Plasma, Optical Emission Spectrometry SOP ICP-OES, Revision 1.0 (8/96). Columbia Analytical Services, Inc. - Canoga Park, Graphite Furnace Atomic Absorption Spectrometry SOP GFA-GFAA, Revision 1.0 (8/96). Columbia Analytical Services, Inc. - Canoga Park, Mercury in Solid or Semisolid Waste SOP MET-7471, Revision 2.0 (3/98).

SDG: L9801888

Samples Reviewed: RH025, RH002, RH003, RH004, RH005, RH006, RH007, RH021, RH026, RH030, RH031, RH032, RH033, RH036

EPA Level V- Metals Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	The sample condition questions were answered on the applicable COCs. The sample cooler temperatures upon receipt were noted on the COCs at 11°C, 13°C, and 14°C. Samples were collected by Ogden personnel, placed in coolers containing ice, and hand delivered to the laboratory. The COCs were signed by the field and laboratory personnel with the exception of one COC which was not signed by the laboratory, and custody seals were not present on some coolers, but as no shipping was involved in the transportation of the samples, this was acceptable.	Due to the nonvolatile nature of the analytes, the samples were not qualified for the temperature blank information. No sample preservation or handling problems were noted.
2. <u>Method Blanks</u>	None. All method blank results were below laboratory determined PQLs.	None

	Problems	Qualifications
3. <u>LCS</u>	The LCS results were all within the laboratory established control limits of 75-125 %R.	None
4. <u>Duplicates</u>	None performed.	None
5. <u>MS/MSDs</u> Performed on soil sample RH030	Antimony: MS at 53 %R/MSD at 56 %R.	Antimony nondetects qualified "UJ" for the MS/MSD %Rs.
6. <u>Furnace Atomic Absorption QC</u> Post digestion spikes performed on sample RH025	The post digestion spike recoveries for the arsenic, selenium, and thallium analyses were within the 85-115 %R control limit. The validator determined the post spike results by reviewing the GFAA raw data.	None
7. <u>ICP Serial Dilution</u> Performed on sample RH006	All serial dilution results greater than 10× the PQL were within the 10%D control limit with the exception of zinc with a 11.8%D. There was no ICP serial dilution form in the report. The validator determined the serial dilution results by reviewing the ICP raw data.	Zinc detected in the samples was qualified "J."
8. <u>Field QC Samples</u> ER samples: RH037, RH018 FB samples: RH020, RH008 Field Duplicates: None identified for this SDG	There were detects in the field QC samples but none at high enough levels to require sample qualifications.	None
9. <u>Other</u>	None	None
10. <u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Metals

Sample Name: RH002
 Lab Code: L9801888-002
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	11	1	6/18/98	6/19/98	6800			
Antimony	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	Q
Arsenic	EPA 3050	7060	5	1	6/18/98	6/18/98	5	U	u	
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	53			
Beryllium	EPA 3050	6010	0.5	1	6/18/98	6/19/98	0.5	U	u	
Boron	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	9			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	4			
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	10			
Lead	EPA 3050	6010	5	1	6/18/98	6/19/98	6			
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Nickel	EPA 3050	6010	5	1	6/18/98	6/19/98	6			
Selenium	EPA 3050	7740	5	1	6/18/98	6/18/98	5	U	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Thallium	EPA 3050	7841	5	1	6/18/98	6/18/98	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	17			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	37		J	A

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwartz*
 1344/021397p

Date: *7/20/98*

11003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Metals

Sample Name: RH003
 Lab Code: L9801888-003
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	11	1	6/18/98	6/19/98	10000			
Antimony	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	J
Arsenic	EPA 3050	7060	5	1	6/18/98	6/18/98	9			
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	76			
Beryllium	EPA 3050	6010	0.5	1	6/18/98	6/19/98	0.6			
Boron	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	15			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	5			
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	8			
Lead	EPA 3050	6010	5	1	6/18/98	6/19/98	8			
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Nickel	EPA 3050	6010	5	1	6/18/98	6/19/98	11			
Selenium	EPA 3050	7740	5	1	6/18/98	6/18/98	5	U	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Thallium	EPA 3050	7841	5	1	6/18/98	6/18/98	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	26			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	47		J	A

CODEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz
 1344021397p

Date: 7/20/98

11004

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Metals

Sample Name: RH004
 Lab Code: L9801888-004
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev	Qual	Code
Aluminum	EPA 3050	6010	12	1	6/18/98	6/19/98	4000				
Antimony	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u	J	Q
Arsenic	EPA 3050	7060	6	1	6/18/98	6/18/98	6	U	u		
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	61				
Beryllium	EPA 3050	6010	0.6	1	6/18/98	6/19/98	0.6	U	u		
Boron	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u		
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u		
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	6				
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	3				
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	3				
Lead	EPA 3050	6010	6	1	6/18/98	6/19/98	6	U	u		
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u		
Molybdenum	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u		
Nickel	EPA 3050	6010	6	1	6/18/98	6/19/98	8				
Selenium	EPA 3050	7740	6	1	6/18/98	6/18/98	6	U	u		
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u		
Thallium	EPA 3050	7841	6	1	6/18/98	6/18/98	6	U	u		
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	13				
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	28			J	A

CODEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz
 1544/021397p

Date: 7/20/98

11005

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Metals

Sample Name: RH005
 Lab Code: L9801888-005
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	12	1	6/18/98	6/19/98	3300			
Antimony	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u	J
Arsenic	EPA 3050	7060	6	1	6/18/98	6/18/98	6	U	u	
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	29			
Beryllium	EPA 3050	6010	0.6	1	6/18/98	6/19/98	0.6	U	u	
Boron	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	7			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	3			
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	5			
Lead	EPA 3050	6010	6	1	6/18/98	6/19/98	6	U	u	
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	
Molybdenum	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u	
Nickel	EPA 3050	6010	6	1	6/18/98	6/19/98	9			
Selenium	EPA 3050	7740	6	1	6/18/98	6/18/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/18/98	6/18/98	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	14			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	28		J	A

CODEN VALIDATED

LEVEL V

Approved By: Eydie Schwarz
 LS40021397p

Date: 7/20/98

11006

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Metals

Sample Name: RH006
 Lab Code: L9801888-006
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev. Qual	Guar. Code
Aluminum	EPA 3050	6010	11	1	6/18/98	6/19/98	18000			
Antimony	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	Q
Arsenic	EPA 3050	7060	6	1	6/18/98	6/18/98	14			
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	140			
Beryllium	EPA 3050	6010	0.6	1	6/18/98	6/19/98	1.0			
Boron	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	30			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	12			
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	26			
Lead	EPA 3050	6010	6	1	6/18/98	6/19/98	27			
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Nickel	EPA 3050	6010	6	1	6/18/98	6/19/98	30			
Selenium	EPA 3050	7740	6	1	6/18/98	6/18/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/18/98	6/18/98	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	52			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	110		J	A

CODEN VALIDATED
 LEVEL V

Approved By: *Eydie Schwartz*
 1344/021397p

Date: *7/20/98*

11007

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne 313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Metals

Sample Name: RH007
 Lab Code: L9801888-007
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qua Code
Aluminum	EPA 3050	6010	11	1	6/18/98	6/19/98	18000			
Antimony	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	uJ	Q
Arsenic	EPA 3050	7060	5	1	6/18/98	6/18/98	14			
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	170			
Beryllium	EPA 3050	6010	0.5	1	6/18/98	6/19/98	1.0			
Boron	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	28			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	11			
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	28			
Lead	EPA 3050	6010	5	1	6/18/98	6/19/98	22			
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Nickel	EPA 3050	6010	5	1	6/18/98	6/19/98	27			
Selenium	EPA 3050	7740	5	1	6/18/98	6/18/98	5	U	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Thallium	EPA 3050	7841	5	1	6/18/98	6/18/98	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	52			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	110		J	A

CODEN VALIDATED
 LEVEL V

Approved By: Eydie Schwarz
 1344/0213979

Date: 7/20/98

11008

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/12/98
 Date Received: 6/12/98

Metals

Sample Name: RH021
 Lab Code: L9801888-008
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qna Code
Aluminum	EPA 3050	6010	11	1	6/18/98	6/19/98	4900			
Antimony	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	uJ	Q
Arsenic	EPA 3050	7060	5	1	6/18/98	6/18/98	5	U	u	
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	31			
Beryllium	EPA 3050	6010	0.5	1	6/18/98	6/19/98	0.5	U	u	
Boron	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	9			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	3			
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	5			
Lead	EPA 3050	6010	5	1	6/18/98	6/19/98	6			
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Nickel	EPA 3050	6010	5	1	6/18/98	6/19/98	6			
Selenium	EPA 3050	7740	5	1	6/18/98	6/18/98	5	U	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Thallium	EPA 3050	7841	5	1	6/18/98	6/18/98	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	17			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	30		J	A

CODEN VALIDATED

LEVEL V

Approved By: *Eydie Schwarz*
 1344/0213979

Date: *7/20/98*

11009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/12/98
 Date Received: 6/12/98

Metals

Sample Name: RH025
 Lab Code: L9801888-001
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Cont
Aluminum	EPA 3050	6010	11	1	6/18/98	6/19/98	3300			
Antimony	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	Q
Arsenic	EPA 3050	7060	6	1	6/18/98	6/18/98	6	U	u	
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	23			
Beryllium	EPA 3050	6010	0.6	1	6/18/98	6/19/98	0.6	U	u	
Boron	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	7			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	2	U	u	
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	5			
Lead	EPA 3050	6010	6	1	6/18/98	6/19/98	6	U	u	
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Nickel	EPA 3050	6010	6	1	6/18/98	6/19/98	7			
Selenium	EPA 3050	7740	6	1	6/18/98	6/18/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/18/98	6/18/98	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	15			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	24		J	A

CODEN VALIDATED

LEVEL V

Approved By: Epidie Schwartz
 1544/021397p

Date: 7/20/98

11002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne 313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/12/98
 Date Received: 6/12/98

Metals

Sample Name: RH026
 Lab Code: L9801888-009
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev	Anal	Gu
Aluminum	EPA 3050	6010	10	1	6/18/98	6/19/98	5600				
Antimony	EPA 3050	6010	10	1	6/18/98	6/19/98	10	U	u	J	Q
Arsenic	EPA 3050	7060	5	1	6/18/98	6/18/98	9				
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	36				
Beryllium	EPA 3050	6010	0.5	1	6/18/98	6/19/98	0.5	U	u		
Boron	EPA 3050	6010	10	1	6/18/98	6/19/98	10	U	u		
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u		
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	9				
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	4				
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	6				
Lead	EPA 3050	6010	5	1	6/18/98	6/19/98	7				
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u		
Molybdenum	EPA 3050	6010	10	1	6/18/98	6/19/98	10	U	u		
Nickel	EPA 3050	6010	5	1	6/18/98	6/19/98	7				
Selenium	EPA 3050	7740	5	1	6/18/98	6/18/98	5	U	u		
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u		
Thallium	EPA 3050	7841	5	1	6/18/98	6/18/98	5	U	u		
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	19				
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	35			J	A

CODEN VALIDATED

LEVEL V

Approved By: Eydie Schwarz
 1344/021397p

Date: 7/20/98

11010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Metals

Sample Name: RH030
 Lab Code: L9801888-012
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev	Anal	Q
Aluminum	EPA 3050	6010	12	1	6/18/98	6/19/98	4900				
Antimony	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u	u	Q
Arsenic	EPA 3050	7060	6	1	6/18/98	6/18/98	6	U	u	u	
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	35				
Beryllium	EPA 3050	6010	0.6	1	6/18/98	6/19/98	0.6	U	u	u	
Boron	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	u	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	11				
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	5				
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	5				
Lead	EPA 3050	6010	6	1	6/18/98	6/19/98	6	U	u	u	
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	u	
Molybdenum	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u	u	
Nickel	EPA 3050	6010	6	1	6/18/98	6/19/98	9				
Selenium	EPA 3050	7740	6	1	6/18/98	6/18/98	6	U	u	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	u	
Thallium	EPA 3050	7841	6	1	6/18/98	6/18/98	6	U	u	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	19				
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	37		J	A	

CODEN VALIDATED

LEVEL V

Approved By: Eydie Schuyt
 1344/021397p

Date: 7/20/98

11011

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Metals

Sample Name: RH031
 Lab Code: L9801888-013
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	12	1	6/18/98	6/19/98	3900			
Antimony	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	UJ	Q
Arsenic	EPA 3050	7060	6	1	6/18/98	6/18/98	6	U	U	
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	37			
Beryllium	EPA 3050	6010	0.6	1	6/18/98	6/19/98	0.6	U	U	
Boron	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	U	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	U	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	6			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	6			
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	4			
Lead	EPA 3050	6010	6	1	6/18/98	6/19/98	6	U	U	
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	U	
Molybdenum	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	U	
Nickel	EPA 3050	6010	6	1	6/18/98	6/19/98	6	U	U	
Selenium	EPA 3050	7740	6	1	6/18/98	6/18/98	6	U	U	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	U	
Thallium	EPA 3050	7841	6	1	6/18/98	6/18/98	6	U	U	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	15			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	28		J	A

CODEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz
 1344/021397p

Date: 7/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Metals

Sample Name: RH032
 Lab Code: L9801888-014
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qua Col
Aluminum	EPA 3050	6010	12	1	6/18/98	6/19/98	4000			
Antimony	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u	J
Arsenic	EPA 3050	7060	6	1	6/18/98	6/18/98	6	U	u	
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	39			
Beryllium	EPA 3050	6010	0.6	1	6/18/98	6/19/98	0.6	U	u	
Boron	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	5			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	3			
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	6			
Lead	EPA 3050	6010	6	1	6/18/98	6/19/98	6	U	u	
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	
Molybdenum	EPA 3050	6010	12	1	6/18/98	6/19/98	12	U	u	
Nickel	EPA 3050	6010	6	1	6/18/98	6/19/98	6	U	u	
Selenium	EPA 3050	7740	6	1	6/18/98	6/18/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/18/98	6/18/98	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	14			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	27			J

ODGEN VALIDATED

LEVEL V

Approved By: *Eydie Schwarz*
 1344/021397p

Date: *7/20/98*

11013

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Metals

Sample Name: RH033
 Lab Code: L9801888-015
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	11	1	6/18/98	6/19/98	13000			
Antimony	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	Q
Arsenic	EPA 3050	7060	5	1	6/18/98	6/18/98	5	U	u	
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	97			
Beryllium	EPA 3050	6010	0.5	1	6/18/98	6/19/98	0.7			
Boron	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1			
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	17			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	5			
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	8			
Lead	EPA 3050	6010	5	1	6/18/98	6/19/98	10			
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Nickel	EPA 3050	6010	5	1	6/18/98	6/19/98	14			
Selenium	EPA 3050	7740	5	1	6/18/98	6/18/98	5	U	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Thallium	EPA 3050	7841	5	1	6/18/98	6/18/98	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	28			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	32		J	A

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz
 1344/021397p

Date: 7/20/98

11014

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Metals

Sample Name: RH036
 Lab Code: L9801888-016
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Guar Cob
Aluminum	EPA 3050	6010	11	1	6/18/98	6/19/98	11000			
Antimony	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	Q
Arsenic	EPA 3050	7060	6	1	6/18/98	6/18/98	6	U	u	
Barium	EPA 3050	6010	1	1	6/18/98	6/19/98	82			
Beryllium	EPA 3050	6010	0.6	1	6/18/98	6/19/98	0.7			
Boron	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/18/98	6/19/98	16			
Cobalt	EPA 3050	6010	2	1	6/18/98	6/19/98	6			
Copper	EPA 3050	6010	2	1	6/18/98	6/19/98	9			
Lead	EPA 3050	6010	6	1	6/18/98	6/19/98	14			
Mercury	EPA 7471	7471	0.2	1	6/18/98	6/18/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/18/98	6/19/98	11	U	u	
Nickel	EPA 3050	6010	6	1	6/18/98	6/19/98	12			
Selenium	EPA 3050	7740	6	1	6/18/98	6/18/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/18/98	6/19/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/18/98	6/18/98	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/18/98	6/19/98	30			
Zinc	EPA 3050	6010	1	1	6/18/98	6/19/98	56		J	A

CODEN VALIDATED

LEVEL V

Approved By: Eydie Schuartz
 1344/021397p

Date: 7/20/98

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Ste. 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: 6010/7000

No. of Samples: 4

Date Completed: August 19, 1998

Reviewer: K. Okonzak-Lowry

Ref: *USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994), Columbia Analytical Services, Inc. - Columbia Analytical Services, Inc. - Canoga Park, Graphite*
FuCanoga Park, Determination of Trace Elements by Inductively Coupled Plasma, Optical Emission Spectrometry SOP ICP-OES, Revision 1.0 (8/96). Trace Atomic Absorption Spectrometry SOP GFA-GFAA, Revision 1.0 (8/96). Columbia Analytical Services, Inc. - Canoga Park, Mercury in Liquid by Cold Vapor Atomic Absorption Spectroscopy SOP CVA-Hg, Revision 1.0 (8/96).

SDG: L9801906

Samples Reviewed: RH020, RH037, RH008, RH018

EPA Level V- Metals Assessment Form

	Problems	Qualifications
I. <u>Sample Management</u>	The cooler temperatures were noted at 7°C and 17°C. Sample condition questions were answered on the COCs. Samples were collected by Ogden personnel, placed in coolers containing ice, and hand delivered to the laboratory. The COC for sample RH037 was not signed by the laboratory personnel, and custody seals were present on only one of the coolers, but as no shipping was involved in the transportation of the samples, this was acceptable. No sample preservation or handling problems were noted.	Due to the nonvolatile nature of the analytes, the samples were not qualified for the temperature blanks.

	Problems	Qualifications
2. <u>Method Blanks</u>	None. All method blank results were below laboratory determined PQLs. The method blank results for zinc and barium were reported as less than 0.02 mg/L which is twice as high as the laboratory stated PQL for zinc and barium of 0.01 mg/L. The raw data was validated to determine that the method blank results for zinc and barium were actually not detected at 0.01 mg/L.	None
3. <u>LCS</u>	The LCS results were acceptable as reviewed.	None
4. <u>Duplicates</u>	None performed.	None
5. <u>MS/MSDs</u>	The four field QC samples in this package were not assessed for this criteria.	None
6. <u>Furnace Atomic Absorption QC</u>	The four field QC samples in this package were not assessed for this criteria.	None
7. <u>ICP Serial Dilution</u> No serial dilution form was provided in the data package.	The four field QC samples in this package were not assessed for this criteria.	None
8. <u>Field QC Samples</u> None applicable	The four field QC samples in this package were not assessed for this criteria.	None
9. <u>Other</u>	The barium and zinc results for the field QC samples in this SDG were reported at higher PQLs than the laboratory's stated PQLs for this project.	The barium and zinc Form I results for the field QC samples were corrected to reflect the nondetects or detects at the stated PQL for these analytes of 0.01 mg/L. The validator verified the raw data for these samples to determine whether the barium and zinc results were actually nondetects or detects at the lower reporting limits.

	Problems	Qualifications
10. <u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906
 Date Collected: 6/11/98
 Date Received: 6/11/98

Metals

Sample Name: RH008
 Lab Code: L9801906-002
 Test Notes:

Units: MG/L
 Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3010	6010	0.05	1	8/25/98	8/25/98	0.05	U	u	
Antimony	EPA 3010	6010	0.05	1	8/25/98	8/25/98	0.05	U	u	
Arsenic	EPA 3020	7060	0.005	1	8/24/98	8/25/98	0.005	U	u	
Barium	EPA 3010	6010	0.020.01	1	8/25/98	8/25/98	0.020.01	U	u	\$, *
Beryllium	EPA 3010	6010	0.005	1	8/25/98	8/25/98	0.005	U	u	
Boron	EPA 3010	6010	0.05	1	8/25/98	8/25/98	0.05	U	u	
Cadmium	EPA 3010	6010	0.005	1	8/25/98	8/25/98	0.005	U	u	
Chromium	EPA 3010	6010	0.01	1	8/25/98	8/25/98	0.01	U	u	
Cobalt	EPA 3010	6010	0.01	1	8/25/98	8/25/98	0.01	U	u	
Copper	EPA 3010	6010	0.01	1	8/25/98	8/25/98	0.01	U	u	
Lead	EPA 3010	6010	0.05	1	8/25/98	8/25/98	0.05	U	u	
Mercury	EPA 7471	7471	0.001	1	8/24/98	8/24/98	0.001	U/*	u	
Molybdenum	EPA 3010	6010	0.02	1	8/25/98	8/25/98	0.02	U	u	
Nickel	EPA 3010	6010	0.04	1	8/25/98	8/25/98	0.04	U	u	
Selenium	EPA 3020	7740	0.005	1	8/24/98	8/25/98	0.005	U	u	
Silver	EPA 3010	6010	0.01	1	8/25/98	8/25/98	0.01	U	u	
Thallium	EPA 3020	7841	0.005	1	8/24/98	8/25/98	0.005	U	u	
Vanadium	EPA 3010	6010	0.01	1	8/25/98	8/25/98	0.01	U	u	
Zinc	EPA 3010	6010	0.020.01	1	8/25/98	8/25/98	0.020.01	U	u	\$, *

11002
 8/27/98

Sample was analyzed past the holding time.

Approved By: Eydie Schwarz
 1544/021397p

Date: 8/26/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906
 Date Collected: 6/11/98
 Date Received: 6/11/98

Metals

Sample Name: RH018
 Lab Code: L9801906-003
 Test Notes:

Units: MG/L
 Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3010	6010	0.05	1	8/25/98	8/25/98	0.05	U	u	
Antimony	EPA 3010	6010	0.05	1	8/25/98	8/25/98	0.05	U	u	
Arsenic	EPA 3020	7060	0.005	1	8/24/98	8/25/98	0.005	U	u	
Barium	EPA 3010	6010	0.020.01	1	8/25/98	8/25/98	0.020.01	U	u	\$, * 9
Beryllium	EPA 3010	6010	0.005	1	8/25/98	8/25/98	0.005	U	u	
Boron	EPA 3010	6010	0.05	1	8/25/98	8/25/98	0.05	U	u	
Cadmium	EPA 3010	6010	0.005	1	8/25/98	8/25/98	0.005	U	u	
Chromium	EPA 3010	6010	0.01	1	8/25/98	8/25/98	0.01	U	u	
Cobalt	EPA 3010	6010	0.01	1	8/25/98	8/25/98	0.01	U	u	
Copper	EPA 3010	6010	0.01	1	8/25/98	8/25/98	0.01	U	u	
Lead	EPA 3010	6010	0.05	1	8/25/98	8/25/98	0.05	U	u	
Mercury	EPA 7471	7471	0.001	1	8/25/98	8/25/98	0.001	U/*	u	
Molybdenum	EPA 3010	6010	0.02	1	8/25/98	8/25/98	0.02	U	u	
Nickel	EPA 3010	6010	0.04	1	8/25/98	8/25/98	0.04	U	u	
Selenium	EPA 3020	7740	0.005	1	8/24/98	8/25/98	0.005	U	u	
Silver	EPA 3010	6010	0.01	1	8/25/98	8/25/98	0.01	U	u	
Thallium	EPA 3020	7841	0.005	1	8/24/98	8/25/98	0.005	U	u	
Vanadium	EPA 3010	6010	0.01	1	8/25/98	8/25/98	0.01	U	u	
Zinc	EPA 3010	6010	0.020.01	1	8/25/98	8/25/98	0.020.01	U	u	\$, * 9

KKOL
 8/27/98

* Sample was analyzed past the holding time.

Approved By: Eydie Schwartz
 1544/021397p

Date: 8/26/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906

Date Collected: 6/15/98

Date Received: 6/15/98

Metals

Sample Name: RH020
 Lab Code: L9801906-009
 Test Notes:

Units: MG/L

Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev	Qual Code
Aluminum	EPA 3010	6010	0.05	1	6/23/98	6/24/98	0.05	U	u	u
Antimony	EPA 3010	6010	0.05	1	6/23/98	6/24/98	0.05	U	u	u
Arsenic	EPA 3020	7060	0.005	1	6/19/98	6/22/98	0.005	U	u	u
Barium	EPA 3010	6010	0.02 0.01	1	6/23/98	6/24/98	0.02 0.01	U	u	u
Beryllium	EPA 3010	6010	0.005	1	6/23/98	6/24/98	0.005	U	u	u
Boron	EPA 3010	6010	0.05	1	6/23/98	6/24/98	0.05	U	u	u
Cadmium	EPA 3010	6010	0.005	1	6/23/98	6/24/98	0.005	U	u	u
Chromium	EPA 3010	6010	0.01	1	6/23/98	6/24/98	0.01	U	u	u
Cobalt	EPA 3010	6010	0.01	1	6/23/98	6/24/98	0.01	U	u	u
Copper	EPA 3010	6010	0.01	1	6/23/98	6/24/98	0.01	U	u	u
Lead	EPA 3010	6010	0.05	1	6/23/98	6/24/98	0.05	U	u	u
Mercury	EPA 7471	7470	0.001	1	6/23/98	6/24/98	0.001	U	u	u
Molybdenum	EPA 3010	6010	0.02	1	6/23/98	6/24/98	0.02	U	u	u
Nickel	EPA 3010	6010	0.04	1	6/23/98	6/24/98	0.04	U	u	u
Selenium	EPA 3020	7740	0.005	1	6/19/98	6/22/98	0.005	U	u	u
Silver	EPA 3010	6010	0.01	1	6/23/98	6/24/98	0.01	U	u	u
Thallium	EPA 3020	7841	0.005	1	6/19/98	6/22/98	0.005	U	u	u
Vanadium	EPA 3010	6010	0.01	1	6/23/98	6/24/98	0.01	U	u	u
Zinc	EPA 3010	6010	0.02 0.01	1	6/23/98	6/24/98	0.02			

KLR
 8/19/98

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

8/5/98

11002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Ogden Environmental
Rocketdyne/313150002
Water

Service Request: L9801906
Date Collected: 6/15/98
Date Received: 6/15/98

Metals

Sample Name: RH037
Lab Code: L9801906-011
Test Notes:

Units: MGL
Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3010	6010	0.05	1	6/23/98	6/24/98	0.05	U	u	
Antimony	EPA 3010	6010	0.05	1	6/23/98	6/24/98	0.05	U	u	
Arsenic	EPA 3020	7060	0.005	1	6/19/98	6/22/98	0.005	U	u	
Barium	EPA 3010	6010	0.02 0.01	1	6/23/98	6/24/98	0.02 0.01	U	u	\$, * 9
Beryllium	EPA 3010	6010	0.005	1	6/23/98	6/24/98	0.005	U	u	
Boron	EPA 3010	6010	0.05	1	6/23/98	6/24/98	0.05	U	u	
Cadmium	EPA 3010	6010	0.005	1	6/23/98	6/24/98	0.005	U	u	
Chromium	EPA 3010	6010	0.01	1	6/23/98	6/24/98	0.01	U	u	
Cobalt	EPA 3010	6010	0.01	1	6/23/98	6/24/98	0.01	U	u	
Copper	EPA 3010	6010	0.01	1	6/23/98	6/24/98	0.01	U	u	
Lead	EPA 3010	6010	0.05	1	6/23/98	6/24/98	0.05	U	u	
Mercury	EPA 7471	7470	0.001	1	6/23/98	6/24/98	0.001	U	u	
Molybdenum	EPA 3010	6010	0.02	1	6/23/98	6/24/98	0.02	U	u	
Nickel	EPA 3010	6010	0.04	1	6/23/98	6/24/98	0.04	U	u	
Selenium	EPA 3020	7740	0.005	1	6/19/98	6/22/98	0.005	U	u	
Silver	EPA 3010	6010	0.01	1	6/23/98	6/24/98	0.01	U	u	
Thallium	EPA 3020	7841	0.005	1	6/19/98	6/22/98	0.005	U	u	
Vanadium	EPA 3010	6010	0.01	1	6/23/98	6/24/98	0.01	U	u	
Zinc	EPA 3010	6010	0.02 0.01	1	6/23/98	6/24/98	0.02 0.01	U	u	\$, * 9

KAL
8/19/98

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz
1944/021397p

Date: 8/5/98

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Ste. 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: 6010/7000

No. of Samples: 10

Date Completed: August 19, 1998

Reviewer: K. Okonczak-Lowry

Ref: *USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994), Columbia Analytical Services, Inc. - Canoga Park, Determination of Trace Elements by Inductively Coupled Plasma, Optical Emission Spectrometry SOP ICP-OES, Revision 1.0 (8/96). Columbia Analytical Services, Inc. - Canoga Park, Graphite Furnace Atomic Absorption Spectrometry SOP GFA-GFAA, Revision 1.0 (8/96). Columbia Analytical Services, Inc. - Canoga Park, Mercury in Solid or Semisolid Waste SOP MET-7471, Revision 2.0 (3/98).*

SDG: L9801914

Samples Reviewed: RH011, RH012, RH013, RH014, RH015, RH016, RH041, RH046, RH047, RH048

EPA Level V- Metals Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	The sample condition questions were answered on the applicable COCs. The sample cooler temperatures upon receipt were noted on the COCs at 4°C and 13°C. Samples were collected by Ogden personnel, placed in coolers containing ice, and hand delivered to the laboratory. The COCs were not signed by the laboratory personnel, and no custody seals were present on the coolers, but as no shipping was involved in the transportation of the samples, this was acceptable. No sample preservation or handling problems were noted.	Due to the nonvolatile nature of the analytes, the samples were not qualified for the temperature blank information.
2. <u>Method Blanks</u>	None. All method blank results were below laboratory determined PQLs.	None

	Problems	Qualifications
3. <u>LCS</u>	The LCS results were all within the laboratory established control limits of 75-125 %R.	None
4. <u>Duplicates</u>	None performed.	None
5. <u>MS/MSDs</u> Performed on soil sample RH048	Antimony: MS at 43 %R/MSD at 36 %R.	Antimony nondetects qualified "UJ" for the MS/MSD %Rs.
6. <u>Furnace Atomic Absorption QC</u> Post digestion spikes performed on sample RH011	The post digestion spike recoveries for the arsenic, selenium, and thallium analyses were within the 85-115 %R control limit. The validator determined the post spike results by reviewing the GFAA raw data.	None
7. <u>ICP Serial Dilution</u> Performed on sample RH046	All serial dilution results greater than 10× the PQL were within the 10%D control limit with the exception of aluminum, barium, and zinc with %Ds of 12.4%, 10.7%, and 15.8%, respectively. There was no ICP serial dilution form in the report. The validator determined the serial dilution results by reviewing the ICP raw data.	Aluminum, barium, and zinc detected in the samples was qualified "J."
8. <u>Field QC Samples</u> ER samples: RH018, RH037 FB samples: RH008, RH020 Field Duplicates: RH047/RH048	There were detects in the field QC samples but none at high enough levels to require qualifications to the site samples. The detects for the field duplicate samples were in common with RPDs of 100% or less.	None
9. <u>Other</u>	None	None
10. <u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Ogden Environmental
Rocketdyne/313150002
Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Metals

Sample Name: RH011
Lab Code: L9801914-001
Test Notes:

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Anal Code
Aluminum	EPA 3050	6010	16	1	6/19/98	6/22/98	6900		J	A
Antimony	EPA 3050	6010	16	1	6/19/98	6/22/98	16	U	uJ	G
Arsenic	EPA 3050	7060	8	1	6/19/98	6/19/98	8			
Barium	EPA 3050	6010	2	1	6/19/98	6/22/98	63		J	A
Beryllium	EPA 3050	6010	0.8	1	6/19/98	6/22/98	0.8	U	u	
Boron	EPA 3050	6010	16	1	6/19/98	6/22/98	16	U	u	
Cadmium	EPA 3050	6010	2	1	6/19/98	6/22/98	2	U	u	
Chromium	EPA 3050	6010	3	1	6/19/98	6/22/98	15			
Cobalt	EPA 3050	6010	3	1	6/19/98	6/22/98	5			
Copper	EPA 3050	6010	3	1	6/19/98	6/22/98	10			
Lead	EPA 3050	6010	8	1	6/19/98	6/22/98	9			
Mercury	EPA 7471	7471	0.3	1	6/19/98	6/19/98	0.3	U	u	
Molybdenum	EPA 3050	6010	16	1	6/19/98	6/22/98	16	U	u	
Nickel	EPA 3050	6010	8	1	6/19/98	6/22/98	17			
Selenium	EPA 3050	7740	8	1	6/19/98	6/19/98	8	U	u	
Silver	EPA 3050	6010	2	1	6/19/98	6/22/98	2	U	u	
Thallium	EPA 3050	7841	8	1	6/19/98	6/19/98	8	U	u	
Vanadium	EPA 3050	6010	2	1	6/19/98	6/22/98	30			
Zinc	EPA 3050	6010	1	1	6/19/98	6/22/98	40		J	A

CODEN VALIDATED

LEVEL V

Approved By: Eydie Schwarz
1344/021397p

Date: 7/27/98

11002

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Metals

Sample Name: RH012
 Lab Code: L9801914-002
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	12	1	6/19/98	6/22/98	4400		J	A
Antimony	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	u	Q
Arsenic	EPA 3050	7060	6	1	6/19/98	6/19/98	6	U	u	
Barium	EPA 3050	6010	1	1	6/19/98	6/22/98	30		J	A
Beryllium	EPA 3050	6010	0.6	1	6/19/98	6/22/98	0.6	U	u	
Boron	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	u	
Cadmium	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/19/98	6/22/98	7			
Cobalt	EPA 3050	6010	2	1	6/19/98	6/22/98	3			
Copper	EPA 3050	6010	2	1	6/19/98	6/22/98	5			
Lead	EPA 3050	6010	6	1	6/19/98	6/22/98	6	U	u	
Mercury	EPA 7471	7471	0.2	1	6/19/98	6/19/98	0.2	U	u	
Molybdenum	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	u	
Nickel	EPA 3050	6010	6	1	6/19/98	6/22/98	6	U	u	
Selenium	EPA 3050	7740	6	1	6/19/98	6/19/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/19/98	6/19/98	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/19/98	6/22/98	13			
Zinc	EPA 3050	6010	1	1	6/19/98	6/22/98	30		J	A

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schwartz*
 1544/021397p

Date: *7/27/98*

11003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Ogden Environmental
Rocketdyne/313150002
Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Metals

Sample Name: RH013
Lab Code: L9801914-003
Test Notes:

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Gen Cod
Aluminum	EPA 3050	6010	12	1	6/19/98	6/22/98	3400		J	A
Antimony	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	u	Q
Arsenic	EPA 3050	7060	6	1	6/19/98	6/19/98	6	U	u	
Barium	EPA 3050	6010	1	1	6/19/98	6/22/98	22		J	A
Beryllium	EPA 3050	6010	0.6	1	6/19/98	6/22/98	0.6	U	u	
Boron	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	u	
Cadmium	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/19/98	6/22/98	6			
Cobalt	EPA 3050	6010	2	1	6/19/98	6/22/98	2	U	u	
Copper	EPA 3050	6010	2	1	6/19/98	6/22/98	3			
Lead	EPA 3050	6010	6	1	6/19/98	6/22/98	6	U	u	
Mercury	EPA 7471	7471	0.2	1	6/19/98	6/19/98	0.2	U	u	
Molybdenum	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	u	
Nickel	EPA 3050	6010	6	1	6/19/98	6/22/98	6	U	u	
Selenium	EPA 3050	7740	6	1	6/19/98	6/19/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/19/98	6/19/98	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/19/98	6/22/98	12			
Zinc	EPA 3050	6010	1	1	6/19/98	6/22/98	23		J	A

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwant
1544/021397p

Date: 7/27/98

11004

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Ogden Environmental
Rocketdyne/313150002
Soil

Service Request: L9801914

Date Collected: 6/11/98

Date Received: 6/11/98

Metals

Sample Name: RH014
Lab Code: L9801914-004
Test Notes:

Units: MG/KG

Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Grp Code
Aluminum	EPA 3050	6010	12	1	6/19/98	6/22/98	4100		J	A
Antimony	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	uJ	Q
Arsenic	EPA 3050	7060	6	1	6/19/98	6/19/98	6	U	u	
Barium	EPA 3050	6010	1	1	6/19/98	6/22/98	27		J	A
Beryllium	EPA 3050	6010	0.6	1	6/19/98	6/22/98	0.6	U	u	
Boron	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	u	
Cadmium	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/19/98	6/22/98	7			
Cobalt	EPA 3050	6010	2	1	6/19/98	6/22/98	3			
Copper	EPA 3050	6010	2	1	6/19/98	6/22/98	4			
Lead	EPA 3050	6010	6	1	6/19/98	6/22/98	6	U	u	
Mercury	EPA 7471	7471	0.2	1	6/19/98	6/19/98	0.2	U	u	
Molybdenum	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	u	
Nickel	EPA 3050	6010	6	1	6/19/98	6/22/98	6	U	u	
Selenium	EPA 3050	7740	6	1	6/19/98	6/19/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/19/98	6/19/98	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/19/98	6/22/98	13			
Zinc	EPA 3050	6010	1	1	6/19/98	6/22/98	26		J	A

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz
1344021397p

Date: 7/27/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Metals

Sample Name: RH015
 Lab Code: L9801914-005
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	13	1	6/19/98	6/22/98	8500		J	A
Antimony	EPA 3050	6010	13	1	6/19/98	6/22/98	13	U	uJ	Q
Arsenic	EPA 3050	7060	7	1	6/19/98	6/19/98	7	U	u	
Barium	EPA 3050	6010	1	1	6/19/98	6/22/98	110		J	A
Beryllium	EPA 3050	6010	0.7	1	6/19/98	6/22/98	0.7	U	u	
Boron	EPA 3050	6010	13	1	6/19/98	6/22/98	13	U	u	
Cadmium	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Chromium	EPA 3050	6010	3	1	6/19/98	6/22/98	13			
Cobalt	EPA 3050	6010	3	1	6/19/98	6/22/98	4			
Copper	EPA 3050	6010	3	1	6/19/98	6/22/98	5			
Lead	EPA 3050	6010	7	1	6/19/98	6/22/98	8			
Mercury	EPA 7471	7471	0.3	1	6/19/98	6/19/98	0.3	U	u	
Molybdenum	EPA 3050	6010	13	1	6/19/98	6/22/98	13	U	u	
Nickel	EPA 3050	6010	7	1	6/19/98	6/22/98	7	U	u	
Selenium	EPA 3050	7740	7	1	6/19/98	6/19/98	7	U	u	
Silver	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Thallium	EPA 3050	7841	7	1	6/19/98	6/19/98	7	U	u	
Vanadium	EPA 3050	6010	3	1	6/19/98	6/22/98	20			
Zinc	EPA 3050	6010	1	1	6/19/98	6/22/98	39		J	A

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Scheraga
 1344/021397p

Date: 7/27/98

11006

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Metals

Sample Name: RH016
 Lab Code: L9801914-006
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	13	1	6/19/98	6/22/98	4500		J	A
Antimony	EPA 3050	6010	13	1	6/19/98	6/22/98	13	U	u	Q
Arsenic	EPA 3050	7060	6	1	6/19/98	6/19/98	6	U	u	
Barium	EPA 3050	6010	1	1	6/19/98	6/22/98	31		J	A
Beryllium	EPA 3050	6010	0.6	1	6/19/98	6/22/98	0.6	U	u	
Boron	EPA 3050	6010	13	1	6/19/98	6/22/98	13	U	u	
Cadmium	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Chromium	EPA 3050	6010	3	1	6/19/98	6/22/98	8			
Cobalt	EPA 3050	6010	3	1	6/19/98	6/22/98	4			
Copper	EPA 3050	6010	3	1	6/19/98	6/22/98	4			
Lead	EPA 3050	6010	6	1	6/19/98	6/22/98	6	U	u	
Mercury	EPA 7471	7471	0.3	1	6/19/98	6/19/98	0.3	U	u	
Molybdenum	EPA 3050	6010	13	1	6/19/98	6/22/98	13	U	u	
Nickel	EPA 3050	6010	6	1	6/19/98	6/22/98	6	U	u	
Selenium	EPA 3050	7740	6	1	6/19/98	6/19/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/19/98	6/19/98	6	U	u	
Vanadium	EPA 3050	6010	3	1	6/19/98	6/22/98	15			
Zinc	EPA 3050	6010	1	1	6/19/98	6/22/98	29		J	A

CODEN VALIDATED

LEVEL V

Approved By: *Eydie Schwan*
 1344/021397p

Date: *7/27/98*

11007

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Metals

Sample Name: RH041
 Lab Code: L9801914-007
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	11	1	6/19/98	6/22/98	13000		J	A
Antimony	EPA 3050	6010	11	1	6/19/98	6/22/98	11	U	u J	R
Arsenic	EPA 3050	7060	5	1	6/19/98	6/19/98	5	U	u	
Barium	EPA 3050	6010	1	1	6/19/98	6/22/98	84		J	A
Beryllium	EPA 3050	6010	0.5	1	6/19/98	6/22/98	1.1			
Boron	EPA 3050	6010	11	1	6/19/98	6/22/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/19/98	6/22/98	22			
Cobalt	EPA 3050	6010	2	1	6/19/98	6/22/98	8			
Copper	EPA 3050	6010	2	1	6/19/98	6/22/98	17			
Lead	EPA 3050	6010	5	1	6/19/98	6/22/98	25			
Mercury	EPA 7471	7471	0.2	1	6/19/98	6/19/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/19/98	6/22/98	11	U	u	
Nickel	EPA 3050	6010	5	1	6/19/98	6/22/98	17			
Selenium	EPA 3050	7740	5	1	6/19/98	6/19/98	5	U	u	
Silver	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Thallium	EPA 3050	7841	5	1	6/19/98	6/19/98	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/19/98	6/22/98	43			
Zinc	EPA 3050	6010	1	1	6/19/98	6/22/98	78		J	A

CODEN VALIDATED

LEVEL V

Approved By: *Eydie Schwartz*
 1544/0213979

Date: *7/27/98*

11008

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Metals

Sample Name: RH046
 Lab Code: L9801914-008
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	12	1	6/19/98	6/22/98	18000		J	A
Antimony	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	U	Q
Arsenic	EPA 3050	7060	6	1	6/19/98	6/19/98	14			
Barium	EPA 3050	6010	1	1	6/19/98	6/22/98	140		J	A
Beryllium	EPA 3050	6010	0.6	1	6/19/98	6/22/98	1.1			
Boron	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	U	
Cadmium	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	U	
Chromium	EPA 3050	6010	2	1	6/19/98	6/22/98	29			
Cobalt	EPA 3050	6010	2	1	6/19/98	6/22/98	12			
Copper	EPA 3050	6010	2	1	6/19/98	6/22/98	28			
Lead	EPA 3050	6010	6	1	6/19/98	6/22/98	29			
Mercury	EPA 7471	7471	0.2	1	6/19/98	6/19/98	0.2	U	U	
Molybdenum	EPA 3050	6010	12	1	6/19/98	6/22/98	12	U	U	
Nickel	EPA 3050	6010	6	1	6/19/98	6/22/98	29			
Selenium	EPA 3050	7740	6	1	6/19/98	6/19/98	6	U	U	
Silver	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	U	
Thallium	EPA 3050	7841	6	1	6/19/98	6/19/98	6	U	U	
Vanadium	EPA 3050	6010	2	1	6/19/98	6/22/98	54			
Zinc	EPA 3050	6010	1	1	6/19/98	6/22/98	110		J	A

CODEN VALIS 1009

LEVEL V

Approved By: Eydie Schwartz
 1344/021397g

Date: 7/27/98

11009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Metals

Sample Name: RH047
 Lab Code: L9801914-013
 Test Notes:

Units: MG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	11	1	6/19/98	6/22/98	16000		J	A
Antimony	EPA 3050	6010	11	1	6/19/98	6/22/98	11	U	u	G
Arsenic	EPA 3050	7060	6	1	6/19/98	6/19/98	16		J	A
Barium	EPA 3050	6010	1	1	6/19/98	6/22/98	87			
Beryllium	EPA 3050	6010	0.6	1	6/19/98	6/22/98	1.0			
Boron	EPA 3050	6010	11	1	6/19/98	6/22/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/19/98	6/22/98	25			
Cobalt	EPA 3050	6010	2	1	6/19/98	6/22/98	10			
Copper	EPA 3050	6010	2	1	6/19/98	6/22/98	30			
Lead	EPA 3050	6010	6	1	6/19/98	6/22/98	23			
Mercury	EPA 7471	7471	0.2	1	6/19/98	6/19/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/19/98	6/22/98	11	U	u	
Nickel	EPA 3050	6010	6	1	6/19/98	6/22/98	20			
Selenium	EPA 3050	7740	6	1	6/19/98	6/19/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/19/98	6/19/98	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/19/98	6/22/98	45			
Zinc	EPA 3050	6010	1	1	6/19/98	6/22/98	97		J	A

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schwartz*
 1544/021397p

Date: *7/27/98*

11010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Ogden Environmental
Rocketdyne/313150002
Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98

Metals

Sample Name: RH048
Lab Code: L9801914-014
Test Notes:

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	11	1	6/19/98	6/22/98	16000		J	A
Antimony	EPA 3050	6010	11	1	6/19/98	6/22/98	11	U	u J	Q
Arsenic	EPA 3050	7060	6	1	6/19/98	6/19/98	14			
Barium	EPA 3050	6010	1	1	6/19/98	6/22/98	91		J	A
Beryllium	EPA 3050	6010	0.6	1	6/19/98	6/22/98	1.1			
Boron	EPA 3050	6010	11	1	6/19/98	6/22/98	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Chromium	EPA 3050	6010	2	1	6/19/98	6/22/98	26			
Cobalt	EPA 3050	6010	2	1	6/19/98	6/22/98	11			
Copper	EPA 3050	6010	2	1	6/19/98	6/22/98	28			
Lead	EPA 3050	6010	6	1	6/19/98	6/22/98	26			
Mercury	EPA 7471	7471	0.2	1	6/19/98	6/19/98	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/19/98	6/22/98	11	U	u	
Nickel	EPA 3050	6010	6	1	6/19/98	6/22/98	23			
Selenium	EPA 3050	7740	6	1	6/19/98	6/19/98	6	U	u	
Silver	EPA 3050	6010	1	1	6/19/98	6/22/98	1	U	u	
Thallium	EPA 3050	7841	6	1	6/19/98	6/19/98	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/19/98	6/22/98	46			
Zinc	EPA 3050	6010	1	1	6/19/98	6/22/98	110		J	A

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schwartz*
1344/021397p

Date: *7/27/98*

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Suite 500
Lakewood, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 8270-SIM

No. of Samples: 14

Date Reviewed: 08/14/98

Reviewer: K. McNeill

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994), and Columbia Analytical Services SOP 97-SOA-SIM-00M (Revision 1, 10/14/97).

SDG: L9801888

Samples Reviewed: RH025, RH002, RH003, RH004, RH005, RH006, RH007, RH021, RH026, RH030, RH031, RH032, RH033, RH036.

Matrix: Soil

EPA Level V- Polynuclear Aromatic Hydrocarbons Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	All samples were received with cooler temperatures of 11°C, 13°C, and 14°C. The samples were all received intact and no other shipping/receipt problems were noted.	No qualifications were required. Because the samples were collected by Ogden personnel, placed in coolers containing ice, and delivered to the Columbia laboratory, the samples had not yet cooled to acceptable temperatures. No custody seals were present on the coolers, but because they were transported directly to the laboratory by field personnel, this was acceptable.
4. <u>Method Blanks</u>	One method blank was analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with this SDG. The LCS had acceptable recovery values for all compounds.	No qualifications were required.

	Problems	Qualifications
6. <u>Surrogates</u>	Samples RH004, RH006, RH026, and RH030 all had a high %R value for nitrobenzene-d5. All other samples had acceptable surrogate recovery values.	No qualifications were required for the high %R value of nitrobenzene-d5, because only one surrogate was outlier.
7. <u>MS/MSDs</u> Sample RH036 was the MS/MSD associated with this SDG.	The MS/MSDs had acceptable %R and RPD values.	No qualifications were required.
8. <u>Field QC Samples</u> ER: RH037 (L9801906); RH018 (L9801906) FB: RH008 (L9801906); RH020 (L9801906) Duplicates: None	Equipment rinsate RH037 had nondetects for all compounds. Sample RH018, an equipment rinsate, was requested to have a PAH analysis, but was not performed. The sample was initially submitted to the laboratory on hold on 6/11/98, and the hold was removed on 6/18/98 and approved for analysis. Both field blanks had nondetects for all compounds. N/A	No qualifications were required. No qualifications were required. N/A
9. <u>Other</u>	Pyrene detect in sample RH026 was recalculated and verified as requested. No problems were noted with detect, all values were correctly calculated.	N/A
10. <u>Comments</u>	N/A	N/A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH002
 Lab Code: L9801888-002
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	3	1	6/19/98	6/27/98	3	U
Naphthalene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Acenaphthylene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Acenaphthene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Diethyl Phthalate	EPA 3550	8270SIM	150	1	6/19/98	6/27/98	150	U
Fluorene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Phenanthrene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Anthracene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	150	1	6/19/98	6/27/98	150	U
Fluoranthene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Pyrene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Benz(a)anthracene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	150	1	6/19/98	6/27/98	150	U
Chrysene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Benzo(a)pyrene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	46	1	6/19/98	6/27/98	46	U

N-Nitrosodimethylamine

Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By:

Eydie Schwartz

Date:

7/20/98

1S22/020597p

01888SOA_AA2 - Sample (2) 7/20/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH003
 Lab Code: L9801888-003
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/27/98	2	U
Naphthalene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Acenaphthylene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Acenaphthene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/27/98	110	U
Fluorene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Phenanthrene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Anthracene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/27/98	110	U
Fluoranthene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Pyrene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Benz(a)anthracene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/27/98	110	U
Chrysene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Benzo(a)pyrene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	32	1	6/19/98	6/27/98	32	U

N-Nitrosodimethylamine Reported Method Detection Limit

**OGDEN VALIDATED
LEVEL V**

Approved By: *Eydie Schwartz*

Date: *7/20/98*

1S22/020597p

01888SOA_AA2 - Sample (3) 7/20/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH004
 Lab Code: L9801888-004
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/29/98	2	U	U
Naphthalene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Acenaphthylene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Acenaphthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U	U
Fluorene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Phenanthrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Anthracene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U	U
Fluoranthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Pyrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Benz(a)anthracene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U	U
Chrysene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Benzo(a)pyrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	U

N-Nitrosodimethylamine

Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schurz*

Date: 7/20/98

1522/020597p

01888SOA_AA2 - Sample (4) 7/20/98

1005

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH005
 Lab Code: L9801888-005
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/29/98	2	U
Naphthalene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Acenaphthylene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Acenaphthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U
Fluorene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Phenanthrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Anthracene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U
Fluoranthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Pyrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Benz(a)anthracene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U
Chrysene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Benzo(a)pyrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwartz*

Date: *7/20/98*

1S22/020597p

01888SOA.AA2 - Sample (5) 7/20/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH006
 Lab Code: L9801888-006
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/29/98	2	U
Naphthalene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Acenaphthylene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Acenaphthene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/29/98	110	U
Fluorene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Phenanthrene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Anthracene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/29/98	110	U
Fluoranthene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Pyrene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Benz(a)anthracene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/29/98	110	U
Chrysene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Benzo(a)pyrene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	34	1	6/19/98	6/29/98	34	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwartz*

Date: *7/20/98*

1S22/020597p

01888SOA_AA2 - Sample (6) 7/20/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH007
 Lab Code: L9801888-007
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/27/98	2	U
Naphthalene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Acenaphthylene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Acenaphthene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/27/98	110	U
Fluorene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Phenanthrene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/27/98	110	U
Fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Benz(a)anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/27/98	110	U
Chrysene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Benzo(a)pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schurz*

Date: 7/20/98

1S22/020597p

01888SOA.AA2 - Sample (7) 7/20/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/12/98
 Date Received: 6/12/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH021
 Lab Code: L9801888-008
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev	Qual
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/29/98	2	U		
Naphthalene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Acenaphthylene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Acenaphthene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/29/98	110	U		
Fluorene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Phenanthrene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Di-n-butyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/29/98	110	U		
Fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Benz(a)anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/29/98	110	U		
Chrysene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Benzo(b)fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Benzo(k)fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Benzo(a)pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Dibenz(a,h)anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
Benzo(g,h,i)perylene	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		
N-Nitrosodiphenylamine	EPA 3550	8270SIM	33	1	6/19/98	6/29/98	33	U		

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwartz*

Date: *7/20/98*

1S22/020597p

01888SOA-AA2 - Sample (8) 7/20/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/12/98
 Date Received: 6/12/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH025
 Lab Code: L9801888-001
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/27/98	2	U
Naphthalene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Acenaphthylene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Acenaphthene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/27/98	120	U
Fluorene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Phenanthrene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Anthracene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/27/98	120	U
Fluoranthene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Pyrene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Benz(a)anthracene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/27/98	120	U
Chrysene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Benzo(a)pyrene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	34	1	6/19/98	6/27/98	34	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwartz*

Date: 7/20/98

IS22/020597p

01888SOA-AA2 - Sample 7/20/98

LEVEL V¹⁰⁰²
 Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/12/98
 Date Received: 6/12/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH026
 Lab Code: L9801888-009
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev Qual	Case Code
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/29/98	2	U		
Naphthalene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Acenaphthylene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Acenaphthene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Diethyl Phthalate	EPA 3550	8270SIM	100	1	6/19/98	6/29/98	100	U		
Fluorene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Phenanthrene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Anthracene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Di-n-butyl Phthalate	EPA 3550	8270SIM	100	1	6/19/98	6/29/98	100	U		
Fluoranthene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Pyrene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	39			
Benz(a)anthracene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	100	1	6/19/98	6/29/98	100	U		
Chrysene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Benzo(b)fluoranthene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Benzo(k)fluoranthene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Benzo(a)pyrene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Dibenz(a,h)anthracene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
Benzo(g,h,i)perylene	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		
N-Nitrosodiphenylamine	EPA 3550	8270SIM	31	1	6/19/98	6/29/98	31	U		

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schuof

Date: 7/20/98

1S22/020597p

01888SOA.AA3 - Sample 7/20/98

1010

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Selected Ion Monitoring (SIM)
Base Neutral Semivolatile Organic Compounds

Sample Name: RH030
Lab Code: L9801888-012
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/29/98	2	U	C
Naphthalene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Acenaphthylene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Acenaphthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U	
Fluorene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Phenanthrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Anthracene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Di-n-butyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U	
Fluoranthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Pyrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Benz(a)anthracene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U	
Chrysene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Benzo(b)fluoranthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Benzo(k)fluoranthene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Benzo(a)pyrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Dibenz(a,h)anthracene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
Benzo(g,h,i)perylene	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	
N-Nitrosodiphenylamine	EPA 3550	8270SIM	35	1	6/19/98	6/29/98	35	U	

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schumert*

Date: *7/20/98*

1522/020597p

01888SOA.AA3 - Sample (2) 7/20/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH031
 Lab Code: L9801888-013
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/29/98	2	U
Naphthalene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Acenaphthylene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Acenaphthene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U
Fluorene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Phenanthrene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Anthracene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U
Fluoranthene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Pyrene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Benz(a)anthracene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U
Chrysene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Benzo(a)pyrene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	36	1	6/19/98	6/29/98	36	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schmitt*

1522/020597p

Date: *7/20/98*

01888SOA.AA3 - Sample (3) 7/20/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH032
 Lab Code: L9801888-014
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/29/98	2	U
Naphthalene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Acenaphthylene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Acenaphthene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U
Fluorene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Phenanthrene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Anthracene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U
Fluoranthene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Pyrene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Benz(a)anthracene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/19/98	6/29/98	120	U
Chrysene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Benzo(a)pyrene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	37	1	6/19/98	6/29/98	37	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schurpf*

Date: *7/20/98*

1522/020597p

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH033
 Lab Code: L9801888-015
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/27/98	2	U
Naphthalene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Acenaphthylene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Acenaphthene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/27/98	110	U
Fluorene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Phenanthrene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/27/98	110	U
Fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Benz(a)anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/27/98	110	U
Chrysene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Benzo(a)pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	33	1	6/19/98	6/27/98	33	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwartz*

Date: *7/20/98*

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Selected Ion Monitoring (SIM)
Base Neutral Semivolatile Organic Compounds

Sample Name: RH036
Lab Code: L9801888-016
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/19/98	6/26/98	2	U
Naphthalene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Acenaphthylene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Acenaphthene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/26/98	110	U
Fluorene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Phenanthrene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/26/98	110	U
Fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Benz(a)anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/19/98	6/26/98	110	U
Chrysene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Benzo(a)pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	33	1	6/19/98	6/26/98	33	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schurz*

Date: *7/20/98*

1522/020597p

01888SOA.AA3 - Sample (6) 7/20/98

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Page No.:

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Suite 500
Lakewood, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 8270-SIM

No. of Samples: 3

Date Reviewed: 8/19/98

Reviewer: M. Pokorny

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994), and Columbia Analytical Services SOP 97-SOA-SIM-00M (Revision 1, 10/14/97).

SDG: L9801906

Samples Reviewed: RH008, RH020, RH037

Matrix: Water

EPA Level V- Polynuclear Aromatic Hydrocarbons Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	All samples were received with cooler temperatures of 17°C, 5°C and 7°C. The samples were all received intact and no other shipping/receipt problems were noted.	No qualifications were required. Because the samples were collected by Ogden personnel, placed in coolers containing ice, and delivered to the Columbia laboratory, the samples had not yet cooled to acceptable temperatures. No custody seals were present on the coolers, but because they were transported directly to the laboratory by field personnel, this was acceptable.
4. <u>Method Blanks</u>	Two method blanks were analyzed with this SDG. No target compounds were detected in the method blanks.	No qualifications were required.
5. <u>LCS/BS</u>	Two LCS/Dup pairs were analyzed with this SDG. The LCS/Dups had acceptable recovery values for all compounds.	No qualifications were required.
6. <u>Surrogates</u>	The surrogate recoveries were acceptable for all samples.	No qualifications were required.

	Problems	Qualifications
7. <u>MS/MSDs</u> None	The laboratory did not analyze any of the samples of this SDG as an MS/MSD. Accuracy was evaluated from the blank spikes associated with this SDG.	No qualifications were required.
8. <u>Field QC Samples</u> None	The samples of this SDG were all identified as field QC samples, as such they are not evaluated against other field QC samples.	No qualifications were required.
9. <u>Other</u>	N/A	N/A
10. <u>Comments</u>	N/A	N/A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906

Date Collected: 6/11/98

Date Received: 6/11/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH008
 Lab Code: L9801906-002
 Test Notes:

Units: UG/L

Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUN COS
N-Nitrosodimethylamine	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U	U	
Naphthalene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Acenaphthylene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Acenaphthene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Diethyl Phthalate	EPA 3510	8270SIM	2	1	6/12/98	6/18/98	2	U		
Fluorene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Phenanthrene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Anthracene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Di-n-butyl Phthalate	EPA 3510	8270SIM	2	1	6/12/98	6/18/98	2	U		
Fluoranthene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Pyrene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Benz(a)anthracene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270SIM	2	1	6/12/98	6/18/98	2	U		
Chrysene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Benzo(b)fluoranthene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Benzo(k)fluoranthene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Benzo(a)pyrene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Indeno(1,2,3-cd)pyrene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Dibenz(a,h)anthracene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
Benzo(g,h,i)perylene	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		
N-Nitrosodiphenylamine	EPA 3510	8270SIM	0.5	1	6/12/98	6/18/98	0.5	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

8/5/98

1S22/020597p

01906SOA.AA1 - Sample 8/5/98

1003

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water

Service Request: L9801906
Date Collected: 6/15/98
Date Received: 6/15/98

Selected Ion Monitoring (SIM)
Base Neutral Semivolatile Organic Compounds

Sample Name: RH020
Lab Code: L9801906-009
Test Notes:

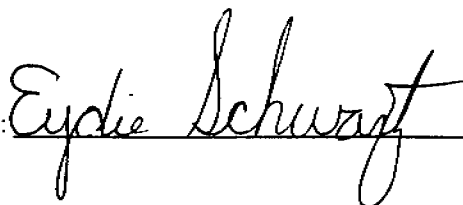
Units: UG/L
Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
N-Nitrosodimethylamine	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U	U	
Naphthalene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Acenaphthylene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Acenaphthene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Diethyl Phthalate	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Fluorene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Phenanthrene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Anthracene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Di-n-butyl Phthalate	EPA 3510	8270SIM	2	1	6/17/98	6/18/98	2	U		
Fluoranthene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Pyrene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Benz(a)anthracene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270SIM	2	1	6/17/98	6/18/98	2	U		
Chrysene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Benzo(b)fluoranthene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Benzo(k)fluoranthene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Benzo(a)pyrene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Indeno(1,2,3-cd)pyrene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Dibenz(a,h)anthracene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Benzo(g,h,i)perylene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
N-Nitrosodiphenylamine	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		

OGDEN VALIDATED

LEVEL V

Approved By:



Date:

8/5/98

1522/020597p

01906SOA.AA2 - Sample 8/5/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906
 Date Collected: 6/15/98
 Date Received: 6/15/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH037
 Lab Code: L9801906-011
 Test Notes:

Units: UG/L
 Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
N-Nitrosodimethylamine	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U	U	
Naphthalene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Acenaphthylene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Acenaphthene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Diethyl Phthalate	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Fluorene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Phenanthrene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Anthracene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Di-n-butyl Phthalate	EPA 3510	8270SIM	2	1	6/17/98	6/18/98	2	U		
Fluoranthene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Pyrene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Benz(a)anthracene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270SIM	2	1	6/17/98	6/18/98	2	U		
Chrysene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Benzo(b)fluoranthene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Benzo(k)fluoranthene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Benzo(a)pyrene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Indeno(1,2,3-cd)pyrene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Dibenz(a,h)anthracene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
Benzo(g,h,i)perylene	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		
N-Nitrosodiphenylamine	EPA 3510	8270SIM	0.5	1	6/17/98	6/18/98	0.5	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

8/5/98

1S22/020597p

01906SOA.AA2 - Sample (2) 8/5/98

1005

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Selected Ion Monitoring (SIM)
Base Neutral Semivolatile Organic Compounds

Sample Name: RH011
Lab Code: L9801914-001
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	3	1	6/25/98	7/7/98	3	U
Naphthalene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Acenaphthylene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Acenaphthene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Diethyl Phthalate	EPA 3550	8270SIM	160	1	6/25/98	7/7/98	160	U
Fluorene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Phenanthrene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Anthracene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	160	1	6/25/98	7/7/98	160	U
Fluoranthene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Pyrene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Benz(a)anthracene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	160	1	6/25/98	7/7/98	160	U
Chrysene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Benzo(a)pyrene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	48	1	6/25/98	7/7/98	48	U

N-Nitrosodimethylamine Reported Method Detection Limit

**OGDEN VALIDATED
LEVEL V**

Approved By: *Eydie Schuartz*

Date: *7/27/98*

1522/020597p

01914SOA_AA1 - Sample 7/24/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH012
 Lab Code: L9801914-002
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/25/98	7/7/98	2	U
Naphthalene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Acenaphthylene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Acenaphthene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U
Fluorene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Phenanthrene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Anthracene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U
Fluoranthene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Pyrene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Benz(a)anthracene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U
Chrysene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Benzo(a)pyrene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	37	1	6/25/98	7/7/98	37	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schurz*

Date: *7/27/98*

1S22/020597p

01914SOA.AA1 - Sample (2) 7/24/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Selected Ion Monitoring (SIM)
Base Neutral Semivolatile Organic Compounds

Sample Name: RH013
Lab Code: L9801914-003
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/25/98	7/7/98	2	U
Naphthalene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Acenaphthylene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Acenaphthene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U
Fluorene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Phenanthrene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Anthracene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U
Fluoranthene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Pyrene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Benzo(a)anthracene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U
Chrysene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Benzo(a)pyrene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	35	1	6/25/98	7/7/98	35	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwartz*

Date: 7/27/98

1522/020597p

01914SOA.AA1 - Sample (3) 7/24/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH014
 Lab Code: L9801914-004
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/25/98	7/7/98	2	U
Naphthalene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Acenaphthylene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Acenaphthene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U
Fluorene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Phenanthrene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Anthracene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U
Fluoranthene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Pyrene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Benz(a)anthracene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U
Chrysene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Benzo(a)pyrene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwartz*

Date: *7/27/98*

1522/020597p

01914SOA.AA1 - Sample (4) 7/24/98

1005
 Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH015
 Lab Code: L9801914-005
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	3	1	6/25/98	7/7/98	3	U
Naphthalene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Acenaphthylene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Acenaphthene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Diethyl Phthalate	EPA 3550	8270SIM	130	1	6/25/98	7/7/98	130	U
Fluorene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Phenanthrene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Anthracene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	130	1	6/25/98	7/7/98	130	U
Fluoranthene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Pyrene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Benz(a)anthracene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	130	1	6/25/98	7/7/98	130	U
Chrysene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Benzo(a)pyrene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwartz*

1S22/020597p

Date: 7/27/98

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01914SOA.AA1 - Sample (5) 7/24/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH016
 Lab Code: L9801914-006
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	3	1	6/25/98	7/7/98	3	U
Naphthalene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Acenaphthylene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Acenaphthene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Diethyl Phthalate	EPA 3550	8270SIM	130	1	6/25/98	7/7/98	130	U
Fluorene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Phenanthrene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Anthracene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	130	1	6/25/98	7/7/98	130	U
Fluoranthene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Pyrene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Benz(a)anthracene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	130	1	6/25/98	7/7/98	130	U
Chrysene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Benzo(a)pyrene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	39	1	6/25/98	7/7/98	39	U

N-Nitrosodimethylamine Reported Method Detection Limit

**OGDEN VALIDATED
LEVEL V**

Approved By: *Eddie Schwartz*

Date: *7/27/98*

1S22/020597p

01914SOA-AA1 - Sample (6) 7/24/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98

Selected Ion Monitoring (SIM)
Base Neutral Semivolatile Organic Compounds

Sample Name: RH041
Lab Code: L9801914-007
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/25/98	7/7/98	2	U
Naphthalene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Acenaphthylene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Acenaphthene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/25/98	7/7/98	110	U
Fluorene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Phenanthrene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Anthracene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	110	1	6/25/98	7/7/98	110	U
Fluoranthene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Pyrene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Benz(a)anthracene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/25/98	7/7/98	110	U
Chrysene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Benzo(a)pyrene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	32	1	6/25/98	7/7/98	32	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwarz*

Date: *7/27/98*

1S22/020597p

01914SOA.AA1 - Sample (7) 7/24/98

1008

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH046
 Lab Code: L9801914-008
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev	Qual
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/25/98	7/7/98	2	U	U	
Naphthalene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Acenaphthylene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Acenaphthene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U		
Fluorene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Phenanthrene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Anthracene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Di-n-butyl Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U		
Fluoranthene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Pyrene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Benz(a)anthracene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/25/98	7/7/98	120	U		
Chrysene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Benzo(b)fluoranthene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Benzo(k)fluoranthene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Benzo(a)pyrene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Dibenz(a,h)anthracene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
Benzo(g,h,i)perylene	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		
N-Nitrosodiphenylamine	EPA 3550	8270SIM	36	1	6/25/98	7/7/98	36	U		

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED
LEVEL V

Approved By: *Eddie Schwanz*

Date: *7/27/98*

1S22/020597p

01914SOA.AA1 - Sample (5) 7/24/98

1009

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Selected Ion Monitoring (SIM)
 Base Neutral Semivolatile Organic Compounds

Sample Name: RH047
 Lab Code: L9801914-013
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/25/98	7/7/98	2	U
Naphthalene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Acenaphthylene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Acenaphthene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/25/98	7/7/98	110	U
Fluorene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Phenanthrene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Anthracene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	110	1	6/25/98	7/7/98	110	U
Fluoranthene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Pyrene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Benz(a)anthracene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/25/98	7/7/98	110	U
Chrysene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Benzo(a)pyrene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	34	1	6/25/98	7/7/98	34	U

N-Nitrosodimethylamine Reported Method Detection Limit

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schwartz*

Date: 7/27/98

1S22/020597p

01914SOA-AA2 - Sample 7/24/98

1010

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98

Selected Ion Monitoring (SIM)
Base Neutral Semivolatile Organic Compounds

Sample Name: RH048
Lab Code: L9801914-014
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/25/98	7/6/98	2	U
Naphthalene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Acenaphthylene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Acenaphthene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/25/98	7/6/98	110	U
Fluorene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Phenanthrene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Anthracene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Di-n-butyl Phthalate	EPA 3550	8270SIM	110	1	6/25/98	7/6/98	110	U
Fluoranthene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Pyrene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Benz(a)anthracene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/25/98	7/6/98	110	U
Chrysene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Benzo(a)pyrene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	34	1	6/25/98	7/6/98	34	U

N-Nitrosodimethylamine Reported Method Detection Limit

**OGDEN VALIDATED
LEVEL V**

Approved By: *Eydie Schumt*

Date: *7/27/98*

1522/020597p

01914SOA-AA2 - Sample (2) 7/24/98

1011

Page No.:

OGDEN

ENVIRONMENTAL AND ENERGY SERVICES

550 South Wadsworth Blvd. Ste. 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/Method: Perchlorates

No. of Samples: 14

Date Completed: August 14, 1998

Reviewer: K. Chapman

Ref: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994) and EPA Method 300M

SDG: L9801888

Samples Reviewed: RH025, RH002, RH003, RH004, RH005, RH006, RH007, RH021, RH026, RH030, RH031, RH032, RH033, RH036

EPA Level V- General Minerals Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	Holding time met. These samples were shipped from the Columbia Canoga Park California laboratory to the Weck Laboratories without a proper COC. An internal signed login sheet with the date relinquished and the date received written on it was shipped with the samples. The sample temperatures upon receipt at Weck laboratories was not recorded, nor was the condition or presence of custody seals.	Qualifications would not be assigned for the temperature of the samples upon receipt; therefore, no qualifications were deemed necessary.
2. <u>Method Blanks</u>	Acceptable as reviewed.	None
3. <u>LCS/BS</u>	Acceptable as reviewed.	None
4. <u>Duplicates</u>	None performed.	None

5. <u>MS/MSDs</u> Performed on samples RH030 and RH031	Acceptable as reviewed.	None.
6. <u>Field QC Samples</u> ER: RH018 and RH037 FB: RH008 and RH020	No detects were noted in any of the field QC samples.	None
7. <u>Other</u>	None	None
8. <u>Comments</u>	None	None

Weck Laboratories, Inc.

Analytical & Environmental Services

Client: Columbia Analytical Services
6925 Canoga Avenue
Canoga Park, CA 91303

Report Date: July 13, 1998

Received Date: June 18, 1998
Thursday 12:57/EA
(818) 587-5550 x FAX (818) 587-5555

Attn.: Leo Raab

Project Name: Rocketdyne
Purchase Order #:

Normal Turnaround

Project #: L9801888

Certificate of Analysis

Lab#: 9815699 Sample ID: RH025 Matrix: Soil
Sampled By: Client Date: 06/12/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #	Rev	Anal	Code
Perchlorate (Based on dry weight).....	ND	ug/kg	46	EPA 300M	06/23/1998	98101702	u		

Lab#: 9815700 Sample ID: RH002 Matrix: Soil
Sampled By: Client Date: 06/10/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #	Rev	Anal	Code
Perchlorate (Based on dry weight).....	ND	ug/kg	61	EPA 300M	06/23/1998	98101702	u		

Lab#: 9815701 Sample ID: RH003 Matrix: Soil
Sampled By: Client Date: 06/10/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #	Rev	Anal	Code
Perchlorate (Based on dry weight).....	ND	ug/kg	210	EPA 300M	06/23/1998	98101702	u		

Lab#: 9815702 Sample ID: RH004 Matrix: Soil
Sampled By: Client Date: 06/10/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #	Rev	Anal	Code
Perchlorate (Based on dry weight).....	ND	ug/kg	85	EPA 300M	06/23/1998	98101702	u		

Lab#: 9815703 Sample ID: RH005 Matrix: Soil
Sampled By: Client Date: 06/10/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #	Rev	Anal	Code
Perchlorate (Based on dry weight).....	ND	ug/kg	46	EPA 300M	06/23/1998	98101702	u		

LEVEL V

UNEN VALIDATED

Weck Laboratories, Inc.

Analytical & Environmental Services

Client: Columbia Analytical Services
 Project Name: Rocketdyne
 Purchase Order #

Normal Turnaround

Report Date: July 13, 1998
 Project #: L9801888

Page 2

Certificate of Analysis (Continued)

Lab#: 9815704 Sample ID: RH006 Matrix: Soil
 Sampled By: Client Date: 06/10/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	46	EPA 300M	06/23/1998	98101702

Rev
 Anal

u

Lab#: 9815705 Sample ID: RH007 Matrix: Soil
 Sampled By: Client Date: 06/10/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	44	EPA 300M	06/23/1998	98101702

u

Lab#: 9815707 Sample ID: RH030 Matrix: Soil
 Sampled By: Client Date: 06/15/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	47	EPA 300M	06/23/1998	98101702

u

Lab#: 9815708 Sample ID: RH031 Matrix: Soil
 Sampled By: Client Date: 06/15/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	47	EPA 300M	06/23/1998	98101702

u

Lab#: 9815709 Sample ID: RH032 Matrix: Soil
 Sampled By: Client Date: 06/15/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	49	EPA 300M	06/23/1998	98101702

u

Lab#: 9815710 Sample ID: RH033 Matrix: Soil
 Sampled By: Client Date: 06/15/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	45	EPA 300M	06/23/1998	98101702

u

Lab#: 9815711 Sample ID: RH036 Matrix: Soil
 Sampled By: Client Date: 06/15/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
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LEVEL V

GOLDEN VALIDATED

Weck Laboratories, Inc.

Analytical & Environmental Services

Client: Columbia Analytical Services
Project Name: Rocketdyne
Purchase Order #

Normal Turnaround

Report Date: July 13, 1998
Project #: L9801888

Page 3

Certificate of Analysis (Continued)

Lab#: 9815711 Sample ID: RH036 Matrix: Soil
Sampled By: Client Date: 06/15/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	42	EPA 300M	06/23/1998	98101702

Rev
Qual

u

Lab#: 9815759 Sample ID: RH021 Matrix: Soil
Sampled By: Client Date: 06/12/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	43	EPA 300M	06/23/1998	98101702

u

Lab#: 9815760 Sample ID: RH026 Matrix: Soil
Sampled By: Client Date: 06/12/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	41	EPA 300M	06/23/1998	98101702

u

ND = Not Detected
PQL = Practical Quantifiable Limit
e = Estimated (> MDL, but < PQL)

Any remaining sample(s) for testing will be disposed of three weeks from the final report date unless other arrangements are made in advance.

James Kastner
Authorized Signature

LEVEL V

OGDEN VALIDATED

OGDEN

ENVIRONMENTAL AND ENERGY SERVICES

550 South Wadsworth Blvd. Ste. 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/Method: Perchlorates

No. of Samples: 4

Date Completed: August 24, 1998

Reviewer: K. Chapman

Ref: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994)
and EPA Method 300M

SDG: L9801906

Samples Reviewed: RH008, RH018, RH020, RH037

EPA Level V- General Minerals Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	Holding time met. Two of these samples were shipped from the Columbia Canoga Park California laboratory to the Weck Laboratories without a proper COC. An internal signed login sheet with the date relinquished and the date received written on it was shipped with the samples. The sample temperatures upon receipt at Weck laboratories was not recorded, nor was the condition or presence of custody seals.	Qualifications would not be assigned for the temperature of the samples upon receipt; therefore, no qualifications were deemed necessary.
2. <u>Method Blanks</u>	Acceptable as reviewed.	None
3. <u>LCS/BS</u>	Acceptable as reviewed.	None
4. <u>Duplicates</u>	None performed.	None
5. <u>MS/MSDs</u> Performed on sample RH037	Acceptable as reviewed.	None.

6. <u>Field QC Samples</u> None	All four samples were identified as field QC samples, and as such are not evaluated against other field QC samples.	None
7. <u>Other</u>	None	None
8. <u>Comments</u>	None	None

Weck Laboratories, Inc.

Analytical & Environmental Services

Client: Columbia Analytical Services
6925 Canoga Avenue
Canoga Park, CA 91303

Report Date: July 13, 1998

Received Date: June 16, 1998
Tuesday 15:50/MVR
(818) 587-5550 x FAX (818) 587-5555

Attn.: Leo Raab

Project Name: Rocketdyne
Purchase Order #: L9801906

Normal Turnaround

Project #: L9801906

Certificate of Analysis

Lab#: 9815400 Sample ID: RH008 Matrix: Water
Sampled By: Client Date: 06/11/1998 Time: 08:30

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate.....	ND	ug/L	4	EPA 300M	06/18/1998	98101492

Rev
Qual

u

Lab#: 9815401 Sample ID: RH018 Matrix: Water
Sampled By: Client Date: 06/11/1998 Time: 20:00

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate.....	ND	ug/L	4	EPA 300M	06/18/1998	98101492

u

Lab#: 9815685 Sample ID: RH020 Matrix: Water
Sampled By: Client Date: 06/15/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate.....	ND	ug/L	4	EPA 300M	06/18/1998	98101492

u

Lab#: 9815686 Sample ID: RH037 Matrix: Water
Sampled By: Client Date: 06/15/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate.....	ND	ug/L	4	EPA 300M	06/18/1998	98101492

u

ND = Not Detected

PQL = Practical Quantifiable Limit

e = Estimated (> MDL, but < PQL)

Any remaining sample(s) for testing will be disposed of three weeks from the final report date unless other arrangements are made in advance.

James Kastner
Authorized Signature

LEVEL V

QDEN VALIDATED

OGDEN**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Ste. 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/Method: Perchlorates

No. of Samples: 10

Date Completed: August 14, 1998

Reviewer: K. Chapman

Ref: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994)
and EPA Method 300M

SDG: L9801914

Samples Reviewed: RH011, RH012, RH013, RH014, RH015, RH016, RH041, RH046, RH047, RH048

EPA Level V- General Minerals Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	Holding time met. These samples were shipped from the Columbia Canoga Park California laboratory to the Weck Laboratories without a proper COC. An internal signed login sheet with the date relinquished and the date received written on it was shipped with the samples. The sample temperatures upon receipt at Weck laboratories was not recorded, nor was the condition or presence of custody seals.	Qualifications would not be assigned for the temperature of the samples upon receipt; therefore, no qualifications were deemed necessary.
2. <u>Method Blanks</u>	Acceptable as reviewed.	None
3. <u>LCS/BS</u>	Acceptable as reviewed.	None
4. <u>Duplicates</u>	None performed.	None
5. <u>MS/MSDs</u> Performed on samples RH030 and RH031	Acceptable as reviewed.	None.

6. <u>Field QC Samples</u> ER: RH018 and RH037 FB: RH008 and RH020 Field duplicates: RH047/RH048	No detects were noted in any of the field QC samples. No detects were reported in either field duplicate sample.	None
7. <u>Other</u>	None	None
8. <u>Comments</u>	None	None

Weck Laboratories, Inc.

Analytical & Environmental Services

Client: Columbia Analytical Services
6925 Canoga Avenue
Canoga Park, CA 91303

Report Date: July 13, 1998

Attn.: Leo Raab

Received Date: June 18, 1998
Thursday 12:57/EA
(818) 587-5550 x FAX (818) 587-5555 ✓

Project Name: Rocketdyne
Purchase Order #:

Normal Turnaround

Project #: L9801914

Certificate of Analysis

Lab#: 9815687 **Sample ID:** RH011 **Matrix:** Soil
Sampled By: Client **Date:** 06/11/1998 **Time:**

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	64	EPA 300M	06/23/1998	98101702

Rev
Qual
Code

u

Lab#: 9815688 **Sample ID:** RH012 **Matrix:** Soil
Sampled By: Client **Date:** 06/11/1998 **Time:**

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	48	EPA 300M	06/23/1998	98101702

u

Lab#: 9815689 **Sample ID:** RH013 **Matrix:** Soil
Sampled By: Client **Date:** 06/11/1998 **Time:**

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	46	EPA 300M	06/23/1998	98101702

u

Lab#: 9815690 **Sample ID:** RH014 **Matrix:** Soil
Sampled By: Client **Date:** 06/11/1998 **Time:**

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	48	EPA 300M	06/23/1998	98101702

u

Lab#: 9815691 **Sample ID:** RH041 **Matrix:** Soil
Sampled By: Client **Date:** 06/16/1998 **Time:**

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	43	EPA 300M	06/23/1998	98101702

u

LEVEL V

QGDEN VALIDATED

Weck Laboratories, Inc.

Analytical & Environmental Services

Client: Columbia Analytical Services

Project Name: Rocketdyne

Purchase Order #

Normal Turnaround

Report Date: July 13, 1998

Project #: L9801914

Page 2

Certificate of Analysis (Continued)

Lab#: 9815692 Sample ID: RH046 Matrix: Soil
Sampled By: Client Date: 06/16/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	49	EPA 300M	06/23/1998	98101702

Rev
Qual
Code

u

Lab#: 9815697 Sample ID: RH047 Matrix: Soil
Sampled By: Client Date: 06/16/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	230	EPA 300M	06/23/1998	98101702

u

Lab#: 9815698 Sample ID: RH048 Matrix: Soil
Sampled By: Client Date: 06/16/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	45	EPA 300M	06/23/1998	98101702

u

Lab#: 9815757 Sample ID: RH015 Matrix: Soil
Sampled By: Client Date: 06/11/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	260	EPA 300M	06/23/1998	98101702

u

Lab#: 9815758 Sample ID: RH016 Matrix: Soil
Sampled By: Client Date: 06/11/1998 Time:

Parameter	Result	Units	PQL	Method	Analyzed	Run #
Perchlorate (Based on dry weight).....	ND	ug/kg	52	EPA 300M	06/23/1998	98101702

u

ND = Not Detected

PQL = Practical Quantifiable Limit

e = Estimated (> MDL, but < PQL)

Any remaining sample(s) for testing will be disposed of three weeks from the final report date unless other arrangements are made in advance.

Anna Kastura
Authorized Signature

LEVEL V

QDEN VALIDATED

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/COC Method: EPA Method 8080PCB

No. of Samples: 14

Date Reviewed: 8/13/98

Reviewer: H. White

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994); Columbia Analytical Services SOP Number: SOA-PEST, Revision Number: 1.0, August 7, 1996.

SDG: L9801888

Samples Reviewed: RH024, RH002, RH003, RH004, RH005, RH006, RH007, RH021, RH026, RH030, RH031, RH032, RH033, RH036

Matrix: Soil

EPA Level V- PCB Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received intact above the temperature limits of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ at cooler temperatures ranging from 11°C - 14°C . Samples were transported, in ice-filled coolers, directly from the field to the laboratory by field personnel; therefore, no custody seals were necessary on the coolers. All samples were received intact and no problems were noted during sample handling and transport. The COCs were signed by field and laboratory personnel. No COC discrepancies were noted. There were some crossouts on the COCs without dates. The samples were analyzed within 14 days of the sampling dates.	Due to the nonvolatile nature of the target compounds, no qualifications were required.
4. <u>Method Blanks</u>	One method blank was analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.

	Problems	Qualifications
5. <u>LCS/BS</u>	One blank spike was analyzed with this SDG. Aroclor-1260 was used as the fortifying compound. The recovery was within the laboratory established QC limits of 62%-154%.	No qualifications were required.
6. <u>Surrogates</u>	Tetrachloro-m-xylene was used as the surrogate. Surrogate recoveries were within the laboratory established QC limits of 45%-140%.	No qualifications were required.
7. <u>MS/MSDs</u> Performed on sample RH031	Aroclor-1260 was used to fortify the parent sample. The recovery for Aroclor-1260 was within the laboratory established QC limits of 62%-154%.	No qualifications were required.
8. <u>Field QC Samples</u> ER: RH037 & RH018 (SDG L9908906) FB: RH008 & RH020 (SDG L9801906) There were no field duplicates.	PCB compounds were not detected in the analyzed field QC samples. ER RH018 was not analyzed by the laboratory.	No qualifications were required.
9. <u>Other</u>	None	None
10. <u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH002
Lab Code: L9801888-002
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U
Aroclor 1221	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U
Aroclor 1232	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U
Aroclor 1242	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U
Aroclor 1248	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U
Aroclor 1254	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U
Aroclor 1260	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U

OGDEN VALIDATED**LEVEL V**

Approved By: Eydie Schwarz
1544021397p

Date: 9/26/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH003
Lab Code: L9801888-003
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Qual
Aroclor 1016	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	u
Aroclor 1221	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	
Aroclor 1232	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	
Aroclor 1242	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	
Aroclor 1248	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	
Aroclor 1254	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	
Aroclor 1260	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	

OGDEN VALIDATED**LEVEL V**

Approved By: Eydie Schwartz
1544/021397p

Date: 7/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH004
Lab Code: L9801888-004
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Qual	Code
Aroclor 1016	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U	u	
Aroclor 1221	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1232	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1242	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1248	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1254	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1260	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		

OGDEN VALIDATED
LEVEL V

Approved By: Eydie Schwarz
1544/021397p

Date: 7/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH005
Lab Code: L9801888-005
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev	Qual
Aroclor 1016	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U	u	
Aroclor 1221	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1232	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1242	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1248	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1254	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1260	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		

OGDEN VALIDATED**LEVEL V**

Approved By: Eydie Schwaef
1544/021397p

Date: 7/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH006
Lab Code: L9801888-006
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Lab Code
Aroclor 1016	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	u
Aroclor 1221	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	
Aroclor 1232	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	
Aroclor 1242	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	
Aroclor 1248	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	
Aroclor 1254	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	
Aroclor 1260	EPA 3550	8080	110	1	6/23/98	6/29/98	110	U	

OGDEN VALIDATED**LEVEL V**

Approved By: Eddie Schwartz
1544021397p

Date: 7/20/98

5007

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH007
Lab Code: L9801888-007
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV	Qual	Code
Aroclor 1016	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U	U		
Aroclor 1221	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U	U		
Aroclor 1232	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U	U		
Aroclor 1242	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U	U		
Aroclor 1248	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U	U		
Aroclor 1254	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U	U		
Aroclor 1260	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U	U		

OGDEN VALIDATED

LEVEL V

Approved By: Epidie Schwart
1844021397p

Date: 7/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH021
Lab Code: L9801888-008
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Qual	Code
Aroclor 1016	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U	u	
Aroclor 1221	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		
Aroclor 1232	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		
Aroclor 1242	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		
Aroclor 1248	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		
Aroclor 1254	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		
Aroclor 1260	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schuett
1544021397p

Date: 7/20/98

5009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH025
Lab Code: L9801888-001
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rel. Qual.	Qual. Cont.
Aroclor 1016	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U	u	
Aroclor 1221	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1232	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1242	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1248	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1254	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		
Aroclor 1260	EPA 3550	8080	120	1	6/23/98	6/29/98	120	U		

OGDEN VALIDATED**LEVEL V**

Approved By: Eydie Schwartz
1544/021397p

Date: 7/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH026
Lab Code: L9801888-009
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Qual / Qty / Cnt
Aroclor 1016	EPA 3550	8080	100	1	6/23/98	6/30/98	100	U	u
Aroclor 1221	EPA 3550	8080	100	1	6/23/98	6/30/98	100	U	
Aroclor 1232	EPA 3550	8080	100	1	6/23/98	6/30/98	100	U	
Aroclor 1242	EPA 3550	8080	100	1	6/23/98	6/30/98	100	U	
Aroclor 1248	EPA 3550	8080	100	1	6/23/98	6/30/98	100	U	
Aroclor 1254	EPA 3550	8080	100	1	6/23/98	6/30/98	100	U	
Aroclor 1260	EPA 3550	8080	100	1	6/23/98	6/30/98	100	U	

OGDEN VALIDATED
LEVEL V

Approved By: *Eydie Schwartz*
ISA/021397p

Date: *7/20/98*

5010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH030
Lab Code: L9801888-012
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rel	Qual Code
Aroclor 1016	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U	u	
Aroclor 1221	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1232	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1242	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1248	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1254	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1260	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		

OGDEN VALIDATED
LEVEL V

Approved By: Eydie Schwartz
1544021397p

Date: 7/20/98

5011

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH031
Lab Code: L9801888-013
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Qual	Quant
Aroclor 1016	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U	u	
Aroclor 1221	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1232	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1242	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1248	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1254	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1260	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schwartz*

Date: *7/20/98*

5012

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH032
Lab Code: L9801888-014
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Qual	Qual
Aroclor 1016	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U	u	
Aroclor 1221	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1232	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1242	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1248	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1254	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		
Aroclor 1260	EPA 3550	8080	120	1	6/23/98	6/30/98	120	U		

OGDEN VALIDATED**LEVEL V**

Approved By: Eydie Schwartz
1844/021397p

Date: 7/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH033
Lab Code: L9801888-015
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev	Qua	Code
Aroclor 1016	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U			
Aroclor 1221	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U			
Aroclor 1232	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U			
Aroclor 1242	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U			
Aroclor 1248	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U			
Aroclor 1254	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U			
Aroclor 1260	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U			

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz
ISA/021397p

Date: 7/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH036
Lab Code: L9801888-016
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Qual	Check
Aroclor 1016	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U	u	
Aroclor 1221	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		
Aroclor 1232	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		
Aroclor 1242	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		
Aroclor 1248	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		
Aroclor 1254	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		
Aroclor 1260	EPA 3550	8080	110	1	6/23/98	6/30/98	110	U		

OGDEN VALIDATED
LEVEL V

Approved By: Eydie Schurz
1544/021397p

Date: 7/20/98

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/COC Method: EPA Method 8080PCB

No. of Samples: 3

Date Reviewed: 8/21/98

Reviewer: H. White

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994); Columbia Analytical Services SOP Number: SOA-PEST, Revision Number: 1.0, August 7, 1996.

SDG: L9801906

Samples Reviewed: RH008, RH020, RH037

Matrix: Water

EPA Level V- PCB Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received intact with temperatures of 5°C - 17°C. Samples were transported, in ice-filled coolers, directly from the field to the laboratory by field personnel; therefore, no custody seals were necessary on the coolers. All samples were received intact and no problems were noted during sample handling and transport. The COCs were signed by field and laboratory personnel. No COC discrepancies were noted. Sample RH018 was not analyzed for PCBs, although requested by Ogden. The samples were extracted within 14 days of the sampling dates and analyzed within 40 days of extraction.	Due to the nonvolatile nature of the target compounds, qualifications were not assigned for temperature problems.
4. <u>Method Blanks</u>	One method blank was analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.

	Problems	Qualifications
5. <u>LCS/BS</u>	One blank spike was analyzed with this SDG. Aroclor-1260 was used as the fortifying compound. The recovery was within the laboratory established QC limits of 62%-154%.	No qualifications were required.
6. <u>Surrogates</u>	Tetrachloro-m-xylene was used as the surrogate. Surrogate recoveries were within the laboratory established QC limits of 45%-140%.	No qualifications were required.
7. <u>MS/MSDs</u> None	Samples were not assessed for this criteria.	No qualifications were required.
8. <u>Field QC Samples</u> ER: None FB: None Field Duplicates: None	All samples in this SDG were identified as field QC samples.	No qualifications were required.
9. <u>Other</u>	None	None
10. <u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water

Service Request: L9801906
Date Collected: 6/11/98
Date Received: 6/11/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH008
Lab Code: L9801906-002
Test Notes:

Units: UG/L
Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Qual	Qual
Aroclor 1016	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U	u	
Aroclor 1221	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1232	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1242	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1248	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1254	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1260	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schurz
1344021397p

Date: 8/5/98

5002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water

Service Request: L9801906
Date Collected: 6/15/98
Date Received: 6/15/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH020
Lab Code: L9801906-009
Test Notes:

Units: UG/L
Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV	Qual	Qual
Aroclor 1016	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U			
Aroclor 1221	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U			
Aroclor 1232	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U			
Aroclor 1242	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U			
Aroclor 1248	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U			
Aroclor 1254	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U			
Aroclor 1260	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U			

OGDEN VALIDATED

LEVEL V

Approved By: *Euphie Schwartz*
1544/021397p

Date: *8/5/98*

5003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water

Service Request: L9801906
Date Collected: 6/15/98
Date Received: 6/15/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH037
Lab Code: L9801906-011
Test Notes:

Units: UG/L
Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev	Q
Aroclor 1016	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1221	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1232	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1242	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1248	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1254	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		
Aroclor 1260	EPA 3510	8080	1	1	6/16/98	6/19/98	1	U		

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwart
1544/021397p

Date: 8/5/98

5004

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Project Manager: D. Hambrick

Analysis/COC Method: EPA Method 8080PCB

No. of Samples: 10

Date Reviewed: 8/13/98

Reviewer: H. White

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994); Columbia Analytical Services SOP Number: SOA-PEST, Revision Number: 1.0, August 7, 1996.

SDG: L9801914

Samples Reviewed: RH011, RH012, RH013, RH014, RH015, RH016, RH041, RH046, RH047, RH048

Matrix: Soil

EPA Level V- PCB Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received intact within the temperature limits of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ at 4°C , with the exception of samples RH011-RH016, which were received at 13°C . Samples were transported, in ice-filled coolers, directly from the field to the laboratory by field personnel; therefore, no custody seals were necessary on the coolers. All samples were received intact and no problems were noted during sample handling and transport. The COCs were signed by field and laboratory personnel. No COC discrepancies were noted. Some corrections on the COCs were scribbled rather than lined out, and there were some crossouts on the COCs without dates. The samples were analyzed within 14 days of the sampling dates.	Due to the nonvolatile nature of the target compounds, qualifications were not assigned for temperature problems.
4. <u>Method Blanks</u>	One method blank was analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.

	Problems	Qualifications
5. <u>LCS/BS</u>	One blank spike was analyzed with this SDG. Aroclor-1260 was used as the fortifying compound. The recovery was within the laboratory established QC limits of 62%-154%.	No qualifications were required.
6. <u>Surrogates</u>	Tetrachloro-m-xylene was used as the surrogate. Surrogate recoveries were within the laboratory established QC limits of 45%-140%.	No qualifications were required.
7. <u>MS/MSDs</u> Performed on sample RH046	Aroclor-1260 was used to fortify the parent sample. The recovery for Aroclor-1260 was within the laboratory established QC limits of 62%-154%.	No qualifications were required.
8. <u>Field QC Samples</u> ER: RH037 & RH018 (SDG L9801906) FB: RH008 & RH020 (SDG L9801906) Field Duplicates: RH047/RH048	PCB compounds were not detected in the field QC samples. ER RH018 was not analyzed by the laboratory. No target compounds were detected in either duplicate sample.	No qualifications were required.
9. <u>Other</u>	None	None
10. <u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH011
Lab Code: L9801914-001
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rel Qual	Qua Co
Aroclor 1016	EPA 3550	8080	160	1	6/24/98	7/1/98	160	U	u	
Aroclor 1221	EPA 3550	8080	160	1	6/24/98	7/1/98	160	U		
Aroclor 1232	EPA 3550	8080	160	1	6/24/98	7/1/98	160	U		
Aroclor 1242	EPA 3550	8080	160	1	6/24/98	7/1/98	160	U		
Aroclor 1248	EPA 3550	8080	160	1	6/24/98	7/1/98	160	U		
Aroclor 1254	EPA 3550	8080	160	1	6/24/98	7/1/98	160	U		
Aroclor 1260	EPA 3550	8080	160	1	6/24/98	7/1/98	160	U		

OGDEN VALIDATED**LEVEL 1**

Approved By: Eydie Schwartz
1844/021397p

Date: 7/27/98

5002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH012
Lab Code: L9801914-002
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rel Qual	Qual Cod
Aroclor 1016	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U	u	
Aroclor 1221	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1232	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1242	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1248	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1254	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1260	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		

OGDEN VALIDATED

LEVEL V

Approved By:
1544021397p

Eydie Schwartz

Date:

7/27/98

5003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH013
Lab Code: L9801914-003
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rel	Qual
Aroclor 1016	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U	u	
Aroclor 1221	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1232	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1242	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1248	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1254	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1260	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		

OGDEN VALIDATED
LEVEL V

Approved By: Epidie Schuartz
1544/021397p

Date: 7/6/98

5004

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH014
Lab Code: L9801914-004
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rel Qual	Dual Co
Aroclor 1016	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U	✓	
Aroclor 1221	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1232	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1242	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1248	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1254	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		
Aroclor 1260	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U		

OGDEN VALIDATED
LEVEL V

Approved By: Eydie Schwartz
1544/021397p

Date: 7/27/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH015
Lab Code: L9801914-005
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rel Qual	Comp
Aroclor 1016	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U	U	
Aroclor 1221	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U	U	
Aroclor 1232	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U	U	
Aroclor 1242	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U	U	
Aroclor 1248	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U	U	
Aroclor 1254	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U	U	
Aroclor 1260	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U	U	

OGDEN VALIDATED
LEVEL V

Approved By: Eydie Schwartz
1844021397p

Date: 7/6/98

5006

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH016
Lab Code: L9801914-006
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rel Final	Qual Cont
Aroclor 1016	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U	u	
Aroclor 1221	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U		
Aroclor 1232	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U		
Aroclor 1242	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U		
Aroclor 1248	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U		
Aroclor 1254	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U		
Aroclor 1260	EPA 3550	8080	130	1	6/24/98	7/1/98	130	U		

OGDEN VALIDATED
LEVEL V

Approved By: Eydie Schwartz
1544/021397p

Date: 7/6/98

5007

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH041
Lab Code: L9801914-007
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rel	Qual	Co
Aroclor 1016	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U	u		
Aroclor 1221	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U			
Aroclor 1232	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U			
Aroclor 1242	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U			
Aroclor 1248	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U			
Aroclor 1254	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U			
Aroclor 1260	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U			

OGDEN VALIDATED**LEVEL V**

Approved By:
1544021397p

Eydie Schuyt

Date:

7/27/98

5008

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH046
Lab Code: L9801914-008
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U
Aroclor 1221	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U
Aroclor 1232	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U
Aroclor 1242	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U
Aroclor 1248	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U
Aroclor 1254	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U
Aroclor 1260	EPA 3550	8080	120	1	6/24/98	7/1/98	120	U

OGDEN VALIDATED
LEVEL V

Approved By: Eydie Schwartz
1344/021397p

Date: 7/6/98

5009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH047
Lab Code: L9801914-013
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Ref	Qual Code
Aroclor 1016	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U		
Aroclor 1221	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U		
Aroclor 1232	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U		
Aroclor 1242	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U		
Aroclor 1248	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U		
Aroclor 1254	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U		
Aroclor 1260	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U		

OGDEN VALIDATED**LEVEL V**

Approved By:
ISA4021397p

Eydie Schwartz

Date:

7/27/98

5010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98

Polychlorinated Biphenyls (PCBs)

Sample Name: RH048
Lab Code: L9801914-014
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U
Aroclor 1221	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U
Aroclor 1232	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U
Aroclor 1242	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U
Aroclor 1248	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U
Aroclor 1254	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U
Aroclor 1260	EPA 3550	8080	110	1	6/24/98	7/1/98	110	U

OGDEN VALIDATED**LEVEL V**

Approved By: Eydie Schwartz
1S44021397p

Date: 7/27/98



ENVIRONMENTAL AND ENERGY SERVICES

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 8270

No. of Samples: 14

Date Reviewed: 8/18/98

Reviewer: M. Pokorny

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994), Columbia SOP SOA.SOC 8/96 Rev. 1, and EPA Method 8270B.

SDG: L9801888

Samples Reviewed: RH002, RH003, RH004, RH005, RH006, RH007, RH021, RH025, RH026, RH030, RH031, RH032, RH033, RH036

Matrix: Soil

EPA Level V- Semivolatiles Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	All samples were received with cooler temperatures of 11°C, 13°C, and 14°C. The samples were transported, in an ice-filled cooler, directly from the field to the laboratory by field personnel; therefore, no custody seals were necessary on the cooler. The samples were received intact and no problems were noted during sample handling and transport. The COC was signed by field and laboratory personnel.	No qualifications were required.
4. <u>Method Blanks</u>	Two method blanks were analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	Two blank spikes were analyzed with the samples of this SDG. All recoveries were within the USEPA SW846 Method 8270 QC limits.	No qualifications were required.

	Problems	Qualifications
6. <u>Surrogates</u>	Several samples had surrogate recoveries that were above the QC limits listed on the laboratory summary form. Samples RH026, RH002, RH003, RH004, RH005, and RH006 had 2,4,6-tribromophenol above QC limits. Samples RH005, RH006, and RH021 had phenol-d5 above QC limits.	Since no target compounds were detected in the samples with surrogate outliers, no qualifications were required.
7. <u>MS/MSDs</u> RH033	All percent recoveries were within the QC limits listed on the laboratory summary form.	No qualifications were required.
8. <u>Field QC Samples</u> ER: RH037 (SDG L9801906) FB: RF008 & RH020 (SDG L9801906) There were no field duplicates.	No target compounds were detected in any of the field QC samples.	No qualifications were required.
10. <u>Other</u>	It was noted in the Level IV data validation of a previous data package that the laboratory was using phenol-d5 as the surrogate instead of phenol-d6 as stated on the surrogate summary forms and on the sample quantitation forms. A review of the raw data from this package confirms that the laboratory used phenol-d5, as in the previous data package. Several of the samples of this SDG had tentatively identified compounds (TICs) detected.	None. The use of phenol-d5 verses phenol-d6 as a surrogate compound does not affect the quality of the data. TICs were qualified "NJ."
<u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888

Date Collected: 6/10/98

Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH002
 Lab Code: L9801888-002
 Test Notes:

Units: UG/KG

Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev	QUAL	CCD
Bis(2-chloroethyl) Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
1,2-Dichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
1,3-Dichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
1,4-Dichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
N-Nitrosodi-n-propylamine	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Hexachloroethane	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Nitrobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Isophorone	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Bis(2-chloroethoxy)methane	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
1,2,4-Trichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Naphthalene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
4-Chloroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Hexachlorobutadiene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
2-Methylnaphthalene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Hexachlorocyclopentadiene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
2-Chloronaphthalene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
2-Nitroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Dimethyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Acenaphthylene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
3-Nitroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Acenaphthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Dibenzofuran	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
2,4-Dinitrotoluene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
2,6-Dinitrotoluene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Diethyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Fluorene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
4-Nitroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
N-Nitrosodiphenylamine	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
4-Bromophenyl Phenyl Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Hexachlorobenzene	EPA 3550	8270	220	1	6/21/98	6/23/98	220	U			
Phenanthrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Anthracene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Di-n-butyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Fluoranthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Pyrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Butyl Benzyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
3,3'-Dichlorobenzidine	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Benz(a)anthracene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Chrysene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Di-n-octyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			
Benzo(b)fluoranthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U			

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

9/26/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH002
 Lab Code: L9801888-002
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CCS
Benzo(k)fluoranthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Benzo(a)pyrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Dibenz(a,h)anthracene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Benzo(g,h,i)perylene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Phenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2-Chlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Benzyl Alcohol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2-Methylphenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2-Nitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2,4-Dimethylphenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Benzoic Acid	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2,4-Dichlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
4-Chloro-3-methylphenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2,4,6-Trichlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2,4,5-Trichlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2,4-Dinitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
4-Nitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Pentachlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Carbazole	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz
 152p/020597p

Date: 9/26/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98
Date Extracted: 6/21/98
Date Analyzed: 6/23/98

**Tentatively Identified Compounds (TIC)
 Base Neutral/Acid Semivolatile Organic Compounds**

Sample Name: RH002
Lab Code: L9801888-002
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result	REV	QUAL
				Notes	QUAL	CODE
000544-76-3	Hexadecane	31.12	480		NJ	
000083-47-6	gamma.-Sisterol	36.70	1100		NJ	

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwarz

Date:

9/26/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH003
 Lab Code: L9801888-003
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
1,3-Dichlorobenzene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
1,4-Dichlorobenzene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Hexachloroethane	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Nitrobenzene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Isophorone	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Naphthalene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
4-Chloroaniline	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Hexachlorobutadiene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
2-Methylnaphthalene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Hexachlorocyclopentadiene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
2-Chloronaphthalene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
2-Nitroaniline	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Dimethyl Phthalate	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Acenaphthylene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
3-Nitroaniline	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Acenaphthene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Dibenzofuran	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
2,4-Dinitrotoluene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
2,6-Dinitrotoluene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Diethyl Phthalate	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Fluorene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
4-Nitroaniline	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
N-Nitrosodiphenylamine	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Hexachlorobenzene	EPA 3550	8270	210	1	6/21/98	6/23/98	210	U		
Phenanthrene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Anthracene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Di-n-butyl Phthalate	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Fluoranthene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Pyrene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Butyl Benzyl Phthalate	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Benz(a)anthracene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Chrysene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Di-n-octyl Phthalate	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		
Benzo(b)fluoranthene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwarz

Date:

7/20/98

3009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH003
 Lab Code: L9801888-003
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUA CODE
Benzo(k)fluoranthene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
Benzo(a)pyrene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
Dibenz(a,h)anthracene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
Benzo(g,h,i)perylene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
Phenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
2-Chlorophenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
Benzyl Alcohol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
2-Methylphenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
3- and 4-Methylphenol Coelution	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
2-Nitrophenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
2,4-Dimethylphenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
Benzoic Acid	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
2,4-Dichlorophenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
4-Chloro-3-methylphenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
2,4,6-Trichlorophenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
2,4,5-Trichlorophenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
2,4-Dinitrophenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
4-Nitrophenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
Pentachlorophenol	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	
Carbazole	EPA 3550	8270	320	1	6/21/98	6/23/98	320	U	U	

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwart

Date: 7/20/98

152p/020597p

01888SOA.AA4 - Sample 63 7/20/98

3010

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98
Date Extracted: 6/21/98
Date Analyzed: 6/23/98

**Tentatively Identified Compounds (TIC)
 Base Neutral/Acid Semivolatile Organic Compounds**

Sample Name: RH003
Lab Code: L9801888-003
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result	REV	QUAL
				Notes	QUAL	CODE
000523-59-1	2H, 8H-Benzo [1,2-b:3,4-b'] dipyran-2-one	23.96	770		NS	
055334-39-9	2H, 8H-Benzo [1,2-b:5,4-b'] dipyran-2-one	28.80	2000			
000630-07-9	Pentatriacontane	31.11	320			
000593-45-3	Octadecane	32.93	840			
000630-06-8	Hexatriacontane	34.97	420			

OGDEN VALIDATED

Approved By:

Eydie Schwarz

Date:

7/20/98

TIC/020597p
 01888SOA.AA4 - TIC (3) 7/20/98

LEVEL V

3042

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH004
 Lab Code: L9801888-004
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
1,2-Dichlorobenzene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
1,3-Dichlorobenzene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
1,4-Dichlorobenzene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Hexachloroethane	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Nitrobenzene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Isophorone	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Naphthalene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Chloroaniline	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Hexachlorobutadiene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Methylnaphthalene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Hexachlorocyclopentadiene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Chloronaphthalene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Nitroaniline	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Dimethyl Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Acenaphthylene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
3-Nitroaniline	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Acenaphthene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Dibenzofuran	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4-Dinitrotoluene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,6-Dinitrotoluene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Diethyl Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Fluorene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Nitroaniline	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
N-Nitrosodiphenylamine	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Hexachlorobenzene	EPA 3550	8270	240	1	6/21/98	6/23/98	240	U		
Phenanthrene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Anthracene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Di-n-butyl Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Fluoranthene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Pyrene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Butyl Benzyl Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Benz(a)anthracene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Chrysene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Di-n-octyl Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Benzo(b)fluoranthene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/20/98

3011

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH004
 Lab Code: L9801888-004
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U	U	
Benzo(a)pyrene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Dibenz(a,h)anthracene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Benzo(g,h,i)perylene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Phenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Chlorophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U	U	
Benzyl Alcohol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Methylphenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Nitrophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4-Dimethylphenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Benzoic Acid	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4-Dichlorophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Chloro-3-methylphenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4,6-Trichlorophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4,5-Trichlorophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4-Dinitrophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Nitrophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Pentachlorophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Carbazole	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwarz

Date:

7/20/98

3012

IS2p/020597p

01888SOA_AA4 - Sample (4) 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98
Date Extracted: 6/21/98
Date Analyzed: 6/23/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH004
Lab Code: L9801888-004
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
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(No Tentatively Identified Compounds Detected)

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz

Date: 7/20/98

3043

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH005
 Lab Code: L9801888-005
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CCD
Bis(2-chloroethyl) Ether	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
1,3-Dichlorobenzene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
1,4-Dichlorobenzene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Hexachloroethane	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Nitrobenzene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Isophorone	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Naphthalene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Chloroaniline	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Hexachlorobutadiene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Methylnaphthalene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Hexachlorocyclopentadiene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Chloronaphthalene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Nitroaniline	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Dimethyl Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Acenaphthylene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
3-Nitroaniline	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Acenaphthene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Dibenzofuran	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4-Dinitrotoluene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,6-Dinitrotoluene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Diethyl Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Fluorene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Nitroaniline	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
N-Nitrosodiphenylamine	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Hexachlorobenzene	EPA 3550	8270	230	1	6/21/98	6/23/98	230	U		
Phenanthrene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Anthracene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Di-n-butyl Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Fluoranthene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Pyrene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Butyl Benzyl Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Benz(a)anthracene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Chrysene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Di-n-octyl Phthalate	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Benzo(b)fluoranthene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/20/98

3013

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH005
 Lab Code: L9801888-005
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U	U	
Benzo(a)pyrene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Dibenz(a,h)anthracene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Benzo(g,h,i)perylene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Phenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Chlorophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U	U	
Benzyl Alcohol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Methylphenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Nitrophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4-Dimethylphenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Benzoic Acid	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4-Dichlorophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Chloro-3-methylphenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4,6-Trichlorophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4,5-Trichlorophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2,4-Dinitrophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
4-Nitrophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Pentachlorophenol	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		
Carbazole	EPA 3550	8270	350	1	6/21/98	6/23/98	350	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schurz

Date:

7/20/98

IS2p/020397p

3014

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98
Date Extracted: 6/21/98
Date Analyzed: 6/23/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH005
Lab Code: L9801888-005
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes	REV	QUAL	QUD
							CODE
010544-50-0	Sulfur, mol. (S8)	24.77	390		2	J	
000630-06-8	Hexatriacont	31.11	410		2	J	
055282-14-9	Docosane, 9-butyl-	34.97	680		2	J	

OGDEN VALIDATED**LEVEL V**Approved By: Eydie SchwartzDate: 7/20/98

3044

TIC/020597p

01888SOA.AA4 - TIC (5) 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH006
 Lab Code: L9801888-006
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
1,3-Dichlorobenzene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
1,4-Dichlorobenzene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Hexachloroethane	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Nitrobenzene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Isophorone	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Naphthalene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
4-Chloroaniline	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Hexachlorobutadiene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2-Methylnaphthalene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Hexachlorocyclopentadiene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2-Chloronaphthalene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2-Nitroaniline	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Dimethyl Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Acenaphthylene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
3-Nitroaniline	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Acenaphthene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Dibenzofuran	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2,4-Dinitrotoluene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2,6-Dinitrotoluene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Diethyl Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Fluorene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
4-Nitroaniline	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
N-Nitrosodiphenylamine	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Hexachlorobenzene	EPA 3550	8270	230	1	6/21/98	6/23/98	230	U		
Phenanthrene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Anthracene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Di-n-butyl Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Fluoranthene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Pyrene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Butyl Benzyl Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Benz(a)anthracene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Chrysene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Di-n-octyl Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Benzo(b)fluoranthene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		

OGDEN VALIDATED

Approved By:

Eydie Schuartz

Date:

7/20/98

LEVEL V

3015

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/10/98
 Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH006
 Lab Code: L9801888-006
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUA CODE
Benzo(k)fluoranthene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Benzo(a)pyrene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Dibenz(a,h)anthracene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Benzo(g,h,i)perylene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Phenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
2-Chlorophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Benzyl Alcohol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
2-Methylphenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
3- and 4-Methylphenol Coelution	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
2-Nitrophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
2,4-Dimethylphenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Benzoic Acid	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
2,4-Dichlorophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
4-Chloro-3-methylphenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
2,4,6-Trichlorophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
2,4,5-Trichlorophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
2,4-Dinitrophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
4-Nitrophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Pentachlorophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Carbazole	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	

OGDEN VALIDATED

Approved By: Eydie Schwartz
 152p/020597p

Date: 7/20/98

LEVEL V

3016

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98
Date Extracted: 6/21/98
Date Analyzed: 6/23/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

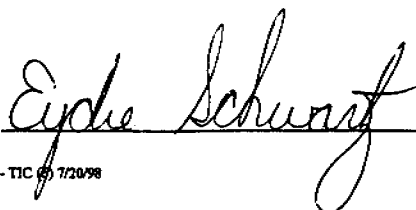
Sample Name: RH006
Lab Code: L9801888-006
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes	REV	QUAL
					QUAL	CODE
000076-22-2	Camphor	11.07	880		NJ	
002091-29-4	9-Hexadecanoic acid	23.25	1500			
000057-10-3	Hexadecanoic acid	23.39	1400			
000112-80-1	Oleic Acid	25.44	760			
001454-84-8	1-Nonadecanol	29.17	610			
007225-64-1	Heptadecane, 9-octyl-	35.00	920			
000544-85-4	Dotriacontane	36.47	760			
000083-47-6	.gamma.-Systerol	36.71	700			

OGDEN VALIDATED

Approved By:



Date:

**LEVEL V**

3045

TIC/020597p

01888SOA.AA4 - TIC (S) 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Ogden Environmental
Rocketdyne/313150002
Soil

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH007
Lab Code: L9801888-007
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	DEV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
1,3-Dichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
1,4-Dichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Hexachloroethane	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Nitrobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Isophorone	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Naphthalene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
4-Chloroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Hexachlorobutadiene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2-Methylnaphthalene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Hexachlorocyclopentadiene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2-Chloronaphthalene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2-Nitroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Dimethyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Acenaphthylene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
3-Nitroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Acenaphthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Dibenzofuran	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2,4-Dinitrotoluene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2,6-Dinitrotoluene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Diethyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Fluorene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
4-Nitroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
N-Nitrosodiphenylamine	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Hexachlorobenzene	EPA 3550	8270	220	1	6/21/98	6/23/98	220	U		
Phenanthrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Anthracene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Di-n-butyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Fluoranthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Pyrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Butyl Benzyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Benz(a)anthracene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Chrysene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Di-n-octyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Benzo(b)fluoranthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		

OGDEN VALIDATED

Approved By:

Eydie Schwarz

Date:

7/20/98

LEVEL V

3017

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Ogden Environmental
Rocketdyne/313150002
Soil

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH007
Lab Code: L9801888-007
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUR COD
Benzo(k)fluoranthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Benzo(a)pyrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Dibenz(a,h)anthracene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Benzo(g,h,i)perylene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Phenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2-Chlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Benzyl Alcohol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2-Methylphenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
3- and 4-Methylphenol Coelution	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2-Nitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2,4-Dimethylphenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Benzoic Acid	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2,4-Dichlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
4-Chloro-3-methylphenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2,4,6-Trichlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2,4,5-Trichlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2,4-Dinitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
4-Nitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Pentachlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Carbazole	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	

OGDEN VALIDATED

Approved By:

152p/020397p

Date:

7/20/98

LEVEL V

3018

01888SOA.AA4 - Sample (7) 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98
Date Extracted: 6/21/98
Date Analyzed: 6/23/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH007
Lab Code: L9801888-007
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes	REV QUAL	QUA CODE
000057-10-3	Hexadecanoic acid	23.32	530			
000638-66-4	Octadecanal	28.54	410			
018435-45-5	1-Nonadecene	29.17	540			
000629-94-7	Heneicosane	31.11	860			
000630-06-8	Hexatriacontane	34.98	1800			
000629-96-9	1-Ecosanol	35.04	410			
000057-88-5	Cholesterol	35.19	720			
000474-67-9	Ergosta-5,22-dien-3-ol, (3.beta.,22E)-	35.51	380			
000083-48-7	Stigmasterol	36.18	650			
000630-06-8	Hexatriacontane	36.45	1200			
000083-47-6	.gamma.-Sisterol	36.69	2100			
001058-61-3	Stigmast-4-en-3-one	37.82	480			

OGDEN VALIDATED

Approved By:

Eydie Schwartz

Date:

7/20/98

LEVEL V

3046

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Ogden Environmental
Rocketdyne/313150002
Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH021
Lab Code: L9801888-008
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
1,2-Dichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
1,3-Dichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
1,4-Dichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Hexachloroethane	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Nitrobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Isophorone	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Naphthalene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
4-Chloroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Hexachlorobutadiene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2-Methylnaphthalene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Hexachlorocyclopentadiene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2-Chloronaphthalene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2-Nitroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Dimethyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Acenaphthylene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
3-Nitroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Acenaphthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Dibenzofuran	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2,4-Dinitrotoluene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
2,6-Dinitrotoluene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Diethyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Fluorene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
4-Nitroaniline	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
N-Nitrosodiphenylamine	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Hexachlorobenzene	EPA 3550	8270	220	1	6/21/98	6/23/98	220	U		
Phenanthrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Anthracene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Di-n-butyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Fluoranthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Pyrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Butyl Benzyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Benz(a)anthracene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Chrysene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Di-n-octyl Phthalate	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		
Benzo(b)fluoranthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U		

OGDEN VALIDATED

Approved By:

Eydie Schantz

Date:

7/20/98

LEVEL V

3019

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Ogden Environmental
Rockeddyne/313150002
Soil

Service Request: L9801888

Date Collected: 6/12/98

Date Received: 6/12/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH021
Lab Code: L9801888-008
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUA CODE
Benzo(k)fluoranthene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Benzo(a)pyrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Dibenz(a,h)anthracene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Benzo(g,h,i)perylene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Phenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2-Chlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Benzyl Alcohol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2-Methylphenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
3- and 4-Methylphenol Coelution	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2-Nitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2,4-Dimethylphenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Benzoic Acid	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2,4-Dichlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
4-Chloro-3-methylphenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2,4,6-Trichlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2,4,5-Trichlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2,4-Dinitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
4-Nitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Pentachlorophenol	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	
Carbazole	EPA 3550	8270	330	1	6/21/98	6/23/98	330	U	U	

OGDEN VALIDATED

Approved By:

152p020597p

Date:

7/20/98

LEVEL V

3020

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98
Date Extracted: 6/21/98
Date Analyzed: 6/23/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH021
Lab Code: L9801888-008
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
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(No Tentatively Identified Compounds Detected)

OGDEN VALIDATED

Approved By:

Eydie Schwartz

Date:

7/20/98

LEVEL V

3047

TIC/020597p

01888SOA.AA4 - TIC (0) 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/12/98
 Date Received: 6/12/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH025
 Lab Code: L9801888-001
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
1,3-Dichlorobenzene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
1,4-Dichlorobenzene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Hexachloroethane	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Nitrobenzene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Isophorone	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Naphthalene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
4-Chloroaniline	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Hexachlorobutadiene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2-Methylnaphthalene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Hexachlorocyclopentadiene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2-Chloronaphthalene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2-Nitroaniline	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Dimethyl Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Acenaphthylene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
3-Nitroaniline	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Acenaphthene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Dibenzofuran	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2,4-Dinitrotoluene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2,6-Dinitrotoluene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Diethyl Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Fluorene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
4-Nitroaniline	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
N-Nitrosodiphenylamine	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Hexachlorobenzene	EPA 3550	8270	230	1	6/21/98	6/23/98	230	U		
Phenanthrene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Anthracene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Di-n-butyl Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Fluoranthene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Pyrene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Butyl Benzyl Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Benz(a)anthracene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Chrysene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Di-n-octyl Phthalate	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Benzo(b)fluoranthene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		

OGDEN VALIDATED

Approved By:

Eydie Schwartz

Date:

7/20/98

LEVEL V
3005

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/12/98
 Date Received: 6/12/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH025
 Lab Code: L9801888-001
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Benzo(a)pyrene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Dibenz(a,h)anthracene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Benzo(g,h,i)perylene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Phenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2-Chlorophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U	U	
Benzyl Alcohol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2-Methylphenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2-Nitrophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2,4-Dimethylphenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Benzoic Acid	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2,4-Dichlorophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
4-Chloro-3-methylphenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2,4,6-Trichlorophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2,4,5-Trichlorophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2,4-Dinitrophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
4-Nitrophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Pentachlorophenol	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		
Carbazole	EPA 3550	8270	340	1	6/21/98	6/23/98	340	U		

OGDEN VALIDATED

Approved By: Eydie Schwarz
 152p020397p

Date: 7/20/98

LEVEL V

3006

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98
Date Extracted: 6/21/98
Date Analyzed: 6/23/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH025
Lab Code: L9801888-001
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	- TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
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(No Tentatively Identified Compounds Detected)

OGDEN VALIDATED

Approved By:

Euphie Schwartz

Date:

7/20/98

LEVEL V
3040

TIC/020597p

01888SOA.AAA4 - TIC 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/12/98
 Date Received: 6/12/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH026
 Lab Code: L9801888-009
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
1,3-Dichlorobenzene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
1,4-Dichlorobenzene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Hexachloroethane	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Nitrobenzene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Isophorone	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Naphthalene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
4-Chloroaniline	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Hexachlorobutadiene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
2-Methylnaphthalene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Hexachlorocyclopentadiene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
2-Chloronaphthalene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
2-Nitroaniline	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Dimethyl Phthalate	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Acenaphthylene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
3-Nitroaniline	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Acenaphthene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Dibenzofuran	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
2,4-Dinitrotoluene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
2,6-Dinitrotoluene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Diethyl Phthalate	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Fluorene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
4-Nitroaniline	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
N-Nitrosodiphenylamine	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Hexachlorobenzene	EPA 3550	8270	210	1	6/18/98	6/24/98	210	U		
Phenanthrene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Anthracene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Di-n-butyl Phthalate	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Fluoranthene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Pyrene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Butyl Benzyl Phthalate	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Benz(a)anthracene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Chrysene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Di-n-octyl Phthalate	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		
Benzo(b)fluoranthene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U		

OGDEN VALIDATED

Approved By:

Eydie Schwartz

Date:

7/20/98

LEVEL V

3021

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/12/98
 Date Received: 6/12/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH026
 Lab Code: L9801888-009
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
Benzo(a)pyrene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
Dibenz(a,h)anthracene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
Benzo(g,h,i)perylene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
Phenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
2-Chlorophenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
Benzyl Alcohol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
2-Methylphenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
3- and 4-Methylphenol Coelution	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
2-Nitrophenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
2,4-Dimethylphenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
Benzoic Acid	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
2,4-Dichlorophenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
4-Chloro-3-methylphenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
2,4,6-Trichlorophenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
2,4,5-Trichlorophenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
2,4-Dinitrophenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
4-Nitrophenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
Pentachlorophenol	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	
Carbazole	EPA 3550	8270	310	1	6/18/98	6/24/98	310	U	U	

OGDEN VALIDATED

Approved By:

152p/020597p

Date:

7/20/98

LEVEL V

3022

01888SOA.AA5 - Sample 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98
Date Extracted: 6/18/98
Date Analyzed: 6/24/98

**Tentatively Identified Compounds (TIC)
 Base Neutral/Acid Semivolatile Organic Compounds**

Sample Name: RH026
Lab Code: L9801888-009
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result	REV	QUAL	CODE
				Notes	QUAL		
000629-97-0	Docosane	29.22	320				
000593-45-3	Octadecane	31.11	950				
000593-45-3	Octadecane	34.97	770				
000593-45-3	Octadecane	36.44	390				
000083-47-6	.gamma. -Sitosterol	36.68	540				

NJ



OGDEN VALIDATED

Approved By:

Eydie Schwartz

Date:

7/20/98

LEVEL V

3048

TIC/020597p

01888SOAAAS - TIC 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH030
 Lab Code: L9801888-012
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUA CCR
Bis(2-chloroethyl) Ether	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
1,3-Dichlorobenzene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
1,4-Dichlorobenzene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Hexachloroethane	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Nitrobenzene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Isophorone	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Naphthalene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
4-Chloroaniline	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Hexachlorobutadiene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2-Methylnaphthalene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Hexachlorocyclopentadiene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2-Chloronaphthalene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2-Nitroaniline	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Dimethyl Phthalate	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Acenaphthylene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
3-Nitroaniline	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Acenaphthene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Dibenzofuran	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2,4-Dinitrotoluene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2,6-Dinitrotoluene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Diethyl Phthalate	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Fluorene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
4-Nitroaniline	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
N-Nitrosodiphenylamine	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Hexachlorobenzene	EPA 3550	8270	240	1	6/18/98	6/24/98	240	U		
Phenanthrene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Anthracene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Di-n-butyl Phthalate	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Fluoranthene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Pyrene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Butyl Benzyl Phthalate	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Benz(a)anthracene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Chrysene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Di-n-octyl Phthalate	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Benzo(b)fluoranthene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		

OGDEN VALIDATED

Approved By:

Eydie Schwartz

Date:

7/20/98

LEVEL V

3023

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH030
Lab Code: L9801888-012
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U	U	
Benzo(a)pyrene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Dibenz(a,h)anthracene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Benzo(g,h,i)perylene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Phenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2-Chlorophenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U	U	
Benzyl Alcohol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2-Methylphenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2-Nitrophenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2,4-Dimethylphenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Benzoic Acid	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2,4-Dichlorophenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
4-Chloro-3-methylphenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2,4,6-Trichlorophenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2,4,5-Trichlorophenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2,4-Dinitrophenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
4-Nitrophenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Pentachlorophenol	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		
Carbazole	EPA 3550	8270	350	1	6/18/98	6/24/98	350	U		

OGDEN VALIDATED

Approved By: Eydie Schwart

Date: 7/20/98

LEVEL V
3024

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98
Date Extracted: 6/18/98
Date Analyzed: 6/24/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH030
Lab Code: L9801888-012
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
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(No Tentatively Identified Compounds Detected)

OGDEN VALIDATED

Approved By:

Eydie Schwarz

Date:

7/20/98

LEVEL V

3049

Page No.:

TIC/020597p

01888SOA.AA5 - TIC (7/20/98)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH031
 Lab Code: L9801888-013
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
1,3-Dichlorobenzene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
1,4-Dichlorobenzene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Hexachloroethane	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Nitrobenzene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Isophorone	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Naphthalene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
4-Chloroaniline	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Hexachlorobutadiene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2-Methylnaphthalene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Hexachlorocyclopentadiene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2-Chloronaphthalene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2-Nitroaniline	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Dimethyl Phthalate	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Acenaphthylene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
3-Nitroaniline	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Acenaphthene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Dibenzofuran	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2,4-Dinitrotoluene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2,6-Dinitrotoluene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Diethyl Phthalate	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Fluorene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
4-Nitroaniline	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
N-Nitrosodiphenylamine	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Hexachlorobenzene	EPA 3550	8270	240	1	6/18/98	6/24/98	240	U		
Phenanthrene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Anthracene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Di-n-butyl Phthalate	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Fluoranthene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Pyrene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Butyl Benzyl Phthalate	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Benz(a)anthracene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Chrysene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Di-n-octyl Phthalate	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Benzo(b)fluoranthene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/20/98

3025

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH031
 Lab Code: L9801888-013
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U	U	
Benzo(a)pyrene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Dibenz(a,h)anthracene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Benzo(g,h,i)perylene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Phenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U	↓	
2-Chlorophenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U	U	
Benzyl Alcohol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2-Methylphenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2-Nitrophenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2,4-Dimethylphenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Benzoic Acid	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2,4-Dichlorophenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
4-Chloro-3-methylphenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2,4,6-Trichlorophenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2,4,5-Trichlorophenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2,4-Dinitrophenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
4-Nitrophenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Pentachlorophenol	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U		
Carbazole	EPA 3550	8270	360	1	6/18/98	6/24/98	360	U	↓	

OGDEN VALIDATED

Approved By: *Eydie Schwartz*
 152p/020597p

Date: 7/20/98

LEVEL V

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98
Date Extracted: 6/18/98
Date Analyzed: 6/24/98

**Tentatively Identified Compounds (TIC)
 Base Neutral/Acid Semivolatile Organic Compounds**

Sample Name: RH031
Lab Code: L9801888-013
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result	REV	QUAL
				Notes	QUAL	CODE
000629-62-9	Pentadecane	31.15	380			
000593-45-3	Octadecane	32.98	610			
000083-47-6	.gamma. -Sitosterol	36.74	860			

NJ
↓

OGDEN VALIDATED

Approved By:

Eydie Schwartz

Date:

7/20/98

LEVEL V

TIC/020597p

01888SOA.AA5 - TIC (3) 7/20/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH032
 Lab Code: L9801888-014
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUA CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
1,3-Dichlorobenzene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
1,4-Dichlorobenzene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Hexachloroethane	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Nitrobenzene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Isophorone	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Naphthalene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
4-Chloroaniline	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Hexachlorobutadiene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2-Methylnaphthalene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Hexachlorocyclopentadiene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2-Chloronaphthalene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2-Nitroaniline	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Dimethyl Phthalate	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Acenaphthylene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
3-Nitroaniline	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Acenaphthene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Dibenzofuran	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2,4-Dinitrotoluene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2,6-Dinitrotoluene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Diethyl Phthalate	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Fluorene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
4-Nitroaniline	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
N-Nitrosodiphenylamine	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Hexachlorobenzene	EPA 3550	8270	240	1	6/18/98	6/24/98	240	U		
Phenanthrene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Anthracene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Di-n-butyl Phthalate	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Fluoranthene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Pyrene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Butyl Benzyl Phthalate	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Benz(a)anthracene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Chrysene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Di-n-octyl Phthalate	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Benzo(b)fluoranthene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Scheidt

Date:

7/20/98

3027

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH032
 Lab Code: L9801888-014
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U	U	
Benzo(a)pyrene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Dibenz(a,h)anthracene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Benzo(g,h,i)perylene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Phenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2-Chlorophenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U	U	
Benzyl Alcohol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2-Methylphenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2-Nitrophenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2,4-Dimethylphenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Benzoic Acid	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2,4-Dichlorophenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
4-Chloro-3-methylphenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2,4,6-Trichlorophenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2,4,5-Trichlorophenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2,4-Dinitrophenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
4-Nitrophenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Pentachlorophenol	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		
Carbazole	EPA 3550	8270	370	1	6/18/98	6/24/98	370	U		

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schuff

157p/020597p

Date: 7/20/98

3028

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98
Date Extracted: 6/18/98
Date Analyzed: 6/24/98

**Tentatively Identified Compounds (TIC)
 Base Neutral/Acid Semivolatile Organic Compounds**

Sample Name: RH032
Lab Code: L9801888-014
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes	REV QUAL	QUAL CODE
000629-94-7	Heneicosane	32.99	380		NJ	

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz

Date: 7/20/98

3051

TIC020597p

01888SOA.AAS - TIC (4) 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH033
 Lab Code: L9801888-015
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
1,3-Dichlorobenzene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
1,4-Dichlorobenzene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Hexachloroethane	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Nitrobenzene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Isophorone	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Naphthalene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
4-Chloroaniline	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Hexachlorobutadiene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
2-Methylnaphthalene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Hexachlorocyclopentadiene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
2-Chloronaphthalene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
2-Nitroaniline	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Dimethyl Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Acenaphthylene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
3-Nitroaniline	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Acenaphthene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Dibenzofuran	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
2,4-Dinitrotoluene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
2,6-Dinitrotoluene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Diethyl Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Fluorene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
4-Nitroaniline	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
N-Nitrosodiphenylamine	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Hexachlorobenzene	EPA 3550	8270	220	1	6/18/98	6/24/98	220	U		
Phenanthrene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Anthracene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Di-n-butyl Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Fluoranthene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Pyrene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Butyl Benzyl Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Benz(a)anthracene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Chrysene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Di-n-octyl Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		
Benzo(b)fluoranthene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/20/98

3029

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH033
Lab Code: L9801888-015
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Benzo(a)pyrene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Dibenz(a,h)anthracene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Benzo(g,h,i)perylene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Phenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2-Chlorophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Benzyl Alcohol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2-Methylphenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
3- and 4-Methylphenol Coelution	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2-Nitrophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2,4-Dimethylphenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Benzoic Acid	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2,4-Dichlorophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
4-Chloro-3-methylphenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2,4,6-Trichlorophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2,4,5-Trichlorophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2,4-Dinitrophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
4-Nitrophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Pentachlorophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Carbazole	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	

OGDEN VALIDATED

Approved By:

Eydie Schwart

Date:

*7/22/98***LEVEL V**

3030

152p/020597p

01888SOAAAS - Sample (3) 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98
Date Extracted: 6/18/98
Date Analyzed: 6/24/98

**Tentatively Identified Compounds (TIC)
 Base Neutral/Acid Semivolatile Organic Compounds**

Sample Name: RH033
Lab Code: L9801888-015
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result	REV	QUAL
				Notes	QUAL	CODE
000057-10-3	Hexadecanoic acid	23.37	550		NJ	
001454-84-8	1-Nonadecanol	29.21	680			
000112-95-8	Eicosane	35.02	650			
000083-47-6	.gamma. -Sitosterol	36.73	450			

OGDEN VALIDATED

Approved By: Eydie Schwarz

Date: 7/20/98

LEVEL V

3052

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH036
 Lab Code: L9801888-016
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV	QUAL	QUA
Bis(2-chloroethyl) Ether	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U		
1,2-Dichlorobenzene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
1,3-Dichlorobenzene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
1,4-Dichlorobenzene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
N-Nitrosodi-n-propylamine	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Hexachloroethane	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Nitrobenzene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Isophorone	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Bis(2-chloroethoxy)methane	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
1,2,4-Trichlorobenzene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Naphthalene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
4-Chloroaniline	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Hexachlorobutadiene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
2-Methylnaphthalene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Hexachlorocyclopentadiene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
2-Chloronaphthalene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
2-Nitroaniline	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Dimethyl Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Acenaphthylene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
3-Nitroaniline	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Acenaphthene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Dibenzofuran	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
2,4-Dinitrotoluene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
2,6-Dinitrotoluene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Diethyl Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Fluorene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
4-Nitroaniline	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
N-Nitrosodiphenylamine	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
4-Bromophenyl Phenyl Ether	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Hexachlorobenzene	EPA 3550	8270	220	1	6/18/98	6/24/98	220	U			
Phenanthrene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Anthracene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Di-n-butyl Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Fluoranthene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Pyrene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Butyl Benzyl Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
3,3'-Dichlorobenzidine	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Benz(a)anthracene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Chrysene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Di-n-octyl Phthalate	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			
Benzo(b)fluoranthene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U			

OGDEN VALIDATED

Approved By:

Eydie Schwartz

Date:

7/20/98

LEVEL V

3031

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801888
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH036
 Lab Code: L9801888-016
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Benzo(a)pyrene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Dibenz(a,h)anthracene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Benzo(g,h,i)perylene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Phenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2-Chlorophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Benzyl Alcohol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2-Methylphenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
3- and 4-Methylphenol Coelution	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2-Nitrophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2,4-Dimethylphenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Benzoic Acid	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2,4-Dichlorophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
4-Chloro-3-methylphenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2,4,6-Trichlorophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2,4,5-Trichlorophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2,4-Dinitrophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
4-Nitrophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Pentachlorophenol	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	
Carbazole	EPA 3550	8270	330	1	6/18/98	6/24/98	330	U	U	

OGDEN VALIDATED

Approved By: *Eydie Schwab*
 152p/020597p

Date: 7/20/98

LEVEL V

3032

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98
Date Extracted: 6/18/98
Date Analyzed: 6/24/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH036
Lab Code: L9801888-016
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes	REV QUAL	QUAL CODE
000057-10-3	Hexadecanoic acid	23.39	740		NJ	
001599-67-3	1-Docosene	29.21	520			
007098-22-8	Tetratetracontane	31.14	730			
000630-06-8	Hexatriacontane	32.99	2100			
055282-14-9	Docosane, 9-butyl-	35.01	1100			
000629-96-6	1-Eicosanol	35.07	660			
004651-51-8	Ergost-5-en-3-ol, (3.beta.)-	36.02	770			
000083-48-7	Stigmasterol	36.23	350			
000112-95-8	Eicosane	36.48	380			
000083-47-6	.gamma.-Sitosterol	36.73	1400			
001058-61-3	Stigmast-4-en-3-one	37.89	380			

OGDEN VALIDATED

Approved By: Eydie Schauf

Date: 7/20/98

LEVEL V

3053

TIC/020597p

01888SOA.AAS - TIC (6) 7/20/98

Page No.:



ENVIRONMENTAL AND ENERGY SERVICES

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 8270

No. of Samples: 3

Date Reviewed: 8/19/98

Reviewer: M. Pokorny

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994), Columbia SOP SOA.SOC 8/96 Rev. 1, and EPA Method 8270B.

SDG: L9801906

Samples Reviewed: RH008, RH020, RH037

Matrix: Water

EPA Level V- Semivolatiles Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received intact with temperatures of 5°C - 17°C. Samples were transported, in ice-filled coolers, directly from the field to the laboratory by field personnel; therefore, no custody seals were necessary on the coolers. All samples were received intact and no problems were noted during sample handling and transport. The COCs were signed by field and laboratory personnel. No COC discrepancies were noted. The samples were extracted within 14 days of the sampling dates and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	Two method blanks were analyzed with this SDG. No target compounds were detected in the method blanks.	No qualifications were required.
5. <u>LCS/BS</u>	Two blank spikes were analyzed with the samples of this SDG. All recoveries were within the USEPA SW846 Method 8270 QC limits.	No qualifications were required.

	Problems	Qualifications
6. <u>Surrogates</u>	All surrogate recoveries were within the QC limits listed on the laboratory summary form.	No qualifications were required .
7. <u>MS/MSDs</u> None	The laboratory did not analyze any of the samples of this SDG as an MS/MSD. Accuracy was evaluated from the blank spikes associated with this SDG.	No qualifications were required.
8. <u>Field QC Samples</u> None	The samples of this SDG were all identified as field QC samples, as such they are not evaluated against other field QC samples.	No qualifications were required.
10. <u>Other</u>	It was noted in the Level IV data validation of a previous data package that the laboratory was using phenol-d5 as the surrogate instead of phenol-d6 as stated on the surrogate summary forms and on the sample quantitation forms. A review of the raw data from this package confirms that the laboratory used phenol-d5 as in the previous data package.	None, the use of phenol-d5 verses phenol-d6 as a surrogate compound does not affect the quality of the data.
<u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH008
 Lab Code: L9801906-002
 Test Notes:

Units: UG/L
 Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUA COD
Bis(2-chloroethyl) Ether	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U	U	
1,2-Dichlorobenzene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
1,3-Dichlorobenzene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
1,4-Dichlorobenzene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Bis(2-chloroisopropyl) Ether	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
N-Nitrosodi-n-propylamine	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Hexachloroethane	EPA 3510	8270	10	1	6/12/98	6/19/98	10	U		
Nitrobenzene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Isophorone	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Bis(2-chloroethoxy)methane	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
1,2,4-Trichlorobenzene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Naphthalene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
4-Chloroaniline	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Hexachlorobutadiene	EPA 3510	8270	10	1	6/12/98	6/19/98	10	U		
2-Methylnaphthalene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Hexachlorocyclopentadiene	EPA 3510	8270	10	1	6/12/98	6/19/98	10	U		
2-Chloronaphthalene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
2-Nitroaniline	EPA 3510	8270	20	1	6/12/98	6/19/98	20	U		
Dimethyl Phthalate	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Acenaphthylene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
3-Nitroaniline	EPA 3510	8270	20	1	6/12/98	6/19/98	20	U		
Acenaphthene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Dibenzofuran	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
2,4-Dinitrotoluene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
2,6-Dinitrotoluene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Diethyl Phthalate	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
4-Chlorophenyl Phenyl Ether	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Fluorene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
4-Nitroaniline	EPA 3510	8270	20	1	6/12/98	6/19/98	20	U		
N-Nitrosodiphenylamine	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
4-Bromophenyl Phenyl Ether	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Hexachlorobenzene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Phenanthrene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Anthracene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Di-n-butyl Phthalate	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Fluoranthene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Pyrene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Butyl Benzyl Phthalate	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
3,3'-Dichlorobenzidine	EPA 3510	8270	20	1	6/12/98	6/19/98	20	U		
Benz(a)anthracene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Chrysene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Di-n-octyl Phthalate	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Benzo(b)fluoranthene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

8/5/98

3005

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906

Date Collected: 6/11/98

Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH008
 Lab Code: L9801906-002
 Test Notes:

Units: UG/L

Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U	U	
Benzo(a)pyrene	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Dibenz(a,h)anthracene	EPA 3550	8270	5	1	6/12/98	6/19/98	5	U		
Benzo(g,h,i)perylene	EPA 3550	8270	5	1	6/12/98	6/19/98	5	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	5	1	6/12/98	6/19/98	5	U		
Phenol	EPA 3550	8270	5	1	6/12/98	6/19/98	5	U		
2-Chlorophenol	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
Benzyl Alcohol	EPA 3510	8270	10	1	6/12/98	6/19/98	10	U		
2-Methylphenol	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
3- and 4-Methylphenol Coelution	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
2-Nitrophenol	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
2,4-Dimethylphenol	EPA 3510	8270	10	1	6/12/98	6/19/98	10	U		
Benzoic Acid	EPA 3510	8270	50	1	6/12/98	6/19/98	50	U		
2,4-Dichlorophenol	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
4-Chloro-3-methylphenol	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
2,4,6-Trichlorophenol	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
2,4,5-Trichlorophenol	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		
2,4-Dinitrophenol	EPA 3510	8270	50	1	6/12/98	6/19/98	50	U		
4-Nitrophenol	EPA 3510	8270	50	1	6/12/98	6/19/98	50	U		
2-Methyl-4,6-dinitrophenol	EPA 3510	8270	20	1	6/12/98	6/19/98	20	U		
Pentachlorophenol	EPA 3510	8270	30	1	6/12/98	6/19/98	30	U		
Carbazole	EPA 3510	8270	5	1	6/12/98	6/19/98	5	U		

OGDEN VALIDATED**LEVEL V**

Approved By:

Eydie Schwartz

Date:

8/5/98

3006

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water

Service Request: L9801906
Date Collected: 6/11/98
Date Received: 6/11/98
Date Extracted: 6/12/98
Date Analyzed: 6/19/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH008
Lab Code: L9801906-002
Test Notes:

Prep Method: EPA 3510
Analysis Method: 8270
Units: UG/L
Basis: NA

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
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No Tentatively Identified Compounds were detected.

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwarz

Date:

8/5/98

TIC/020597p

01906SOA.AA3 - TIC 8/5/98

3021

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH020
 Lab Code: L9801906-009
 Test Notes:

Units: UG/L
 Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUA CCE
Bis(2-chloroethyl) Ether	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
1,2-Dichlorobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
1,3-Dichlorobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
1,4-Dichlorobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Bis(2-chloroisopropyl) Ether	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
N-Nitrosodi-n-propylamine	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Hexachloroethane	EPA 3510	8270	10	1	6/16/98	6/19/98	10	U	U	
Nitrobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Isophorone	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Bis(2-chloroethoxy)methane	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
1,2,4-Trichlorobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Naphthalene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
4-Chloroaniline	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Hexachlorobutadiene	EPA 3510	8270	10	1	6/16/98	6/19/98	10	U	U	
2-Methylnaphthalene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Hexachlorocyclopentadiene	EPA 3510	8270	10	1	6/16/98	6/19/98	10	U	U	
2-Chloronaphthalene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
2-Nitroaniline	EPA 3510	8270	20	1	6/16/98	6/19/98	20	U	U	
Dimethyl Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Acenaphthylene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
3-Nitroaniline	EPA 3510	8270	20	1	6/16/98	6/19/98	20	U	U	
Acenaphthene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Dibenzofuran	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
2,4-Dinitrotoluene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
2,6-Dinitrotoluene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Diethyl Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
4-Chlorophenyl Phenyl Ether	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Fluorene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
4-Nitroaniline	EPA 3510	8270	20	1	6/16/98	6/19/98	20	U	U	
N-Nitrosodiphenylamine	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
4-Bromophenyl Phenyl Ether	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Hexachlorobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Phenanthrene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Anthracene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Di-n-butyl Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Fluoranthene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Pyrene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Butyl Benzyl Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
3,3'-Dichlorobenzidine	EPA 3510	8270	20	1	6/16/98	6/19/98	20	U	U	
Benz(a)anthracene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Chrysene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Di-n-octyl Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Benzo(b)fluoranthene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwart

Date:

8/5/98

3007

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH020
 Lab Code: L9801906-009
 Test Notes:

Units: UG/L
 Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUD CODE
Benzo(k)fluoranthene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Benzo(a)pyrene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Dibenz(a,h)anthracene	EPA 3550	8270	5	1	6/16/98	6/19/98	5	U		
Benzo(g,h,i)perylene	EPA 3550	8270	5	1	6/16/98	6/19/98	5	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	5	1	6/16/98	6/19/98	5	U		
Phenol	EPA 3550	8270	5	1	6/16/98	6/19/98	5	U		
2-Chlorophenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Benzyl Alcohol	EPA 3510	8270	10	1	6/16/98	6/19/98	10	U		
2-Methylphenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
3- and 4-Methylphenol Coelution	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
2-Nitrophenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
2,4-Dimethylphenol	EPA 3510	8270	10	1	6/16/98	6/19/98	10	U		
Benzoic Acid	EPA 3510	8270	50	1	6/16/98	6/19/98	50	U		
2,4-Dichlorophenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
4-Chloro-3-methylphenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
2,4,6-Trichlorophenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
2,4,5-Trichlorophenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
2,4-Dinitrophenol	EPA 3510	8270	50	1	6/16/98	6/19/98	50	U		
4-Nitrophenol	EPA 3510	8270	50	1	6/16/98	6/19/98	50	U		
2-Methyl-4,6-dinitrophenol	EPA 3510	8270	20	1	6/16/98	6/19/98	20	U		
Pentachlorophenol	EPA 3510	8270	30	1	6/16/98	6/19/98	30	U		
Carbazole	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

8/5/98

3008

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water

Service Request: L9801906
Date Collected: 6/15/98
Date Received: 6/15/98
Date Extracted: 6/16/98
Date Analyzed: 6/19/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH020
Lab Code: L9801906-009
Test Notes:

Prep Method: EPA 3510
Analysis Method: 8270
Units: UG/L
Basis: NA

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
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No Tentatively Identified Compounds were detected.

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

8/5/98

3022

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH037
 Lab Code: L9801906-011
 Test Notes:

Units: UG/L
 Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
1,2-Dichlorobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
1,3-Dichlorobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
1,4-Dichlorobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Bis(2-chloroisopropyl) Ether	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
N-Nitrosodi-n-propylamine	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Hexachloroethane	EPA 3510	8270	10	1	6/16/98	6/19/98	10	U		
Nitrobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Isophorone	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Bis(2-chloroethoxy)methane	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
1,2,4-Trichlorobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Naphthalene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
4-Chloroaniline	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Hexachlorobutadiene	EPA 3510	8270	10	1	6/16/98	6/19/98	10	U		
2-Methylnaphthalene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Hexachlorocyclopentadiene	EPA 3510	8270	10	1	6/16/98	6/19/98	10	U		
2-Chloronaphthalene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
2-Nitroaniline	EPA 3510	8270	20	1	6/16/98	6/19/98	20	U		
Dimethyl Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Acenaphthylene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
3-Nitroaniline	EPA 3510	8270	20	1	6/16/98	6/19/98	20	U		
Acenaphthene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Dibenzofuran	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
2,4-Dinitrotoluene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
2,6-Dinitrotoluene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Diethyl Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
4-Chlorophenyl Phenyl Ether	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Fluorene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
4-Nitroaniline	EPA 3510	8270	20	1	6/16/98	6/19/98	20	U		
N-Nitrosodiphenylamine	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
4-Bromophenyl Phenyl Ether	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Hexachlorobenzene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Phenanthrene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Anthracene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Di-n-butyl Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Fluoranthene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Pyrene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Butyl Benzyl Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
3,3'-Dichlorobenzidine	EPA 3510	8270	20	1	6/16/98	6/19/98	20	U		
Benz(a)anthracene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Chrysene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Di-n-octyl Phthalate	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		
Benzo(b)fluoranthene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Euphie Schwartz

Date:

8/5/98

3009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Water

Service Request: L9801906
 Date Collected: 6/15/98
 Date Received: 6/15/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH037
 Lab Code: L9801906-011
 Test Notes:

Units: UG/L
 Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Benzo(a)pyrene	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Dibenz(a,h)anthracene	EPA 3550	8270	5	1	6/16/98	6/19/98	5	U	U	
Benzo(g,h,i)perylene	EPA 3550	8270	5	1	6/16/98	6/19/98	5	U	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	5	1	6/16/98	6/19/98	5	U	U	
Phenol	EPA 3550	8270	5	1	6/16/98	6/19/98	5	U	U	
2-Chlorophenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
Benzyl Alcohol	EPA 3510	8270	10	1	6/16/98	6/19/98	10	U	U	
2-Methylphenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
3- and 4-Methylphenol Coelution	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
2-Nitrophenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
2,4-Dimethylphenol	EPA 3510	8270	10	1	6/16/98	6/19/98	10	U	U	
Benzoic Acid	EPA 3510	8270	50	1	6/16/98	6/19/98	50	U	U	
2,4-Dichlorophenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
4-Chloro-3-methylphenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
2,4,6-Trichlorophenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
2,4,5-Trichlorophenol	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	
2,4-Dinitrophenol	EPA 3510	8270	50	1	6/16/98	6/19/98	50	U	U	
4-Nitrophenol	EPA 3510	8270	50	1	6/16/98	6/19/98	50	U	U	
2-Methyl-4,6-dinitrophenol	EPA 3510	8270	20	1	6/16/98	6/19/98	20	U	U	
Pentachlorophenol	EPA 3510	8270	30	1	6/16/98	6/19/98	30	U	U	
Carbazole	EPA 3510	8270	5	1	6/16/98	6/19/98	5	U	U	

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

8/5/98

3010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water

Service Request: L9801906
Date Collected: 6/15/98
Date Received: 6/15/98
Date Extracted: 6/16/98
Date Analyzed: 6/19/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH037
Lab Code: L9801906-011
Test Notes:

Prep Method: EPA 3510
Analysis Method: 8270
Units: UG/L
Basis: NA

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
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No Tentatively Identified Compounds were detected.

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwarf

Date:

8/5/98

TIC/020597p

01906SOA.AA4 - TIC (2) 8/5/98

3023

Page No.

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 8270

No. of Samples: 10

Date Reviewed: 8/18/98

Reviewer: M. Pokorny

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994), Columbia SOP SOA.SOC 8/96 Rev. 1, and EPA Method 8270B.

SDG: L9801914

Samples Reviewed: RH011, RH012, RH013, RH014, RH015, RH016, RH041, RH046, RH047, RH048

Matrix: Soil

EPA Level V- Semivolatiles Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received intact within the temperature limits of 4°C ± 2°C at 4°C, with the exception of samples RH011-RH016, which were received at 13°C. Samples were transported, in ice-filled coolers, directly from the field to the laboratory by field personnel; therefore, no custody seals were necessary on the coolers. All samples were received intact and no problems were noted during sample handling and transport. The COCs were signed by field and laboratory personnel. No COC discrepancies were noted. Some corrections on the COCs were scribbled rather than lined out, and there were some crossouts on the COCs without dates. The samples were analyzed within 14 days of the sampling dates.	No qualifications were required.
4. <u>Method Blanks</u>	One method blank was analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.

	Problems	Qualifications
5. <u>LCS/BS</u>	One blank spike was analyzed with the samples of this SDG. All recoveries were within the USEPA SW846 Method 8270 QC limits except for the recovery of pyrene which was slightly above QC limits.	No qualifications were required since no target compounds were detected in any of the samples of this SDG.
6. <u>Surrogates</u>	All surrogate recoveries were within the QC limits listed on the laboratory summary form.	No qualifications were required.
7. <u>MS/MSDs</u> RH048	All percent recoveries were within the QC limits listed on the laboratory summary forms with the exception of phenol and pyrene which were recovered slightly above the QC limit.	No qualifications were required since no target compounds were detected in any of the samples of this SDG.
8. <u>Field QC Samples</u> ER: RH037 (SDG L9801906) FB: RF008, RH020 (SDG L9801906) Samples RH047 and RH048 were identified as field duplicate samples.	No target compounds were detected in either of the field QC samples. Neither sample of the field duplicate pair had any target compounds detected.	No qualifications were required. No qualifications were required.
10. <u>Other</u>	It was noted in the Level IV data validation of a previous data package that the laboratory was using phenol-d5 as the surrogate instead of phenol-d6 as stated on the surrogate summary forms and on the sample quantitation forms. A review of the raw data from this package confirms that the laboratory used phenol-d5, as in the previous data package. Several of the samples of this SDG had tentatively identified compounds (TICs) detected.	None, the use of phenol-d5 verses phenol-d6 as a surrogate compound does not affect the quality of the data. TICs were qualified "NJ."
<u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH011
 Lab Code: L9801914-001
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
1,3-Dichlorobenzene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
1,4-Dichlorobenzene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Hexachloroethane	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Nitrobenzene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Isophorone	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Naphthalene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
4-Chloroaniline	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Hexachlorobutadiene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2-Methylnaphthalene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Hexachlorocyclopentadiene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2-Chloronaphthalene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2-Nitroaniline	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Dimethyl Phthalate	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Acenaphthylene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
3-Nitroaniline	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Acenaphthene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Dibenzofuran	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2,4-Dinitrotoluene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2,6-Dinitrotoluene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Diethyl Phthalate	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Fluorene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
4-Nitroaniline	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
N-Nitrosodiphenylamine	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Hexachlorobenzene	EPA 3550	8270	320	1	6/25/98	6/30/98	480	U		
Phenanthrene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Anthracene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Di-n-butyl Phthalate	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Fluoranthene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Pyrene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Butyl Benzyl Phthalate	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Benz(a)anthracene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Chrysene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Di-n-octyl Phthalate	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Benzo(b)fluoranthene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schuatz

Date:

7/27/98

3003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Ogden Environmental
Rocketdyne/313150002
Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH011
Lab Code: L9801914-001
Test Notes:

Units: UG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U	U	
Benzo(a)pyrene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Dibenz(a,h)anthracene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Benzo(g,h,i)perylene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Phenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2-Chlorophenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U	U	
Benzyl Alcohol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2-Methylphenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2-Nitrophenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2,4-Dimethylphenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Benzoic Acid	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2,4-Dichlorophenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
4-Chloro-3-methylphenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2,4,6-Trichlorophenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2,4,5-Trichlorophenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2,4-Dinitrophenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
4-Nitrophenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Pentachlorophenol	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		
Carbazole	EPA 3550	8270	480	1	6/25/98	6/30/98	480	U		

OGDEN VALIDATED**LEVEL V**Approved By: Eydie SchwartzDate: 7/6/98

IS2p020597p

019145VM.ES1 - Sample 7/4/98

3004
Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98
Date Extracted: 6/25/98
Date Analyzed: 6/30/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

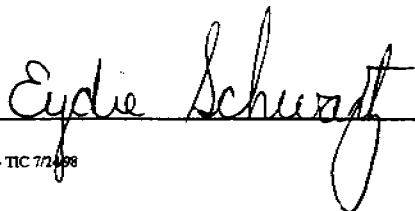
Sample Name: RH011
Lab Code: L9801914-001
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

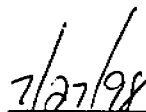
CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result	REV	QUAL	QUAL CODE
				Notes	QUAL		
000057-10-3	Hexadecanoic acid	23.33	510		NJ		
001599-67-3	1-Docosene	29.17	1100				
000629-62-9	Pentadecane	31.09	2100				
000593-45-3	Octadecane	32.93	1900				
007616-22-0	.gamma.-Tocopherol	34.53	1200				
000629-94-7	Heneicosane	34.95	720				
000059-02-9	Vitamin E	35.19	880				
000083-47-6	.gamma.-Sitosterol	36.74	6100				
001058-61-3	Stigmast-4-en-3-one	37.83	650				

OGDEN VALIDATED**LEVEL V**

Approved By:



Date:



3027

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH012
 Lab Code: L9801914-002
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
1,3-Dichlorobenzene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
1,4-Dichlorobenzene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Hexachloroethane	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Nitrobenzene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Isophorone	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Naphthalene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
4-Chloroaniline	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Hexachlorobutadiene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2-Methylnaphthalene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Hexachlorocyclopentadiene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2-Chloronaphthalene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2-Nitroaniline	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Dimethyl Phthalate	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Acenaphthylene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
3-Nitroaniline	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Acenaphthene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Dibenzofuran	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2,4-Dinitrotoluene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2,6-Dinitrotoluene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Diethyl Phthalate	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Fluorene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
4-Nitroaniline	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
N-Nitrosodiphenylamine	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Hexachlorobenzene	EPA 3550	8270	250	1	6/25/98	6/30/98	250	U		
Phenanthrene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Anthracene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Di-n-butyl Phthalate	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Fluoranthene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Pyrene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Butyl Benzyl Phthalate	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Benz(a)anthracene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Chrysene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Di-n-octyl Phthalate	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Benzo(b)fluoranthene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/27/98

3005

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH012
 Lab Code: L9801914-002
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U	U	
Benzo(a)pyrene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Dibenz(a,h)anthracene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Benzo(g,h,i)perylene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Phenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2-Chlorophenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Benzyl Alcohol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2-Methylphenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2-Nitrophenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2,4-Dimethylphenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Benzoic Acid	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2,4-Dichlorophenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
4-Chloro-3-methylphenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2,4,6-Trichlorophenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2,4,5-Trichlorophenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2,4-Dinitrophenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
4-Nitrophenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Pentachlorophenol	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		
Carbazole	EPA 3550	8270	370	1	6/25/98	6/30/98	370	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwarz

Date:

7/27/98

3006

152p020597p

01914SVM.ESI - Sample (1) 7/24/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98
Date Extracted: 6/25/98
Date Analyzed: 6/30/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH012
Lab Code: L9801914-002
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes	REV	QUAL
					QUAL	CODE
000629-92-5	Nonadecane	22.55	370		NS ↓	
000112-95-8	Eicosane	23.80	370			
001599-67-3	1-Docosene	29.17	740			
001599-67-3	1-Docosene	31.10	490			
000057-88-5	Cholesterol	35.20	710			
000083-47-6	.gamma. -Sitosterol	36.68	1500			

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz

Date: 7/27/98

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TIC/020597p

01914SVM.ESI - TIC (2) 7/27/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH013
 Lab Code: L9801914-003
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REF QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
1,3-Dichlorobenzene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
1,4-Dichlorobenzene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Hexachloroethane	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Nitrobenzene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Isophorone	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Naphthalene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
4-Chloroaniline	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Hexachlorobutadiene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2-Methylnaphthalene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Hexachlorocyclopentadiene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2-Chloronaphthalene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2-Nitroaniline	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Dimethyl Phthalate	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Acenaphthylene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
3-Nitroaniline	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Acenaphthene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Dibenzofuran	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2,4-Dinitrotoluene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2,6-Dinitrotoluene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Diethyl Phthalate	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Fluorene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
4-Nitroaniline	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
N-Nitrosodiphenylamine	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Hexachlorobenzene	EPA 3550	8270	230	1	6/25/98	6/30/98	230	U		
Phenanthrene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Anthracene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Di-n-butyl Phthalate	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Fluoranthene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Pyrene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Butyl Benzyl Phthalate	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Benz(a)anthracene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Chrysene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Di-n-octyl Phthalate	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Benzo(b)fluoranthene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		

LEVEL V

OGDEN VALIDATED

Approved By:

Eydie Schwartz

Date:

7/27/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH013
 Lab Code: L9801914-003
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U	U	
Benzo(a)pyrene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Dibenz(a,h)anthracene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Benzo(g,h,i)perylene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Phenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2-Chlorophenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U	U	
Benzyl Alcohol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2-Methylphenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2-Nitrophenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2,4-Dimethylphenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Benzoic Acid	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2,4-Dichlorophenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
4-Chloro-3-methylphenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2,4,6-Trichlorophenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2,4,5-Trichlorophenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2,4-Dinitrophenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
4-Nitrophenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Pentachlorophenol	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		
Carbazole	EPA 3550	8270	350	1	6/25/98	6/30/98	350	U		

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schwartz*
 152p/020597p

Date: *7/27/98*

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98
Date Extracted: 6/25/98
Date Analyzed: 6/30/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH013
Lab Code: L9801914-003
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
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(No Tentatively Identified Compounds Detected)

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/27/98

TIC/020597p

01914SVM.E51 - TIC (3) 7/24/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH014
 Lab Code: L9801914-004
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
1,3-Dichlorobenzene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
1,4-Dichlorobenzene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Hexachloroethane	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Nitrobenzene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Isophorone	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Naphthalene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Chloroaniline	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Hexachlorobutadiene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Methylnaphthalene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Hexachlorocyclopentadiene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Chloronaphthalene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Nitroaniline	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Dimethyl Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Acenaphthylene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
3-Nitroaniline	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Acenaphthene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Dibenzofuran	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4-Dinitrotoluene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,6-Dinitrotoluene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Diethyl Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Fluorene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Nitroaniline	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
N-Nitrosodiphenylamine	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Hexachlorobenzene	EPA 3550	8270	240	1	6/25/98	6/30/98	240	U		
Phenanthrene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Anthracene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Di-n-butyl Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Fluoranthene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Pyrene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Butyl Benzyl Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Benz(a)anthracene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Chrysene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Di-n-octyl Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Benzo(b)fluoranthene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwarz

Date:

7/27/98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH014
 Lab Code: L9801914-004
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U	U	
Benzo(a)pyrene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Dibenz(a,h)anthracene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Benzo(g,h,i)perylene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Phenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Chlorophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U	U	
Benzyl Alcohol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Methylphenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Nitrophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4-Dimethylphenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Benzoic Acid	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4-Dichlorophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Chloro-3-methylphenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4,6-Trichlorophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4,5-Trichlorophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4-Dinitrophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Nitrophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Pentachlorophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Carbazole	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schwantz*
 152p/020597p

Date: *7/27/98*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98
Date Extracted: 6/25/98
Date Analyzed: 6/30/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH014
Lab Code: L9801914-004
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
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(No Tentatively Identified Compounds Detected)

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz

Date: 7/27/98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH015
 Lab Code: L9801914-005
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
1,3-Dichlorobenzene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
1,4-Dichlorobenzene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Hexachloroethane	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Nitrobenzene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Isophorone	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Naphthalene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
4-Chloroaniline	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Hexachlorobutadiene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2-Methylnaphthalene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Hexachlorocyclopentadiene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2-Chloronaphthalene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2-Nitroaniline	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Dimethyl Phthalate	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Acenaphthylene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
3-Nitroaniline	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Acenaphthene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Dibenzofuran	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2,4-Dinitrotoluene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2,6-Dinitrotoluene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Diethyl Phthalate	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Fluorene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
4-Nitroaniline	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
N-Nitrosodiphenylamine	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Hexachlorobenzene	EPA 3550	8270	260	1	6/25/98	6/30/98	260	U		
Phenanthrene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Anthracene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Di-n-butyl Phthalate	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Fluoranthene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Pyrene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Butyl Benzyl Phthalate	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Benz(a)anthracene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Chrysene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Di-n-octyl Phthalate	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Benzo(b)fluoranthene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		

OGDEN VALIDATED

Approved By:

Eydie Schwartz

Date:

7/27/98

LEVEL V

3011

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH015
 Lab Code: L9801914-005
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUA CODE
Benzo(k)fluoranthene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U	U	
Benzo(a)pyrene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Dibenz(a,h)anthracene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Benzo(g,h,i)perylene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Phenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2-Chlorophenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U	U	
Benzyl Alcohol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2-Methylphenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2-Nitrophenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2,4-Dimethylphenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Benzoic Acid	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2,4-Dichlorophenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
4-Chloro-3-methylphenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2,4,6-Trichlorophenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2,4,5-Trichlorophenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2,4-Dinitrophenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
4-Nitrophenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Pentachlorophenol	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		
Carbazole	EPA 3550	8270	400	1	6/25/98	6/30/98	400	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwarz

Date:

7/27/98

3012

152p/020597p

01914SVM.ES1 - Sample 5/ 7/24/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98
Date Extracted: 6/25/98
Date Analyzed: 6/30/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH015
Lab Code: L9801914-J05
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes	REV QUAL	QUA COD
001599-67-3	1-Docosene	29.18	1800		NS	
018435-45-5	1-Nonadecene	31.08	1100		↓	
000083-47-6	.gamma. -Sitosterol	36.71	800			

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwaft

Date: 7/27/98

TIC/020597p

01914SVM.ES1 - TIC (5) 7/24/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH016
 Lab Code: L9801914-006
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
1,3-Dichlorobenzene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
1,4-Dichlorobenzene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Hexachloroethane	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Nitrobenzene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Isophorone	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Naphthalene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
4-Chloroaniline	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Hexachlorobutadiene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2-Methylnaphthalene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Hexachlorocyclopentadiene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2-Chloronaphthalene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2-Nitroaniline	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Dimethyl Phthalate	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Acenaphthylene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
3-Nitroaniline	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Acenaphthene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Dibenzofuran	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2,4-Dinitrotoluene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2,6-Dinitrotoluene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Diethyl Phthalate	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Fluorene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
4-Nitroaniline	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
N-Nitrosodiphenylamine	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Hexachlorobenzene	EPA 3550	8270	260	1	6/25/98	6/30/98	260	U		
Phenanthrene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Anthracene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Di-n-butyl Phthalate	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Fluoranthene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Pyrene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Butyl Benzyl Phthalate	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Benz(a)anthracene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Chrysene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Di-n-octyl Phthalate	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Benzo(b)fluoranthene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Euphie Schwartz

Date:

7/27/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/11/98
 Date Received: 6/11/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH016
 Lab Code: L9801914-006
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL COD
Benzo(k)fluoranthene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U	U	
Benzo(a)pyrene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Dibenz(a,h)anthracene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Benzo(g,h,i)perylene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Phenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2-Chlorophenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U	U	
Benzyl Alcohol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2-Methylphenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2-Nitrophenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2,4-Dimethylphenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Benzoic Acid	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2,4-Dichlorophenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
4-Chloro-3-methylphenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2,4,6-Trichlorophenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2,4,5-Trichlorophenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2,4-Dinitrophenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
4-Nitrophenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Pentachlorophenol	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		
Carbazole	EPA 3550	8270	390	1	6/25/98	6/30/98	390	U		

OGDEN VALIDATED

LEVEL V

Approved By: *Eddie Schwartz*
 IS2p/020597p

Date: *7/27/98*

3014

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/11/98
Date Received: 6/11/98
Date Extracted: 6/25/98
Date Analyzed: 6/30/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH016
Lab Code: L9801914-006
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes	REV QUAL	QUA CODE
000629-92-5	Nonadecane	31.10	1300		NJ ↓	
000629-97-0	Docosane	34.96	1100			
000083-47-6	.gamma. -Sitosterol	36.72	1300			
005945-53-9	D:C -Friedooleanan-3-one	37.21	900			

OGDEN VALIDATED**LEVEL V**Approved By: Eydie SchuatzDate: 7/27/98

TIC/020597p
01914SVM.ESI - TIC (6) 7/24/98

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH041
 Lab Code: L9801914-007
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
1,3-Dichlorobenzene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
1,4-Dichlorobenzene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Hexachloroethane	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Nitrobenzene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Isophorone	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Naphthalene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
4-Chloroaniline	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Hexachlorobutadiene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
2-Methylnaphthalene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Hexachlorocyclopentadiene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
2-Chloronaphthalene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
2-Nitroaniline	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Dimethyl Phthalate	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Acenaphthylene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
3-Nitroaniline	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Acenaphthene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Dibenzofuran	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
2,4-Dinitrotoluene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
2,6-Dinitrotoluene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Diethyl Phthalate	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Fluorene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
4-Nitroaniline	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
N-Nitrosodiphenylamine	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Hexachlorobenzene	EPA 3550	8270	210	1	6/25/98	6/30/98	210	U		
Phenanthrene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Anthracene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Di-n-butyl Phthalate	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Fluoranthene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Pyrene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Butyl Benzyl Phthalate	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Benz(a)anthracene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Chrysene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Di-n-octyl Phthalate	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		
Benzo(b)fluoranthene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/27/98

3015

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH041
 Lab Code: L9801914-007
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUA CODE
Benzo(k)fluoranthene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
Benzo(a)pyrene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
Dibenz(a,h)anthracene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
Benzo(g,h,i)perylene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
Phenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
2-Chlorophenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
Benzyl Alcohol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
2-Methylphenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
3- and 4-Methylphenol Coelution	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
2-Nitrophenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
2,4-Dimethylphenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
Benzoic Acid	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
2,4-Dichlorophenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
4-Chloro-3-methylphenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
2,4,6-Trichlorophenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
2,4,5-Trichlorophenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
2,4-Dinitrophenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
4-Nitrophenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
Pentachlorophenol	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	
Carbazole	EPA 3550	8270	320	1	6/25/98	6/30/98	320	U	U	

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/27/98

IS2p/020597p

01914SVM.ESI - Sample (7/7/98)

3016

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98
Date Extracted: 6/25/98
Date Analyzed: 6/30/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

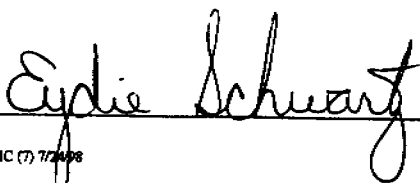
Sample Name: RH041
Lab Code: L9801914-007
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

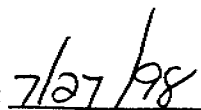
CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes	REV	QUAL
					QUAL	CODE
000629-73-2	1-Hecadecene	29.21	740		NJ ↓	
000544-76-3	Hecadecane	31.10	1500			
007225-66-3	Tridecane, 7-hexyl-	34.97	1200			
000629-96-9	1-Eicosanol	35.03	960			
000083-48-7	Stigmasterol	36.20	320			
007225-64-1	Heptadecane, 9-octyl-	36.47	470			
000083-47-6	.gamma. -Sitosterol	36.72	890			

OGDEN VALIDATED**LEVEL V**

Approved By:



Date:



TIC/020597p

01914SVM.ES1 - TIC (7) 7/2/98

3033

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH046
 Lab Code: L9801914-008
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
1,3-Dichlorobenzene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
1,4-Dichlorobenzene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Hexachloroethane	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Nitrobenzene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Isophorone	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Naphthalene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Chloroaniline	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Hexachlorobutadiene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Methylnaphthalene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Hexachlorocyclopentadiene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Chloronaphthalene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Nitroaniline	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Dimethyl Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Acenaphthylene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
3-Nitroaniline	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Acenaphthene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Dibenzofuran	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4-Dinitrotoluene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,6-Dinitrotoluene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Diethyl Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Fluorene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Nitroaniline	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
N-Nitrosodiphenylamine	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Hexachlorobenzene	EPA 3550	8270	240	1	6/25/98	6/30/98	240	U		
Phenanthrene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Anthracene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Di-n-butyl Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Fluoranthene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Pyrene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Butyl Benzyl Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Benz(a)anthracene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Chrysene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Di-n-octyl Phthalate	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Benzo(b)fluoranthene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		

OGDEN VALIDATED

LEVEL V

Approved By

Eydie Schwarz

Date:

7/27/98

3017

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH046
 Lab Code: L9801914-008
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U	U	
Benzo(a)pyrene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Dibenz(a,h)anthracene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Benzo(g,h,i)perylene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Phenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Chlorophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U	U	
Benzyl Alcohol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Methylphenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Nitrophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4-Dimethylphenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Benzoic Acid	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4-Dichlorophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Chloro-3-methylphenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4,6-Trichlorophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4,5-Trichlorophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2,4-Dinitrophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
4-Nitrophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Pentachlorophenol	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		
Carbazole	EPA 3550	8270	360	1	6/25/98	6/30/98	360	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eddie Schwart

Date:

7/27/98

152p/020597p

3018

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98
Date Extracted: 6/25/98
Date Analyzed: 6/30/98

**Tentatively Identified Compounds (TIC)
 Base Neutral/Acid Semivolatile Organic Compounds**

Sample Name: RH046
Lab Code: L9801914-008
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result	REV	QUAL
				Notes	QUAL	CODE
000112-92-5	1-Octadecanol	29.18	590			
013360-61-7	1-Pentadecene	31.09	520			
000630-06-8	Hexatriacontane	34.96	820			
013475-77-9	Eicosane, 9-octyl-	36.49	650			
					NJ	
					↓	

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwarz

Date:

7/27/98

TIC/020597p

019145VM.ESI - TIC (8) 7/24/98

3034

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH047
 Lab Code: L9801914-013
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
1,3-Dichlorobenzene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
1,4-Dichlorobenzene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Hexachloroethane	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Nitrobenzene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Isophorone	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Naphthalene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Chloroaniline	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Hexachlorobutadiene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Methylnaphthalene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Hexachlorocyclopentadiene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Chloronaphthalene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Nitroaniline	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Dimethyl Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Acenaphthylene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
3-Nitroaniline	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Acenaphthene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Dibenzofuran	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4-Dinitrotoluene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,6-Dinitrotoluene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Diethyl Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Fluorene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Nitroaniline	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
N-Nitrosodiphenylamine	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Hexachlorobenzene	EPA 3550	8270	230	1	6/25/98	6/30/98	230	U		
Phenanthrene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Anthracene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Di-n-butyl Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Fluoranthene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Pyrene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Butyl Benzyl Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Benz(a)anthracene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Chrysene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Di-n-octyl Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Benzo(b)fluoranthene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		

OGDEN VALIDATED

Approved By:

Evelyn Schwartz

Date:

7/6/98

LEVEL V

3019

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH047
 Lab Code: L9801914-013
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Benzo(k)fluoranthene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U	U	
Benzo(a)pyrene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Dibenz(a,h)anthracene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Benzo(g,h,i)perylene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Phenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Chlorophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U	U	
Benzyl Alcohol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Methylphenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Nitrophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4-Dimethylphenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Benzoic Acid	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4-Dichlorophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Chloro-3-methylphenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4,6-Trichlorophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4,5-Trichlorophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4-Dinitrophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Nitrophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Pentachlorophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Carbazole	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/27/98

3020

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98
Date Extracted: 6/25/98
Date Analyzed: 6/30/98

**Tentatively Identified Compounds (TIC)
 Base Neutral/Acid Semivolatile Organic Compounds**

Sample Name: RH047
Lab Code: L9801914-013
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes	REV	QUAL
					QUAL	CODE
000112-95-8	Eicosane	31.08	800		NJ ↓	
000630-06-8	Hexatriacontane	34.95	580			
001454-84-8	1-Nonadecanol	35.02	340			
000083-47-6	.gamma. -Sitosterol	36.64	470			

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/27/98

3035

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH048
 Lab Code: L9801914-014
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
Bis(2-chloroethyl) Ether	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U	U	
1,2-Dichlorobenzene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
1,3-Dichlorobenzene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
1,4-Dichlorobenzene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Bis(2-chloroisopropyl) Ether	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
N-Nitrosodi-n-propylamine	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Hexachloroethane	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Nitrobenzene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Isophorone	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Bis(2-chloroethoxy)methane	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
1,2,4-Trichlorobenzene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Naphthalene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Chloroaniline	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Hexachlorobutadiene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Methylnaphthalene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Hexachlorocyclopentadiene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Chloronaphthalene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Nitroaniline	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Dimethyl Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Acenaphthylene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
3-Nitroaniline	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Acenaphthene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Dibenzofuran	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4-Dinitrotoluene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,6-Dinitrotoluene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Diethyl Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Chlorophenyl Phenyl Ether	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Fluorene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Nitroaniline	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
N-Nitrosodiphenylamine	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Bromophenyl Phenyl Ether	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Hexachlorobenzene	EPA 3550	8270	220	1	6/25/98	6/30/98	220	U		
Phenanthrene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Anthracene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Di-n-butyl Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Fluoranthene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Pyrene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Butyl Benzyl Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
3,3'-Dichlorobenzidine	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Benz(a)anthracene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Chrysene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Di-n-octyl Phthalate	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Benzo(b)fluoranthene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		

OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schenck

Date:

7/27/98

3021

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
 Project: Rocketdyne/313150002
 Sample Matrix: Soil

Service Request: L9801914
 Date Collected: 6/16/98
 Date Received: 6/16/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: RH048
 Lab Code: L9801914-014
 Test Notes:

Units: UG/KG
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Benzo(k)fluoranthene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U	U	
Benzo(a)pyrene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Dibenz(a,h)anthracene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Benzo(g,h,i)perylene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Phenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Chlorophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U	U	
Benzyl Alcohol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Methylphenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
3- and 4-Methylphenol Coelution	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Nitrophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4-Dimethylphenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Benzoic Acid	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4-Dichlorophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Chloro-3-methylphenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4,6-Trichlorophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4,5-Trichlorophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2,4-Dinitrophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
4-Nitrophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
2-Methyl-4,6-dinitrophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Pentachlorophenol	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		
Carbazole	EPA 3550	8270	340	1	6/25/98	6/30/98	340	U		

OGDEN VALIDATED

LEVEL V

Approved By: *Euphie Schwartz*
 152p/020997p

Date: 7/27/98

3022

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil

Service Request: L9801914
Date Collected: 6/16/98
Date Received: 6/16/98
Date Extracted: 6/25/98
Date Analyzed: 6/30/98

**Tentatively Identified Compounds (TIC)
 Base Neutral/Acid Semivolatile Organic Compounds**

Sample Name: RH048
Lab Code: L9801914-014
Test Notes:

Prep Method: EPA 3550
Analysis Method: 8270
Units: UG/KG
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result	REV	QUAL	CODE
				Notes	QUAL		
001454-84-8	1-Nonadecanol	29.18	530				
000630-06-8	Hexatriacontane	31.08	1500				
007225-64-1	Heptadecane, 9-octyl-	34.95	1300				
000629-96-9	1-Eicosanol	35.01	970				
000059-02-9	Vitamin E	35.17	340				
000083-48-7	Stigmasterol	36.19	380				
000112-95-8	Eicosane	36.48	340				
000083-47-6	.gamma. -Sitosterol	36.69	1500				
001058-61-3	Stigmast-4-en-3-one	37.82	440				

NJ



OGDEN VALIDATED

LEVEL V

Approved By:

Eydie Schwartz

Date:

7/27/98

3036

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 8015M

No. of Samples: 14

Date Reviewed: 9/9/98

Reviewer: M. Pokorny

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994); Columbia Analytical Services, SOP Number: SOH-DIES, Revision 1.2, 12/18/97

SDG: L9801888

Samples Reviewed: RH002, RH003, RH004, RH005, RH006, RH007, RH021, RH025, RH026, RH030, RH031, RH032, RH033, RH036

Matrix: Soil

EPA Level V-Total Petroleum Hydrocarbons Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received chilled and intact. COC seals were not present. The temperatures of the samples ranged from 11°C to 14°C.	No qualifications were required. Because the samples were collected by Ogden personnel, placed in coolers containing ice, and hand delivered to the Columbia laboratory, the samples had not yet cooled to acceptable temperatures. No custody seals were present on the coolers, but because they were transported directly to the laboratory by field personnel, this was acceptable.
2. <u>Method Blanks</u>	Two method blanks were analyzed with this SDG. No target compounds were detected in the method blanks.	No qualifications were required.
3. <u>LCS/BS</u>	Two blank spikes were analyzed with the samples in this SDG. The recovery of the spiked compounds were within the QC limits of 50%-140%.	No qualifications were required.

	Problems	Qualifications
4. <u>Surrogates</u>	All surrogate recoveries were within the QC limits of 50%-140%.	No qualifications were required.
5. <u>MS/MSDs</u> RH006 RH033	The recoveries of the spiked compound were within the QC limits of 50%-140% for all of the MS and MSD samples.	No qualifications were required.
6. <u>Field QC Samples</u> ER: RH037 & RH018 (SDG L9801906) FB: RH008 & RH020 (SDG L9801906) There were no field duplicates.	None of the field QC samples had any target compound detects.	No qualifications were required.
7. <u>Other</u>	None	None
<u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06061198S

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH002
Lab Code: L9801888-002
Test Notes: X

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	Qual Capt
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/11/98	6/11/98	11	U	U	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/11/98	6/11/98	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/11/98	6/11/98	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/11/98	6/11/98	11	U		

GRO
KRO
DRO
LRO
X

Gasoline Range Organics
Kerosene Range Organics
Diesel Range Organics
Lubricating Oil Range Organics
Quantified with diesel fuel

OGDEN VALIDATED

LEVEL V

Approved By:

Eddie Schwarz

Date:

7/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06061198S

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH003
Lab Code: L9801888-003
Test Notes: X

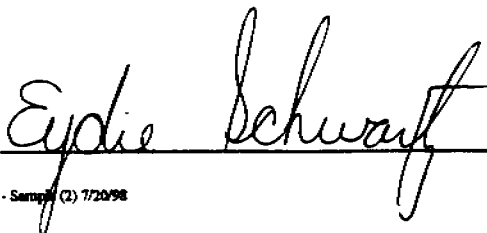
Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/11/98	6/11/98	11	U	U	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/11/98	6/11/98	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/11/98	6/11/98	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/11/98	6/11/98	11	U		

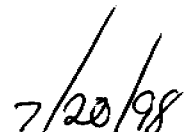
GRO Gasoline Range Organics
KRO Kerosene Range Organics
DRO Diesel Range Organics
LRO Lubricating Oil Range Organics
X Quantified with diesel fuel

OGDEN VALIDATED
LEVEL V

Approved By:



Date:



1522/020597p

01888SOH.SCI - Sample (2) 7/20/98

7005

Page No.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06061198S

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH004
Lab Code: L9801888-004
Test Notes: X

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
C8 - C11 GRO	EPA 3550M	8015M	12	1	6/11/98	6/11/98	12	U	U	
C11 - C14 KRO	EPA 3550M	8015M	12	1	6/11/98	6/11/98	12	U		
C14 - C20 DRO	EPA 3550M	8015M	12	1	6/11/98	6/11/98	12	U		
C20 - C30 LORO	EPA 3550M	8015M	12	1	6/11/98	6/11/98	12	U		

GRO Gasoline Range Organics
KRO Kerosene Range Organics
DRO Diesel Range Organics
LRO Lubricating Oil Range Organics
X Quantified with diesel fuel

OGDEN VALIDATED**LEVEL V**Approved By: Eydie SchwartzDate: 7/20/98

1S22/020597p

01888SOH.SCI - Sample (3) 7/20/98

7006

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06061198S

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH005
Lab Code: L9801888-005
Test Notes: X

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
C8 - C11 GRO	EPA 3550M	8015M	12	1	6/11/98	6/12/98	12	U	U	
C11 - C14 KRO	EPA 3550M	8015M	12	1	6/11/98	6/12/98	12	U		
C14 - C20 DRO	EPA 3550M	8015M	12	1	6/11/98	6/12/98	12	U		
C20 - C30 LORO	EPA 3550M	8015M	12	1	6/11/98	6/12/98	12	U		

GRO Gasoline Range Organics
KRO Kerosene Range Organics
DRO Diesel Range Organics
LRO Lubricating Oil Range Organics
X Quantified with diesel fuel

OGDEN VALIDATED**LEVEL V**Approved By: Eydie SchwartzDate: 7/20/98

1522/020597p

01888SOH.SCI - Sample (s) 7/20/98

7007

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06061198S

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH006
Lab Code: L9801888-006
Test Notes: X

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV	QUAL
									QUAL	CODE
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/11/98	6/12/98	11	U	U	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/11/98	6/12/98	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/11/98	6/12/98	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/11/98	6/12/98	11	U		

GRO Gasoline Range Organics
 KRO Kerosene Range Organics
 DRO Diesel Range Organics
 LRO Lubricating Oil Range Organics
 X Quantified with diesel fuel

OGDEN VALIDATED
LEVEL V

Approved By: Eddie Schwartz

Date: 7/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06061198S

Service Request: L9801888
Date Collected: 6/10/98
Date Received: 6/10/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH007
Lab Code: L9801888-007
Test Notes: X

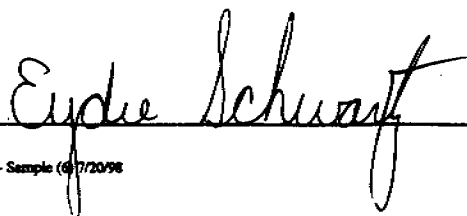
Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/11/98	6/12/98	11	U	U	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/11/98	6/12/98	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/11/98	6/12/98	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/11/98	6/12/98	11	U		

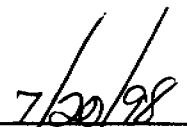
GRO Gasoline Range Organics
KRO Kerosene Range Organics
DRO Diesel Range Organics
LRO Lubricating Oil Range Organics
X Quantified with diesel fuel

OGDEN VALIDATED
LEVEL V

Approved By:



Date:



LS22/020597p

01888SOH.SCI - Sample (6/7/20/98)

7009
Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06062298S

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH021
Lab Code: L9801888-008
Test Notes: X

Units: MG/KG
Basis: Dry

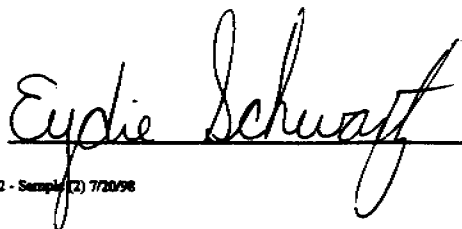
Analyte	Prep	Analysis	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV	QUAL CODE
	Method	Method							QUAL	
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U	U	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		

GRO
KRO
DRO
LRO
X

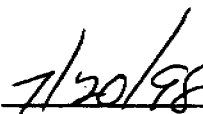
Gasoline Range Organics
Kerosene Range Organics
Diesel Range Organics
Lubricating Oil Range Organics
Quantified with diesel fuel

OGDEN VALIDATED
LEVEL V

Approved By:



Date:



7010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06062298S

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH025
Lab Code: L9801888-001
Test Notes: X

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV Qual	Qual CODE
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U	U	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		

GRO
KRO
DRO
LRO
X

Gasoline Range Organics
Kerosene Range Organics
Diesel Range Organics
Lubricating Oil Range Organics
Quantified with diesel fuel

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz

Date: 7/20/98

1S22/020597p

01888SOH.SC2 - Sample 7/20/98

7003

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06062298S

Service Request: L9801888
Date Collected: 6/12/98
Date Received: 6/12/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH026
Lab Code: L9801888-009
Test Notes: X

Units: MG/KG
Basis: Dry

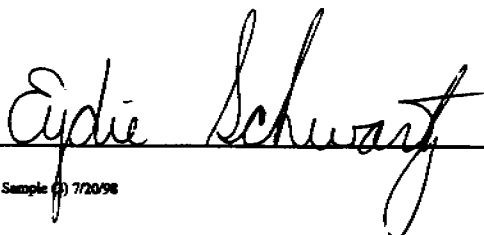
Analyte	Prep	Analysis	PQL	Dilution	Date	Date	Result	Result	Notes	REV	QUAL
	Method	Method			Factor	Extracted				Analyzed	QUAL
C8 - C11 GRO	EPA 3550M	8015M	10	1	6/22/98	6/22/98	10	U	U		
C11 - C14 KRO	EPA 3550M	8015M	10	1	6/22/98	6/22/98	10	U			
C14 - C20 DRO	EPA 3550M	8015M	10	1	6/22/98	6/22/98	10	U			
C20 - C30 LORO	EPA 3550M	8015M	10	1	6/22/98	6/22/98	10	U			

GRO
KRO
DRO
LRO
X

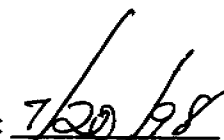
Gasoline Range Organics
Kerosene Range Organics
Diesel Range Organics
Lubricating Oil Range Organics
Quantified with diesel fuel

OGDEN VALIDATED
LEVEL V

Approved By:



Date:



LS22/020597p

01888SOH.SC2 - Sample (S) 7/20/98

7011

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06062298S

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH030
Lab Code: L9801888-012
Test Notes: X

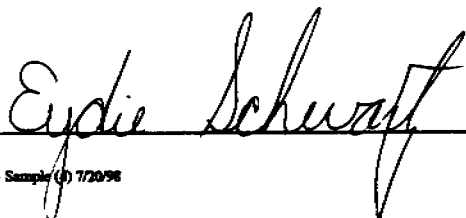
Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
C8 - C11 GRO	EPA 3550M	8015M	12	1	6/22/98	6/22/98	12	U	U	
C11 - C14 KRO	EPA 3550M	8015M	12	1	6/22/98	6/22/98	12	U		
C14 - C20 DRO	EPA 3550M	8015M	12	1	6/22/98	6/22/98	12	U		
C20 - C30 LORO	EPA 3550M	8015M	12	1	6/22/98	6/22/98	12	U		

GRO Gasoline Range Organics
KRO Kerosene Range Organics
DRO Diesel Range Organics
LRO Lubricating Oil Range Organics
X Quantified with diesel fuel

OGDEN VALIDATED
LEVEL V

Approved By:



Date:



1522/020597p

01888SOH.SC2 - Sample (U) 7/20/98

7012

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06062298S

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH031
Lab Code: L9801888-013
Test Notes: X

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	Qual Code
C8 - C11 GRO	EPA 3550M	8015M	12	1	6/22/98	6/23/98	12	U	U	
C11 - C14 KRO	EPA 3550M	8015M	12	1	6/22/98	6/23/98	12	U		
C14 - C20 DRO	EPA 3550M	8015M	12	1	6/22/98	6/23/98	12	U		
C20 - C30 LORO	EPA 3550M	8015M	12	1	6/22/98	6/23/98	12	U		

GRO
KRO
DRO
LRO
X

Gasoline Range Organics
Kerosene Range Organics
Diesel Range Organics
Lubricating Oil Range Organics
Quantified with diesel fuel

OGDEN VALIDATED
LEVEL V

Approved By: Eydie SchwartzDate: 7/20/98

1S22/020597p

01888SOH.LSC2 - Sample (5) 7/20/98

7013

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06062298S

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH032
Lab Code: L9801888-014
Test Notes: X

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
C8 - C11 GRO	EPA 3550M	8015M	12	1	6/22/98	6/23/98	12	U	U	
C11 - C14 KRO	EPA 3550M	8015M	12	1	6/22/98	6/23/98	12	U		
C14 - C20 DRO	EPA 3550M	8015M	12	1	6/22/98	6/23/98	12	U		
C20 - C30 LORO	EPA 3550M	8015M	12	1	6/22/98	6/23/98	12	U		

GRO
KRO
DRO
LRO
X

Gasoline Range Organics
Kerosene Range Organics
Diesel Range Organics
Lubricating Oil Range Organics
Quantified with diesel fuel

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz

Date: 7/20/98

7014

1S22/020397p

01888SOH.LSC2 - Sample (6) 7/20/98

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06062298S

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH033
Lab Code: L9801888-015
Test Notes: X

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV	QUAL CODE
									QUAL	
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U	U	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		

GRO Gasoline Range Organics
KRO Kerosene Range Organics
DRO Diesel Range Organics
LRO Lubricating Oil Range Organics
X Quantified with diesel fuel

OGDEN VALIDATED**LEVEL V**Approved By: Eydie SchwartzDate: 7/20/98

IS22/020597p

01888SOH.SC1 - Sample (7) 7/20/98

7015

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06062298S

Service Request: L9801888
Date Collected: 6/15/98
Date Received: 6/15/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH036
Lab Code: L9801888-016
Test Notes: X

Units: MG/KG
Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U	U	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/22/98	6/22/98	11	U		

GRO Gasoline Range Organics
KRO Kerosene Range Organics
DRO Diesel Range Organics
LRO Lubricating Oil Range Organics
X Quantified with diesel fuel

OGDEN VALIDATED**LEVEL V**Approved By: Eydie SchwartzDate: 7/20/98

1522/020597p

01888SOH.LC1 - Sample 01 7/20/98

7016

Page No.:

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 8015M

No. of Samples: 4

Date Reviewed: 9/9/98

Reviewer: M. Pokorny

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994); Columbia Analytical Services, SOP Number: SOH-DIES, Revision 1.2, 12/18/97

SDG: L9801906

Samples Reviewed: RH008, RH018, RH020, RH037

Matrix: Water

EPA Level V-Total Petroleum Hydrocarbons Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received chilled and intact. COC seals were not present. The temperatures of the samples ranged from 5°C to 17°C.	No qualifications were required. Because the samples were collected by Ogden personnel, placed in coolers containing ice, and delivered to the Columbia laboratory, the samples had not yet cooled to acceptable temperatures. No custody seals were present on the coolers, but because they were transported directly to the laboratory by field personnel, this was acceptable.
2. <u>Method Blanks</u>	One method blank was analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.
3. <u>LCS/BS</u>	One blank spike was analyzed with the samples in this SDG. The recovery of the spiked compounds were within the QC limits of 50%-140%.	No qualifications were required.

	Problems	Qualifications
4. <u>Surrogates</u>	All surrogate recoveries were within the QC limits of 50%-140%.	No qualifications were required.
5. <u>MS/MSDs</u> RH020	The recoveries of the spiked compound were within the QC limits of 50%-140% for the MS and MSD samples.	No qualifications were required.
6. <u>Field QC Samples</u> none There were no field duplicates.	All of the samples of this SDG were identified as field QC samples, and as such are not evaluated against other field QC samples.	No qualifications were required.
7. <u>Other</u>	None	None
<u>Comments</u>	None	None

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water
Batch Number: GC06062098W

Service Request: L9801906
Date Collected: 6/11/98
Date Received: 6/11/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH008
Lab Code: L9801906-002
Test Notes: X

Units: MG/L(ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV	QUAL	QUA
											CODE
C8 - C11 GRO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U	U		
C11 - C14 KRO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U			
C14 - C20 DRO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U			
C20 - C30 LORO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U			

OGDEN VALIDATED

GRO Gasoline Range Organics
KRO Kerosene Range Organics
DRO Diesel Range Organics
LRO Lubricating Oil Range Organics
X Quantified with diesel fuel

LEVEL V

Approved By: Eydie Schwartz

Date: 8/5/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water
Batch Number: GC06062098W

Service Request: L9801906
Date Collected: 6/11/98
Date Received: 6/11/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH018
Lab Code: L9801906-003
Test Notes: X

Units: MG/L(ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUA CODE
C8 - C11 GRO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U	U	
C11 - C14 KRO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U		
C14 - C20 DRO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U		
C20 - C30 LORO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U		

OGDEN VALIDATED

GRO Gasoline Range Organics
KRO Kerosene Range Organics
DRO Diesel Range Organics
LRO Lubricating Oil Range Organics
X Quantified with diesel fuel

LEVEL VApproved By: Eydie SchuergDate: 8/5/98

7003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water
Batch Number: GC06062098W

Service Request: L9801906
Date Collected: 6/15/98
Date Received: 6/15/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH020
Lab Code: L9801906-009
Test Notes: X

Units: MG/L(ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
C8 - C11 GRO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U	U	
C11 - C14 KRO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U		
C14 - C20 DRO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U		
C20 - C30 LORO	EPA 3510M	8015M	0.5	1	6/20/98	6/20/98	0.5	U		

OGDEN VALIDATED

GRO Gasoline Range Organics
 KRO Kerosene Range Organics
 DRO Diesel Range Organics
 LRO Lubricating Oil Range Organics
 X Quantified with diesel fuel

LEVEL V

Approved By:

Eydie Schwartz

Date:

8/5/98

7004

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Water
Batch Number: GC06062098W

Service Request: L9801906
Date Collected: 6/15/98
Date Received: 6/15/98

Hydrocarbon Scan / Fuel Characterization

Sample Name: RH037
Lab Code: L9801906-011
Test Notes: X

Units: MG/L(ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV	QUAL
									QUAL	CODE
C8 - C11 GRO	EPA 3510M	8015M	0.5	1	6/20/98	6/21/98	0.5	U	U	
C11 - C14 KRO	EPA 3510M	8015M	0.5	1	6/20/98	6/21/98	0.5	U		
C14 - C20 DRO	EPA 3510M	8015M	0.5	1	6/20/98	6/21/98	0.5	U		
C20 - C30 LORO	EPA 3510M	8015M	0.5	1	6/20/98	6/21/98	0.5	U		

OGDEN VALIDATED

GRO Gasoline Range Organics
KRO Kerosene Range Organics
DRO Diesel Range Organics
LRO Lubricating Oil Range Organics
X Quantified with diesel fuel

LEVEL VApproved By: Eddie SchwartzDate: 8/5/98

**ENVIRONMENTAL AND ENERGY SERVICES**

550 South Wadsworth Blvd. Suite 500
Denver, CO 80226
(303) 935-6505

Rocketdyne

Analysis/Method: EPA Method 8015M

No. of Samples: 10

Date Reviewed: 9/9/98

Reviewer: M. Pokorny

Reference: USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994); Columbia Analytical Services, SOP Number: SOH-DIES, Revision 1.2, 12/18/97

SDG: L9801914

Samples Reviewed: RH011, RH012, RH013, RH014, RH015, RH016, RH041, RH046, RH047, RH048

Matrix: Soil -

EPA Level V-Total Petroleum Hydrocarbons Assessment Form

	Problems	Qualifications
1. <u>Sample Management</u>	According to the case narrative and COCs, samples were received chilled and intact. COC seals were not present. The temperatures of the samples ranged from 4°C to 13°C.	No qualifications were required. Because the samples were collected by Ogden personnel, placed in coolers containing ice, and delivered to the Columbia laboratory, the samples had not yet cooled to acceptable temperatures. No custody seals were present on the coolers, but because they were transported directly to the laboratory by field personnel, this was acceptable.
2. <u>Method Blanks</u>	One method blank was analyzed with this SDG. No target compounds were detected in the method blank.	No qualifications were required.
3. <u>LCS/BS</u>	One blank spike was analyzed with the samples in this SDG. The recovery of the spiked compounds were within the QC limits of 50%-140%.	No qualifications were required.

BELL CANYON AREA SOIL SAMPLING RESULTS

Legend

- Sample Location
- ▲ NPDES Monitoring Point
- BCSS03 Ogden ID (Surface Sample, 0' bgs)
- BCBS03 Ogden ID (Boring Sample, 1' bgs)
- S01,D01,etc Sample Or Duplicate Sample Number
- D##.# Depth In Feet
- RH##.# EPA Sample ID
- J Data Qualifier, Estimated Value
- Tritium-RE Tritium Reanalysis Result
- ug/kg Micrograms Per Kilogram
- mg/kg Milligrams Per Kilogram
- ng/kg Nanograms Per Kilogram
- pCi/g Picocuries Per Gram

Comparison Values		
Acetone	1400000	ug/kg
Pyrene	1500000	ug/kg
Lead	NE	mg/kg
Nickel	NE	mg/kg
Sulfide	NE	mg/kg
Fluoride	NE	mg/kg
Chloride	NE	mg/kg
Nitrate	NE	mg/kg
Manganese-54	NE	mg/kg
Radon-222	NE	pCi/g
Radon-226	NE	pCi/g
TOTAL TEQ	36	pg/kg
Aluminum	75000	mg/kg
Arsenic	0.38	mg/kg
Barium	5200	mg/kg
Beryllium	150	mg/kg
Cadmium	9	mg/kg
Chromium	210	mg/kg
Cobalt	3300	mg/kg
Copper	2800	mg/kg
Lead	130	mg/kg
Nickel	150	mg/kg
Vanadium	520	mg/kg
Zinc	22000	mg/kg
Cesium-137	9.2	pCi/g
Manganese-54	6.1	pCi/g
Radon-222	2.6	pCi/g
Radon-226	5	pCi/g
Thorium-228	31900	pCi/g
Thorium-230	NE	pCi/g
Thorium-232	5	pCi/g
Uranium-233/234	30	pCi/g
Uranium-235	30	pCi/g
Uranium-238	35	pCi/g

- Notes:
1. Resident sample identifiers not included by request of residents to maintain confidentiality.
 2. Comparison values presented. Non-detected results presented as (<) any if multiple samples analyzed at that location.
 3. Comparison Values based on USEPA Residential FRGs (chemicals) or DHS Approved Release Criteria
 4. Only TOTAL TEQ result included for detected dioxins or furans.
 5. Thorium-228 result reported for thorium analysis only (EERF 00-07).

Basemap Legend

- Buildings
- Drainages
- Roads
- Contours
- Dirt Roads
- Parcels *

MAP NOTES:
MAP COORDINATES IN STATEPLANE, NAD 27, ZONE V.

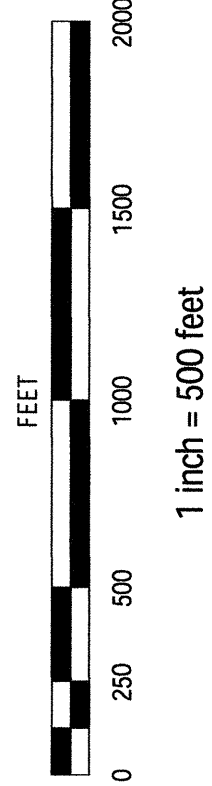
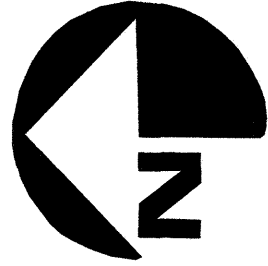


FIGURE
4

DATE: 10/05/98
FILE: /syproc/npdes/plans/npdes.aml

Environmental and Energy Services

