



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis/Method: Total Fuel Hydrocarbons by GC/EPA Method 8015M  
QC Level: V<sup>1</sup>  
SDG: IMI0124  
Matrix: Soil  
No. of Samples: 3  
Dilutions/Reanalyses: 0  
Date Reviewed: December 22, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MT509, MT511, MT512

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. All samples were received at the laboratory on HOLD. A memo from MWH personnel dated 9/03/02 released the HOLD status and requested the total petroleum hydrocarbon analyses. The laboratory's case narrative noted that the samples were received intact, with a cooler temperature within the limits of 4°C ± 2°C, at 2°C. No custody seal information was provided by the laboratory.</p> <p>According to the sample result summary forms, the samples were extracted within 14 days of collection, and analyzed within 40 days of extraction.</p>	No qualifications were required.
3. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. None of the target compound hydrocarbon ranges were reported in the method blank.	No qualifications were required.

	Findings	Qualifications
4. <u>LCS/BS</u>	One soil LCS was extracted and analyzed with this SDG. The laboratory reported only a total of the hydrocarbon ranges (from spiked diesel). The total recovery was within the laboratory-established control limits.	No qualifications were required.
5. <u>Surrogates</u>	The surrogate recoveries for the samples were within the laboratory-established QC limits.	No qualifications were required.
6. <u>MS/MSDs</u> None	No MS/MSD analyses were performed in association with this SDG.	No qualifications were required.
7. <u>Field QC Samples</u>  FB: MT697 (SDG IMI0935) and MT711 (SDG IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) Field Duplicates: None	None of the target compound hydrocarbon ranges were reported in any of the field QC samples.	No qualifications were required.
8. <u>Other</u>	The laboratory analyzed for n-alkane ranges C8-C11, C12-C14, C15-C20, and C21-C30 and also reported the total, C8-C30.  Soil sample results and reporting limits were reported on a dry-weight basis. Results reported below the reporting limit were qualified as estimated, "J," by the laboratory.  Due to matrix interference sample MT509 was analyzed at a 2× dilution.	As the result for total TFH represents the sum of the individual hydrocarbon ranges, the results for total extractable fuel hydrocarbons (alkane range C8-C30) were rejected,"R," in favor of the individual n-alkane ranges.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V Validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



MWH-San Diego  
1230 Columbia Street, Suite 750  
San Diego, CA 92101  
Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
Boeing SSFL  
Report Number: IMI0124

Sampled: 08/26/03  
Received: 09/03/03

EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Row Qual	Qual Code
Sample ID: IMI0124-01 (MT509 - Soil)											
Reporting Units: mg/kg dry											
EFH (C8 - C30)	EPA 8015 MOD.	3106023	N/A	11	79	2	09/06/03	09/10/03	R		D
EFH (C8 - C11)	EPA 8015 MOD.	3106023	N/A	11	ND	2	09/06/03	09/10/03	U		
EFH (C12 - C14)	EPA 8015 MOD.	3106023	N/A	11	ND	2	09/06/03	09/10/03	↓		
EFH (C15 - C20)	EPA 8015 MOD.	3106023	N/A	11	ND	2	09/06/03	09/10/03	↓		
EFH (C21 - C30)	EPA 8015 MOD.	3106023	N/A	11	76	2	09/06/03	09/10/03			
Surrogate: n-Octacosane (50-125%)					91 %						
Sample ID: IMI0124-02 (MT511 - Soil)											
Reporting Units: mg/kg dry											
EFH (C8 - C30)	EPA 8015 MOD.	3106023	N/A	5.2	ND	1	09/06/03	09/10/03	R		D
EFH (C8 - C11)	EPA 8015 MOD.	3106023	N/A	5.2	ND	1	09/06/03	09/10/03	U		
EFH (C12 - C14)	EPA 8015 MOD.	3106023	N/A	5.2	ND	1	09/06/03	09/10/03	↓		
EFH (C15 - C20)	EPA 8015 MOD.	3106023	N/A	5.2	ND	1	09/06/03	09/10/03	↓		
EFH (C21 - C30)	EPA 8015 MOD.	3106023	N/A	5.2	ND	1	09/06/03	09/10/03	↓		
Surrogate: n-Octacosane (50-125%)					60 %						
Sample ID: IMI0124-03 (MT512 - Soil)											
Reporting Units: mg/kg dry											
EFH (C8 - C30)	EPA 8015 MOD.	3106023	N/A	5.4	ND	1	09/06/03	09/12/03	R		D
EFH (C8 - C11)	EPA 8015 MOD.	3106023	N/A	5.4	ND	1	09/06/03	09/12/03	U		
EFH (C12 - C14)	EPA 8015 MOD.	3106023	N/A	5.4	ND	1	09/06/03	09/12/03	↓		
EFH (C15 - C20)	EPA 8015 MOD.	3106023	N/A	5.4	ND	1	09/06/03	09/12/03	↓		
EFH (C21 - C30)	EPA 8015 MOD.	3106023	N/A	5.4	ND	1	09/06/03	09/12/03	↓		
Surrogate: n-Octacosane (50-125%)					71 %						

ANALYZED  
LEVEL V

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: M ID487  
Matrix: Soil  
No. of Samples: 13  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 19, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T550, M T551, M T552, M T553, M T554, M T555, M T556, M T557, M T559,  
 M T560, M T561, M T562, M T563

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COCs were signed by field and laboratory personnel. Per a memo from MWH personnel dated 9/09/03, the EPA ID for sample M T558 was changed to M T563. The COCs accounted for the remaining samples and analyses presented in this SDG. The case narrative noted that the samples were received intact, with a cooler temperature within the limits of <math>4^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>, at <math>4^{\circ}\text{C}</math>. No custody seal information was provided.</p> <p>According to the sample result sheets, the samples were extracted within 14 days of collection, and the sample analyses were performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	Three soil method blank were extracted and analyzed with this SDG. There were no target compounds reported in any of the method blanks.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	One soil blank spike and two soil blank spike/blank spike duplicate pairs were extracted and analyzed with this SDG. Percent recoveries and RPDs for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.
6. <u>Surrogates</u>	The surrogate recoveries for the sample analyses were within the laboratory-established QC limits.	No qualifications were required.
7. <u>M/S/MSDs</u> M T557	The recoveries and RPDs for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.
8. <u>Field QC Samples</u>  FB:M T697 (SDG IM ID935) and M T711 (SDG IM ID005) ER:M T696 (SDG IM ID935) and M T710 (SDG IM ID005) Field Duplicates:M T553/M T557	There were no Aroclor compounds detected in any of the field QC samples.  There were no Aroclor compounds detected in either of the field duplicate samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
<b>Sample ID: IMI0487-01 (MT550 - Soil)</b>					<b>Sampled: 09/08/03</b>					
Reporting Units: ug/kg dry									Rev Qual	Qual Code
Aroclor 1016	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03	U ↓	
Aroclor 1221	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1232	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1242	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1248	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1254	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1260	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Surrogate: Decachlorobiphenyl (45-125%)					87 %					
<b>Sample ID: IMI0487-02 (MT551 - Soil)</b>					<b>Sampled: 09/08/03</b>					
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03	U ↓	
Aroclor 1221	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1232	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1242	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1248	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1254	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1260	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03		
Surrogate: Decachlorobiphenyl (45-125%)					93 %					
<b>Sample ID: IMI0487-03 (MT552 - Soil)</b>					<b>Sampled: 09/08/03</b>					
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	U ↓	
Aroclor 1221	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03		
Aroclor 1232	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03		
Aroclor 1242	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03		
Aroclor 1248	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03		
Aroclor 1254	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03		
Aroclor 1260	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03		
Surrogate: Decachlorobiphenyl (45-125%)					85 %					

ANEC VALIDATED  
 LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IMI0487-04 (MT553 - Soil)</b>					<b>Sampled: 09/08/03</b>				
Reporting Units: ug/kg dry									Rev Qual
Aroclor 1016	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03	U
Aroclor 1221	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03	↓
Aroclor 1232	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03	
Aroclor 1242	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03	
Aroclor 1248	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03	
Aroclor 1254	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03	
Aroclor 1260	EPA 3545/8082	3I12094	N/A	52	ND	1	09/12/03	09/14/03	
Surrogate: Decachlorobiphenyl (45-125%)					91 %				
<b>Sample ID: IMI0487-05 (MT554 - Soil)</b>					<b>Sampled: 09/08/03</b>				
Reporting Units: ug/kg dry									U
Aroclor 1016	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	↓
Aroclor 1221	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Aroclor 1232	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Aroclor 1242	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Aroclor 1248	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Aroclor 1254	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Aroclor 1260	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Surrogate: Decachlorobiphenyl (45-125%)					77 %				
<b>Sample ID: IMI0487-06 (MT555 - Soil)</b>					<b>Sampled: 09/08/03</b>				
Reporting Units: ug/kg dry									U
Aroclor 1016	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	↓
Aroclor 1221	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Aroclor 1232	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Aroclor 1242	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Aroclor 1248	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Aroclor 1254	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Aroclor 1260	EPA 3545/8082	3I12094	N/A	53	ND	1	09/12/03	09/14/03	
Surrogate: Decachlorobiphenyl (45-125%)					91 %				

AMEC VALIDATED  
 LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
<b>Sample ID: IMI0487-07 (MT556 - Soil)</b>					<b>Sampled: 09/08/03</b>					Per Qual
Reporting Units: ug/kg dry										Qual Code
Aroclor 1016	EPA 3545/8082	3I12094	N/A	60	ND	1	09/12/03	09/14/03	U	
Aroclor 1221	EPA 3545/8082	3I12094	N/A	60	ND	1	09/12/03	09/14/03	↓	
Aroclor 1232	EPA 3545/8082	3I12094	N/A	60	ND	1	09/12/03	09/14/03		
Aroclor 1242	EPA 3545/8082	3I12094	N/A	60	ND	1	09/12/03	09/14/03		
Aroclor 1248	EPA 3545/8082	3I12094	N/A	60	ND	1	09/12/03	09/14/03		
Aroclor 1254	EPA 3545/8082	3I12094	N/A	60	ND	1	09/12/03	09/14/03		
Aroclor 1260	EPA 3545/8082	3I12094	N/A	60	ND	1	09/12/03	09/14/03		
Surrogate: Decachlorobiphenyl (45-125%)					90 %					
<b>Sample ID: IMI0487-08 (MT557 - Soil)</b>					<b>Sampled: 09/08/03</b>					U
Reporting Units: ug/kg dry										↓
Aroclor 1016	EPA 3545/8082	3I12096	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1221	EPA 3545/8082	3I12096	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1232	EPA 3545/8082	3I12096	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1242	EPA 3545/8082	3I12096	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1248	EPA 3545/8082	3I12096	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1254	EPA 3545/8082	3I12096	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1260	EPA 3545/8082	3I12096	N/A	52	ND	1	09/12/03	09/14/03		
Surrogate: Decachlorobiphenyl (45-125%)					80 %					
<b>Sample ID: IMI0487-10 (MT563 - Soil)</b>					<b>Sampled: 09/08/03</b>					U
Reporting Units: ug/kg dry										↓
Aroclor 1016	EPA 3545/8082	3I12096	N/A	51	ND	1	09/12/03	09/14/03		
Aroclor 1221	EPA 3545/8082	3I12096	N/A	51	ND	1	09/12/03	09/14/03		
Aroclor 1232	EPA 3545/8082	3I12096	N/A	51	ND	1	09/12/03	09/14/03		
Aroclor 1242	EPA 3545/8082	3I12096	N/A	51	ND	1	09/12/03	09/14/03		
Aroclor 1248	EPA 3545/8082	3I12096	N/A	51	ND	1	09/12/03	09/14/03		
Aroclor 1254	EPA 3545/8082	3I12096	N/A	51	ND	1	09/12/03	09/14/03		
Aroclor 1260	EPA 3545/8082	3I12096	N/A	51	ND	1	09/12/03	09/14/03		
Surrogate: Decachlorobiphenyl (45-125%)					92 %					

AMEC VALIDATED  
 LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers										
<b>Sample ID: IMI0487-11 (MT559 - Soil)</b>					<b>Sampled: 09/05/03</b>														
Reporting Units: ug/kg dry									<table border="1"> <tr> <td>Raw Qual</td> <td>Qual Code</td> </tr> <tr> <td>U</td> <td></td> </tr> <tr> <td>↓</td> <td></td> </tr> <tr> <td>↓</td> <td></td> </tr> <tr> <td>↓</td> <td></td> </tr> </table>	Raw Qual	Qual Code	U		↓		↓		↓	
Raw Qual	Qual Code																		
U																			
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Aroclor 1016	EPA 3545/8082	3I12096	N/A	63	ND	1	09/12/03	09/14/03											
Aroclor 1221	EPA 3545/8082	3I12096	N/A	63	ND	1	09/12/03	09/14/03											
Aroclor 1232	EPA 3545/8082	3I12096	N/A	63	ND	1	09/12/03	09/14/03											
Aroclor 1242	EPA 3545/8082	3I12096	N/A	63	ND	1	09/12/03	09/14/03											
Aroclor 1248	EPA 3545/8082	3I12096	N/A	63	ND	1	09/12/03	09/14/03											
Aroclor 1254	EPA 3545/8082	3I12096	N/A	63	ND	1	09/12/03	09/14/03											
Aroclor 1260	EPA 3545/8082	3I12096	N/A	63	ND	1	09/12/03	09/14/03											
Surrogate: Decachlorobiphenyl (45-125%)					86 %														
<b>Sample ID: IMI0487-12 (MT560 - Soil)</b>					<b>Sampled: 09/05/03</b>														
Reporting Units: ug/kg dry									<table border="1"> <tr> <td>Raw Qual</td> <td>Qual Code</td> </tr> <tr> <td>U</td> <td></td> </tr> <tr> <td>↓</td> <td></td> </tr> <tr> <td>↓</td> <td></td> </tr> <tr> <td>↓</td> <td></td> </tr> </table>	Raw Qual	Qual Code	U		↓		↓		↓	
Raw Qual	Qual Code																		
U																			
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↓																			
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Aroclor 1016	EPA 3545/8082	3I12096	N/A	54	ND	1	09/12/03	09/14/03											
Aroclor 1221	EPA 3545/8082	3I12096	N/A	54	ND	1	09/12/03	09/14/03											
Aroclor 1232	EPA 3545/8082	3I12096	N/A	54	ND	1	09/12/03	09/14/03											
Aroclor 1242	EPA 3545/8082	3I12096	N/A	54	ND	1	09/12/03	09/14/03											
Aroclor 1248	EPA 3545/8082	3I12096	N/A	54	ND	1	09/12/03	09/14/03											
Aroclor 1254	EPA 3545/8082	3I12096	N/A	54	ND	1	09/12/03	09/14/03											
Aroclor 1260	EPA 3545/8082	3I12096	N/A	54	ND	1	09/12/03	09/14/03											
Surrogate: Decachlorobiphenyl (45-125%)					79 %														
<b>Sample ID: IMI0487-13 (MT561 - Soil)</b>					<b>Sampled: 09/09/03</b>														
Reporting Units: ug/kg dry									<table border="1"> <tr> <td>Raw Qual</td> <td>Qual Code</td> </tr> <tr> <td>U</td> <td></td> </tr> <tr> <td>↓</td> <td></td> </tr> <tr> <td>↓</td> <td></td> </tr> <tr> <td>↓</td> <td></td> </tr> </table>	Raw Qual	Qual Code	U		↓		↓		↓	
Raw Qual	Qual Code																		
U																			
↓																			
↓																			
↓																			
Aroclor 1016	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03											
Aroclor 1221	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03											
Aroclor 1232	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03											
Aroclor 1242	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03											
Aroclor 1248	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03											
Aroclor 1254	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03											
Aroclor 1260	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03											
Surrogate: Decachlorobiphenyl (45-125%)					66 %														

AMEC VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IMI0487-14 (MT562 - Soil)					Sampled: 09/09/03					Res Qual
Reporting Units: ug/kg dry										Qual Code
Aroclor 1016	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03	U	
Aroclor 1221	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03	↓	
Aroclor 1232	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03		
Aroclor 1242	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03		
Aroclor 1248	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03		
Aroclor 1254	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03		
Aroclor 1260	EPA 3545/8082	3I14002	N/A	51	ND	1	09/14/03	09/16/03		
Surrogate: Decachlorobiphenyl (45-125%)					73 %					

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LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

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550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: M10838  
Matrix: Soil  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 19, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T690, M T691, M T692, M T693, M T694

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. The COC accounted for the samples and analyses presented in this SDG. The case narrative for this SDG noted that the samples were received intact, with a cooler temperature within the limits of 4°C ± 2°C, at 5°C. No custody seal information was provided.</p> <p>According to the sample result sheets, the samples were extracted within 14 days of collection, and the sample analyses were performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	One soil blank spike/blank spike duplicate pair was extracted and analyzed with this SDG. Percent recoveries and RPDs for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.
6. <u>Surrogates</u>	The surrogate recoveries for the sample analyses were within the laboratory-established QC limits.	No qualifications were required.
7. <u>MS/MSDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB:M T697 (SDG IM D935) and M T711 (SDG IM D005) ER:M T696 (SDG IM D935) and M T710 (SDG IM D005) Field Duplicates: none	There were no Aroclor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0838

Sampled: 09/15/03  
 Received: 09/15/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Raw Qual	Qual Code
<b>Sample ID: IMI0838-01 (MT690 - Soil)</b>										
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3I16060	N/A	56	ND	1	09/16/03	09/18/03	U	
Aroclor 1221	EPA 3545/8082	3I16060	N/A	56	ND	1	09/16/03	09/18/03		
Aroclor 1232	EPA 3545/8082	3I16060	N/A	56	ND	1	09/16/03	09/18/03		
Aroclor 1242	EPA 3545/8082	3I16060	N/A	56	ND	1	09/16/03	09/18/03		
Aroclor 1248	EPA 3545/8082	3I16060	N/A	56	ND	1	09/16/03	09/18/03		
Aroclor 1254	EPA 3545/8082	3I16060	N/A	56	ND	1	09/16/03	09/18/03		
Aroclor 1260	EPA 3545/8082	3I16060	N/A	56	ND	1	09/16/03	09/18/03		
Surrogate: Decachlorobiphenyl (45-125%)					82 %					
<b>Sample ID: IMI0838-02 (MT691 - Soil)</b>										
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03	U	
Aroclor 1221	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Aroclor 1232	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Aroclor 1242	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Aroclor 1248	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Aroclor 1254	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Aroclor 1260	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Surrogate: Decachlorobiphenyl (45-125%)					77 %					
<b>Sample ID: IMI0838-03 (MT692 - Soil)</b>										
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3I16060	N/A	53	ND	1	09/16/03	09/18/03	U	
Aroclor 1221	EPA 3545/8082	3I16060	N/A	53	ND	1	09/16/03	09/18/03		
Aroclor 1232	EPA 3545/8082	3I16060	N/A	53	ND	1	09/16/03	09/18/03		
Aroclor 1242	EPA 3545/8082	3I16060	N/A	53	ND	1	09/16/03	09/18/03		
Aroclor 1248	EPA 3545/8082	3I16060	N/A	53	ND	1	09/16/03	09/18/03		
Aroclor 1254	EPA 3545/8082	3I16060	N/A	53	ND	1	09/16/03	09/18/03		
Aroclor 1260	EPA 3545/8082	3I16060	N/A	53	ND	1	09/16/03	09/18/03		
Surrogate: Decachlorobiphenyl (45-125%)					80 %					

ANEC VALIDATED  
 LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

 Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0838

 Sampled: 09/15/03  
 Received: 09/15/03

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Raw Qual	Qual Code
<b>Sample ID: IMI0838-04 (MT693 - Soil)</b>										
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03	U	
Aroclor 1221	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Aroclor 1232	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Aroclor 1242	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Aroclor 1248	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Aroclor 1254	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
Aroclor 1260	EPA 3545/8082	3I16060	N/A	54	ND	1	09/16/03	09/18/03		
<i>Surrogate: Decachlorobiphenyl (45-125%)</i>					72 %					
<b>Sample ID: IMI0838-05 (MT694 - Soil)</b>										
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3I16060	N/A	52	ND	1	09/16/03	09/18/03	U	
Aroclor 1221	EPA 3545/8082	3I16060	N/A	52	ND	1	09/16/03	09/18/03		
Aroclor 1232	EPA 3545/8082	3I16060	N/A	52	ND	1	09/16/03	09/18/03		
Aroclor 1242	EPA 3545/8082	3I16060	N/A	52	ND	1	09/16/03	09/18/03		
Aroclor 1248	EPA 3545/8082	3I16060	N/A	52	ND	1	09/16/03	09/18/03		
Aroclor 1254	EPA 3545/8082	3I16060	N/A	52	ND	1	09/16/03	09/18/03		
Aroclor 1260	EPA 3545/8082	3I16060	N/A	52	ND	1	09/16/03	09/18/03		
<i>Surrogate: Decachlorobiphenyl (45-125%)</i>					74 %					

AMEC VALIDATED  
LEVEL V

 Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: M1169  
Matrix: Soil  
No. of Samples: 9  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 18, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T699, M T700, M T701, M T702, M T703, M T705, M T706, M T707, M T708

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. Sample M T704 was listed on the COC but was not received at the laboratory. The case narrative for this SDG noted that the samples were received intact, with a cooler temperature within the limits of <math>4^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>, at <math>2^{\circ}\text{C}</math>. No custody seal information was provided.</p> <p>According to the sample result sheets, the samples were extracted within 14 days of collection, and the sample analyses were performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was extracted and analyzed with this SDG. Percent recoveries for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.

	Findings	Qualifications
6. <u>Surrogates</u>	The surrogate recoveries for the sample analyses were within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S M SDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB :M T697 (SDG IM I0935) and M T711 (SDG IM II005) ER :M T696 (SDG IM I0935) and M T710 (SDG IM II005) Field Duplicates: M T702/M T705	There were no Aroclor compounds detected in any of the field QC samples.  There were no Aroclor compounds detected in either of the field duplicate samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI1169

Sampled: 09/16/03-09/17/03  
 Received: 09/17/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IMI1169-01 (MT699 - Soil)</b>					<b>Sampled: 09/16/03</b>				
Reporting Units: ug/kg dry									Rev Qual
Aroclor 1016	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	U
Aroclor 1221	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	↓
Aroclor 1232	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	
Aroclor 1242	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	
Aroclor 1248	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	
Aroclor 1254	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	
Aroclor 1260	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	
Surrogate: Decachlorobiphenyl (45-125%)					84 %				
<b>Sample ID: IMI1169-02 (MT700 - Soil)</b>					<b>Sampled: 09/17/03</b>				
Reporting Units: ug/kg dry									Qual Code
Aroclor 1016	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	U
Aroclor 1221	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	↓
Aroclor 1232	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1242	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1248	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1254	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1260	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Surrogate: Decachlorobiphenyl (45-125%)					90 %				
<b>Sample ID: IMI1169-03 (MT701 - Soil)</b>					<b>Sampled: 09/17/03</b>				
Reporting Units: ug/kg dry									Qual Code
Aroclor 1016	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	U
Aroclor 1221	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	↓
Aroclor 1232	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1242	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1248	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1254	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1260	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Surrogate: Decachlorobiphenyl (45-125%)					90 %				

ANALYSIS VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI1169

Sampled: 09/16/03-09/17/03  
 Received: 09/17/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IMI1169-04 (MT702 - Soil)</b>					<b>Sampled: 09/17/03</b>				
Reporting Units: ug/kg dry									Raw Qual
Aroclor 1016	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	U
Aroclor 1221	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	↓
Aroclor 1232	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	
Aroclor 1242	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	
Aroclor 1248	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	
Aroclor 1254	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	
Aroclor 1260	EPA 3545/8082	3I20037	N/A	54	ND	1	09/20/03	09/24/03	
Surrogate: Decachlorobiphenyl (45-125%)					89 %				
<b>Sample ID: IMI1169-05 (MT703 - Soil)</b>					<b>Sampled: 09/16/03</b>				
Reporting Units: ug/kg dry									Raw Qual
Aroclor 1016	EPA 3545/8082	3I20037	N/A	56	ND	1	09/20/03	09/24/03	U
Aroclor 1221	EPA 3545/8082	3I20037	N/A	56	ND	1	09/20/03	09/24/03	↓
Aroclor 1232	EPA 3545/8082	3I20037	N/A	56	ND	1	09/20/03	09/24/03	
Aroclor 1242	EPA 3545/8082	3I20037	N/A	56	ND	1	09/20/03	09/24/03	
Aroclor 1248	EPA 3545/8082	3I20037	N/A	56	ND	1	09/20/03	09/24/03	
Aroclor 1254	EPA 3545/8082	3I20037	N/A	56	ND	1	09/20/03	09/24/03	
Aroclor 1260	EPA 3545/8082	3I20037	N/A	56	ND	1	09/20/03	09/24/03	
Surrogate: Decachlorobiphenyl (45-125%)					94 %				
<b>Sample ID: IMI1169-06 (MT705 - Soil)</b>					<b>Sampled: 09/17/03</b>				
Reporting Units: ug/kg dry									Raw Qual
Aroclor 1016	EPA 3545/8082	3I20037	N/A	51	ND	1	09/20/03	09/24/03	U
Aroclor 1221	EPA 3545/8082	3I20037	N/A	51	ND	1	09/20/03	09/24/03	↓
Aroclor 1232	EPA 3545/8082	3I20037	N/A	51	ND	1	09/20/03	09/24/03	
Aroclor 1242	EPA 3545/8082	3I20037	N/A	51	ND	1	09/20/03	09/24/03	
Aroclor 1248	EPA 3545/8082	3I20037	N/A	51	ND	1	09/20/03	09/24/03	
Aroclor 1254	EPA 3545/8082	3I20037	N/A	51	ND	1	09/20/03	09/24/03	
Aroclor 1260	EPA 3545/8082	3I20037	N/A	51	ND	1	09/20/03	09/24/03	
Surrogate: Decachlorobiphenyl (45-125%)					88 %				

AMEC VALIDATED  
 LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

 Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI1169

 Sampled: 09/16/03-09/17/03  
 Received: 09/17/03

**POLYCHLORINATED BIPHENYLS (EPA 8082)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IMI1169-07 (MT706 - Soil)</b>					<b>Sampled: 09/16/03</b>				
Reporting Units: ug/kg dry									Rev Qual
Aroclor 1016	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	Qual Code
Aroclor 1221	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	↓
Aroclor 1232	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1242	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1248	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1254	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1260	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Surrogate: Decachlorobiphenyl (45-125%)					92 %				
<b>Sample ID: IMI1169-08 (MT707 - Soil)</b>					<b>Sampled: 09/17/03</b>				
Reporting Units: ug/kg dry									
Aroclor 1016	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	↓
Aroclor 1221	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1232	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1242	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1248	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1254	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Aroclor 1260	EPA 3545/8082	3I20037	N/A	52	ND	1	09/20/03	09/24/03	
Surrogate: Decachlorobiphenyl (45-125%)					85 %				
<b>Sample ID: IMI1169-09 (MT708 - Soil)</b>					<b>Sampled: 09/16/03</b>				
Reporting Units: ug/kg dry									
Aroclor 1016	EPA 3545/8082	3I20037	N/A	65	ND	1	09/20/03	09/24/03	↓
Aroclor 1221	EPA 3545/8082	3I20037	N/A	65	ND	1	09/20/03	09/24/03	
Aroclor 1232	EPA 3545/8082	3I20037	N/A	65	ND	1	09/20/03	09/24/03	
Aroclor 1242	EPA 3545/8082	3I20037	N/A	65	ND	1	09/20/03	09/24/03	
Aroclor 1248	EPA 3545/8082	3I20037	N/A	65	ND	1	09/20/03	09/24/03	
Aroclor 1254	EPA 3545/8082	3I20037	N/A	65	ND	1	09/20/03	09/24/03	
Aroclor 1260	EPA 3545/8082	3I20037	N/A	65	ND	1	09/20/03	09/24/03	
Surrogate: Decachlorobiphenyl (45-125%)					80 %				

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LEVEL V

 Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



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## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: M ID247  
Matrix: Soil  
No. of Samples: 7  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 18, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T534, M T535, M T536, M T537, M T538, M T539, M T540

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. The COC accounted for the samples and analyses presented in this SDG. The case narrative for this SDG noted that the samples were received intact, with a cooler temperature within the limits of <math>4^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>, at <math>6^{\circ}\text{C}</math>. No custody seal information was provided.</p> <p>According to the sample result sheets, the samples were extracted within 14 days of collection, and the sample analyses were performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was extracted and analyzed with this SDG. Percent recoveries for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.

	Findings	Qualifications
6. <u>Surrogates</u>	The surrogate recoveries for the sample analyses were within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S M SDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB :M T697 (SDG IM I0935) and M T711 (SDG IM I1005) ER :M T696 (SDG IM I0935) and M T710 (SDG IM I1005) Field Duplicates: none	There were no Aroclor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.  Due to matrix interference, sample M T536 was reported from a 2x dilution.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



MWH-San Diego  
1230 Columbia Street, Suite 750  
San Diego, CA 92101  
Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
Boeing SSFL  
Report Number: IMI0247

Sampled: 09/04/03  
Received: 09/04/03

**POLYCHLORINATED BIPHENYLS (EPA 8082)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IMI0247-02 (MT534 - Soil)</b>					<b>Sampled: 09/04/03</b>				
Reporting Units: ug/kg dry									Rev Qual
Aroclor 1016	EPA 3545/8082	3I05054	13	53	ND	1	09/05/03	09/07/03	U
Aroclor 1221	EPA 3545/8082	3I05054	10	53	ND	1	09/05/03	09/07/03	↓
Aroclor 1232	EPA 3545/8082	3I05054	7.1	53	ND	1	09/05/03	09/07/03	↓
Aroclor 1242	EPA 3545/8082	3I05054	19	53	ND	1	09/05/03	09/07/03	↓
Aroclor 1248	EPA 3545/8082	3I05054	20	53	ND	1	09/05/03	09/07/03	↓
Aroclor 1254	EPA 3545/8082	3I05054	21	53	ND	1	09/05/03	09/07/03	↓
Aroclor 1260	EPA 3545/8082	3I05054	26	53	ND	1	09/05/03	09/07/03	↓
Surrogate: Decachlorobiphenyl (45-125%)					78 %				
<b>Sample ID: IMI0247-03 (MT535 - Soil)</b>					<b>Sampled: 09/04/03</b>				
Reporting Units: ug/kg dry									Qual Code
Aroclor 1016	EPA 3545/8082	3I05054	13	55	ND	1	09/05/03	09/07/03	U
Aroclor 1221	EPA 3545/8082	3I05054	11	55	ND	1	09/05/03	09/07/03	↓
Aroclor 1232	EPA 3545/8082	3I05054	7.3	55	ND	1	09/05/03	09/07/03	↓
Aroclor 1242	EPA 3545/8082	3I05054	20	55	ND	1	09/05/03	09/07/03	↓
Aroclor 1248	EPA 3545/8082	3I05054	21	55	ND	1	09/05/03	09/07/03	↓
Aroclor 1254	EPA 3545/8082	3I05054	22	55	ND	1	09/05/03	09/07/03	↓
Aroclor 1260	EPA 3545/8082	3I05054	26	55	ND	1	09/05/03	09/07/03	↓
Surrogate: Decachlorobiphenyl (45-125%)					79 %				
<b>Sample ID: IMI0247-04 (MT536 - Soil)</b>					<b>Sampled: 09/04/03</b>				
Reporting Units: ug/kg dry									Qual Code
Aroclor 1016	EPA 3545/8082	3I05054	26	110	ND	2	09/05/03	09/10/03	U
Aroclor 1221	EPA 3545/8082	3I05054	21	110	ND	2	09/05/03	09/10/03	↓
Aroclor 1232	EPA 3545/8082	3I05054	14	110	ND	2	09/05/03	09/10/03	↓
Aroclor 1242	EPA 3545/8082	3I05054	39	110	ND	2	09/05/03	09/10/03	↓
Aroclor 1248	EPA 3545/8082	3I05054	41	110	ND	2	09/05/03	09/10/03	↓
<b>Aroclor 1254</b>	EPA 3545/8082	3I05054	44	110	<b>260</b>	2	09/05/03	09/10/03	↓
<b>Aroclor 1260</b>	EPA 3545/8082	3I05054	52	110	<b>110</b>	2	09/05/03	09/10/03	↓
Surrogate: Decachlorobiphenyl (45-125%)					98 %				

AMES VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-San Diego  
1230 Columbia Street, Suite 750  
San Diego, CA 92101  
Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
Boeing SSFL  
Report Number: IMI0247

Sampled: 09/04/03  
Received: 09/04/03

**POLYCHLORINATED BIPHENYLS (EPA 8082)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IMI0247-05 (MT537 - Soil)</b>					<b>Sampled: 09/04/03</b>				
Reporting Units: ug/kg dry									Raw Qual
Aroclor 1016	EPA 3545/8082	3I05054	13	56	ND	1	09/05/03	09/07/03	U
Aroclor 1221	EPA 3545/8082	3I05054	11	56	ND	1	09/05/03	09/07/03	↓
Aroclor 1232	EPA 3545/8082	3I05054	7.4	56	ND	1	09/05/03	09/07/03	↓
Aroclor 1242	EPA 3545/8082	3I05054	20	56	ND	1	09/05/03	09/07/03	↓
Aroclor 1248	EPA 3545/8082	3I05054	21	56	ND	1	09/05/03	09/07/03	↓
Aroclor 1254	EPA 3545/8082	3I05054	22	56	ND	1	09/05/03	09/07/03	↓
Aroclor 1260	EPA 3545/8082	3I05054	27	56	ND	1	09/05/03	09/07/03	↓
Surrogate: Decachlorobiphenyl (45-125%)					75 %				
<b>Sample ID: IMI0247-06 (MT538 - Soil)</b>					<b>Sampled: 09/04/03</b>				
Reporting Units: ug/kg dry									Raw Qual
Aroclor 1016	EPA 3545/8082	3I05054	12	51	ND	1	09/05/03	09/10/03	U
Aroclor 1221	EPA 3545/8082	3I05054	10	51	ND	1	09/05/03	09/10/03	↓
Aroclor 1232	EPA 3545/8082	3I05054	6.8	51	ND	1	09/05/03	09/10/03	↓
<b>Aroclor 1242</b>	EPA 3545/8082	3I05054	19	51	<b>74</b>	1	09/05/03	09/10/03	U
Aroclor 1248	EPA 3545/8082	3I05054	20	51	ND	1	09/05/03	09/10/03	↓
Aroclor 1254	EPA 3545/8082	3I05054	21	51	ND	1	09/05/03	09/10/03	↓
Aroclor 1260	EPA 3545/8082	3I05054	25	51	ND	1	09/05/03	09/10/03	↓
Surrogate: Decachlorobiphenyl (45-125%)					85 %				
<b>Sample ID: IMI0247-07 (MT539 - Soil)</b>					<b>Sampled: 09/04/03</b>				
Reporting Units: ug/kg dry									Raw Qual
Aroclor 1016	EPA 3545/8082	3I05054	15	63	ND	1	09/05/03	09/07/03	U
Aroclor 1221	EPA 3545/8082	3I05054	12	63	ND	1	09/05/03	09/07/03	↓
Aroclor 1232	EPA 3545/8082	3I05054	8.4	63	ND	1	09/05/03	09/07/03	↓
Aroclor 1242	EPA 3545/8082	3I05054	23	63	ND	1	09/05/03	09/07/03	↓
Aroclor 1248	EPA 3545/8082	3I05054	24	63	ND	1	09/05/03	09/07/03	↓
Aroclor 1254	EPA 3545/8082	3I05054	25	63	ND	1	09/05/03	09/07/03	↓
Aroclor 1260	EPA 3545/8082	3I05054	30	63	ND	1	09/05/03	09/07/03	↓
Surrogate: Decachlorobiphenyl (45-125%)					67 %				

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LEVEL V

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-San Diego  
1230 Columbia Street, Suite 750  
San Diego, CA 92101  
Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
Boeing SSFL  
Report Number: IMI0247

Sampled: 09/04/03  
Received: 09/04/03

**POLYCHLORINATED BIPHENYLS (EPA 8082)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IMI0247-08 (MT540 - Soil)					Sampled: 09/04/03					Rev Qual
Reporting Units: ug/kg dry										Qual Code
Aroclor 1016	EPA 3545/8082	3I05054	14	56	ND	1	09/05/03	09/07/03	U	
Aroclor 1221	EPA 3545/8082	3I05054	11	56	ND	1	09/05/03	09/07/03		
Aroclor 1232	EPA 3545/8082	3I05054	7.5	56	ND	1	09/05/03	09/07/03		
Aroclor 1242	EPA 3545/8082	3I05054	20	56	ND	1	09/05/03	09/07/03		
Aroclor 1248	EPA 3545/8082	3I05054	21	56	ND	1	09/05/03	09/07/03		
Aroclor 1254	EPA 3545/8082	3I05054	23	56	ND	1	09/05/03	09/07/03		
Aroclor 1260	EPA 3545/8082	3I05054	27	56	ND	1	09/05/03	09/07/03		
Surrogate: Decachlorobiphenyl (45-125%)					67%					

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LEVEL V

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Project Manager



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## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: MH1307  
Matrix: Soil  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 19, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MT504, MT505

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. The COC accounted for the samples and analyses presented in this SDG. The case narrative for this SDG noted that the samples were received intact, with a cooler temperature within the limits of <math>4^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>, at <math>4^{\circ}\text{C}</math>. No custody seal information was provided.</p> <p>According to the sample result sheets, the samples were extracted within 14 days of collection, and the sample analyses were performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was extracted and analyzed with this SDG. Percent recoveries for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.

	Findings	Qualifications
6. <u>Surrogates</u>	The surrogate recoveries for the sample analyses were within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S M SDs</u> M T504	Due to the significant concentration of Aroclor 1260 in the unspiked sample, Aroclor 1260 was not recovered in the M S but was recovered within the control limits in the M SD. The RPD for Aroclor 1260 exceeded the control limit of $\pm 25\%$ .  Aroclor 1016 was recovered 3% above the control limit in the M SD but was recovered within the control limits in the M S.	The result for Aroclor 1260 was qualified as estimated, "J," in parent sample M T504.
8. <u>Field QC Samples</u>  FB :M T697 (SDG IM ID935) and M T711 (SDG IM ID005) ER :M T696 (SDG IM ID935) and M T710 (SDG IM ID005) Field Duplicates: none	There were no Aroclor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.  Due to matrix interference, sample M T504 was reported from a 10x dilution.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMH1307

Sampled: 08/22/03  
 Received: 08/22/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
Sample ID: IMH1307-01 (MT504 - Soil) - cont.										
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3H25055	N/A	530	ND	10	08/25/03	08/26/03	U	M1
Aroclor 1221	EPA 3545/8082	3H25055	N/A	530	ND	10	08/25/03	08/26/03	↓	
Aroclor 1232	EPA 3545/8082	3H25055	N/A	530	ND	10	08/25/03	08/26/03		
Aroclor 1242	EPA 3545/8082	3H25055	N/A	530	ND	10	08/25/03	08/26/03		
Aroclor 1248	EPA 3545/8082	3H25055	N/A	530	ND	10	08/25/03	08/26/03		
Aroclor 1254	EPA 3545/8082	3H25055	N/A	530	1900	10	08/25/03	08/26/03		H
Aroclor 1260	EPA 3545/8082	3H25055	N/A	530	800	10	08/25/03	08/26/03	J	M1, N-1, R-3
Surrogate: Decachlorobiphenyl (45-135%)					50 %					

PM  
 12/19/02

VALID  
 LEVEL

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

 Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMH1307

 Sampled: 08/22/03  
 Received: 08/22/03

**POLYCHLORINATED BIPHENYLS (EPA 8082)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMH1307-02 (MT505 - Soil)									
Reporting Units: ug/kg dry									
Aroclor 1016	EPA 3545/8082	3H25055	N/A	55	ND	1	08/25/03	08/26/03	U
Aroclor 1221	EPA 3545/8082	3H25055	N/A	55	ND	1	08/25/03	08/26/03	↓
Aroclor 1232	EPA 3545/8082	3H25055	N/A	55	ND	1	08/25/03	08/26/03	
Aroclor 1242	EPA 3545/8082	3H25055	N/A	55	ND	1	08/25/03	08/26/03	
Aroclor 1248	EPA 3545/8082	3H25055	N/A	55	ND	1	08/25/03	08/26/03	
Aroclor 1254	EPA 3545/8082	3H25055	N/A	55	ND	1	08/25/03	08/26/03	
Aroclor 1260	EPA 3545/8082	3H25055	N/A	55	ND	1	08/25/03	08/26/03	
Surrogate: Decachlorobiphenyl (45-135%)					110 %				

**VALIDATED**

 Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



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## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: M ID405  
Matrix: Soil  
No. of Samples: 6  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 19, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T541, M T542, M T543, M T544, M T545, M T546

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. The COC accounted for the samples and analyses presented in this SDG. The case narrative for this SDG noted that the samples were received intact, with a cooler temperature within the limits of <math>4^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>, at <math>4^{\circ}\text{C}</math>. No custody seal information was provided.</p> <p>According to the sample result sheets, the samples were extracted within 14 days of collection, and the sample analyses were performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was extracted and analyzed with this SDG. Percent recoveries for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.

	Findings	Qualifications
6. <u>Surrogates</u>	The surrogate recoveries for the sample analyses were within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S M SDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB :M T697 (SDG IM I0935) and M T711 (SDG IM I1005) ER :M T696 (SDG IM I0935) and M T710 (SDG IM I1005) Field Duplicates: none	There were no Aroclor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.  Due to matrix interference, sample M T541 was reported from a 2x dilution and sample M T543 was reported from a 5x dilution.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0405

Sampled: 09/05/03  
 Received: 09/05/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IMI0405-02 (MT541 - Soil)					Sampled: 09/05/03					Per Qual
Reporting Units: ug/kg dry										Qual Code
Aroclor 1016	EPA 3545/8082	3I09073	N/A	100	ND	2	09/09/03	09/17/03	U	
Aroclor 1221	EPA 3545/8082	3I09073	N/A	100	ND	2	09/09/03	09/17/03	U	
Aroclor 1232	EPA 3545/8082	3I09073	N/A	100	ND	2	09/09/03	09/17/03	U	
Aroclor 1242	EPA 3545/8082	3I09073	N/A	100	ND	2	09/09/03	09/17/03	U	
Aroclor 1248	EPA 3545/8082	3I09073	N/A	100	ND	2	09/09/03	09/17/03	U	
Aroclor 1254	EPA 3545/8082	3I09073	N/A	100	190	2	09/09/03	09/17/03	XX	
Aroclor 1260	EPA 3545/8082	3I09073	N/A	100	ND	2	09/09/03	09/17/03	U	
Surrogate: Decachlorobiphenyl (45-125%)					88 %					
Sample ID: IMI0405-03 (MT542 - Soil)					Sampled: 09/05/03					
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3I09073	N/A	58	ND	1	09/09/03	09/12/03	U	
Aroclor 1221	EPA 3545/8082	3I09073	N/A	58	ND	1	09/09/03	09/12/03	U	
Aroclor 1232	EPA 3545/8082	3I09073	N/A	58	ND	1	09/09/03	09/12/03	U	
Aroclor 1242	EPA 3545/8082	3I09073	N/A	58	ND	1	09/09/03	09/12/03	U	
Aroclor 1248	EPA 3545/8082	3I09073	N/A	58	ND	1	09/09/03	09/12/03	U	
Aroclor 1254	EPA 3545/8082	3I09073	N/A	58	ND	1	09/09/03	09/12/03	U	
Aroclor 1260	EPA 3545/8082	3I09073	N/A	58	ND	1	09/09/03	09/12/03	U	
Surrogate: Decachlorobiphenyl (45-125%)					91 %					
Sample ID: IMI0405-04 (MT543 - Soil)					Sampled: 09/05/03					
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3I09073	N/A	270	ND	5	09/09/03	09/12/03	U	
Aroclor 1221	EPA 3545/8082	3I09073	N/A	270	ND	5	09/09/03	09/12/03	U	
Aroclor 1232	EPA 3545/8082	3I09073	N/A	270	ND	5	09/09/03	09/12/03	U	
Aroclor 1242	EPA 3545/8082	3I09073	N/A	270	ND	5	09/09/03	09/12/03	U	
Aroclor 1248	EPA 3545/8082	3I09073	N/A	270	ND	5	09/09/03	09/12/03	U	
Aroclor 1254	EPA 3545/8082	3I09073	N/A	270	1000	5	09/09/03	09/12/03	U	
Aroclor 1260	EPA 3545/8082	3I09073	N/A	270	ND	5	09/09/03	09/12/03	U	
Surrogate: Decachlorobiphenyl (45-125%)					94 %					

ANALYSIS VALIDATED

LEVEL V

PM 01/09/04

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



MWH-San Diego  
1230 Columbia Street, Suite 750  
San Diego, CA 92101  
Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
Boeing SSFL  
Report Number: IMI0405

Sampled: 09/05/03  
Received: 09/05/03

POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0405-05 (MT544 - Soil)					Sampled: 09/05/03				
Reporting Units: ug/kg dry									Raw Qual
Aroclor 1016	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/12/03	U
Aroclor 1221	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/12/03	↓
Aroclor 1232	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/12/03	
Aroclor 1242	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/12/03	
Aroclor 1248	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/12/03	
Aroclor 1254	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/12/03	
Aroclor 1260	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/12/03	
Surrogate: Decachlorobiphenyl (45-125%)					94 %				
Sample ID: IMI0405-06 (MT545 - Soil)					Sampled: 09/05/03				
Reporting Units: ug/kg dry									Raw Qual
Aroclor 1016	EPA 3545/8082	3I09073	N/A	52	ND	1	09/09/03	09/12/03	U
Aroclor 1221	EPA 3545/8082	3I09073	N/A	52	ND	1	09/09/03	09/12/03	↓
Aroclor 1232	EPA 3545/8082	3I09073	N/A	52	ND	1	09/09/03	09/12/03	
Aroclor 1242	EPA 3545/8082	3I09073	N/A	52	ND	1	09/09/03	09/12/03	
Aroclor 1248	EPA 3545/8082	3I09073	N/A	52	ND	1	09/09/03	09/12/03	
Aroclor 1254	EPA 3545/8082	3I09073	N/A	52	ND	1	09/09/03	09/12/03	
Aroclor 1260	EPA 3545/8082	3I09073	N/A	52	ND	1	09/09/03	09/12/03	
Surrogate: Decachlorobiphenyl (45-125%)					95 %				
Sample ID: IMI0405-07 (MT546 - Soil)					Sampled: 09/05/03				
Reporting Units: ug/kg dry									Raw Qual
Aroclor 1016	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/16/03	U
Aroclor 1221	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/16/03	↓
Aroclor 1232	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/16/03	
Aroclor 1242	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/16/03	
Aroclor 1248	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/16/03	
Aroclor 1254	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/16/03	
Aroclor 1260	EPA 3545/8082	3I09073	N/A	54	ND	1	09/09/03	09/16/03	
Surrogate: Decachlorobiphenyl (45-125%)					80 %				

ANALYZED VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: MF003  
Matrix: Soil  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 19, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MF005

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. The sample's EPA ID was hand-connected on the COC. Per a telephone conversation with E. Sarao of MWH, the ID was corrected by the field crew and reflected the proper ID. The case narrative for this SDG noted that the sample was received intact, with a cooler temperature within the limits of <math>4^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>, at <math>5^{\circ}\text{C}</math>. No custody seals were present on the cooler.</p> <p>According to the sample result sheet, the sample was extracted within 14 days of collection, and the sample analysis was performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	One soil blank spike was extracted and analyzed with this SDG. Percent recoveries for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.
6. <u>Surrogates</u>	The surrogate recovery for the sample analysis was within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S/M SDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB:M T697 (SDG IM ID935) and M T711 (SDG IM ID005) ER:M T696 (SDG IM ID935) and M T710 (SDG IM ID005) Field Duplicates: none	There were no Aroclor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

FORM 1  
 PESTICIDE ORGANICS ANALYSIS DATA SHEET

MONTGOMERY SAMPLE NC.

MF005

Lab Name: CEIMIC CORP

Contract: 1890812

Lab Code: CEIMIC

Case No.: BOEING

SAS No.:

SDG No.: MF003

Matrix: (soil/water) SOIL

Lab Sample ID: 031290-03

Sample wt/vol: 30.2(g/mL) G

Lab File ID: \_\_\_\_\_

% Moisture: 13 Decanted: (Y/N) N

Date Received: 09/19/03

Extraction: (Type) SONC

Date Extracted: 09/23/03

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 10/13/03

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 6.7

Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	Q	Rev Qual	Qual Code
12674-11-2	Aroclor-1016	38	U	U
11104-28-2	Aroclor-1221	77	U	
11141-16-5	Aroclor-1232	38	U	
53469-21-9	Aroclor-1242	38	U	
12672-29-6	Aroclor-1248	38	U	
11097-69-1	Aroclor-1254	38	U	
11096-82-5	Aroclor-1260	38	U	

ANALYSIS DATE

LABORATORY

FORM I PEST



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: MF001  
Matrix: Soil  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 22, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MF001

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. The case narrative for this SDG noted that the sample was received intact and chilled. No custody seals were present on the cooler.</p> <p>According to the sample result sheet, the sample was extracted within 14 days of collection, and the sample analysis was performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was extracted and analyzed with this SDG. The percent recovery for Aroclor 1260 was within the laboratory-established QC limits. The recovery for Aroclor 1016 was above the control limit.	As Aroclor 1016 was not detected in the site sample, no qualifications were required.

	Findings	Qualifications
6. <u>Surrogates</u>	The surrogate recovery for the sample analysis was within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S M SDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB :M T697 (SDG IM I0935) and M T711 (SDG IM I1005) ER :M T696 (SDG IM I0935) and M T710 (SDG IM I1005) Field Duplicates: none	There were no Arochlor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

FORM 1  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MF001

Lab Name: CEIMIC CORP Contract: BOEING  
 Lab Code: CEIMIC Case No.: BOEING SAS No.: SDG No.: MF001  
 Matrix: (soil/water) SOIL Lab Sample ID: 031213-01  
 Sample wt/vol: 30.0(g/mL) G Lab File ID: \_\_\_\_\_  
 % Moisture: 5 Decanted: (Y/N) N Date Received: 09/06/03  
 Extraction: (Type) SONC Date Extracted: 09/10/03  
 Concentrated Extract Volume: 10000(uL) Date Analyzed: 09/15/03  
 Injection Volume: 1.0(uL) Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: \_\_\_\_\_ Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	UG/KG	Q	Qual	Qual Code
12674-11-2	Aroclor-1016	35	U	U	
11104-28-2	Aroclor-1221	71	U		
11141-16-5	Aroclor-1232	35	U		
53469-21-9	Aroclor-1242	35	U		
12672-29-6	Aroclor-1248	35	U		
11097-69-1	Aroclor-1254	35	U		
11096-82-5	Aroclor-1260	35	U		

AMEC VALUE  
LEVEL V



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: M ID763  
Matrix: Soil  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 18, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T685, M T686, M T687, M T688, M T689

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COCs were signed by field and laboratory personnel and had uninitialed corrections and cross-outs. The COCs accounted for the samples and analyses presented in this SDG. The case narrative for this SDG noted that the samples were received intact, with a cooler temperature within the limits of 4°C ± 2°C, at 5°C. No custody seal information was provided.</p> <p>According to the sample result sheets, the samples were extracted within 14 days of collection, and the sample analyses were performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	Two soil method blanks were extracted and analyzed with this SDG. There were no target compounds reported in either of the method blanks.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	There was no LCS associated with sample M T689. One soil blank spike was extracted and analyzed with remaining samples in this SDG. Percent recoveries for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.
6. <u>Surrogates</u>	The surrogate recoveries for the sample analyses were within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S/M SDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB: M T697 (SDG IM ID935) and M T711 (SDG IM ID005) ER: M T696 (SDG IM ID935) and M T710 (SDG IM ID005) Field Duplicates: none	There were no Aroclor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0763

Sampled: 09/08/03-09/11/03  
 Received: 09/12/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IMI0763-21 (MT685 - Soil)					Sampled: 09/11/03					Raw Qual
Reporting Units: ug/kg dry										Code
Aroclor 1016	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1221	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1232	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1242	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1248	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1254	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1260	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Surrogate: Decachlorobiphenyl (45-125%)					74 %					U
Sample ID: IMI0763-22 (MT686 - Soil)					Sampled: 09/11/03					Raw Qual
Reporting Units: ug/kg dry										Code
Aroclor 1016	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1221	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1232	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1242	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1248	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1254	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Aroclor 1260	EPA 3545/8082	3I15043	N/A	52	ND	1	09/15/03	09/18/03	U	
Surrogate: Decachlorobiphenyl (45-125%)					74 %					U
Sample ID: IMI0763-23 (MT687 - Soil)					Sampled: 09/11/03					Raw Qual
Reporting Units: ug/kg dry										Code
Aroclor 1016	EPA 3545/8082	3I15043	N/A	54	ND	1	09/15/03	09/18/03	U	
Aroclor 1221	EPA 3545/8082	3I15043	N/A	54	ND	1	09/15/03	09/18/03	U	
Aroclor 1232	EPA 3545/8082	3I15043	N/A	54	ND	1	09/15/03	09/18/03	U	
Aroclor 1242	EPA 3545/8082	3I15043	N/A	54	ND	1	09/15/03	09/18/03	U	
Aroclor 1248	EPA 3545/8082	3I15043	N/A	54	ND	1	09/15/03	09/18/03	U	
Aroclor 1254	EPA 3545/8082	3I15043	N/A	54	ND	1	09/15/03	09/18/03	U	
Aroclor 1260	EPA 3545/8082	3I15043	N/A	54	ND	1	09/15/03	09/18/03	U	
Surrogate: Decachlorobiphenyl (45-125%)					76 %					U

ARRO CHLORINATED

LEVEL V

Del Mar Analytical, Irvine  
 Fred Haley For Michele Harper  
 Project Manager

MWH-San Diego  
 1250 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0763

Sampled: 09/08/03-09/11/03  
 Received: 09/12/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
Sample ID: IMI0763-24 (MT688 - Soil)					Sampled: 09/11/03					
Reporting Units: ug/kg dry										
Aroclor 1016	EPA 3545/8082	3115043	N/A	51	ND	1	09/15/03	09/18/03	U	
Aroclor 1221	EPA 3545/8082	3115043	N/A	51	ND	1	09/15/03	09/18/03		
Aroclor 1232	EPA 3545/8082	3115043	N/A	51	ND	1	09/15/03	09/18/03		
Aroclor 1242	EPA 3545/8082	3115043	N/A	51	ND	1	09/15/03	09/18/03		
Aroclor 1248	EPA 3545/8082	3115043	N/A	51	ND	1	09/15/03	09/18/03		
Aroclor 1254	EPA 3545/8082	3115043	N/A	51	ND	1	09/15/03	09/18/03		
Aroclor 1260	EPA 3545/8082	3115043	N/A	51	ND	1	09/15/03	09/18/03		
Surrogate: Decachlorobiphenyl (45-125%)					77%					

ANALYSIS VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
 Fred Haley For Michele Harper  
 Project Manager

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0763

Sampled: 09-08-03-09-11-03  
 Received: 09-12-03

## POLYCHLORINATED BIPHENYLS (EPA 3580A/8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0763-25 (MT689 - Product)					Sampled: 09/11/03				
Reporting Units: mg/kg									Low Qual Code
Aroclor 1016	EPA 3580/8082	3122060	N/A	5.0	ND	1	09-22-03	09-23-03	U
Aroclor 1221	EPA 3580/8082	3122060	N/A	5.0	ND	1	09-22-03	09-23-03	↓
Aroclor 1232	EPA 3580/8082	3122060	N/A	5.0	ND	1	09-22-03	09-23-03	
Aroclor 1242	EPA 3580/8082	3122060	N/A	5.0	ND	1	09-22-03	09-23-03	
Aroclor 1248	EPA 3580/8082	3122060	N/A	5.0	ND	1	09-22-03	09-23-03	
Aroclor 1254	EPA 3580/8082	3122060	N/A	5.0	ND	1	09-22-03	09-23-03	
Aroclor 1260	EPA 3580/8082	3122060	N/A	5.0	ND	1	09-22-03	09-23-03	
Surrogate: Decachlorobiphenyl (45-125%)					86 %				

AMEC VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
 Fred Haley For Michele Harper  
 Project Manager



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: M10126  
Matrix: Soil  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 19, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T522, M T523, M T524

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. All samples were received on HOLD. A memo from MWH personnel dated 9/11/03 released the samples from HOLD and requested the PCB analysis. The case narrative for this SDG noted that the samples were received intact, with a cooler temperature within the limits of <math>4^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>, at <math>4^{\circ}\text{C}</math>. No custody seal information was provided.</p> <p>According to the sample result sheets, the samples were extracted within 14 days of collection, and the sample analyses were performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	One soil blank spike was extracted and analyzed with this SDG. Percent recoveries for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.
6. <u>Surrogates</u>	The surrogate recoveries for the sample analyses were within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S/M SDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB:M T697 (SDG IM ID935) and M T711 (SDG IM ID005) ER:M T696 (SDG IM ID935) and M T710 (SDG IM ID005) Field Duplicates: none	There were no Aroclor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.  Due to matrix interference, sample M T541 was reported from a 2x dilution and sample M T543 was reported from a 5x dilution.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0126

Sampled: 09/02/03  
 Received: 09/03/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
								Raw Qual	Qual Code
Sample ID: IMI0126-02 (MT522 - Soil)									
Reporting Units: ug/kg dry									
Sampled: 09/02/03									
Aroclor 1016	EPA 3545/8082	3112094	51	ND	1	9/12/2003	9/14/2003	U	
Aroclor 1221	EPA 3545/8082	3112094	51	ND	1	9/12/2003	9/14/2003		
Aroclor 1232	EPA 3545/8082	3112094	51	ND	1	9/12/2003	9/14/2003		
Aroclor 1242	EPA 3545/8082	3112094	51	ND	1	9/12/2003	9/14/2003		
Aroclor 1248	EPA 3545/8082	3112094	51	ND	1	9/12/2003	9/14/2003		
Aroclor 1254	EPA 3545/8082	3112094	51	ND	1	9/12/2003	9/14/2003		
Aroclor 1260	EPA 3545/8082	3112094	51	ND	1	9/12/2003	9/14/2003		
Surrogate: Decachlorobiphenyl (45-125%)									
					86 %				
Sample ID: IMI0126-03 (MT523 - Soil)									
Reporting Units: ug/kg dry									
Sampled: 09/02/03									
Aroclor 1016	EPA 3545/8082	3112094	52	ND	1	9/12/2003	9/14/2003	U	
Aroclor 1221	EPA 3545/8082	3112094	52	ND	1	9/12/2003	9/14/2003		
Aroclor 1232	EPA 3545/8082	3112094	52	ND	1	9/12/2003	9/14/2003		
Aroclor 1242	EPA 3545/8082	3112094	52	ND	1	9/12/2003	9/14/2003		
Aroclor 1248	EPA 3545/8082	3112094	52	ND	1	9/12/2003	9/14/2003		
Aroclor 1254	EPA 3545/8082	3112094	52	ND	1	9/12/2003	9/14/2003		
Aroclor 1260	EPA 3545/8082	3112094	52	ND	1	9/12/2003	9/14/2003		
Surrogate: Decachlorobiphenyl (45-125%)									
					69 %				
Sample ID: IMI0126-04 (MT524 - Soil)									
Reporting Units: ug/kg dry									
Sampled: 09/02/03									
Aroclor 1016	EPA 3545/8082	3112094	53	ND	1	9/12/2003	9/14/2003	U	
Aroclor 1221	EPA 3545/8082	3112094	53	ND	1	9/12/2003	9/14/2003		
Aroclor 1232	EPA 3545/8082	3112094	53	ND	1	9/12/2003	9/14/2003		
Aroclor 1242	EPA 3545/8082	3112094	53	ND	1	9/12/2003	9/14/2003		
Aroclor 1248	EPA 3545/8082	3112094	53	ND	1	9/12/2003	9/14/2003		
Aroclor 1254	EPA 3545/8082	3112094	53	ND	1	9/12/2003	9/14/2003		
Aroclor 1260	EPA 3545/8082	3112094	53	ND	1	9/12/2003	9/14/2003		
Surrogate: Decachlorobiphenyl (45-125%)									
					86 %				

ANALYSIS VALIDATED  
 LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: M10125  
Matrix: Soil  
No. of Samples: 6  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 18, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T526, M T527, M T528, M T529, M T530, M T531

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. All samples were received on HOLD. A memo from MWH personnel dated 9/11/03 released the samples from HOLD and requested the PCB analysis. The case narrative for this SDG noted that the samples were received intact, with a cooler temperature within the limits of <math>4^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>, at <math>5^{\circ}\text{C}</math>. No custody seal information was provided.</p> <p>According to the sample result sheets, the samples were extracted within 14 days of collection, and the sample analyses were performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	One soil blank spike was extracted and analyzed with this SDG. Percent recoveries for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.
6. <u>Surrogates</u>	The surrogate recoveries for the sample analyses were within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S/M SDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB:M T697 (SDG IM ID935) and M T711 (SDG IM ID005) ER:M T696 (SDG IM ID935) and M T710 (SDG IM ID005) Field Duplicates: none	There were no Aroclor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IM10125

Sampled: 09/03/03  
 Received: 09/03/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IM10125-02 (MT526 - Soil)					Sampled: 09/03/03					Rev Qual
Reporting Units: ug/kg dry										Qual Code
Aroclor 1016	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03	U	
Aroclor 1221	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03	↓	
Aroclor 1232	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1242	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1248	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1254	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1260	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Surrogate: Decachlorobiphenyl (45-125%)					89 %					
Sample ID: IM10125-03 (MT527 - Soil)					Sampled: 09/03/03					U
Reporting Units: ug/kg dry										↓
Aroclor 1016	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03		
Aroclor 1221	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03		
Aroclor 1232	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03		
Aroclor 1242	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03		
Aroclor 1248	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03		
Aroclor 1260	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03		
Surrogate: Decachlorobiphenyl (45-125%)					84 %					
Sample ID: IM10125-04 (MT528 - Soil)					Sampled: 09/03/03					U
Reporting Units: ug/kg dry										↓
Aroclor 1016	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1221	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1232	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1242	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1248	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Aroclor 1260	EPA 3545/8082	3112094	N/A	52	ND	1	09/12/03	09/14/03		
Surrogate: Decachlorobiphenyl (45-125%)					80 %					

AMEC VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IM10125

Sampled: 09/03/03  
 Received: 09/03/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code	
Sample ID: IM10125-05 (MT529 - Soil)					Sampled: 09/03/03					Reu	Qual
Reporting Units: ug/kg dry										Qual	Code
Aroclor 1016	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03	U		
Aroclor 1221	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03			
Aroclor 1232	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03			
Aroclor 1242	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03			
Aroclor 1248	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03			
Aroclor 1254	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03			
Aroclor 1260	EPA 3545/8082	3112094	N/A	53	ND	1	09/12/03	09/14/03			
Surrogate: Decachlorobiphenyl (45-125%)					84 %						
Sample ID: IM10125-06 (MT530 - Soil)					Sampled: 09/03/03						
Reporting Units: ug/kg dry											
Aroclor 1016	EPA 3545/8082	3112094	N/A	55	ND	1	09/12/03	09/14/03	U		
Aroclor 1221	EPA 3545/8082	3112094	N/A	55	ND	1	09/12/03	09/14/03			
Aroclor 1232	EPA 3545/8082	3112094	N/A	55	ND	1	09/12/03	09/14/03			
Aroclor 1242	EPA 3545/8082	3112094	N/A	55	ND	1	09/12/03	09/14/03			
Aroclor 1248	EPA 3545/8082	3112094	N/A	55	ND	1	09/12/03	09/14/03			
Aroclor 1254	EPA 3545/8082	3112094	N/A	55	ND	1	09/12/03	09/14/03			
Aroclor 1260	EPA 3545/8082	3112094	N/A	55	ND	1	09/12/03	09/14/03			
Surrogate: Decachlorobiphenyl (45-125%)					86 %						
Sample ID: IM10125-07 (MT531 - Soil)					Sampled: 09/03/03						
Reporting Units: ug/kg dry											
Aroclor 1016	EPA 3545/8082	3112094	N/A	54	ND	1	09/12/03	09/14/03	U		
Aroclor 1221	EPA 3545/8082	3112094	N/A	54	ND	1	09/12/03	09/14/03			
Aroclor 1232	EPA 3545/8082	3112094	N/A	54	ND	1	09/12/03	09/14/03			
Aroclor 1242	EPA 3545/8082	3112094	N/A	54	ND	1	09/12/03	09/14/03			
Aroclor 1248	EPA 3545/8082	3112094	N/A	54	ND	1	09/12/03	09/14/03			
Aroclor 1254	EPA 3545/8082	3112094	N/A	54	ND	1	09/12/03	09/14/03			
Aroclor 1260	EPA 3545/8082	3112094	N/A	54	ND	1	09/12/03	09/14/03			
Surrogate: Decachlorobiphenyl (45-125%)					91 %						

AMEC VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: MH1522  
Matrix: Soil  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 18, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MT514

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel and accounted for the sample and analysis presented in this SDG. The case narrative for this SDG noted that the samples were received intact, with a cooler temperature within the limits of 4°C ± 2°C, at 4°C. No custody seal information was provided.</p> <p>According to the sample result sheets, the sample was extracted within 14 days of collection, and the sample analysis was performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was extracted and analyzed with this SDG. Percent recoveries for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.

	Findings	Qualifications
6. <u>Surrogates</u>	The surrogate recoveries for the sample analysis were within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S M SDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB :M T697 (SDG IM I0935) and M T711 (SDG IM I1005) ER :M T696 (SDG IM I0935) and M T710 (SDG IM I1005) Field Duplicates: none	There were no Arochlor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.  Sample M T514 was analyzed at a 2.5x dilution due to potential matrix interference, as the extract was dark in color.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



MWH-San Diego  
1230 Columbia Street, Suite 750  
San Diego, CA 92101  
Attention: Lisa J. Tucker

Project ID: Boeing SSFL

Report Number: IMH1522

Sampled: 08/26/03-08/27/03  
Received: 08/27/03

POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IMH1522-01 (MT514 - Soil)				Sampled: 08/26/03					
Reporting Units: ug/kg dry									
Aroclor 1016	EPA 3545/8082	3H28034	130	ND	2.5	8/28/2003	8/29/2003	RL-1 Qual	
Aroclor 1221	EPA 3545/8082	3H28034	130	ND	2.5	8/28/2003	8/29/2003	↓	
Aroclor 1232	EPA 3545/8082	3H28034	130	ND	2.5	8/28/2003	8/29/2003	↓	
Aroclor 1242	EPA 3545/8082	3H28034	130	ND	2.5	8/28/2003	8/29/2003	↓	
Aroclor 1248	EPA 3545/8082	3H28034	130	ND	2.5	8/28/2003	8/29/2003	↓	
Aroclor 1254	EPA 3545/8082	3H28034	130	ND	2.5	8/28/2003	8/29/2003	↓	
Aroclor 1260	EPA 3545/8082	3H28034	130	ND	2.5	8/28/2003	8/29/2003	↓	
Surrogate: Decachlorobiphenyl (45-125%)				95 %					

AMEC VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: M ID124  
Matrix: Soil  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 18, 2003  
Reviewer: P. Meeks  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T509, M T511, M T512

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. Samples M T509, M T510, M T511, and M T512 were received on HOLD. A memo from MWH personnel dated 9/03/03 released sample M T509, M T511, and M T512 from HOLD and requested the PCB analysis. The case narrative for this SDG noted that the samples were received intact, with a cooler temperature within the limits of <math>4^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>, at <math>2^{\circ}\text{C}</math>. No custody seal information was provided.</p> <p>According to the sample result sheets, the samples were extracted within 14 days of collection, and the sample analyses were performed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. There were no target compounds reported in the method blank.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	One soil blank spike was extracted and analyzed with this SDG. Percent recoveries for Aroclor 1016 and Aroclor 1260 were within the laboratory-established QC limits.	No qualifications were required.
6. <u>Surrogates</u>	The surrogate recoveries for the sample analyses were within the laboratory-established QC limits.	No qualifications were required.
7. <u>M S/M SDs</u> None	None performed.	No qualifications were required.
8. <u>Field QC Samples</u>  FB:M T697 (SDG IM ID935) and M T711 (SDG IM ID005) ER:M T696 (SDG IM ID935) and M T710 (SDG IM ID005) Field Duplicates: none	There were no Aroclor compounds detected in any of the field QC samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for percent moisture and sample amount, and dilution if applicable.	No qualifications were required.
<u>Comments</u>		

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0124

Sampled: 08/26/03  
 Received: 09/03/03

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0124-01 (MT509 - Soil)									
Reporting Units: ug/kg dry									
Aroclor 1016	EPA 3545/8082	3I05054	N/A	56	ND	1	09/05/03	09/07/03	U
Aroclor 1221	EPA 3545/8082	3I05054	N/A	56	ND	1	09/05/03	09/07/03	↓
Aroclor 1232	EPA 3545/8082	3I05054	N/A	56	ND	1	09/05/03	09/07/03	
Aroclor 1242	EPA 3545/8082	3I05054	N/A	56	ND	1	09/05/03	09/07/03	
Aroclor 1248	EPA 3545/8082	3I05054	N/A	56	ND	1	09/05/03	09/07/03	
Aroclor 1254	EPA 3545/8082	3I05054	N/A	56	ND	1	09/05/03	09/07/03	
Aroclor 1260	EPA 3545/8082	3I05054	N/A	56	200	1	09/05/03	09/07/03	
Surrogate: Decachlorobiphenyl (45-125%)					90 %				
Sample ID: IMI0124-02 (MT511 - Soil)									
Reporting Units: ug/kg dry									
Aroclor 1016	EPA 3545/8082	3I05054	N/A	52	ND	1	09/05/03	09/07/03	U ↓
Aroclor 1221	EPA 3545/8082	3I05054	N/A	52	ND	1	09/05/03	09/07/03	
Aroclor 1232	EPA 3545/8082	3I05054	N/A	52	ND	1	09/05/03	09/07/03	
Aroclor 1242	EPA 3545/8082	3I05054	N/A	52	ND	1	09/05/03	09/07/03	
Aroclor 1248	EPA 3545/8082	3I05054	N/A	52	ND	1	09/05/03	09/07/03	
Aroclor 1254	EPA 3545/8082	3I05054	N/A	52	ND	1	09/05/03	09/07/03	
Aroclor 1260	EPA 3545/8082	3I05054	N/A	52	ND	1	09/05/03	09/07/03	
Surrogate: Decachlorobiphenyl (45-125%)					74 %				
Sample ID: IMI0124-03 (MT512 - Soil)									
Reporting Units: ug/kg dry									
Aroclor 1016	EPA 3545/8082	3I05054	N/A	54	ND	1	09/05/03	09/07/03	U ↓
Aroclor 1221	EPA 3545/8082	3I05054	N/A	54	ND	1	09/05/03	09/07/03	
Aroclor 1232	EPA 3545/8082	3I05054	N/A	54	ND	1	09/05/03	09/07/03	
Aroclor 1242	EPA 3545/8082	3I05054	N/A	54	ND	1	09/05/03	09/07/03	
Aroclor 1248	EPA 3545/8082	3I05054	N/A	54	ND	1	09/05/03	09/07/03	
Aroclor 1254	EPA 3545/8082	3I05054	N/A	54	ND	1	09/05/03	09/07/03	
Aroclor 1260	EPA 3545/8082	3I05054	N/A	54	ND	1	09/05/03	09/07/03	
Surrogate: Decachlorobiphenyl (45-125%)					69 %				

ANEC VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



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303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis/Method: PAH  
QC Level: V<sup>1</sup>  
SDG: IMI0126  
Matrix: Soil  
No. of Samples: 3  
Dilutions/Reanalyses: 0  
Date Reviewed: July 19, 2004  
Reviewer: L. Calvin  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MT522, MT523, MT524

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COCs from the field to Del Mar and the transfer COCs from Del Mar to Calscience Environmental Laboratories had appropriate relinquish and receipt signatures. The Method 8270C/SIM analysis was subcontracted to Calscience. The samples were received intact at both laboratories, with cooler temperatures within the limits of 4°C ±2°C. Custody seals were not noted to be present on the cooler upon receipt at Del Mar. Custody seals were not present on the cooler upon receipt at Calscience.</p> <p>The samples were extracted within 14 days of collection and analyzed within 40 days of extraction.</p>	No qualifications were required.
3. <u>Method Blanks</u>	Two soil method blanks, one for the PAH compounds and one for NDMA, were extracted and analyzed with the samples in this SDG. None of the target compounds were detected in the respective method blanks.	No qualifications were required.

	Findings	Qualifications
4. <u>LCS/BS</u>	One soil LCS spiked with acenaphthene and pyrene for the PAH analysis, and one soil LCS for NDMA were extracted and analyzed with the samples in this SDG. All recoveries were within the laboratory-established QC limits for the PAH LCS, and within the QC limits of 50-150% for the NDMA LCS.	No qualifications were required.
5. <u>Surrogates</u>	Recoveries for the base-neutral surrogates for the PAH analysis were within the laboratory-established QC limits, and recoveries of 1,4-dichlorobenzene-d4 for the NDMA analysis were within the QC limits of 50-130%.	No qualifications were required.
3. <u>MS/MSDs</u> None	All recoveries and RPDs for the PAH MS/MSD analyses were within the laboratory-established QC limits. Recoveries for the NDMA MS/MSD were within the QC limits of 50-150% and the RPD was within the QC limit of $\leq 20\%$ .	No qualifications were required.
4. <u>Field QC Samples</u>  FB: ER: Field Duplicates: None	There were no identified field QC samples associated with the site samples in this SDG.	No qualifications were required.
8. <u>Other</u>	Reporting limits and sample results were reported on a dry-weight basis.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V Validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

**Analytical Report**

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/15/03  
Work Order No: 03-09-0830  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0126

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0126-02	03-09-0830-1	09/02/03	Solid	09/16/03	09/24/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1.01		mg/kg	Benzo (a) Anthracene	ND	0.10	1.01		mg/kg
2-Methylnaphthalene	ND	0.10	1.01		mg/kg	Chrysene	ND	0.10	1.01		mg/kg
Acenaphthylene	ND	0.10	1.01		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1.01		mg/kg
Acenaphthene	ND	0.10	1.01		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1.01		mg/kg
Fluorene	ND	0.10	1.01		mg/kg	Benzo (a) Pyrene	ND	0.10	1.01		mg/kg
Phenanthrene	ND	0.10	1.01		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1.01		mg/kg
Anthracene	ND	0.10	1.01		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1.01		mg/kg
Fluoranthene	ND	0.10	1.01		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1.01		mg/kg
Pyrene	ND	0.10	1.01		mg/kg	1-Methylnaphthalene	ND	0.10	1.01		mg/kg

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control	Qual
Nitrobenzene-d5	85	28-139		2-Fluorobiphenyl	63	33-144	
p-Terphenyl-d14	69	23-160					

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0126-03	03-09-0830-2	09/02/03	Solid	09/16/03	09/24/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1.03		mg/kg	Benzo (a) Anthracene	ND	0.10	1.03		mg/kg
2-Methylnaphthalene	ND	0.10	1.03		mg/kg	Chrysene	ND	0.10	1.03		mg/kg
Acenaphthylene	ND	0.10	1.03		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1.03		mg/kg
Acenaphthene	ND	0.10	1.03		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1.03		mg/kg
Fluorene	ND	0.10	1.03		mg/kg	Benzo (a) Pyrene	ND	0.10	1.03		mg/kg
Phenanthrene	ND	0.10	1.03		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1.03		mg/kg
Anthracene	ND	0.10	1.03		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1.03		mg/kg
Fluoranthene	ND	0.10	1.03		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1.03		mg/kg
Pyrene	ND	0.10	1.03		mg/kg	1-Methylnaphthalene	ND	0.10	1.03		mg/kg

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control	Qual
Nitrobenzene-d5	135	28-139		2-Fluorobiphenyl	98	33-144	
p-Terphenyl-d14	105	23-160					

AMEC VALIDATED  
**LEVEL V**

WAC  
07.19.04

MAILED  
JAN 09 2004

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

**Analytical Report**

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/15/03  
Work Order No: 03-09-0830  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0126

Page 2 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0126-04	03-09-0830-3	09/02/03	Solid	09/16/03	09/25/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.065		mg/kg	Benzo (a) Anthracene	ND	0.11	1.065		mg/kg
2-Methylnaphthalene	ND	0.11	1.065		mg/kg	Chrysene	ND	0.11	1.065		mg/kg
Acenaphthylene	ND	0.11	1.065		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.065		mg/kg
Acenaphthene	ND	0.11	1.065		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.065		mg/kg
Fluorene	ND	0.11	1.065		mg/kg	Benzo (a) Pyrene	ND	0.11	1.065		mg/kg
Phenanthrene	ND	0.11	1.065		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.065		mg/kg
Anthracene	ND	0.11	1.065		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.065		mg/kg
Fluoranthene	ND	0.11	1.065		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.065		mg/kg
Pyrene	ND	0.11	1.065		mg/kg	1-Methylnaphthalene	ND	0.11	1.065		mg/kg

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control	Qual
Nitrobenzene-d5	126	28-139		2-Fluorobiphenyl	91	33-144	
p-Terphenyl-d14	97	23-160					

Method Blank *	099-06-010-7	N/A	Solid	09/16/03	09/25/03	030916L08
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Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control	Qual
Nitrobenzene-d5	100	28-139		2-Fluorobiphenyl	60	33-144	
p-Terphenyl-d14	78	23-160					

\* Analysis not validated.

AMEC VALIDATED  
**LEVEL V**

07.19.04

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/15/03  
Work Order No: 03-09-0830  
Preparation: EPA 3545  
Method: EPA 8270C SIM NDMA

Project: IMI0126

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0126-02 <i>see qual code</i>	03-09-0830-1	09/02/03	Solid	09/16/03	10/08/03	030916L09

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine <i>u</i>	ND	3.1	1.02		ug/kg
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Dichlorobenzene-d4	64	50-130			

IMI0126-03 <i>see qual code</i>	03-09-0830-2	09/02/03	Solid	09/16/03	10/08/03	030916L09
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine <i>u</i>	ND	3.1	1.04		ug/kg
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Dichlorobenzene-d4	85	50-130			

IMI0126-04 <i>see qual code</i>	03-09-0830-3	09/02/03	Solid	09/16/03	10/08/03	030916L09
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine <i>u</i>	ND	3.2	1.080		ug/kg
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Dichlorobenzene-d4	99	50-130			

Method Blank *	099-07-027-50	N/A	Solid	09/16/03	10/08/03	030916L09
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Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0	1		ug/kg
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Dichlorobenzene-d4	81	50-130			

*\* Analysis not validated.*

AMEC VALIDATED  
**LEVEL V**

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T707PA13  
 Task Order 313150012  
 SDG No. MF003  
 No. of Analyses 1

Laboratory Ceimic  
 Reviewer K. Shadowlight  
 Analysis/Method PAH

Date: December 29, 2003  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	<u>Qualifications were assigned for method blank contamination.</u>
6. <b>Deviations from Analysis Protocol, e.g.,</b>	<u>Qualifications were assigned for method blank contamination.</u>
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## 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 were 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 were 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 (*) will indicate 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 (*) will indicate the subsection where a description of the problem can be found.

## Data Qualifier Reference Table

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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).

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550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis/Method: PAH  
QC Level: V<sup>1</sup>  
SDG: MF003  
Matrix: Soil  
No. of Samples: 1  
Dilutions/Reanalyses: 1  
Date Reviewed: December 29, 2003  
Reviewer: K. Shadowlight  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MF005

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The EPA ID for sample MF005 was hand-corrected in the COC. It was determined that the ID was corrected by field personnel per a telephone conversation with E. Sarao of MWH dated 12/19/03. The laboratory's sample receipt checklist noted that the sample was received intact, with a cooler temperature within the limits of 4°C ± 2°C, at 5°C. No custody seals were present on the cooler.</p> <p>According to the sample result summary form, the sample was extracted within 14 days of collection, and analyzed within 40 days of extraction.</p>	No qualifications were required.
3. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. Bis(2-ethylhexyl) phthalate was reported at a concentration of 380ug/kg.	The result for bis(2-ethylhexyl) phthalate was qualified as an estimated nondetect "UJ" and the reporting limit raised to the level of contamination in sample MF005.
4. <u>LCS/BS</u>	One soil LCS was extracted and analyzed with this SDG. The recoveries for all target compounds were within the laboratory-established control limits.	No qualifications were required.

	Findings	Qualifications
5. <u>Surrogates</u>	The surrogate recoveries for the undiluted analysis of sample MF005 were all within the laboratory-established QC limits.	No qualifications were required.
6. <u>MS/MSDs</u> None	No MS/MSD analyses were performed in association with this SDG.	No qualifications were required.
7. <u>Field QC Samples</u>  FB: MT697 (SDG IMI0935) and MT711 (IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) Field Duplicates: None	There were no target compounds reported in any of the field QC samples associated with this SDG.	No qualifications were required.
8. <u>Other</u>	Sample MF005 was analyzed at a 20× dilution (MF005DL) in order to report bis(2-ethylhexyl) phthalate within linear range of the calibration; however, as the result for bis(2-ethylhexyl) phthalate was qualified as a nondetect (see section 2.4) in sample MF005, the diluted analysis, MF005DL was not necessary. Soil sample results and reporting limits were reported on a dry-weight. Results reported below the reporting limit were qualified as estimated, “J,” by the laboratory.  TICs are not typically reported for SIM analyses, and were not reported by the laboratory for this SDG.	Sample MF005DL was rejected, “R,” in favor of the undiluted analysis MF005. No further qualifications were required.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V Validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

FORM 1  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW SAMPLE NO.

MF005

Lab Name: CEIMIC CORP

Project: BOEING SSFL

Lab Code: CEIMIC Case No.: BOEING

SDG No.: MF003

Matrix: (soil/water) SOIL

Lab Sample ID: 031290-03

Sample wt/vol: 30.00 (g/mL) G

Lab File ID: AG296

Level: (low/med) LOW

Date Received: 09/19/03

% Moisture: 13 decanted: (Y/N) N

Date Extracted: 09/23/03

Concentrated Extract Volume: 500 (uL)

Date Analyzed: 10/09/03

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q	Rev Qual	Qual Code
62-75-9	N-Nitrosodimethylamine	4	U		u	B
91-20-3	Naphthalene	4	U			
91-57-6	2-Methylnaphthalene	4	U			
208-96-8	Acenaphthylene	4	U			
83-32-9	Acenaphthene	4	U			
86-73-7	Fluorene	4	U			
85-01-8	Phenanthrene	4	U			
120-12-7	Anthracene	4	U			
206-44-0	Fluoranthene	4	U			
129-00-0	Pyrene	4	U			
56-55-3	Benzo (a) anthracene	4	U			
218-01-9	Chrysene	4	U			
205-99-2	Benzo (b) fluoranthene	4	U			
207-08-9	Benzo (k) fluoranthene	4	U			
50-32-8	Benzo (a) pyrene	4	U			
193-39-5	Indeno (1, 2, 3-cd) pyrene	4	U			
53-70-3	Dibenzo (a, h) anthracene	4	U			
191-24-2	Benzo (g, h, i) perylene	4	U			
84-66-2	Diethylphthalate	4	U			
84-74-2	Di-n-butylphthalate	4	U			
117-81-7	bis(2-Ethylhexyl) phthalate	1100	EB			

LEVEL V  
FORM I SV

FORM 1  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW SAMPLE NO.

MF005DL

Lab Name: CEIMIC CORP

Project: BOEING SSFL

Lab Code: CEIMIC Case No.: BOEING

SDG No.: MF003

Matrix: (soil/water) SOIL

Lab Sample ID: 031290-03DL

Sample wt/vol: 30.00 (g/mL) G

Lab File ID: AG299

Level: (low/med) LOW

Date Received: 09/19/03

% Moisture: 13 decanted: (Y/N) N

Date Extracted: 09/23/03

Concentrated Extract Volume: 500 (uL)

Date Analyzed: 10/09/03

Injection Volume: 2.0 (uL)

Dilution Factor: 20.0

GPC Cleanup: (Y/N) Y pH: 6.7

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Rev Qual	Qual Code
		(ug/L or ug/Kg)	UG/KG		
62-75-9	N-Nitrosodimethylamine	76	U	R	D
91-20-3	Naphthalene	440	D		
91-57-6	2-Methylnaphthalene	76	U		
208-96-8	Acenaphthylene	76	U		
83-32-9	Acenaphthene	52	DJ		
86-73-7	Fluorene	76	U		
85-01-8	Phenanthrene	76	U		
120-12-7	Anthracene	76	U		
206-44-0	Fluoranthene	76	U		
129-00-0	Pyrene	76	U		
56-55-3	Benzo (a) anthracene	76	U		
218-01-9	Chrysene	76	U		
205-99-2	Benzo (b) fluoranthene	76	U		
207-08-9	Benzo (k) fluoranthene	76	U		
50-32-8	Benzo (a) pyrene	76	U		
193-39-5	Indeno (1, 2, 3-cd) pyrene	76	U		
53-70-3	Dibenzo (a, h) anthracene	76	U		
191-24-2	Benzo (g, h, i) perylene	76	U		
84-66-2	Diethylphthalate	76	U		
84-74-2	Di-n-butylphthalate	76	U		
117-81-7	bis(2-Ethylhexyl)phthalate	1100	DB		

LEVEL V  
FORM I SV



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis/Method: PAH  
QC Level: V<sup>1</sup>  
SDG: MF001  
Matrix: Soil  
No. of Samples: 1  
Dilutions/Reanalyses: 1  
Date Reviewed: December 29, 2003  
Reviewer: K. Shadowlight  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MF001

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel. The laboratory's sample receipt checklist noted that the sample was received intact, with a cooler temperature within the limits of 4°C ± 2°C, at 6°C. No custody seal were present on the cooler.</p> <p>According to the sample result summary form, the sample was extracted within 14 days of collection, and analyzed within 40 days of extraction.</p>	No qualifications were required.
3. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with this SDG. Di-n-butylphthalate and bis(2-ethylhexyl) phthalate were reported at concentrations of 2ug/kg and 60ug/kg, respectively.	Results for di-n-butylphthalate and bis(2-ethylhexyl) phthalate were qualified as estimated nondetects "UJ" and raised to the levels of contamination, unless otherwise rejected (see section 2.11).
4. <u>LCS/BS</u>	One soil LCS was extracted and analyzed with this SDG. Bis(2-ethylhexyl)phthalate was recovered above QC limits. The recoveries for the remaining target compounds were within the laboratory-established control limits.	As there were no reportable detects for bis(2-ethylhexyl)phthalate no qualifications were required.

	Findings	Qualifications
5. <u>Surrogates</u>	Surrogate recoveries were not evaluated for samples analyzed at a 10× dilution or greater. The surrogate recoveries for the undiluted analysis of sample MF001 were all within the laboratory-established QC limits.	No qualifications were required.
6. <u>MS/MSDs</u> None	No MS/MSD analyses were performed in association with this SDG.	No qualifications were required.
7. <u>Field QC Samples</u>  FB: MT697 (SDG IMI0935) and MT711 (SDG IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) FD: None	There were no target compounds detected in any of the field QC samples.	No qualifications were required.
8. <u>Other</u>	<p>Sample MF001 was analyzed at a 100× dilution (MF001DL) in order to report 12 target compounds within linear range of the calibration. Anthracene and dibenzo(a,h)anthracene which were reported at concentrations above linear range in MF001 were diluted out in sample MF001DL. Soil sample results and reporting limits were reported on a dry-weight basis and were appropriately adjusted for dilution. Results reported below the reporting limit were qualified as estimated, “J,” by the laboratory.</p> <p>TICs are not typically reported for SIM analyses, and were not reported by the laboratory for this SDG.</p>	The results for anthracene and dibenzo(a,h)anthracene were qualified as estimated, “J” in sample MF001. Results for the remaining target compounds that exceeded linear range in the 1× dilution were rejected, “R,” in sample MF001 in favor of those same diluted results in MF001DL. All other results in MF001DL were rejected “R,” in favor of the undiluted results in MF001. No further qualifications were required.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V Validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

FORM 1  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW SAMPLE NO.

MF001

Lab Name: CEIMIC CORP

Project: BOEING SSFL

Lab Code: CEIMIC Case No.: BOEING

SDG No.: MF001

Matrix: (soil/water) SOIL

Lab Sample ID: 031213-01

Sample wt/vol: 30.20 (g/mL) G

Lab File ID: K5443

Level: (low/med) LOW

Date Received: 09/06/03

% Moisture: 5 decanted: (Y/N) N

Date Extracted: 09/10/03

Concentrated Extract Volume: 500 (uL)

Date Analyzed: 09/30/03

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: \_\_\_\_\_

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q	Qual	Qual
62-75-9	N-Nitrosodimethylamine	3	U			
91-20-3	Naphthalene	2	J			
91-57-6	2-Methylnaphthalene	3	U			
208-96-8	Acenaphthylene	2	J			
83-32-9	Acenaphthene	49				
86-73-7	Fluorene	13				
85-01-8	Phenanthrene	430	E			
120-12-7	Anthracene	100	E			
206-44-0	Fluoranthene	1500	E			
129-00-0	Pyrene	1900	E			
56-55-3	Benzo (a) anthracene	950	E			
218-01-9	Chrysene	920	E			
205-99-2	Benzo (b) fluoranthene	820	E			
207-08-9	Benzo (k) fluoranthene	840	E			
50-32-8	Benzo (a) pyrene	930	E			
193-39-5	Indeno (1, 2, 3-cd) pyrene	640	E			
53-70-3	Dibenzo (a, h) anthracene	140	E			
191-24-2	Benzo (g, h, i) perylene	470	E			
84-66-2	Diethylphthalate	2	J			
84-74-2	Di-n-butylphthalate	7	B			
117-81-7	bis(2-Ethylhexyl)phthalate	170	BE			

Q  
Qual  
Qual  
L  
R  
D  
XII  
D  
Y  
+1  
D  
B  
B

1/25  
12/29/03

LEVEL V  
NOT VALIDATED

FORM I SV

FORM 1  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW SAMPLE NO.

MF001DL

Lab Name: CEIMIC CORP

Project: BOEING SSFL

Lab Code: CEIMIC Case No.: BOEING

SDG No.: MF001

Matrix: (soil/water) SOIL

Lab Sample ID: 031213-01DL

Sample wt/vol: 30.20 (g/mL) G

Lab File ID: K5444

Level: (low/med) LOW

Date Received: 09/06/03

% Moisture: 5 decanted: (Y/N) N

Date Extracted: 09/10/03

Concentrated Extract Volume: 500 (uL)

Date Analyzed: 09/30/03

Injection Volume: 2.0 (uL)

Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: \_\_\_

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Rev Qual	Qual Code
62-75-9	N-Nitrosodimethylamine	350 U		R D
91-20-3	Naphthalene	350 U		
91-57-6	2-Methylnaphthalene	350 U		
208-96-8	Acenaphthylene	350 U		
83-32-9	Acenaphthene	350 U		
86-73-7	Fluorene	350 U		
85-01-8	Phenanthrene	430 D		
120-12-7	Anthracene	350 U	R	D
206-44-0	Fluoranthene	2000 D		
129-00-0	Pyrene	1700 D		
56-55-3	Benzo (a) anthracene	960 D		
218-01-9	Chrysene	940 D		
205-99-2	Benzo (b) fluoranthene	940 D		
207-08-9	Benzo (k) fluoranthene	800 D		
50-32-8	Benzo (a) pyrene	960 D		
193-39-5	Indeno (1, 2, 3-cd) pyrene	700 D		
53-70-3	Dibenzo (a, h) anthracene	350 U	R	D
191-24-2	Benzo (g, h, i) perylene	430 D		
84-66-2	Diethylphthalate	350 U	R	D
84-74-2	Di-n-butylphthalate	350 U		
117-81-7	bis(2-Ethylhexyl) phthalate	200 DBJ		

LABORATORY VALIDATED

LEVEL V FORM I SV

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T707PA11

Task Order 313150012

SDG No. IMI0125

No. of Analyses 6

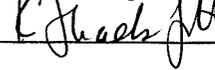
Laboratory Calscience Environmental Laboratories

Reviewer K. Shadowlight

Analysis/Method PAH

Date: December 29, 2003

Reviewer's Signature



<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative</b>	
<b>Deficiencies</b>	
2. <b>Out of Scope</b>	
<b>Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy</b>	
<b>Deliverables</b>	
5. <b>Incorrect Hardcopy</b>	Final concentrations were not adjusted for sample amount. The reporting limit/results were edited by the reviewer if necessary.
<b>Deliverables</b>	
6. <b>Deviations from Analysis</b>	
<b>Protocol, e.g.,</b>	
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## 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).

## 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 were 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 were 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 (*) will indicate 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 (*) will indicate the subsection where a description of the problem can be found.



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis Method: PAH by Method 8270/SIM  
QC Level: V<sup>1</sup>  
SDG: IM 10125  
Matrix: Soil  
No. of Samples: 6  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 29, 2003  
Reviewer: K. Shadowlight  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T526, M T527, M T528, M T529, M T530, M T531

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC from the field to DelMar Analytical was also used as the transfer COC from DelMar Analytical to CalScience Environmental Laboratories. The COC was signed by the field and both laboratories' personnel. In a memo from MW personnel, dated 09/11/03, the PAH analysis was removed from "HOLD" status. The COC accounted for the sample analyses presented in this SDG. The case narratives for this SDG noted that the samples were received intact, with cooler temperatures within the limits of 4°C ± 2°C. Custody seals were not present on the coolers.</p> <p>The soil samples were extracted within 14 days of sample collection and analyzed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	<p>Two soil method blanks, one for the PAH analysis and one for the NDM A analysis, were extracted and analyzed with this SDG. There were no reported target compound detects in any of the method blanks.</p>	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	One soil blank spike/blank spike duplicate pair, associated with the PAH analysis, and one blank spike, associated with the NDM A analysis were extracted and analyzed with the samples in this SDG . All recoveries and RPD s were within the laboratory-established QC limits for the PAH analysis, and within the QC limits of 50-150% for the NDM A analysis.	No qualifications were required.
6. <u>Surrogates</u>	Surrogate recoveries were within the laboratory-established QC limits for the PAH sample analyses and within the QC limits of 50-130% for the NDM A sample analyses.	No qualifications were required.
7. <u>M S/M SD s</u>	M S/M SD analyses were performed on sample M T529 for both the PAH and NDM A analyses of this SDG . All recoveries and were within the laboratory-established QC limits for the PAH analyses. Both RPD s for the PAH analysis exceeded 20% . The recoveries for the NDM A analyses were within the QC limits of 50-150% and the RPD was ≤20% .	No qualifications were required.
8. <u>Field QC Samples</u>  ER : M T696 (SDG IM ID935) and M T710 (SDG IM ID005) FB : M T697 (SDG IM ID935) and M T711 (SDG IM ID005) FD : None	There were no target compounds detected in the PAH or NDM A analyses of the field QC samples.	No qualifications were required.
9. <u>Other</u>	The sample results were correctly reported on a dry-weight basis; however, the reviewer noted that variations in sample amount extracted were not accounted for in the reporting of final concentrations. Concentrations and/or reporting limits were manually corrected by the reviewer on the sample result summary forms if necessary.  Compounds reported below the reporting limit were qualified as estimated, "U," by the laboratory.  TICs are not typically reported for SIM analyses, and were not reported by the laboratory for the samples in this SDG .	EPA IDs were manually added to the sample result summaries. No qualifications were required.
<u>Comment</u>	None.	None.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/12/03  
Work Order No: 03-09-0736  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0125

Page 1 of 4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0125-02 (MT526)	03-09-0736-1	09/03/03	Solid	09/13/03	09/23/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	106	28-139				2-Fluorobiphenyl	80	33-144			
p-Terphenyl-d14	88	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0125-03 (MT527)	03-09-0736-2	09/03/03	Solid	09/13/03	09/23/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	110	28-139				2-Fluorobiphenyl	80	33-144			
p-Terphenyl-d14	88	23-160									

RESULTS VALIDATED  
**LEVEL V**

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/12/03  
Work Order No: 03-09-0736  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0125

Page 2 of 4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0125-04 (MT528)	03-09-0736-3	09/03/03	Solid	09/13/03	09/23/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	0.058	0.059	0.10	1	J mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	108	28-139				2-Fluorobiphenyl	80	33-144			
p-Terphenyl-d14	88	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0125-05 (MT529)	03-09-0736-4	09/03/03	Solid	09/13/03	09/23/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	0.11	0.10	0.11	1.1	J mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	104	28-139				2-Fluorobiphenyl	76	33-144			
p-Terphenyl-d14	84	23-160									

16 12/29/03  
KMP-23-04

VALIDATED  
**LEVEL V**

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/12/03  
 Work Order No: 03-09-0736  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM PAHs

Project: IMI0125

Page 3 of 4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0125-06 (MT530)	03-09-0736-5	09/03/03	Solid	09/13/03	09/23/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Rev Qual	Qual	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual
Naphthalene	u		ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg	u	
2-Methylnaphthalene			ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg		
Acenaphthylene			ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg		
Acenaphthene			ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg		
Fluorene			ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg		
Phenanthrene			ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg		
Anthracene			ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg		
Fluoranthene			ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg		
Pyrene			ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg		
<u>Surrogates:</u>			<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>			
Nitrobenzene-d5			104	28-139				2-Fluorobiphenyl	77	33-144					
p-Terphenyl-d14			89	23-160											

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0125-07 (MT531)	03-09-0736-6	09/03/03	Solid	09/13/03	09/23/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Rev Qual	Qual	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual
Naphthalene	u		ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg	u	
2-Methylnaphthalene			ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg		
Acenaphthylene			ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg		
Acenaphthene			ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg		
Fluorene			ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg		
Phenanthrene			ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg		
Anthracene			ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg		
Fluoranthene			ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg		
Pyrene			ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg		
<u>Surrogates:</u>			<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>			
Nitrobenzene-d5			108	28-139				2-Fluorobiphenyl	81	33-144					
p-Terphenyl-d14			92	23-160											

ANALYZED  
 LEVEL V

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/12/03  
 Work Order No: 03-09-0736  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM NDMA

Project: IMI0125

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0125-02 (MT526)	03-09-0736-1	09/03/03	Solid	09/15/03	10/01/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	
N-Nitrosodimethylamine	ND	3.0 3.2	1		ug/kg	
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	80	50-130				
IMI0125-03 (MT527)	03-09-0736-2	09/03/03	Solid	09/15/03	10/01/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	
N-Nitrosodimethylamine	ND	3.3 3.2	1.1		ug/kg	
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	89	50-130				
IMI0125-04 (MT528)	03-09-0736-3	09/03/03	Solid	09/15/03	10/01/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	
N-Nitrosodimethylamine	ND	3.0 3.1	1		ug/kg	
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	90	50-130				
IMI0125-05 (MT529)	03-09-0736-4	09/03/03	Solid	09/15/03	10/01/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	
N-Nitrosodimethylamine	ND	3.3 3.2	1.1		ug/kg	
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	81	50-130				
IMI0125-06 (MT530)	03-09-0736-5	09/03/03	Solid	09/15/03	10/01/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	
N-Nitrosodimethylamine	ND	3.3 3.4	1.1		ug/kg	
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	101	50-130				

Rev Qual | Qual Code  
 u | \$

RECALC VALIDATED LEVEL V  
 KM 1-23-04

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/12/03  
Work Order No: 03-09-0736  
Preparation: EPA 3545  
Method: EPA 8270C SIM NDMA

Project: IMI0125

Page 2 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0125-07 (MT531)	03-09-0736-6	09/03/03	Solid	09/15/03	10/01/03	030915L06

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0	1.1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	98	50-130			

Rev Qual | Qual code  
u | \$

Method Blank	099-07-027-47	N/A	Solid	09/09/03	09/26/03	030909L04
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Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0	1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	76	50-130			

Rev Qual | Qual code  
\* \* | \$

Method Blank	099-07-027-49	N/A	Solid	09/15/03	10/01/03	030915L06
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Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0	1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	90	50-130			

Rev Qual | Qual code  
\* |

\* not validated

ALSO VALIDATED

LEVEL V

ICMead 1-23-04

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T707PA10

Task Order 313150012

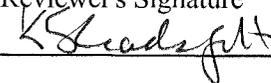
SDG No. IMI0124

No. of Analyses 3

Laboratory Calscience Environmental  
 Laboratories

Date: December 29, 2003

Reviewer K. Shadowlight

Reviewer's Signature  


Analysis/Method PAH

<b>ACTION ITEMS<sup>a</sup></b>	
<b>1. Case Narrative Deficiencies</b>	
<b>2. Out of Scope Analyses</b>	
<b>3. Analyses Not Conducted</b>	
<b>4. Missing Hardcopy Deliverables</b>	
<b>5. Incorrect Hardcopy Deliverables</b>	Final concentrations were not adjusted for sample amount. The reporting limit/results were edited by the reviewer if necessary.
<b>6. Deviations from Analysis Protocol, e.g.,</b>	
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## 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).

## 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 were 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 were 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 I, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.	Unusual problems found with the data that have been described in Section I, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis Method: PAH by Method 8270/SIM  
QC Level: V<sup>1</sup>  
SDG: IM 10124  
Matrix: Soil  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 29, 2003  
Reviewer: K. Shadowlight  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T509, M T511, M T512

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC from the field to DelMar Analytical was also used as the transfer COC from DelMar Analytical to CalScience Environmental Laboratories. The COC was signed by the field and both laboratories' personnel. In a memo from MW personnel, dated 08/27/03, the Client IDs for samples M T511 and M T512 were changed to BLBS20S01 and BLBS21S01. The COC accounted for the sample analyses presented in this SDG. The case narratives for this SDG noted that the samples were received intact, with cooler temperatures within the limits of 4°C ± 2°C. Custody seals were not present on the cooler.</p> <p>The soil samples were extracted within 14 days of sample collection and analyzed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	<p>Two soil method blanks, one for the PAH analysis and one for the NDM A analysis, were extracted and analyzed with this SDG. There were no reported target compound detects in either of the method blanks.</p>	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	Two soil blank spikes, one associated with the PAH analysis and one associated with the NDM A analysis were extracted and analyzed with the samples in this SDG . All recoveries were within the laboratory-established QC limits for the PAH analysis, and within the QC limits of 50-150% for the NDM A analysis.	No qualifications were required.
6. <u>Surrogates</u>	Surrogate recoveries were within the laboratory-established QC limits for the PAH sample analyses and within the QC limits of 50-130% for the NDM A sample analyses.	No qualifications were required.
7. <u>M S/M SD s</u>	There were no M S/M SD associated with the samples of this SDG .	No qualifications were required.
8. <u>Field QC Samples</u>  ER : M T696 (SDG IM 10935) and M T710 (SDG IM 11005) FB : M T697 (SDG IM 10935) and M T711 (SDG IM 11005) FD : None	There were no target compounds detected in the PAH or NDM A analyses of the field QC samples.	No qualifications were required.
9. <u>Other</u>	The sample results were correctly reported on a dry-weight basis; however, the reviewer noted that variations in sample amount extracted were not accounted for in the reporting of final concentrations. Concentrations and/or reporting limits were manually corrected by the reviewer on the sample result summary forms if necessary.  Compounds reported below the reporting limit were qualified as estimated, "U," by the laboratory.  TICs are not typically reported for SIM analyses, and were not reported by the laboratory for the samples in this SDG .	EPA IDs were manually added to the sample result summaries. No qualifications were required.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/05/03  
Work Order No: 03-09-0303  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0124

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0124-01 (MT509)	03-09-0303-1	08/26/03	Solid	09/05/03	09/26/03	030905L09

Comment(s): -Results are reported on a dry weight basis.

Parameter	Raw Qual	Qual Code	Result	RL	DF	Qual	Units	Parameter	Raw Qual	Qual Code	Result	RL	DF	Qual	Units
Naphthalene	u		ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	J		0.054	0.11	1.1	J	mg/kg
2-Methylnaphthalene			ND	0.11	1.1		mg/kg	Chrysene			0.060	0.11	1.1	J	mg/kg
Acenaphthylene			ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene			0.040	0.11	1.1	J	mg/kg
Acenaphthene			ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene			0.041	0.11	1.1	J	mg/kg
Fluorene			ND	0.11	1.1		mg/kg	Benzo (a) Pyrene			0.052	0.11	1.1	J	mg/kg
Phenanthrene			0.083	0.11	1.1	J	mg/kg	Benzo (g,h,i) Perylene			0.026	0.11	1.1	J	mg/kg
Anthracene			0.022	0.11	1.1	J	mg/kg	Indeno (1,2,3-c,d) Pyrene			ND	0.11	1.1		mg/kg
Fluoranthene			0.11	0.11	1.1	J	mg/kg	Dibenz (a,h) Anthracene			ND	0.11	1.1		mg/kg
Pyrene			0.11	0.11	1.1	J	mg/kg	1-Methylnaphthalene			ND	0.11	1.1		mg/kg
Surrogates:		REC (%)	Control Limits		Qual			Surrogates:		REC (%)	Control		Qual		
Nitrobenzene-d5		115	28-139					2-Fluorobiphenyl		111	33-144				
p-Terphenyl-d14		111	23-160												

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0124-02 (MT511)	03-09-0303-2	08/26/03	Solid	09/05/03	09/26/03	030905L09

Comment(s): -Results are reported on a dry weight basis.

Parameter	Raw Qual	Qual Code	Result	RL	DF	Qual	Units	Parameter	Raw Qual	Qual Code	Result	RL	DF	Qual	Units
Naphthalene	u		ND	0.11	1.05		mg/kg	Benzo (a) Anthracene	u		ND	0.11	1.05		mg/kg
2-Methylnaphthalene			ND	0.11	1.05		mg/kg	Chrysene			ND	0.11	1.05		mg/kg
Acenaphthylene			ND	0.11	1.05		mg/kg	Benzo (k) Fluoranthene			ND	0.11	1.05		mg/kg
Acenaphthene			ND	0.11	1.05		mg/kg	Benzo (b) Fluoranthene			ND	0.11	1.05		mg/kg
Fluorene			ND	0.11	1.05		mg/kg	Benzo (a) Pyrene			ND	0.11	1.05		mg/kg
Phenanthrene			0.022	0.11	1.05	J	mg/kg	Benzo (g,h,i) Perylene			ND	0.11	1.05		mg/kg
Anthracene			ND	0.11	1.05		mg/kg	Indeno (1,2,3-c,d) Pyrene			ND	0.11	1.05		mg/kg
Fluoranthene			0.031	0.11	1.05	J	mg/kg	Dibenz (a,h) Anthracene			ND	0.11	1.05		mg/kg
Pyrene			0.030	0.11	1.05	J	mg/kg	1-Methylnaphthalene			ND	0.11	1.05		mg/kg
Surrogates:		REC (%)	Control Limits		Qual			Surrogates:		REC (%)	Control		Qual		
Nitrobenzene-d5		117	28-139					2-Fluorobiphenyl		116	33-144				
p-Terphenyl-d14		112	23-160												

**LEVEL V**

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/05/03  
Work Order No: 03-09-0303  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0124

Page 2 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0124-03	03-09-0303-3	08/26/03	Solid	09/05/03	09/26/03	030905L09

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	0.14	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	0.059	0.11	1.1	J	mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	0.033	0.11	1.1	J	mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	104	28-139				2-Fluorobiphenyl	103	33-144			
p-Terphenyl-d14	118	23-160									

Method Blank	099-06-010-2	N/A	Solid	09/05/03	09/26/03	030905L09
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	95	28-139				2-Fluorobiphenyl	94	33-144			
p-Terphenyl-d14	93	23-160									

\* not validated

AMEC VALIDATED

LEVEL V

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/05/03  
Work Order No: 03-09-0303  
Preparation: EPA 3545  
Method: EPA 8270C SIM NDMA

Project: IMI0124

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0124-01 (MT509)	03-09-0303-1	08/26/03	Solid	09/09/03	09/29/03	030909L04
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg	u
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	122	50-130				
IMI0124-02 (MT511)	03-09-0303-2	08/26/03	Solid	09/09/03	09/29/03	030909L04
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.0	1		ug/kg	u
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	124	50-130				
IMI0124-03 (8MT512)	03-09-0303-3	08/26/03	Solid	09/09/03	09/29/03	030909L04
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.3 3.2	1.1		ug/kg	u
Surrogates:	REC (%)	Control Limits		Qual		\$
1,4-Dichlorobenzene-d4	100	50-130				
Method Blank	099-07-027-47	N/A	Solid	09/09/03	09/26/03	030909L04
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.0	1		ug/kg	*
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	76	50-130				

10/12/03

\* not val. dated

**ANISO VALIDATED**  
**LEVEL V**

Km 1-23-04

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



## 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).

## 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 were 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 were 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 (*) will indicate 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 (*) will indicate the subsection where a description of the problem can be found.



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis Method: PAH by Method 8270/SIM  
QC Level: V<sup>1</sup>  
SDG: IM 10487  
Matrix: Soil  
No. of Samples: 13  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 24, 2003  
Reviewer: K. Shadowlight  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T550, M T551, M T552, M T553, M T554, M T555, M T556, M T557, M T559, M T560, M T561, M T562 M T563

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC from the field to DelMar Analytical was also used as the transfer COC from DelMar Analytical to Calscience Environmental Laboratories. The COC was signed by the field and both laboratories' personnel. EPA ID M T558 was listed on the COC twice, in a memo from MW personnel, dated 09/17/03, the EPA ID for BLST03S01 was changed from M T558 to M T563. The COC accounted for the sample analyses presented in this SDG. The case narratives for this SDG noted that the samples were received intact, with cooler temperatures within the limits of 4°C ± 2°C. Custody seals were not present on the coolers.</p> <p>The soil samples were extracted within 14 days of sample collection and analyzed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	Two soil method blanks, one for the PAH analysis and one for the NDMA analysis, were extracted and analyzed with this SDG. There were no reported target compound detects in either of the method blanks.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	Two soil blank spikes, one associated with the PAH analysis and one associated with the NDM A analysis were extracted and analyzed with the samples in this SDG . All recoveries were within the laboratory-established QC limits for the PAH analysis, and within the QC limits of 50-150% for the NDM A analysis.	No qualifications were required.
6. <u>Surrogates</u>	Surrogate recoveries were within the laboratory-established QC limits for the PAH sample analyses and within the QC limits of 50-130% for the NDM A sample analyses.	No qualifications were required.
7. <u>M S/M SD s</u>	There were no M S/M SD associated with the samples of this SDG .	No qualifications were required.
8. <u>Field QC Samples</u>  ER : M T696 (SDG IM ID935) and M T710 (SDG IM IL005) FB : M T697 (SDG IM ID935) and M T711 (SDG IM IL005) FD : M T553/M t557	There were no target compounds detected in the PAH or NDM A analyses of the field QC samples.  There were no target compounds reported in either field duplicate sample.	No qualifications were required.
9. <u>Other</u>	The sample results were correctly reported on a dry-weight basis; however, the reviewer noted that variations in sample amount extracted were not accounted for in the reporting of final concentrations or reporting limits. Concentrations and/or reporting limits were manually corrected by the reviewer on the sample result summary forms if necessary.  Compounds reported below the reporting limit were qualified as estimated, "J," by the laboratory.  TICs are not typically reported for SIM analyses, and were not reported by the laboratory for the samples in this SDG .	EPA IDs were manually added to the sample result summaries. No qualifications were required.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/11/03  
Work Order No: 03-09-0617  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0487

Page 1 of 7

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-01 (MTSS0)	03-09-0617-1	09/08/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	0.037	0.11	1.1	J	mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	110	28-139				2-Fluorobiphenyl	82	33-144			
p-Terphenyl-d14	86	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-02 (MTSS1)	03-09-0617-2	09/08/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	109	28-139				2-Fluorobiphenyl	82	33-144			
p-Terphenyl-d14	84	23-160									

(S 12/24/03

ANALYZED  
**LEVEL V**

MM 1-23-04

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/11/03  
Work Order No: 03-09-0617  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0487

Page 2 of 7

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-03 (MT552)	03-09-0617-3	09/08/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
		<b>Limits</b>									
Nitrobenzene-d5	105	28-139				2-Fluorobiphenyl	78	33-144			
p-Terphenyl-d14	84	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-04 (MT553)	03-09-0617-4	09/08/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
		<b>Limits</b>									
Nitrobenzene-d5	109	28-139				2-Fluorobiphenyl	82	33-144			
p-Terphenyl-d14	88	23-160									

09/14/2003

ANALYZED  
**LEVEL V**

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

7440 Lincoln Way, Garden Grove, CA 92841-1432 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/11/03  
Work Order No: 03-09-0617  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0487

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-05 (MT554)	03-09-0617-5	09/08/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
		<b>Limits</b>									
Nitrobenzene-d5	98	28-139				2-Fluorobiphenyl	73	33-144			
p-Terphenyl-d14	75	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-06 (MT555)	03-09-0617-6	09/08/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
		<b>Limits</b>									
Nitrobenzene-d5	109	28-139				2-Fluorobiphenyl	79	33-144			
p-Terphenyl-d14	85	23-160									

1512/03/03

KM 1-23-04

**LEVEL V**

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/11/03  
Work Order No: 03-09-0617  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0487

Page 4 of 7

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-07 (MT556)	03-09-0617-7	09/08/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.12	1.2		mg/kg	Benzo (a) Anthracene	ND	0.12	1.2		mg/kg
2-Methylnaphthalene	ND	0.12	1.2		mg/kg	Chrysene	ND	0.12	1.2		mg/kg
Acenaphthylene	ND	0.12	1.2		mg/kg	Benzo (k) Fluoranthene	ND	0.12	1.2		mg/kg
Acenaphthene	ND	0.12	1.2		mg/kg	Benzo (b) Fluoranthene	ND	0.12	1.2		mg/kg
Fluorene	ND	0.12	1.2		mg/kg	Benzo (a) Pyrene	ND	0.12	1.2		mg/kg
Phenanthrene	ND	0.12	1.2		mg/kg	Benzo (g,h,i) Perylene	ND	0.12	1.2		mg/kg
Anthracene	ND	0.12	1.2		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.12	1.2		mg/kg
Fluoranthene	ND	0.12	1.2		mg/kg	Dibenz (a,h) Anthracene	ND	0.12	1.2		mg/kg
Pyrene	ND	0.12	1.2		mg/kg	1-Methylnaphthalene	ND	0.12	1.2		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
		<b>Limits</b>									
Nitrobenzene-d5	106	28-139				2-Fluorobiphenyl	78	33-144			
p-Terphenyl-d14	84	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-08 (MT557)	03-09-0617-8	09/08/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
		<b>Limits</b>									
Nitrobenzene-d5	103	28-139				2-Fluorobiphenyl	77	33-144			
p-Terphenyl-d14	84	23-160									

16 12/24/03

**AMEC VALIDATED**  
**LEVEL V**

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

7440 Lincoln Way, Garden Grove, CA 92841-1432 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/11/03  
Work Order No: 03-09-0617  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0487

Page 5 of 7

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-10 (MT563)	03-09-0617-9	09/08/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	109	28-139				2-Fluorobiphenyl	82	33-144			
p-Terphenyl-d14	87	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-11 (MT559)	03-09-0617-10	09/05/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.12	1.2		mg/kg	Benzo (a) Anthracene	ND	0.12	1.2		mg/kg
2-Methylnaphthalene	ND	0.12	1.2		mg/kg	Chrysene	ND	0.12	1.2		mg/kg
Acenaphthylene	ND	0.12	1.2		mg/kg	Benzo (k) Fluoranthene	ND	0.12	1.2		mg/kg
Acenaphthene	ND	0.12	1.2		mg/kg	Benzo (b) Fluoranthene	ND	0.12	1.2		mg/kg
Fluorene	ND	0.12	1.2		mg/kg	Benzo (a) Pyrene	ND	0.12	1.2		mg/kg
Phenanthrene	ND	0.12	1.2		mg/kg	Benzo (g,h,i) Perylene	ND	0.12	1.2		mg/kg
Anthracene	ND	0.12	1.2		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.12	1.2		mg/kg
Fluoranthene	ND	0.12	1.2		mg/kg	Dibenz (a,h) Anthracene	ND	0.12	1.2		mg/kg
Pyrene	ND	0.12	1.2		mg/kg	1-Methylnaphthalene	ND	0.12	1.2		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	93	28-139				2-Fluorobiphenyl	67	33-144			
p-Terphenyl-d14	73	23-160									

12/24/03

UNVALIDATED  
**LEVEL V**

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

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Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/11/03  
Work Order No: 03-09-0617  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0487

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Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-12 (MT560)	03-09-0617-11	09/05/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	94	28-139				2-Fluorobiphenyl	70	33-144			
p-Terphenyl-d14	77	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-13 (MT561)	03-09-0617-12	09/09/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	106	28-139				2-Fluorobiphenyl	78	33-144			
p-Terphenyl-d14	84	23-160									

12/24/07

AMEC VALIDATED  
LEVEL V

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/11/03  
Work Order No: 03-09-0617  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0487

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Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-14 (MT562)	03-09-0617-13	09/09/03	Solid	09/13/03	09/24/03	030913L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	106	28-139				2-Fluorobiphenyl	79	33-144			
p-Terphenyl-d14	86	23-160									

Method Blank	099-06-010-5	N/A	Solid	09/13/03	09/26/03	030913L05
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	93	28-139				2-Fluorobiphenyl	65	33-144			
p-Terphenyl-d14	68	23-160									

lu 12/24/03

AMEC VALIDATED  
**LEVEL V**

NV = not validated

RL - Reporting Limit . DF - Dilution Factor . Qual - Qualifiers

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Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/11/03  
Work Order No: 03-09-0617  
Preparation: EPA 3545  
Method: EPA 8270C SIM NDMA

Project: IMI0487

Page 1 of 3

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-01 (MTSS0)	03-09-0617-1	09/08/03	Solid	09/15/03	10/01/03	030915L06

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	98	50-130			

Res Qual | Qual Code  
u | \$

IMI0487-02 (MTSS1)	03-09-0617-2	09/08/03	Solid	09/15/03	10/01/03	030915L06
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0	1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	123	50-130			

Res Qual | Qual Code  
u | \$

IMI0487-03 (MTSS2)	03-09-0617-3	09/08/03	Solid	09/15/03	10/01/03	030915L06
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	99	50-130			

Res Qual | Qual Code  
u | \$

IMI0487-04 (MTSS3)	03-09-0617-4	09/08/03	Solid	09/15/03	10/01/03	030915L06
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0	1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	104	50-130			

Res Qual | Qual Code  
u | \$

IMI0487-05 (MTSS4)	03-09-0617-5	09/08/03	Solid	09/15/03	10/02/03	030915L06
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	119	50-130			

Res Qual | Qual Code  
u | \$

AMEC VALIDATED

MM 1-23-04

LEVEL V

RL - Reporting Limit . DF - Dilution Factor . Qual - Qualifiers

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Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/11/03  
Work Order No: 03-09-0617  
Preparation: EPA 3545  
Method: EPA 8270C SIM NDMA

Project: IMI0487

Page 2 of 3

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-06 (MT555)	03-09-0617-6	09/08/03	Solid	09/15/03	10/02/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg	u   \$
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	102	50-130				
IMI0487-07 (MT556)	03-09-0617-7	09/08/03	Solid	09/15/03	10/02/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.6	1.2		ug/kg	u   \$
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	100	50-130				
IMI0487-08 (MT557)	03-09-0617-8	09/08/03	Solid	09/15/03	10/02/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.1	1		ug/kg	u   \$
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	125	50-130				
IMI0487-10 (MT563)	03-09-0617-9	09/08/03	Solid	09/15/03	10/02/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.1	1		ug/kg	u   \$
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	112	50-130				
IMI0487-11 (MT559)	03-09-0617-10	09/05/03	Solid	09/15/03	10/02/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.9	1.3		ug/kg	u   \$
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	93	50-130				

10/12/24/03

AMEC VALIDATED

LEVEL V

KMI-23-00

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/11/03  
Work Order No: 03-09-0617  
Preparation: EPA 3545  
Method: EPA 8270C SIM NDMA

Project: IMI0487

Page 3 of 3

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0487-12 (MT560)	03-09-0617-11	09/05/03	Solid	09/15/03	10/02/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual / Qual Code
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg	u
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	103	50-130				
IMI0487-13 (MT561)	03-09-0617-12	09/09/03	Solid	09/15/03	10/02/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual / Qual Code
N-Nitrosodimethylamine	ND	3.0	1		ug/kg	u
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	93	50-130				
IMI0487-14 (MT562)	03-09-0617-13	09/09/03	Solid	09/15/03	10/02/03	030915L06
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual / Qual Code
N-Nitrosodimethylamine	ND	3.0	1		ug/kg	u
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	107	50-130				
Method Blank		099-07-027-49	N/A	Solid	09/15/03	10/01/03 030915L06
Parameter	Result	RL	DF	Qual	Units	Rev Qual / Qual Code
N-Nitrosodimethylamine	ND	3.0	1		ug/kg	NV
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	90	50-130				

Ka 12/24/03

NV = not validated

AMEC VALIDATED

LEVEL V

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T707PA8  
 Task Order 313150012  
 SDG No. IMI0838  
 No. of Analyses 5

Laboratory Calscience Environmental Laboratories

Reviewer K. Shadowlight

Analysis/Method PAH

Date: December 24, 2003

Reviewer's Signature

*K. Shadowlight*

<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	Final concentrations were not adjusted for sample amount. The reporting limit/results were edited by the reviewer if necessary.
6. <b>Deviations from Analysis Protocol, e.g.,</b>	
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## 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).

## 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 were 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 were 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 (*) will indicate 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 (*) will indicate the subsection where a description of the problem can be found.



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis Method: PAH by Method 8270/SIM  
QC Level: V<sup>1</sup>  
SDG: IM 10838  
Matrix: Soil  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 24, 2003  
Reviewer: K. Shadowlight  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MT690, MT691, MT692, MT693, MT694

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC from the field to DelMar Analytical was also used as the transfer COC from DelMar Analytical to CalScience Environmental Laboratories. The COC was signed by the field and both laboratories' personnel. The COC accounted for the sample analyses presented in this SDG. The case narratives for this SDG noted that the samples were received intact, with cooler temperatures within the limits of 4°C ± 2°C. Custody seals were not present on the coolers.</p> <p>The soil samples were extracted within 14 days of sample collection and analyzed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	Two soil method blanks, one for the PAH analysis and one for the NDMA analysis, were extracted and analyzed with this SDG. There were no reported target compound detects in either of the method blanks.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	Two soil blank spikes, one associated with the PAH analysis and one associated with the NDM A analysis were extracted and analyzed with the samples in this SDG . All recoveries were within the laboratory-established QC limits for the PAH analysis, and within the QC limits of 50-150% for the NDM A analysis.	No qualifications were required.
6. <u>Surrogates</u>	Surrogate recoveries were within the laboratory-established QC limits for the PAH sample analyses and within the QC limits of 50-130% for the NDM A sample analyses.	No qualifications were required.
7. <u>M S/M SD s</u>	There were no M S/M SD associated with the samples of this SDG .	No qualifications were required.
8. <u>Field QC Samples</u>  ER : M T696 (SDG IM ID935) and M T710 (SDG IM ID005) FB : M T697 (SDG IM ID935) and M T711 (SDG IM ID005) FD : None	There were no target compounds detected in the PAH or NDM A analyses of the field QC samples.	No qualifications were required.
9. <u>Other</u>	The sample results were correctly reported on a dry-weight basis; however, the reviewer noted that variations in sample amount extracted were not accounted for in the reporting of final concentrations. Concentrations and/or reporting limits were manually corrected by the reviewer on the sample result summary forms if necessary.  Compounds reported below the reporting limit were qualified as estimated, "J," by the laboratory.  TICs are not typically reported for SIM analyses, and were not reported by the laboratory for the samples in this SDG .	EPA IDs were manually added to the sample result summaries. No qualifications were required.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/16/03  
Work Order No: 03-09-0891  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0838

Page 1 of 3

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0838-01 (MT690)	03-09-0891-1	09/15/03	Solid	09/16/03	09/25/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Res Qual	Qual Code	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units	Res Qual	Qual Code
Naphthalene	u		ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg	u	
2-Methylnaphthalene			ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg		
Acenaphthylene			ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg		
Acenaphthene			ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg		
Fluorene			ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg		
Phenanthrene			ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg		
Anthracene			ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg		
Fluoranthene			ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg		
Pyrene			ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg		
Surrogates:			REC (%)	Control		Qual		Surrogates:	REC (%)	Control		Qual			
				Limits											
Nitrobenzene-d5			115	28-139				2-Fluorobiphenyl	84	33-144					
p-Terphenyl-d14			87	23-160											

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0838-02 (MT691)	03-09-0891-2	09/15/03	Solid	09/16/03	09/25/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Res Qual	Qual Code	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units	Res Qual	Qual Code
Naphthalene	u		ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg	u	
2-Methylnaphthalene			ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg		
Acenaphthylene			ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg		
Acenaphthene			ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg		
Fluorene			ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg		
Phenanthrene			ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg		
Anthracene			ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg		
Fluoranthene			ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg		
Pyrene			ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg		
Surrogates:			REC (%)	Control		Qual		Surrogates:	REC (%)	Control		Qual			
				Limits											
Nitrobenzene-d5			125	28-139				2-Fluorobiphenyl	92	33-144					
p-Terphenyl-d14			99	23-160											

10/12/24/03

ANEC VALIDATED  
**LEVEL V**

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/16/03  
Work Order No: 03-09-0891  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0838

Page 2 of 3

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0838-03 (CMT692)	03-09-0891-3	09/15/03	Solid	09/16/03	09/25/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	76	28-139				2-Fluorobiphenyl	58	33-144			
p-Terphenyl-d14	61	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0838-04 (CMT693)	03-09-0891-4	09/15/03	Solid	09/16/03	09/25/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	0.045	0.11	1.1	J	mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	115	28-139				2-Fluorobiphenyl	86	33-144			
p-Terphenyl-d14	93	23-160									

1/5 12/24/03

ANALYZED  
**LEVEL V**

10/11-23-04

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/16/03  
Work Order No: 03-09-0891  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0838

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Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0838-05 (Wt 6.94)	03-09-0891-5	09/15/03	Solid	09/16/03	09/25/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	0.029	0.10	1	J	mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	0.026	0.10	1	J	mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	0.028	0.10	1	J	mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	0.012	0.10	1	J	mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	114	28-139				2-Fluorobiphenyl	83	33-144			
p-Terphenyl-d14	91	23-160									

Method Blank	099-06-010-7	N/A	Solid	09/16/03	09/25/03	030916L08
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Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	100	28-139				2-Fluorobiphenyl	60	33-144			
p-Terphenyl-d14	78	23-160									

NV = not validated

10/12/03

AMEC VALIDATED

LEVEL V

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/16/03  
Work Order No: 03-09-0891  
Preparation: EPA 3545  
Method: EPA 8270C SIM NDMA

Project: IMI0838

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0838-01 (MT690)	03-09-0891-1	09/15/03	Solid	09/24/03	09/30/03	030924L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg	u	
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	95	50-130					

IMI0838-02 (MT691)	03-09-0891-2	09/15/03	Solid	09/24/03	09/30/03	030924L05
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg	u	
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	129	50-130					

IMI0838-03 (MT692)	03-09-0891-3	09/15/03	Solid	09/24/03	09/30/03	030924L05
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	<sup>3.2</sup> 3.3	1.1		ug/kg	u	\$
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	84	50-130					

IMI0838-04 (MT693)	03-09-0891-4	09/15/03	Solid	09/24/03	09/30/03	030924L05
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	<sup>3.1</sup> 3.3	1.1		ug/kg	u	\$
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	91	50-130					

IMI0838-05 (MT694)	03-09-0891-5	09/15/03	Solid	09/24/03	09/30/03	030924L05
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	<sup>3.2</sup> 3.0	1		ug/kg	u	\$
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	67	50-130					

09/24/03

**AMEC VALIDATED**

**LEVEL V**

MM 1-23-03





# DATA VALIDATION REPORT

Rocketdyne  
SSFL RFI Program

ANALYSIS: POLYNUCLEAR AROMATIC  
HYDROCARBONS

SAMPLE DELIVERY GROUP: IMI0763

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: Rocketdyne SSFL RFI Program  
Contract Task Order #: 313150012  
SDG#: IMI0763  
Project Manager: D. Hambrick  
Matrix: Soil  
Analysis: PAH  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: July 7, 2004

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)* and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Del Mar ID	Lab No.	Matrix	Method
BLTS07S02	MT685	IMI0763-21	03-09-0831-1	soil	8270C/SIM
BLTS01S01	MT686	IMI0763-22	03-09-0831-2	soil	8270C/SIM
BLTS09S04	MT687	IMI0763-23	03-09-0831-3	soil	8270C/SIM
BLTS34S01	MT688	IMI0763-24	03-09-0831-4	soil	8270C/SIM
BLTS09S05	MT689	IMI0763-25	03-09-1216-1	soil	8270C/SIM

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at both Del Mar Analytical and Calscience Environmental Laboratories within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . According to the laboratory login sheet, the samples were received intact and in good condition. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC from the field to Del Mar Analytical and the transfer COC from Del Mar Analytical to Calscience Environmental Laboratories were signed by field and laboratory personnel and accounted for the analyses presented in this SDG. Custody seals were not present on the cooler. No qualifications were required.

#### 2.1.3 Holding Times

The soil samples were extracted within 14 days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tune met the criteria specified in SW-846 Method 8270C, and the samples were analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibrations associated with this SDG were analyzed 09/22/03 for the PAH analysis and 05/12/03 for the NDMA analysis. All average RRFs were  $\geq 0.050$  in both initial calibrations. The %RSDs were  $>15\%$  for benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, and dibenz(a,h)anthracene. Results for the aforementioned compounds were qualified as estimated, "J," for detects and "UJ," for nondetects, unless otherwise rejected (see section 2.6). All remaining %RSDs were  $\leq 15\%$ . All RRFs were  $\geq 0.050$  in the continuing calibrations associated with both the PAH and NDMA sample analyses, and all %Ds were  $\leq 20\%$ . No further qualifications were required.

### 2.4 BLANKS

Four soil method blanks, two for the PAH analysis (099-06-010-7 and 099-06-010-8) and two for the NDMA analysis (099-07-027-50 and 099-07-027-51) were extracted and analyzed with the samples in this SDG. There were no target compounds reported in any of the method blanks. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Four soil blank spikes, two associated with the PAH analysis (099-06-010-7 and 099-06-010-8) and two associated with the NDMA analysis (099-07-027-50 and 099-07-027-51) were extracted and analyzed with the samples in this SDG. All recoveries were within the laboratory-established QC limits for the PAH blank spikes, and within the QC limits of 50-150% for the NDMA blank spikes. No qualifications were required.

## 2.6 SURROGATE RECOVERY

Sample MT689 had a recovery below 10% for the surrogate nitrobenzene-d5; therefore, nondetect results were rejected, "R," and the detect for chrysene was qualified as estimated, "J." Although reported by the laboratory, the surrogate recovery for the NDMA analysis of sample MT689 was not evaluated, as at a 100× dilution the surrogate was considered diluted out. Remaining surrogate recoveries were within the laboratory-established QC limits for the PAH sample analyses and within the QC limits of 50-130% for the NDMA sample analyses. No further qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample MT685 for this SDG, for both the PAH and NDMA analyses. All recoveries and RPDs were within the laboratory-established QC limits for the PAH analyses, and for the NDMA analyses, recoveries were within the QC limits of 50-150% and the RPD was  $\leq 20\%$ . Batch MS/MSD analyses associated with the extraction batch of sample MT689 were performed on an unidentified sample for both the PAH and NDMA analyses. Although batch accuracy and precision were demonstrated for both analyses, the results were not further evaluated. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

Samples MT697 and MT711 (SDGs IMI0935 and IMI1005, respectively) were the field blanks, and samples MT696 and MT710 (SDGs IMI0935 and IMI1005, respectively) were the equipment rinsates associated with the site samples in this SDG. There were no target compounds detected in the PAH or NDMA analyses of the field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with this SDG. Field duplicate samples are required at a rate of 10% per matrix for site samples only and may not be present in every data package. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

All internal standard area counts were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for PAH semivolatile target compounds and target compound n-nitrosodimethylamine by Method 8270C/SIM. Chromatograms and retention times of reported target compounds indicated no problems with target compound identification. The laboratory did not provide spectra for the reported target compound detects; therefore, target compound identification could not be verified. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

The reporting limits were consistent with the method, and were supported by a single point calibration analyzed at the reporting limit. Compounds reported below the reporting limit were qualified as estimated, "J," by the laboratory. The sample results were correctly reported on a dry-weight basis; however, the reviewer noted that variations in sample amount extracted were not accounted for in the reporting of final concentrations. Concentrations and/or reporting limits were manually corrected by the reviewer on the sample result summary forms if necessary. Sample MT689 required 5 $\times$  and 100 $\times$  dilutions for the PAH and NDMA analyses, respectively, due to late-eluting non-target hydrocarbon interference evident in both samples. Reporting limits were adjusted accordingly. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs are not typically reported for SIM analyses, and were not reported by the laboratory for the samples in this SDG. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance. No qualifications were required.

**ANALYTICAL REPORT**

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/15/03  
Work Order No: 03-09-0831  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHS

Project: IMI0763

Page 1 of 3

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0763-21	03-09-0831-1	09/11/03	Solid	09/16/03	09/25/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>	
Nitrobenzene-d5	123	28-139				2-Fluorobiphenyl	91	33-144			
p-Terphenyl-d14	95	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0763-22	03-09-0831-2	09/11/03	Solid	09/16/03	09/25/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	0.016	0.017	1	J	mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	0.020	0.10	1	J	mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>	
Nitrobenzene-d5	116	28-139				2-Fluorobiphenyl	86	33-144			
p-Terphenyl-d14	90	23-160									

AMEC VALIDATED  
**LEVEL IV** 1598

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/15/03  
Work Order No: 03-09-0831  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0763

Page 2 of 3

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0763-23	03-09-0831-3	09/11/03	Solid	09/16/03	09/25/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	0.830.78	0.110.10	11	J	mg/kg	Benzo (a) Anthracene	0.080.75	0.110.10	11	J	mg/kg
2-Methylnaphthalene	0.390.34	0.11	11	J	mg/kg	Chrysene	0.0830.073	0.11	11	J	mg/kg
Acenaphthylene	0.0360.034	0.11	11	J	mg/kg	Benzo (k) Fluoranthene	0.0650.060	0.11	11	J	mg/kg
Acenaphthene	0.450.42	0.11	11	J	mg/kg	Benzo (b) Fluoranthene	0.0680.064	0.11	11	J	mg/kg
Fluorene	0.130.12	0.11	11	J	mg/kg	Benzo (a) Pyrene	0.130.12	0.11	11	J	mg/kg
Phenanthrene	0.440.42	0.11	11	J	mg/kg	Benzo (g,h,i) Perylene	0.120.11	0.11	11	J	mg/kg
Anthracene	0.0950.90	0.11	11	J	mg/kg	Indeno (1,2,3-c,d) Pyrene	0.110.10	0.11	11	J	mg/kg
Fluoranthene	0.140.13	0.11	11	J	mg/kg	Dibenz (a,h) Anthracene	ND	0.11	11	J	mg/kg
Pyrene	0.190.017	0.11	11	J	mg/kg	1-Methylnaphthalene	0.750.71	0.11	11	J	mg/kg
Surrogates:	REC (%)	Control Limits		Qual		Surrogates:	REC (%)	Control		Qual	
Nitrobenzene-d5	122	28-139				2-Fluorobiphenyl	89	33-144			
p-Terphenyl-d14	95	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0763-24	03-09-0831-4	09/11/03	Solid	09/16/03	09/25/03	030916L08

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
Surrogates:	REC (%)	Control Limits		Qual		Surrogates:	REC (%)	Control		Qual	
Nitrobenzene-d5	117	28-139				2-Fluorobiphenyl	88	33-144			
p-Terphenyl-d14	92	23-160									

**AMEC VALIDATED**

**LEVEL IV**

1599

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

**ANALYTICAL REPORT**

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/22/03  
 Work Order No: 03-09-1216  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM PAHs

Project: IMI0763

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0763-25	03-09-1216-1	09/11/03	Solid	09/22/03	10/07/03	030922L03

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	5.0	50		mg/kg	Benzo (a) Anthracene	ND	5.0	50		mg/kg
2-Methylnaphthalene	ND	5.0	50		mg/kg	Chrysene	2.8	5.0	50	J	mg/kg
Acenaphthylene	ND	5.0	50		mg/kg	Benzo (k) Fluoranthene	ND	5.0	50		mg/kg
Acenaphthene	ND	5.0	50		mg/kg	Benzo (b) Fluoranthene	ND	5.0	50		mg/kg
Fluorene	ND	5.0	50		mg/kg	Benzo (a) Pyrene	ND	5.0	50		mg/kg
Phenanthrene	ND	5.0	50		mg/kg	Benzo (g,h,i) Perylene	ND	5.0	50		mg/kg
Anthracene	ND	5.0	50		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	5.0	50		mg/kg
Fluoranthene	ND	5.0	50		mg/kg	Dibenz (a,h) Anthracene	ND	5.0	50		mg/kg
Pyrene	ND	5.0	50		mg/kg	1-Methylnaphthalene	ND	5.0	50		mg/kg
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>	
Nitrobenzene-d5	5	28-139	2			2-Fluorobiphenyl	63	33-144			
p-Terphenyl-d14	60	23-160									

Method Blank *	099-06-010-8	N/A	Solid	09/22/03	09/26/03	030922L03
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Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>	
Nitrobenzene-d5	88	28-139				2-Fluorobiphenyl	64	33-144			
p-Terphenyl-d14	68	23-160									

\* Not validated

**AMEC VALIDATED**  
**LEVEL IV**

Rev 1  
 CAC 07.07.04

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/15/03  
 Work Order No: 03-09-0831  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM NDMA

Project: IMI0763

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID	
IMI0763-21	03-09-0831-1	09/11/03	Solid	09/16/03	10/08/03	030916L09	
Comment(s): -Results are reported on a dry weight basis.							
Parameter	Result	RL	DF	Qual	Units		
N-Nitrosodimethylamine	ND	3.0	1		ug/kg		
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	70	50-130					
IMI0763-22	03-09-0831-2	09/11/03	Solid	09/16/03	10/08/03	030916L09	
Comment(s): -Results are reported on a dry weight basis.							
Parameter	Result	RL	DF	Qual	Units		
N-Nitrosodimethylamine	ND	3.0	1		ug/kg		
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	101	50-130					
IMI0763-23	03-09-0831-3	09/11/03	Solid	09/16/03	10/08/03	030916L09	
Comment(s): -Results are reported on a dry weight basis.							
Parameter	Result	RL	DF	Qual	Units		
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg		
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	89	50-130					
IMI0763-24	03-09-0831-4	09/11/03	Solid	09/16/03	10/08/03	030916L09	
Comment(s): -Results are reported on a dry weight basis.							
Parameter	Result	RL	DF	Qual	Units		
N-Nitrosodimethylamine	ND	3.0	1		ug/kg		
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	129	50-130					
Method Blank	099-07-027-50	N/A		Solid	09/16/03	10/08/03	030916L09
Parameter	Result	RL	DF	Qual	Units		
N-Nitrosodimethylamine	ND	3.0	1		ug/kg		
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	81	50-130					

\* Not validated.

AMEC VALIDATED  
**LEVEL IV**

1601

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/22/03  
 Work Order No: 03-09-1216  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM NDMA

Project: IMI0763

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0763-25	03-09-1216-1	09/11/03	Solid	09/24/03	09/30/03	030924L05

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	300	100		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	84	50-130			

Method Blank *		099-07-027-51	N/A	Solid	09/24/03	09/30/03	030924L05
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Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0	1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	91	50-130			

\* Not validated.

Rev 1  
 WAC 07.07.04

**AMEC VALIDATED**  
**LEVEL IV**



## 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 were 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 were 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 I, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.	Unusual problems found with the data that have been described in Section I, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.

## 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).



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis Method: PAH by Method 8270/SIM  
QC Level: V<sup>1</sup>  
SDG: IM 1169  
Matrix: Soil  
No. of Samples: 9  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 24, 2003  
Reviewer: K. Shadowlight  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T699, M T700, M T701, M T702, M T703, M T705, M T706, M T707, M T708

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC from the field to DelMar Analytical was also used as the transfer COC from DelMar Analytical to CalScience Environmental Laboratories. The COC was signed by the field and both laboratories' personnel. In a memo, dated 09/19/03, from MW personnel, the analysis of sample M T704 was cancelled. The COC accounted for the remaining sample analyses presented in this SDG. The case narratives for this SDG noted that the samples were received intact, with cooler temperatures within the limits of 4°C ± 2°C. Custody seals were not present on the coolers.</p> <p>The soil samples were extracted within 14 days of sample collection and analyzed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	<p>Two soil method blanks, one for the PAH analysis and one for the NDMA analysis, were extracted and analyzed with this SDG. There were no reported target compound detects in either of the method blanks.</p>	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	Two soil blank spikes, one associated with the PAH analysis and one associated with the NDM A analysis were extracted and analyzed with the samples in this SDG . All recoveries were within the laboratory-established QC limits for the PAH analysis, and within the QC limits of 50-150% for the NDM A analysis.	No qualifications were required.
6. <u>Surrogates</u>	Surrogate recoveries were within the laboratory-established QC limits for the PAH sample analyses and within the QC limits of 50-130% for the NDM A sample analyses.	No qualifications were required.
7. <u>M S/M SD s</u>	M S/M SD analyses were performed on sample M T699 for both the PAH and NDM A analyses of this SDG . All recoveries and RPD s were within the laboratory-established QC limits for the PAH analyses, and for the NDM A analyses, recoveries were within the QC limits of 50-150% and the RPD was $\leq 20\%$ .	No qualifications were required.
8. <u>Field QC Samples</u>  ER : M T696 (SDG IM ID935) and M T710 (SDG IM 11005) FB : M T697 (SDG IM ID935) and M T711 (SDG IM 11005) FD : None	There were no target compounds detected in the PAH or NDM A analyses of the field QC samples.	No qualifications were required.
9. <u>Other</u>	The sample results were correctly reported on a dry-weight basis; however, the reviewer noted that variations in sample amount extracted were not accounted for in the reporting of final concentrations. Concentrations and/or reporting limits were manually corrected by the reviewer on the sample result summary forms if necessary.  Compounds reported below the reporting limit were qualified as estimated, "J," by the laboratory.  TICs are not typically reported for SIM analyses, and were not reported by the laboratory for the samples in this SDG .	EPA IDs were manually added to the sample result summaries. No qualifications were required.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/22/03  
Work Order No: 03-09-1217  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI1169

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Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-01 (MT699)	03-09-1217-1	09/16/03	Solid	09/22/03	09/26/03	030922L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>			<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>	<u>Qual</u>		
Nitrobenzene-d5	84	28-139				2-Fluorobiphenyl	64	33-144			
p-Terphenyl-d14	72	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-02 (MT700)	03-09-1217-2	09/17/03	Solid	09/22/03	09/26/03	030922L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>			<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>	<u>Qual</u>		
Nitrobenzene-d5	92	28-139				2-Fluorobiphenyl	68	33-144			
p-Terphenyl-d14	72	23-160									

10/12/2003

ALSO VALIDATED  
**LEVEL V**

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/22/03  
Work Order No: 03-09-1217  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI1169

Page 2 of 5

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-03 (MT701)	03-09-1217-3	09/17/03	Solid	09/22/03	09/26/03	030922L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>	
Nitrobenzene-d5	96	28-139				2-Fluorobiphenyl	67	33-144			
p-Terphenyl-d14	75	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-04 (MT702)	03-09-1217-4	09/17/03	Solid	09/22/03	09/26/03	030922L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>	
Nitrobenzene-d5	90	28-139				2-Fluorobiphenyl	65	33-144			
p-Terphenyl-d14	68	23-160									

10/12/03

ANEC VALIDATED  
LEVEL V

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/22/03  
Work Order No: 03-09-1217  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI1169

Page 3 of 5

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-05 (MT703)	03-09-1217-5	09/16/03	Solid	09/22/03	09/26/03	030922L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	90	28-139				2-Fluorobiphenyl	67	33-144			
p-Terphenyl-d14	74	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-06 (MT705)	03-09-1217-6	09/17/03	Solid	09/22/03	09/26/03	030922L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	0.026	0.10	1	J	mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	100	28-139				2-Fluorobiphenyl	70	33-144			
p-Terphenyl-d14	76	23-160									

11/23/03

**MEC VALIDATED** **LEVEL V**

RL - Reporting Limit DF - Dilution Factor Qual - Qualifiers

1824

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/22/03  
 Work Order No: 03-09-1217  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM PAHs

Project: IMI1169

Page 4 of 5

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-07 (MT 706)	03-09-1217-7	09/16/03	Solid	09/22/03	09/26/03	030922L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	95	28-139				2-Fluorobiphenyl	69	33-144			
p-Terphenyl-d14	71	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-08 (MT 707)	03-09-1217-8	09/17/03	Solid	09/22/03	09/26/03	030922L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	0.034	0.10	1.1	J	mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	93	28-139				2-Fluorobiphenyl	66	33-144			
p-Terphenyl-d14	71	23-160									

Kim 1-23-04 LG 12/23/03

AMEC VALIDATED  
**LEVEL V**

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

1825

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/22/03  
Work Order No: 03-09-1217  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI1169

Page 5 of 5

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-09 (MT 708)	03-09-1217-9	09/16/03	Solid	09/22/03	09/26/03	030922L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.13	1.3		mg/kg	Benzo (a) Anthracene	ND	0.13	1.3		mg/kg
2-Methylnaphthalene	ND	0.13	1.3		mg/kg	Chrysene	ND	0.13	1.3		mg/kg
Acenaphthylene	ND	0.13	1.3		mg/kg	Benzo (k) Fluoranthene	ND	0.13	1.3		mg/kg
Acenaphthene	ND	0.13	1.3		mg/kg	Benzo (b) Fluoranthene	ND	0.13	1.3		mg/kg
Fluorene	ND	0.13	1.3		mg/kg	Benzo (a) Pyrene	ND	0.13	1.3		mg/kg
Phenanthrene	ND	0.13	1.3		mg/kg	Benzo (g,h,i) Perylene	ND	0.13	1.3		mg/kg
Anthracene	ND	0.13	1.3		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.13	1.3		mg/kg
Fluoranthene	ND	0.13	1.3		mg/kg	Dibenz (a,h) Anthracene	ND	0.13	1.3		mg/kg
Pyrene	ND	0.13	1.3		mg/kg	1-Methylnaphthalene	ND	0.13	1.3		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	96	28-139				2-Fluorobiphenyl	66	33-144			
p-Terphenyl-d14	71	23-160									

Method Blank	099-06-010-8	N/A	Solid	09/22/03	09/26/03	030922L03
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Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg
2-Methylnaphthalene	ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg
Acenaphthylene	ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg
Acenaphthene	ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg
Fluorene	ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg
Phenanthrene	ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg
Anthracene	ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg
Fluoranthene	ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg
Pyrene	ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	88	28-139				2-Fluorobiphenyl	64	33-144			
p-Terphenyl-d14	68	23-160									

16 12/23/03

NV = not validated

AMEC VALIDATED  
**LEVEL V**

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/22/03  
 Work Order No: 03-09-1217  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM NDMA

Project: IMI1169

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-01 (MT699)	03-09-1217-1	09/16/03	Solid	09/24/03	10/09/03	030924L05
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.2 3.3	1.1		ug/kg	4   \$
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	56	50-130				
IMI1169-02 (MT700)	03-09-1217-2	09/17/03	Solid	09/24/03	10/08/03	030924L05
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.1 3.0	1		ug/kg	4   \$
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	98	50-130				
IMI1169-03 (MT701)	03-09-1217-3	09/17/03	Solid	09/24/03	10/08/03	030924L05
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.1 3.0	1		ug/kg	4   \$
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	64	50-130				
IMI1169-04 (MT702)	03-09-1217-4	09/17/03	Solid	09/24/03	10/08/03	030924L05
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg	4   \$
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	62	50-130				
IMI1169-05 (MT703)	03-09-1217-5	09/16/03	Solid	09/24/03	10/08/03	030924L05
Comment(s): -Results are reported on a dry weight basis.						
Parameter	Result	RL	DF	Qual	Units	Rev Qual   Qual Code
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg	4   \$
Surrogates:	REC (%)	Control Limits		Qual		
1,4-Dichlorobenzene-d4	57	50-130				

AMEC VALIDATED

LEVEL



KMM  
11-23-04

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

1827

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/22/03  
Work Order No: 03-09-1217  
Preparation: EPA 3545  
Method: EPA 8270C SIM NDMA

Project: IMI1169

Page 2 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI1169-06 (MT705)	03-09-1217-6	09/17/03	Solid	09/24/03	10/09/03	030924L05

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	3.1 3.0	1		ug/kg	U	\$
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	57	50-130					

IMI1169-07 (MT706)	03-09-1217-7	09/16/03	Solid	09/24/03	10/09/03	030924L05
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	3.1 3.0	1		ug/kg	U	\$
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	82	50-130					

IMI1169-08 (MT707)	03-09-1217-8	09/17/03	Solid	09/24/03	10/09/03	030924L05
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	3.2 3.3	1.1		ug/kg	U	\$
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	92	50-130					

IMI1169-09 (MT708)	03-09-1217-9	09/16/03	Solid	09/24/03	10/09/03	030924L05
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	4.0 3.9	1.3		ug/kg	U	\$
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	90	50-130					

Method Blank	099-07-027-51	N/A	Solid	09/24/03	09/30/03	030924L05
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Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	3.0	1		ug/kg	NV	
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	91	50-130					

NV - not validated

ICM - 1/25/04

AMEC VALIDATED

**LEVEL V**

RL - Reporting Limit, DF - Dilution Factor, Qual - Qualifiers

1626



## 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 were 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 were 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 (*) will indicate 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 (*) will indicate the subsection where a description of the problem can be found.

## 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).



550 South W adsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis Method: PAH by Method 8270/SIM  
QC Level: V<sup>1</sup>  
SDG: IM 10247  
Matrix: Soil  
No. of Samples: 7  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 24, 2003  
Reviewer: K. Shadowlight  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MT534, MT535, MT536, MT537, MT538, MT539, MT540

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC from the field to DelMar Analytical was also used as the transfer COC from DelMar Analytical to CalScience Environmental Laboratories. The COC was signed by the field and both laboratories' personnel. The COC accounted for the analyses presented in this SDG. The case narratives for this SDG noted that the samples were received intact, with cooler temperatures within the limits of 4°C ± 2°C. Custody seals were not present on the coolers.</p> <p>The soil samples were extracted within 14 days of sample collection and analyzed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	Two soil method blanks, one for the PAH analysis and one for the NDMA analysis, were extracted and analyzed with this SDG. There were no reported target compound detects in either of the method blanks.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	Two soil blank spikes, one associated with the PAH analysis and one associated with the NDM A analysis were extracted and analyzed with the samples in this SDG . All recoveries were within the laboratory-established QC limits for the PAH analysis, and within the QC limits of 50-150% for the NDM A analysis.	No qualifications were required.
6. <u>Surrogates</u>	Surrogate recoveries were within the laboratory-established QC limits for the PAH sample analyses and within the QC limits of 50-130% for the NDM A sample analyses.	No qualifications were required.
7. <u>M S/M SD s</u>	M S/M SD analyses were performed on sample M T534 for the NDM A analysis only of this SDG . The recoveries for the NDM A analyses were within the QC limits of 50-150% and the RPD was <20% . There were no M S/M SD analyses associated with PAH analysis of this SDG .	No qualifications were required.
8. <u>Field QC Samples</u>  ER : M T696 (SDG IM ID935) and M T710 (SDG IM ID005) FB : M T697 (SDG IM ID935) and M T711 (SDG IM ID005) FD : None	There were no target compounds detected in the PAH or NDM A analyses of the field QC samples.	No qualifications were required.
9. <u>Other</u>	The sample results were correctly reported on a dry-weight basis; however, the reviewer noted that variations in sample amount extracted were not accounted for in the reporting of final concentrations. Concentrations and/or reporting limits were manually corrected by the reviewer on the sample result summary forms if necessary.  TICs are not typically reported for SIM analyses, and were not reported by the laboratory for the samples in this SDG .	EPA IDs were manually added to the sample result summaries. No qualifications were required.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/08/03  
 Work Order No: 03-09-0355  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM PAHs

Project: IMI0247

Page 1 of 4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0247-02 (M534)	03-09-0355-30	09/04/03	Solid	09/09/03	09/25/03	030909L03

Comment(s): Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>	<b>Qual</b>			<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>	<b>Qual</b>		
Nitrobenzene-d5	124	28-139				2-Fluorobiphenyl	125	33-144			
p-Terphenyl-d14	121	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0247-03 (M535)	03-09-0355-31	09/04/03	Solid	09/09/03	09/24/03	030909L03

Comment(s): Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>	<b>Qual</b>			<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>	<b>Qual</b>		
Nitrobenzene-d5	101	28-139				2-Fluorobiphenyl	104	33-144			
p-Terphenyl-d14	101	23-160									

10/12/24/03

**AMEC VALIDATED**  
**LEVEL V**

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/08/03  
Work Order No: 03-09-0355  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0247

Page 2 of 4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0247-04 (MTS36)	03-09-0355-32	09/04/03	Solid	09/09/03	09/24/03	030909L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Res Qual	Qual Code	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units	Res Qual	Qual Code
Naphthalene	u		ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg	u	
2-Methylnaphthalene			ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg		
Acenaphthylene			ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg		
Acenaphthene			ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg		
Fluorene			ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg		
Phenanthrene			ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg		
Anthracene			ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg		
Fluoranthene			ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg		
Pyrene			ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg		
<b>Surrogates:</b>			<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>			
Nitrobenzene-d5			92	28-139				2-Fluorobiphenyl	95	33-144					
p-Terphenyl-d14			91	23-160											

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0247-05 (MTS37)	03-09-0355-33	09/04/03	Solid	09/09/03	09/25/03	030909L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Res Qual	Qual Code	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units	Res Qual	Qual Code
Naphthalene	u		ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg	u	
2-Methylnaphthalene			ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg		
Acenaphthylene			ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg		
Acenaphthene			ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg		
Fluorene			ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg		
Phenanthrene			ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg		
Anthracene			ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg		
Fluoranthene			ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg		
Pyrene			ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg		
<b>Surrogates:</b>			<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>			
Nitrobenzene-d5			102	28-139				2-Fluorobiphenyl	105	33-144					
p-Terphenyl-d14			103	23-160											

u 12/24/03

AMEC VALIDATED

LEVEL V

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/08/03  
 Work Order No: 03-09-0355  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM PAHs

Project: IMI0247

Page 3 of 4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0247-06 (MT538)	03-09-0355-34	09/04/03	Solid	09/09/03	09/25/03	030909L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.05		mg/kg	Benzo (a) Anthracene	ND	0.11	1.05		mg/kg
2-Methylnaphthalene	ND	0.11	1.05		mg/kg	Chrysene	ND	0.11	1.05		mg/kg
Acenaphthylene	ND	0.11	1.05		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.05		mg/kg
Acenaphthene	ND	0.11	1.05		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.05		mg/kg
Fluorene	ND	0.11	1.05		mg/kg	Benzo (a) Pyrene	ND	0.11	1.05		mg/kg
Phenanthrene	ND	0.11	1.05		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.05		mg/kg
Anthracene	ND	0.11	1.05		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.05		mg/kg
Fluoranthene	ND	0.11	1.05		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.05		mg/kg
Pyrene	ND	0.11	1.05		mg/kg	1-Methylnaphthalene	ND	0.11	1.05		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>	<b>Qual</b>			<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>	<b>Qual</b>		
		<b>Limits</b>									
Nitrobenzene-d5	108	28-139				2-Fluorobiphenyl	112	33-144			
p-Terphenyl-d14	106	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0247-07 (MT539)	03-09-0355-35	09/04/03	Solid	09/09/03	09/25/03	030909L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.13	1.25		mg/kg	Benzo (a) Anthracene	ND	0.13	1.25		mg/kg
2-Methylnaphthalene	ND	0.13	1.25		mg/kg	Chrysene	ND	0.13	1.25		mg/kg
Acenaphthylene	ND	0.13	1.25		mg/kg	Benzo (k) Fluoranthene	ND	0.13	1.25		mg/kg
Acenaphthene	ND	0.13	1.25		mg/kg	Benzo (b) Fluoranthene	ND	0.13	1.25		mg/kg
Fluorene	ND	0.13	1.25		mg/kg	Benzo (a) Pyrene	ND	0.13	1.25		mg/kg
Phenanthrene	ND	0.13	1.25		mg/kg	Benzo (g,h,i) Perylene	ND	0.13	1.25		mg/kg
Anthracene	ND	0.13	1.25		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.13	1.25		mg/kg
Fluoranthene	ND	0.13	1.25		mg/kg	Dibenz (a,h) Anthracene	ND	0.13	1.25		mg/kg
Pyrene	ND	0.13	1.25		mg/kg	1-Methylnaphthalene	ND	0.13	1.25		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>	<b>Qual</b>			<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>	<b>Qual</b>		
		<b>Limits</b>									
Nitrobenzene-d5	108	28-139				2-Fluorobiphenyl	108	33-144			
p-Terphenyl-d14	113	23-160									

U 12/24/03

AMEC VALIDATED

LEVEL V

RL - Reporting Limit . DF - Dilution Factor . Qual - Qualifiers

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/08/03  
Work Order No: 03-09-0355  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMI0247

Page 4 of 4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0247-08 (MT540)	03-09-0355-36	09/04/03	Solid	09/09/03	09/25/03	030909L03

Comment(s): -Results are reported on a dry weight basis.

Parameter	Rev Qual	Qual Code	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
Naphthalene		U	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg		U
2-Methylnaphthalene			ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg		
Acenaphthylene			ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg		
Acenaphthene			ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg		
Fluorene			ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg		
Phenanthrene			ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg		
Anthracene			ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg		
Fluoranthene			ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg		
Pyrene			ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg		
<b>Surrogates:</b>			<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>			
Nitrobenzene-d5			110	28-139				2-Fluorobiphenyl	116	33-144					
p-Terphenyl-d14			112	23-160											

Method Blank	099-06-010-4	N/A	Solid	09/09/03	09/26/03	030909L03
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Parameter	Rev Qual	Qual Code	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
Naphthalene		NV	ND	0.10	1		mg/kg	Benzo (a) Anthracene	ND	0.10	1		mg/kg		NV
2-Methylnaphthalene			ND	0.10	1		mg/kg	Chrysene	ND	0.10	1		mg/kg		
Acenaphthylene			ND	0.10	1		mg/kg	Benzo (k) Fluoranthene	ND	0.10	1		mg/kg		
Acenaphthene			ND	0.10	1		mg/kg	Benzo (b) Fluoranthene	ND	0.10	1		mg/kg		
Fluorene			ND	0.10	1		mg/kg	Benzo (a) Pyrene	ND	0.10	1		mg/kg		
Phenanthrene			ND	0.10	1		mg/kg	Benzo (g,h,i) Perylene	ND	0.10	1		mg/kg		
Anthracene			ND	0.10	1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.10	1		mg/kg		
Fluoranthene			ND	0.10	1		mg/kg	Dibenz (a,h) Anthracene	ND	0.10	1		mg/kg		
Pyrene			ND	0.10	1		mg/kg	1-Methylnaphthalene	ND	0.10	1		mg/kg		
<b>Surrogates:</b>			<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>			
Nitrobenzene-d5			95	28-139				2-Fluorobiphenyl	94	33-144					
p-Terphenyl-d14			93	23-160											

US 12/24/03

NV = not validated

AMEC VALIDATED  
LEVEL V

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/08/03  
Work Order No: 03-09-0355  
Preparation: EPA 3545  
Method: EPA 8270C SIM NDMA

Project: IMI0247

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0247-02 (MT534)	03-09-0355-30	09/04/03	Solid	09/09/03	09/15/03	030909L04

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.3-3.2	1.1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	110	50-130			

Ref Qual | Qual Code  
u | \$

IMI0247-03 (MT535)	03-09-0355-31	09/04/03	Solid	09/09/03	09/16/03	030909L04
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	123	50-130			

Ref Qual | Qual Code  
u | \$

IMI0247-04 (MT536)	03-09-0355-32	09/04/03	Solid	09/09/03	09/15/03	030909L04
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.3-3.2	1.1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	121	50-130			

Ref Qual | Qual Code  
u | \$

IMI0247-05 (MT537)	03-09-0355-33	09/04/03	Solid	09/09/03	09/15/03	030909L04
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.3-3.4	1.1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	110	50-130			

Ref Qual | Qual Code  
u | \$

IMI0247-06 (MT538)	03-09-0355-34	09/04/03	Solid	09/09/03	09/16/03	030909L04
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0-3.2	1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	98	50-130			

Ref Qual | Qual Code  
u | \$

es 12/24/03

REC VALIDATED

LEVEL V

KM 1-23-04

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 09/08/03  
Work Order No: 03-09-0355  
Preparation: EPA 3545  
Method: EPA 8270C SIM NDMA

Project: IMI0247

Page 2 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0247-07 (MT539)	03-09-0355-35	09/04/03	Solid	09/09/03	09/16/03	030909L04

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.9	3.8	1.3	ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	100	50-130			

Raw Qual | Qual code  
u | \$

IMI0247-08 (MT540)	03-09-0355-36	09/04/03	Solid	09/09/03	09/16/03	030909L04
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.3	1.1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	91	50-130			

Raw Qual | Qual code  
u |

Method Blank	099-07-027-47	N/A	Solid	09/09/03	09/26/03	030909L04
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Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0	1		ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	76	50-130			

Raw Qual | Qual code  
NVX |

10/12/03

NV = not validated

10/2/03

AMEC VALIDATED  
LEVEL V

KM 1-23-04



## 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 were 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 were 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 (*) will indicate 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 (*) will indicate the subsection where a description of the problem can be found.

## 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).



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis Method: PAH by Method 8270/SIM  
QC Level: V<sup>1</sup>  
SDG: IMH1307  
Matrix: Soil  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 24, 2003  
Reviewer: K. Shadowlight  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: M T504 M T505

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC from the field to DelMar Analytical was also used as the transfer COC from DelMar Analytical to Calscience Environmental Laboratories. The COC was signed by the field and both laboratories' personnel. In a memo dated 08/25/03 from MW personnel, the Client IDs for sample M T504 and M T505 were changed to BLBN 01S01 and BLBN 02S01, respectively. The COC accounted for the analyses presented in this SDG. The case narratives for this SDG noted that the samples were received intact, with cooler temperatures within the limits of 4°C ± 2°C. Custody seals were not present on the coolers.</p> <p>The soil samples were extracted within 14 days of sample collection and analyzed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	<p>Two soil method blanks, one for the PAH analysis and one for the NDM A analysis, were extracted and analyzed with this SDG. There were no reported target compound detects in either of the method blanks.</p>	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	Two soil blank spikes, one associated with the PAH analysis and one associated with the NDM A analysis were extracted and analyzed with the samples in this SDG . All recoveries were within the laboratory-established QC limits for the PAH analysis, and within the QC limits of 50-150% for the NDM A analysis.	No qualifications were required.
6. <u>Surrogates</u>	Surrogate recoveries were within the laboratory-established QC limits for the PAH sample analyses and within the QC limits of 50-130% for the NDM A sample analyses.	No qualifications were required.
7. <u>M S/M SD s</u>	M S/M SD analyses were performed on sample M T505 for this SDG , for the NDM A analyses only . The recoveries for NDM A were within the QC limits of 50-150% and the RPD was <20% . There were no M S/M SD analyses associated with PAH analysis of this SDG .	No qualifications were required.
8. <u>Field QC Samples</u>  ER : M T696 (SDG IM I0935) and M T710 (SDG IM I1005) FB : M T697 (SDG IM I0935) and M T711 (SDG IM I1005) FD : None	There were no target compounds detected in the PAH or NDM A analyses of the field QC samples.	No qualifications were required.
9. <u>Other</u>	The sample results were correctly reported on a dry-weight basis; however, the reviewer noted that variations in sample amount extracted were not accounted for in the reporting of final concentrations. Concentrations and/or reporting limits were manually corrected by the reviewer on the sample result summary forms if necessary.  Compounds reported below the reporting limit were qualified as estimated, "J," by the laboratory.  TICs are not typically reported for SIM analyses, and were not reported by the laboratory for the samples in this SDG .	EPA IDs were manually added to the sample result summaries. No qualifications were required.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

Del Mar Analytical  
2852 Alton Parkway  
Irvine, CA 92606-5104

Date Received: 08/25/03  
Work Order No: 03-08-1341  
Preparation: EPA 3545  
Method: EPA 8270C SIM PAHs

Project: IMH1307

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMH1307-01 (MT504)	03-08-1341-1	08/22/03	Solid	08/26/03	09/25/03	030826L01

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.05		mg/kg	Benzo (a) Anthracene	ND	0.11	1.05		mg/kg
2-Methylnaphthalene	ND	0.11	1.05		mg/kg	Chrysene	ND	0.11	1.05		mg/kg
Acenaphthylene	ND	0.11	1.05		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.05		mg/kg
Acenaphthene	ND	0.11	1.05		mg/kg	Benzo (b) Fluoranthene	0.028	0.11	1.05	J	mg/kg
Fluorene	ND	0.11	1.05		mg/kg	Benzo (a) Pyrene	0.023	0.11	1.05	J	mg/kg
Phenanthrene	ND	0.11	1.05		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.05		mg/kg
Anthracene	ND	0.11	1.05		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.05		mg/kg
Fluoranthene	ND	0.11	1.05		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.05		mg/kg
Pyrene	ND	0.11	1.05		mg/kg	1-Methylnaphthalene	ND	0.11	1.05		mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>	<b>Qual</b>			<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>	<b>Qual</b>		
		<b>Limits</b>									
Nitrobenzene-d5	112	28-139				2-Fluorobiphenyl	115	33-144			
p-Terphenyl-d14	109	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMH1307-02 (MT505)	03-08-1341-2	08/22/03	Solid	08/26/03	09/25/03	030826L01

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	0.30	0.11	1.1		mg/kg	Benzo (a) Anthracene	0.022	0.11	1.1	J	mg/kg
2-Methylnaphthalene	0.098	0.11	1.1	J	mg/kg	Chrysene	0.023	0.11	1.1	J	mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	0.035	0.11	1.1	J	mg/kg
Phenanthrene	0.041	0.11	1.1	J	mg/kg	Benzo (g,h,i) Perylene	0.039	0.11	1.1	J	mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	0.040	0.11	1.1	J	mg/kg
Fluoranthene	0.061	0.11	1.1	J	mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	0.075	0.11	1.1	J	mg/kg	1-Methylnaphthalene	0.050	0.11	1.1	J	mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>	<b>Qual</b>			<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>	<b>Qual</b>		
		<b>Limits</b>									
Nitrobenzene-d5	108	28-139				2-Fluorobiphenyl	114	33-144			
p-Terphenyl-d14	117	23-160									

15/12/24/03

AMEC VALIDATED

LEVEL V

1/23-04

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 08/25/03  
 Work Order No: 03-08-1341  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM NDMA

Project: IMH1307

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMH1307-01 (MT504)	03-08-1341-1	08/22/03	Solid	09/03/03	09/16/03	030903L06

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0	3.2	1	ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	129	50-130			

Rev Qual | Qual Code  
 U | \$

IMH1307-02 (MT505)	03-08-1341-2	08/22/03	Solid	09/03/03	09/16/03	030903L06
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Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0	3.3	1	ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	110	50-130			

Rev Qual | Qual Code  
 U | \$

Method Blank	099-07-027-43	N/A	Solid	09/03/03	09/05/03	030903L06
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Parameter	Result	RL	DF	Qual	Units
N-Nitrosodimethylamine	ND	3.0		1	ug/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Dichlorobenzene-d4	117	50-130			

Rev Qual | Qual Code  
 NV

10  
 12/24/03

ANISO VALIDATED

km 1-23-04

NV = not validated

**LEVEL V**

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T707PA3

Task Order 313150012

SDG No. IMI10405

No. of Analyses 6

Laboratory Calscience Environmental Laboratories

Reviewer K. Shadowlight

Analysis/Method PAH

Date: December 24, 2003
Reviewer's Signature <i>K. Shadowlight</i>

<b>ACTION ITEMS<sup>a</sup></b>	
<b>1. Case Narrative Deficiencies</b>	_____
<b>2. Out of Scope Analyses</b>	_____
<b>3. Analyses Not Conducted</b>	_____
<b>4. Missing Hardcopy Deliverables</b>	_____
<b>5. Incorrect Hardcopy Deliverables</b>	Final concentrations were not adjusted for sample amount. The reporting limit/results were edited by the reviewer if necessary.
<b>6. Deviations from Analysis Protocol, e.g.,</b>	_____
Holding Times	_____
GC/MS Tune/Inst. Perform	_____
Calibrations	_____
Blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification and Quantitation	_____
System Performance	_____
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## 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).

## 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 were 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 were 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 I, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.	Unusual problems found with the data that have been described in Section I, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.



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## DATA ASSESSMENT FORM

Project Title: Rocketdyne, SSFL RFI Program  
Project Manager: D. Hambrick  
Analysis Method: PAH by Method 8270/SIM  
QC Level: V<sup>1</sup>  
SDG: IM ID405  
Matrix: Soil  
No. of Samples: 6  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: December 24, 2003  
Reviewer: K. Shadowlight  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: MT541, MT542, MT543, MT544, MT545, MT546

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC from the field to DelMar Analytical was used as the transfer COC from DelMar Analytical to CalScience Environmental Laboratories. The COC was signed by the field and both laboratory personnel. In a memo dated 09/08/03 from MW personnel, the Client ID for sample MT545 was changed from BLTS14D 01 to BLTS14D 02. The COC accounted for the analyses presented in this SDG. The case narratives for this SDG noted that the samples were received intact, with cooler temperatures within the limits of 4°C ± 2°C. Custody seals were not present on the coolers.</p> <p>The soil samples were extracted within 14 days of sample collection and analyzed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	<p>Two water method blanks, one for the PAH analysis and one for the NDMA analysis, were extracted and analyzed with this SDG. There were no reported target compound detects in either of the method blanks.</p>	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	Two soil blank spikes, one associated with the PAH analysis and one associated with the NDM A analysis were extracted and analyzed with the samples in this SDG . All recoveries were within the laboratory-established QC limits for the PAH analysis, and within the QC limits of 50-150% for the NDM A analysis.	No qualifications were required.
6. <u>Surrogates</u>	Surrogate recoveries were within the laboratory-established QC limits for the PAH sample analyses and within the QC limits of 50-130% for the NDM A sample analyses.	No qualifications were required.
7. <u>M S/M SD s</u>	There were no M S/M SD analyses associated with the samples of this SDG .	No qualifications were required.
8. <u>Field QC Samples</u>  ER : M T696 (SDG IM ID935) and M T710 (SDG IM ID005) FB : M T697 (SDG IM ID935) and M T711 (SDG IM ID005) FD : M T542/M T545	There were no target compounds detected in the PAH or NDM A analyses of the field QC samples.  There were no target compounds reported in either field duplicate sample.	No qualifications were required.
9. <u>Other</u>	The sample results were correctly reported on a dry-weight basis; however, the reviewer noted that variations in sample amount extracted were not accounted for in the reporting of final concentrations or reporting limits. Concentrations and/or reporting limits were manually corrected by the reviewer on the sample result summary forms if necessary.  Compounds reported below the reporting limit were qualified as estimated, "U," by the laboratory.  TICs are not typically reported for SIM analyses, and were not reported by the laboratory for the samples in this SDG .	EPA IDs were manually added to the sample result summaries. No qualifications were required.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



**ANALYTICAL REPORT**

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/10/03  
 Work Order No: 03-09-0504  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM PAHs

Project: IMI0405

Page 2 of 4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0405-04 (MT543)	03-09-0504-3	09/05/03	Solid	09/11/03	09/26/03	030911L02

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	0.10	1.1	mg/kg	Benzo (a) Anthracene	ND	0.11	0.10	1.1	mg/kg
2-Methylnaphthalene	ND	0.11		1.1	mg/kg	Chrysene	ND	0.11		1.1	mg/kg
Acenaphthylene	ND	0.11		1.1	mg/kg	Benzo (k) Fluoranthene	ND	0.11		1.1	mg/kg
Acenaphthene	ND	0.11		1.1	mg/kg	Benzo (b) Fluoranthene	ND	0.11		1.1	mg/kg
Fluorene	ND	0.11		1.1	mg/kg	Benzo (a) Pyrene	ND	0.11		1.1	mg/kg
Phenanthrene	ND	0.11		1.1	mg/kg	Benzo (g,h,i) Perylene	ND	0.11		1.1	mg/kg
Anthracene	ND	0.11		1.1	mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11		1.1	mg/kg
Fluoranthene	ND	0.11		1.1	mg/kg	Dibenz (a,h) Anthracene	ND	0.11		1.1	mg/kg
Pyrene	ND	0.11		1.1	mg/kg	1-Methylnaphthalene	ND	0.11		1.1	mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	105	28-139				2-Fluorobiphenyl	104	33-144			
p-Terphenyl-d14	105	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0405-05 (MT544)	03-09-0504-4	09/05/03	Solid	09/11/03	09/26/03	030911L02

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11		1.1	mg/kg	Benzo (a) Anthracene	ND	0.11		1.1	mg/kg
2-Methylnaphthalene	ND	0.11		1.1	mg/kg	Chrysene	ND	0.11		1.1	mg/kg
Acenaphthylene	ND	0.11		1.1	mg/kg	Benzo (k) Fluoranthene	ND	0.11		1.1	mg/kg
Acenaphthene	ND	0.11		1.1	mg/kg	Benzo (b) Fluoranthene	ND	0.11		1.1	mg/kg
Fluorene	ND	0.11		1.1	mg/kg	Benzo (a) Pyrene	ND	0.11		1.1	mg/kg
Phenanthrene	ND	0.11		1.1	mg/kg	Benzo (g,h,i) Perylene	ND	0.11		1.1	mg/kg
Anthracene	ND	0.11		1.1	mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11		1.1	mg/kg
Fluoranthene	ND	0.11		1.1	mg/kg	Dibenz (a,h) Anthracene	ND	0.11		1.1	mg/kg
Pyrene	ND	0.11		1.1	mg/kg	1-Methylnaphthalene	ND	0.11		1.1	mg/kg
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>		<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control</b>		<b>Qual</b>	
Nitrobenzene-d5	109	28-139				2-Fluorobiphenyl	111	33-144			
p-Terphenyl-d14	111	23-160									

10m  
1-23-04

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/10/03  
 Work Order No: 03-09-0504  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM PAHs

Project: IMI0405

Page 3 of 4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0405-06 (MT545)	03-09-0504-5	09/05/03	Solid	09/11/03	09/26/03	030911L02

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	ND	0.11	1.1		mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	ND	0.11	1.1		mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	ND	0.11	1.1		mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	ND	0.11	1.1		mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	ND	0.11	1.1		mg/kg
Phenanthrene	ND	0.11	1.1		mg/kg	Benzo (g,h,i) Perylene	ND	0.11	1.1		mg/kg
Anthracene	ND	0.11	1.1		mg/kg	Indeno (1,2,3-c,d) Pyrene	ND	0.11	1.1		mg/kg
Fluoranthene	ND	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	ND	0.11	1.1		mg/kg
Pyrene	ND	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1		mg/kg
Surrogates:	REC (%)	Control Limits		Qual		Surrogates:	REC (%)	Control		Qual	
Nitrobenzene-d5	116	28-139				2-Fluorobiphenyl	118	33-144			
p-Terphenyl-d14	121	23-160									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0405-07 (MT546)	03-09-0504-6	09/05/03	Solid	09/11/03	09/26/03	030911L02

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Naphthalene	ND	0.11	1.1		mg/kg	Benzo (a) Anthracene	0.47 0.39	0.11	1.1	1.0	mg/kg
2-Methylnaphthalene	ND	0.11	1.1		mg/kg	Chrysene	0.33 0.31	0.11	1.1	1.1	mg/kg
Acenaphthylene	ND	0.11	1.1		mg/kg	Benzo (k) Fluoranthene	0.38 0.34	0.11	1.1	1.1	mg/kg
Acenaphthene	ND	0.11	1.1		mg/kg	Benzo (b) Fluoranthene	0.43 0.43	0.11	1.1	1.1	mg/kg
Fluorene	ND	0.11	1.1		mg/kg	Benzo (a) Pyrene	0.45 0.45	0.11	1.1	1.1	mg/kg
Phenanthrene	0.089 0.086	0.11	1.1	J	mg/kg	Benzo (g,h,i) Perylene	0.17 0.16	0.11	1.1	1.1	mg/kg
Anthracene	0.027 0.024	0.11	1.1	J	mg/kg	Indeno (1,2,3-c,d) Pyrene	0.25 0.24	0.11	1.1	1.1	mg/kg
Fluoranthene	0.64 0.61	0.11	1.1		mg/kg	Dibenz (a,h) Anthracene	0.049 0.047	0.11	1.1	no	mg/kg
Pyrene	0.58 0.54	0.11	1.1		mg/kg	1-Methylnaphthalene	ND	0.11	1.1	1.0	mg/kg
Surrogates:	REC (%)	Control Limits		Qual		Surrogates:	REC (%)	Control		Qual	
Nitrobenzene-d5	111	28-139				2-Fluorobiphenyl	112	33-144			
p-Terphenyl-d14	110	23-160									

*WAC*  
 01-23-04  
 KMAI-23-04

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/10/03  
 Work Order No: 03-09-0504  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM NDMA

Project: IMI0405

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID				
IMI0405-02 (MT541)	03-09-0504-1	09/05/03	Solid	09/10/03	09/16/03	030909L04				
Comment(s): -Results are reported on a dry weight basis.										
Parameter	Result	RL	DF	Qual	Units	<table border="1"> <tr> <th>Raw Qual</th> <th>Qual Code</th> </tr> <tr> <td>u</td> <td>\$</td> </tr> </table>	Raw Qual	Qual Code	u	\$
Raw Qual	Qual Code									
u	\$									
N-Nitrosodimethylamine	ND	3.0 3.1	1		ug/kg					
Surrogates:	REC (%)	Control Limits		Qual						
1,4-Dichlorobenzene-d4	115	50-130								
IMI0405-03 (MT542)	03-09-0504-2	09/05/03	Solid	09/10/03	09/15/03	030909L04				
Comment(s): -Results are reported on a dry weight basis.										
Parameter	Result	RL	DF	Qual	Units	<table border="1"> <tr> <th>Raw Qual</th> <th>Qual Code</th> </tr> <tr> <td>u</td> <td>\$</td> </tr> </table>	Raw Qual	Qual Code	u	\$
Raw Qual	Qual Code									
u	\$									
N-Nitrosodimethylamine	ND	3.0 3.5	1		ug/kg					
Surrogates:	REC (%)	Control Limits		Qual						
1,4-Dichlorobenzene-d4	115	50-130								
IMI0405-04 (MT543)	03-09-0504-3	09/05/03	Solid	09/10/03	09/15/03	030909L04				
Comment(s): -Results are reported on a dry weight basis.										
Parameter	Result	RL	DF	Qual	Units	<table border="1"> <tr> <th>Raw Qual</th> <th>Qual Code</th> </tr> <tr> <td>u</td> <td>\$</td> </tr> </table>	Raw Qual	Qual Code	u	\$
Raw Qual	Qual Code									
u	\$									
N-Nitrosodimethylamine	ND	3.0 3.3	1		ug/kg					
Surrogates:	REC (%)	Control Limits		Qual						
1,4-Dichlorobenzene-d4	129	50-130								
IMI0405-05 (MT544)	03-09-0504-4	09/05/03	Solid	09/10/03	09/15/03	030909L04				
Comment(s): -Results are reported on a dry weight basis.										
Parameter	Result	RL	DF	Qual	Units	<table border="1"> <tr> <th>Raw Qual</th> <th>Qual Code</th> </tr> <tr> <td>u</td> <td>\$</td> </tr> </table>	Raw Qual	Qual Code	u	\$
Raw Qual	Qual Code									
u	\$									
N-Nitrosodimethylamine	ND	3.0 3.2	1		ug/kg					
Surrogates:	REC (%)	Control Limits		Qual						
1,4-Dichlorobenzene-d4	117	50-130								
IMI0405-06 (MT545)	03-09-0504-5	09/05/03	Solid	09/10/03	09/15/03	030909L04				
Comment(s): -Results are reported on a dry weight basis.										
Parameter	Result	RL	DF	Qual	Units	<table border="1"> <tr> <th>Raw Qual</th> <th>Qual Code</th> </tr> <tr> <td>u</td> <td>\$</td> </tr> </table>	Raw Qual	Qual Code	u	\$
Raw Qual	Qual Code									
u	\$									
N-Nitrosodimethylamine	ND	3.0 3.2	1		ug/kg					
Surrogates:	REC (%)	Control Limits		Qual						
1,4-Dichlorobenzene-d4	117	50-130								

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

2360

**ANALYTICAL REPORT**

Del Mar Analytical  
 2852 Alton Parkway  
 Irvine, CA 92606-5104

Date Received: 09/10/03  
 Work Order No: 03-09-0504  
 Preparation: EPA 3545  
 Method: EPA 8270C SIM NDMA

Project: IMI0405

Page 2 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
IMI0405-07 (MT546)	03-09-0504-6	09/05/03	Solid	09/10/03	09/15/03	030909L04

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	3.0	3.2	1	ug/kg	u	\$
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	126	50-130					

Method Blank	099-07-027-47	N/A	Solid	09/09/03	09/26/03	030909L04
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Parameter	Result	RL	DF	Qual	Units	Rev Qual	Qual Code
N-Nitrosodimethylamine	ND	3.0	1		ug/kg	NV	
Surrogates:	REC (%)	Control Limits		Qual			
1,4-Dichlorobenzene-d4	76	50-130					



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method ILM04  
QC Level: V<sup>1</sup>  
SDG: IMI0487  
Matrix: soil  
No. of Samples: 12  
Date Reviewed: January 07, 2004  
Reviewer: P. Mecks  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MT550, MT552, MT553, MT554, MT555, MT556, MT557, MT559, MT560, MT561, MT562, MT563

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	The cooler was received within the temperature QC limits of $4^{\circ}\pm 2^{\circ}$ C. The COC was signed and dated by field and laboratory personnel. The EPA ID listed on the COC as MT558 was changed to MT563 in a memo from MWH personnel dated 09/09/03. The case narrative noted that the samples were received intact. No information was provided regarding the presence or integrity of custody seals on the cooler. The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.	No qualifications were required.
3. <u>Method Blanks</u>	Three solid method blanks were analyzed in association with the samples in this SDG. Several detects were reported in the method blanks, but none at sufficient concentration to qualify the site samples.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	Three solid LCS samples were analyzed with the samples. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 85-120%.	No qualifications were required.
6. <u>Duplicates</u> None	None.	No qualifications were required.
7. <u>MS/MSDs</u> None	None.	No qualifications were required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted negative results for boron in all site samples, antimony in MT554 and MT555, and thallium in MT554, MT555, MT559, MT560, and MT562.</p>	The reporting limits and MDLs for boron in all site samples except MT554 and the MDLs for the aforementioned negative results were raised to the levels of interference and the results were qualified as estimated, "UJ."
11. <u>Field QC</u> FB: MT697 (SDG IMI0935) and MT711 (SDG IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) Field Duplicates: MT553/MT557	<p>There were detects reported in all of the field QC samples but none at sufficient concentration to qualify the site samples in this SDG.</p> <p>All detects were in common for the field duplicate pair and the RPDs were less than 50%.</p>	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers		
Sample ID: IMI0487-01 (MT550 - Soil)					Sampled: 09/08/03					Raw Qual	Qual Code
Reporting Units: mg/kg dry											
Aluminum	EPA 6010B	3I16086	6.1	10	12000	1	09/16/03	09/17/03			
Antimony	EPA 6010B	3I16086	0.55	10	ND	1	09/16/03	09/17/03	U		
Arsenic	EPA 6010B	3I16086	0.50	2.1	7.3	1	09/16/03	09/17/03			
Barium	EPA 6010B	3I16086	0.37	1.0	59	1	09/16/03	09/17/03			
Beryllium	EPA 6010B	3I16086	0.082	0.52	0.46	1	09/16/03	09/17/03	J		
Boron	EPA 6010B	3I16086	0.98	5.6	5.2-5.6	ND	1	09/16/03	09/17/03	UJ	#10
Cadmium	EPA 6010B	3I16086	0.045	0.52	0.16	1	09/16/03	09/17/03	J		
Chromium	EPA 6010B	3I16086	0.089	1.0	16	1	09/16/03	09/17/03			
Cobalt	EPA 6010B	3I16086	0.12	1.0	5.0	1	09/16/03	09/17/03			
Copper	EPA 6010B	3I16086	0.23	2.1	7.0	1	09/16/03	09/17/03			
Lead	EPA 6010B	3I16086	0.28	2.1	7.0	1	09/16/03	09/17/03			
Mercury	EPA 7471A	3I17053	0.0066	0.021	0.038	1	09/17/03	09/17/03			
Molybdenum	EPA 6010B	3I16086	0.14	2.1	1.1	1	09/16/03	09/17/03	J		
Nickel	EPA 6010B	3I16086	0.26	2.1	8.4	1	09/16/03	09/17/03			
Selenium	EPA 6010B	3I16086	0.61	2.1	ND	1	09/16/03	09/17/03	U		
Silver	EPA 6010B	3I16086	0.17	1.0	0.19	1	09/16/03	09/17/03	J		
Thallium	EPA 6010B	3I16086	0.41	10	ND	1	09/16/03	09/17/03	U		
Vanadium	EPA 6010B	3I16086	0.18	1.0	32	1	09/16/03	09/17/03			
Zinc	EPA 6010B	3I16086	0.48	5.2	46	1	09/16/03	09/17/03			
Sample ID: IMI0487-03 (MT552 - Soil)					Sampled: 09/08/03						
Reporting Units: mg/kg dry											
Aluminum	EPA 6010B	3I16086	6.1	11	11000	1	09/16/03	09/17/03			
Antimony	EPA 6010B	3I16086	0.55	11	ND	1	09/16/03	09/17/03	U		
Arsenic	EPA 6010B	3I16086	0.50	2.1	4.3	1	09/16/03	09/17/03			
Barium	EPA 6010B	3I16086	0.37	1.1	88	1	09/16/03	09/17/03			
Beryllium	EPA 6010B	3I16086	0.082	0.53	0.30	1	09/16/03	09/17/03	J		
Boron	EPA 6010B	3I16086	0.98	6.4	5.3-6.4	ND	1	09/16/03	09/17/03	UJ	#10
Cadmium	EPA 6010B	3I16086	0.045	0.53	0.46	1	09/16/03	09/17/03	J		
Chromium	EPA 6010B	3I16086	0.089	1.1	16	1	09/16/03	09/17/03			
Cobalt	EPA 6010B	3I16086	0.12	1.1	5.6	1	09/16/03	09/17/03			
Copper	EPA 6010B	3I16086	0.23	2.1	9.1	1	09/16/03	09/17/03			
Lead	EPA 6010B	3I16086	0.28	2.1	14	1	09/16/03	09/17/03			
Mercury	EPA 7471A	3I17053	0.0066	0.021	0.031	1	09/17/03	09/17/03			
Molybdenum	EPA 6010B	3I16086	0.14	2.1	0.52	1	09/16/03	09/17/03	J		
Nickel	EPA 6010B	3I16086	0.26	2.1	11	1	09/16/03	09/17/03			
Selenium	EPA 6010B	3I16086	0.61	2.1	ND	1	09/16/03	09/17/03	U		
Silver	EPA 6010B	3I16086	0.17	1.1	0.37	1	09/16/03	09/17/03	J		
Thallium	EPA 6010B	3I16086	0.41	11	ND	1	09/16/03	09/17/03	U		
Vanadium	EPA 6010B	3I16086	0.18	1.1	33	1	09/16/03	09/17/03			
Zinc	EPA 6010B	3I16086	0.48	5.3	63	1	09/16/03	09/17/03			

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

**AMEC VALIDATED**

PM 01/01/04

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

IMI0487 <Page 37 of 94>

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0487-04 (MT553 - Soil)					Sampled: 09/08/03				
Reporting Units: mg/kg dry									Raw Qual
Aluminum	EPA 6010B	3I16086	6.0	10	10000	1	09/16/03	09/17/03	
Antimony	EPA 6010B	3I16086	0.54	10	ND	1	09/16/03	09/17/03	U
Arsenic	EPA 6010B	3I16086	0.49	2.1	3.9	1	09/16/03	09/17/03	
Barium	EPA 6010B	3I16086	0.36	1.0	72	1	09/16/03	09/17/03	
Beryllium	EPA 6010B	3I16086	0.080	0.52	0.26	1	09/16/03	09/17/03	J
Boron	EPA 6010B	3I16086	0.96	5.26	ND	1	09/16/03	09/17/03	UJ *10, \$
Cadmium	EPA 6010B	3I16086	0.044	0.52	0.19	1	09/16/03	09/17/03	J
Chromium	EPA 6010B	3I16086	0.088	1.0	12	1	09/16/03	09/17/03	
Cobalt	EPA 6010B	3I16086	0.11	1.0	4.0	1	09/16/03	09/17/03	
Copper	EPA 6010B	3I16086	0.23	2.1	7.1	1	09/16/03	09/17/03	
Lead	EPA 6010B	3I16086	0.28	2.1	12	1	09/16/03	09/17/03	
Mercury	EPA 7471A	3I17053	0.0065	0.021	0.028	1	09/17/03	09/17/03	
Molybdenum	EPA 6010B	3I16086	0.13	2.1	0.48	1	09/16/03	09/17/03	J
Nickel	EPA 6010B	3I16086	0.26	2.1	7.7	1	09/16/03	09/17/03	
Selenium	EPA 6010B	3I16086	0.60	2.1	1.2	1	09/16/03	09/17/03	J
Silver	EPA 6010B	3I16086	0.16	1.0	0.39	1	09/16/03	09/17/03	J
Thallium	EPA 6010B	3I16086	0.40	10	ND	1	09/16/03	09/17/03	U
Vanadium	EPA 6010B	3I16086	0.18	1.0	23	1	09/16/03	09/17/03	
Zinc	EPA 6010B	3I16086	0.47	5.2	61	1	09/16/03	09/17/03	
Sample ID: IMI0487-05 (MT554 - Soil)					Sampled: 09/08/03				
Reporting Units: mg/kg dry									Raw Qual
Aluminum	EPA 6010B	3I16086	6.2	11	25000	1	09/16/03	09/17/03	
Antimony	EPA 6010B	3I16086	0.55	11	ND	1	09/16/03	09/17/03	UJ *10, \$
Arsenic	EPA 6010B	3I16086	0.51	2.1	6.2	1	09/16/03	09/17/03	
Barium	EPA 6010B	3I16086	0.37	1.1	120	1	09/16/03	09/17/03	
Beryllium	EPA 6010B	3I16086	0.083	0.53	0.70	1	09/16/03	09/17/03	
Boron	EPA 6010B	3I16086	0.99	5.3	ND	1	09/16/03	09/17/03	UJ *10, \$
Cadmium	EPA 6010B	3I16086	0.046	0.53	0.35	1	09/16/03	09/17/03	J
Chromium	EPA 6010B	3I16086	0.090	1.1	30	1	09/16/03	09/17/03	
Cobalt	EPA 6010B	3I16086	0.12	1.1	11	1	09/16/03	09/17/03	
Copper	EPA 6010B	3I16086	0.23	2.1	15	1	09/16/03	09/17/03	
Lead	EPA 6010B	3I16086	0.29	2.1	10	1	09/16/03	09/17/03	
Mercury	EPA 7471A	3I17053	0.0067	0.021	0.015	1	09/17/03	09/17/03	J
Molybdenum	EPA 6010B	3I16086	0.14	2.1	0.36	1	09/16/03	09/17/03	J
Nickel	EPA 6010B	3I16086	0.27	2.1	21	1	09/16/03	09/17/03	
Selenium	EPA 6010B	3I16086	0.62	2.1	ND	1	09/16/03	09/17/03	U
Silver	EPA 6010B	3I16086	0.17	1.1	ND	1	09/16/03	09/17/03	U
Thallium	EPA 6010B	3I16086	0.41	11	ND	1	09/16/03	09/17/03	UJ *10, \$
Vanadium	EPA 6010B	3I16086	0.18	1.1	54	1	09/16/03	09/17/03	
Zinc	EPA 6010B	3I16086	0.49	5.3	60	1	09/16/03	09/17/03	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

AMEC VALIDATED

AM 01/01/04



MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IMI0487-06 (MT555 - Soil)					Sampled: 09/08/03					
Reporting Units: mg/kg dry									Raw Qual	Qual Code
Aluminum	EPA 6010B	3I16086	6.1	11	18000	1	09/16/03	09/17/03		
Antimony	EPA 6010B	3I16086	0.55	11	ND	1	09/16/03	09/17/03	U	X10, \$
Arsenic	EPA 6010B	3I16086	0.51	2.1	5.3	1	09/16/03	09/17/03		
Barium	EPA 6010B	3I16086	0.37	1.1	94	1	09/16/03	09/17/03		
Beryllium	EPA 6010B	3I16086	0.083	0.53	0.48	1	09/16/03	09/17/03	J	
Boron	EPA 6010B	3I16086	0.98	5.3	ND	1	09/16/03	09/17/03	U	X10, \$
Cadmium	EPA 6010B	3I16086	0.045	0.53	0.25	1	09/16/03	09/17/03	J	
Chromium	EPA 6010B	3I16086	0.090	1.1	21	1	09/16/03	09/17/03		
Cobalt	EPA 6010B	3I16086	0.12	1.1	6.9	1	09/16/03	09/17/03		
Copper	EPA 6010B	3I16086	0.23	2.1	11	1	09/16/03	09/17/03		
Lead	EPA 6010B	3I16086	0.29	2.1	7.5	1	09/16/03	09/17/03		
Mercury	EPA 7471A	3I17053	0.0067	0.021	0.10	1	09/17/03	09/17/03		
Molybdenum	EPA 6010B	3I16086	0.14	2.1	0.38	1	09/16/03	09/17/03	J	
Nickel	EPA 6010B	3I16086	0.26	2.1	13	1	09/16/03	09/17/03		
Selenium	EPA 6010B	3I16086	0.61	2.1	1.2	1	09/16/03	09/17/03	J	
Silver	EPA 6010B	3I16086	0.17	1.1	ND	1	09/16/03	09/17/03	U	
Thallium	EPA 6010B	3I16086	0.41	11	ND	1	09/16/03	09/17/03	U	X10, \$
Vanadium	EPA 6010B	3I16086	0.18	1.1	41	1	09/16/03	09/17/03		
Zinc	EPA 6010B	3I16086	0.49	5.3	58	1	09/16/03	09/17/03		

Sample ID: IMI0487-07 (MT556 - Soil)  
 Reporting Units: mg/kg dry

Sampled: 09/08/03

Aluminum	EPA 6010B	3I16086	7.0	12	13000	1	09/16/03	09/17/03		
Antimony	EPA 6010B	3I16086	0.63	12	ND	1	09/16/03	09/17/03	U	
Arsenic	EPA 6010B	3I16086	0.58	2.4	4.1	1	09/16/03	09/17/03		
Barium	EPA 6010B	3I16086	0.42	1.2	100	1	09/16/03	09/17/03		
Beryllium	EPA 6010B	3I16086	0.094	0.60	0.35	1	09/16/03	09/17/03	J	
Boron	EPA 6010B	3I16086	1.1	6.0	ND	1	09/16/03	09/17/03	U	X10, \$
Cadmium	EPA 6010B	3I16086	0.052	0.60	0.27	1	09/16/03	09/17/03	J	
Chromium	EPA 6010B	3I16086	0.10	1.2	14	1	09/16/03	09/17/03		
Cobalt	EPA 6010B	3I16086	0.13	1.2	5.1	1	09/16/03	09/17/03		
Copper	EPA 6010B	3I16086	0.27	2.4	9.4	1	09/16/03	09/17/03		
Lead	EPA 6010B	3I16086	0.33	2.4	9.3	1	09/16/03	09/17/03		
Mercury	EPA 7471A	3I17068	0.0076	0.024	0.022	1	09/17/03	09/17/03	J	
Molybdenum	EPA 6010B	3I16086	0.16	2.4	0.63	1	09/16/03	09/17/03	J	
Nickel	EPA 6010B	3I16086	0.30	2.4	9.3	1	09/16/03	09/17/03		
Selenium	EPA 6010B	3I16086	0.70	2.4	ND	1	09/16/03	09/17/03	U	
Silver	EPA 6010B	3I16086	0.19	1.2	0.45	1	09/16/03	09/17/03	J	
Thallium	EPA 6010B	3I16086	0.47	12	ND	1	09/16/03	09/17/03	U	
Vanadium	EPA 6010B	3I16086	0.21	1.2	28	1	09/16/03	09/17/03		
Zinc	EPA 6010B	3I16086	0.56	6.0	70	1	09/16/03	09/17/03		

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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Pm 09/07/04



MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers		
Sample ID: IMI0487-08 (MT557 - Soil)					Sampled: 09/08/03					Rev Qual	Qual Code
Reporting Units: mg/kg dry											
Aluminum	EPA 6010B	3I16086	6.0	10	11000	1	09/16/03	09/17/03			
Antimony	EPA 6010B	3I16086	0.54	10	ND	1	09/16/03	09/17/03	U		
Arsenic	EPA 6010B	3I16086	0.49	2.1	3.6	1	09/16/03	09/17/03			
Barium	EPA 6010B	3I16086	0.36	1.0	73	1	09/16/03	09/17/03			
Beryllium	EPA 6010B	3I16086	0.080	0.52	0.27	1	09/16/03	09/17/03	J		
Boron	EPA 6010B	3I16086	0.96	7.4	5.2	7.4	09/16/03	09/17/03	UJ No, J		
Cadmium	EPA 6010B	3I16086	0.044	0.52	0.19	1	09/16/03	09/17/03	J		
Chromium	EPA 6010B	3I16086	0.088	1.0	12	1	09/16/03	09/17/03			
Cobalt	EPA 6010B	3I16086	0.11	1.0	4.0	1	09/16/03	09/17/03			
Copper	EPA 6010B	3I16086	0.23	2.1	7.0	1	09/16/03	09/17/03			
Lead	EPA 6010B	3I16086	0.28	2.1	12	1	09/16/03	09/17/03			
Mercury	EPA 7471A	3I17068	0.0065	0.021	0.027	1	09/17/03	09/17/03			
Molybdenum	EPA 6010B	3I16086	0.13	2.1	0.49	1	09/16/03	09/17/03	J		
Nickel	EPA 6010B	3I16086	0.26	2.1	7.9	1	09/16/03	09/17/03			
Selenium	EPA 6010B	3I16086	0.60	2.1	ND	1	09/16/03	09/17/03	U		
Silver	EPA 6010B	3I16086	0.16	1.0	0.47	1	09/16/03	09/17/03	J		
Thallium	EPA 6010B	3I16086	0.40	10	ND	1	09/16/03	09/17/03	U		
Vanadium	EPA 6010B	3I16086	0.18	1.0	24	1	09/16/03	09/17/03			
Zinc	EPA 6010B	3I16086	0.47	5.2	58	1	09/16/03	09/17/03			

Sample ID: IMI0487-10 (MT563 - Soil)  
 Reporting Units: mg/kg dry

Sampled: 09/08/03

Aluminum	EPA 6010B	3I16086	5.9	10	13000	1	09/16/03	09/17/03	
Antimony	EPA 6010B	3I16086	0.53	10	ND	1	09/16/03	09/17/03	U
Arsenic	EPA 6010B	3I16086	0.49	2.0	4.6	1	09/16/03	09/17/03	
Barium	EPA 6010B	3I16086	0.36	1.0	85	1	09/16/03	09/17/03	
Beryllium	EPA 6010B	3I16086	0.080	0.51	0.38	1	09/16/03	09/17/03	J
Boron	EPA 6010B	3I16086	0.95	7.2	5.1	7.2	09/16/03	09/17/03	UJ No, J
Cadmium	EPA 6010B	3I16086	0.044	0.51	0.26	1	09/16/03	09/17/03	J
Chromium	EPA 6010B	3I16086	0.087	1.0	16	1	09/16/03	09/17/03	
Cobalt	EPA 6010B	3I16086	0.11	1.0	5.3	1	09/16/03	09/17/03	
Copper	EPA 6010B	3I16086	0.23	2.0	11	1	09/16/03	09/17/03	
Lead	EPA 6010B	3I16086	0.28	2.0	8.1	1	09/16/03	09/17/03	
Mercury	EPA 7471A	3I17068	0.0064	0.020	0.021	1	09/17/03	09/17/03	
Molybdenum	EPA 6010B	3I16086	0.13	2.0	0.48	1	09/16/03	09/17/03	J
Nickel	EPA 6010B	3I16086	0.26	2.0	9.9	1	09/16/03	09/17/03	
Selenium	EPA 6010B	3I16086	0.59	2.0	1.4	1	09/16/03	09/17/03	J
Silver	EPA 6010B	3I16086	0.16	1.0	0.42	1	09/16/03	09/17/03	J
Thallium	EPA 6010B	3I16086	0.40	10	0.46	1	09/16/03	09/17/03	J
Vanadium	EPA 6010B	3I16086	0.17	1.0	32	1	09/16/03	09/17/03	
Zinc	EPA 6010B	3I16086	0.47	5.1	60	1	09/16/03	09/17/03	

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 Michele Harper  
 Project Manager

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MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IMI0487-11 (MT559 - Soil)					Sampled: 09/05/03					Qual Code
Reporting Units: mg/kg dry										
Aluminum	EPA 6010B	3I16086	7.3	13	14000	1	09/16/03	09/17/03		
Antimony	EPA 6010B	3I16086	0.65	13	ND	1	09/16/03	09/17/03	U	
Arsenic	EPA 6010B	3I16086	0.60	2.5	6.2	1	09/16/03	09/17/03		
Barium	EPA 6010B	3I16086	0.44	1.3	89	1	09/16/03	09/17/03		
Beryllium	EPA 6010B	3I16086	0.098	0.63	0.37	1	09/16/03	09/17/03	J	
Boron	EPA 6010B	3I16086	1.2	2.4	6.3	1	09/16/03	09/17/03	UJ	
Cadmium	EPA 6010B	3I16086	0.054	0.63	0.19	1	09/16/03	09/17/03	J	
Chromium	EPA 6010B	3I16086	0.11	1.3	22	1	09/16/03	09/17/03		
Cobalt	EPA 6010B	3I16086	0.14	1.3	6.1	1	09/16/03	09/17/03		
Copper	EPA 6010B	3I16086	0.28	2.5	10	1	09/16/03	09/17/03		
Lead	EPA 6010B	3I16086	0.34	2.5	7.9	1	09/16/03	09/17/03		
Mercury	EPA 7471A	3I17068	0.0079	0.025	0.023	1	09/17/03	09/17/03	J	
Molybdenum	EPA 6010B	3I16086	0.16	2.5	0.58	1	09/16/03	09/17/03	J	
Nickel	EPA 6010B	3I16086	0.31	2.5	12	1	09/16/03	09/17/03		
Selenium	EPA 6010B	3I16086	0.73	2.5	1.4	1	09/16/03	09/17/03	J	
Silver	EPA 6010B	3I16086	0.20	1.3	0.48	1	09/16/03	09/17/03	J	
Thallium	EPA 6010B	3I16086	0.49	0.80	13	1	09/16/03	09/17/03	UJ	
Vanadium	EPA 6010B	3I16086	0.21	1.3	41	1	09/16/03	09/17/03		
Zinc	EPA 6010B	3I16086	0.58	6.3	59	1	09/16/03	09/17/03		
Sample ID: IMI0487-12 (MT560 - Soil)					Sampled: 09/05/03					
Reporting Units: mg/kg dry										
Aluminum	EPA 6010B	3I16086	6.3	11	13000	1	09/16/03	09/17/03		
Antimony	EPA 6010B	3I16086	0.56	11	ND	1	09/16/03	09/17/03	U	
Arsenic	EPA 6010B	3I16086	0.52	2.2	5.4	1	09/16/03	09/17/03		
Barium	EPA 6010B	3I16086	0.38	1.1	82	1	09/16/03	09/17/03		
Beryllium	EPA 6010B	3I16086	0.084	0.54	0.36	1	09/16/03	09/17/03	J	
Boron	EPA 6010B	3I16086	1.0	7.9	5.4	1	09/16/03	09/17/03	UJ	
Cadmium	EPA 6010B	3I16086	0.046	0.54	0.15	1	09/16/03	09/17/03	J	
Chromium	EPA 6010B	3I16086	0.092	1.1	18	1	09/16/03	09/17/03		
Cobalt	EPA 6010B	3I16086	0.12	1.1	4.9	1	09/16/03	09/17/03		
Copper	EPA 6010B	3I16086	0.24	2.2	8.3	1	09/16/03	09/17/03		
Lead	EPA 6010B	3I16086	0.29	2.2	7.1	1	09/16/03	09/17/03		
Mercury	EPA 7471A	3I17068	0.0068	0.022	0.040	1	09/17/03	09/17/03		
Molybdenum	EPA 6010B	3I16086	0.14	2.2	0.48	1	09/16/03	09/17/03	J	
Nickel	EPA 6010B	3I16086	0.27	2.2	10	1	09/16/03	09/17/03		
Selenium	EPA 6010B	3I16086	0.63	2.2	1.4	1	09/16/03	09/17/03	J	
Silver	EPA 6010B	3I16086	0.17	1.1	0.32	1	09/16/03	09/17/03	J	
Thallium	EPA 6010B	3I16086	0.42	6.72	11	1	09/16/03	09/17/03	UJ	
Vanadium	EPA 6010B	3I16086	0.18	1.1	34	1	09/16/03	09/17/03		
Zinc	EPA 6010B	3I16086	0.50	5.4	51	1	09/16/03	09/17/03		

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 Michele Harper  
 Project Manager

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MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0487

Sampled: 09/05/03-09/09/03  
 Received: 09/09/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IMI0487-13 (MT561 - Soil)					Sampled: 09/09/03					
Reporting Units: mg/kg dry										
Aluminum	EPA 6010B	3I16086	5.9	10	10000	1	09/16/03	09/17/03		
Antimony	EPA 6010B	3I16086	0.53	10	ND	1	09/16/03	09/17/03	U	
Arsenic	EPA 6010B	3I16086	0.49	2.0	3.5	1	09/16/03	09/17/03		
Barium	EPA 6010B	3I16086	0.36	1.0	69	1	09/16/03	09/17/03		
Beryllium	EPA 6010B	3I16086	0.079	0.51	0.23	1	09/16/03	09/17/03	J	
Boron	EPA 6010B	3I16086	0.95 <del>8.1</del>	5.1 <del>8.1</del>	ND	1	09/16/03	09/17/03	UJ *10, \$	
Cadmium	EPA 6010B	3I16086	0.044	0.51	0.16	1	09/16/03	09/17/03	J	
Chromium	EPA 6010B	3I16086	0.086	1.0	12	1	09/16/03	09/17/03		
Cobalt	EPA 6010B	3I16086	0.11	1.0	4.1	1	09/16/03	09/17/03		
Copper	EPA 6010B	3I16086	0.22	2.0	6.1	1	09/16/03	09/17/03		
Lead	EPA 6010B	3I16086	0.27	2.0	7.5	1	09/16/03	09/17/03		
Mercury	EPA 7471A	3I17068	0.0064	0.020	0.070	1	09/17/03	09/17/03		
Molybdenum	EPA 6010B	3I16086	0.13	2.0	0.36	1	09/16/03	09/17/03	J	
Nickel	EPA 6010B	3I16086	0.25	2.0	7.6	1	09/16/03	09/17/03		
Selenium	EPA 6010B	3I16086	0.59	2.0	1.3	1	09/16/03	09/17/03	J	
Silver	EPA 6010B	3I16086	0.16	1.0	0.39	1	09/16/03	09/17/03	J	
Thallium	EPA 6010B	3I16086	0.40	10	ND	1	09/16/03	09/17/03	U	
Vanadium	EPA 6010B	3I16086	0.17	1.0	26	1	09/16/03	09/17/03		
Zinc	EPA 6010B	3I16086	0.47	5.1	54	1	09/16/03	09/17/03		
Sample ID: IMI0487-14 (MT562 - Soil)					Sampled: 09/09/03					
Reporting Units: mg/kg dry										
Aluminum	EPA 6010B	3I16086	5.9	10	13000	1	09/16/03	09/17/03		
Antimony	EPA 6010B	3I16086	0.53	10	ND	1	09/16/03	09/17/03	U	
Arsenic	EPA 6010B	3I16086	0.49	2.0	3.7	1	09/16/03	09/17/03		
Barium	EPA 6010B	3I16086	0.36	1.0	65	1	09/16/03	09/17/03		
Beryllium	EPA 6010B	3I16086	0.080	0.51	0.34	1	09/16/03	09/17/03	J	
Boron	EPA 6010B	3I16086	0.95 <del>8.7</del>	5.1 <del>8.7</del>	ND	1	09/16/03	09/17/03	UJ *10, \$	
Cadmium	EPA 6010B	3I16086	0.044	0.51	0.074	1	09/16/03	09/17/03	J	
Chromium	EPA 6010B	3I16086	0.087	1.0	11	1	09/16/03	09/17/03		
Cobalt	EPA 6010B	3I16086	0.11	1.0	3.5	1	09/16/03	09/17/03		
Copper	EPA 6010B	3I16086	0.22	2.0	4.8	1	09/16/03	09/17/03		
Lead	EPA 6010B	3I16086	0.28	2.0	5.4	1	09/16/03	09/17/03		
Mercury	EPA 7471A	3I17068	0.0064	0.020	0.016	1	09/17/03	09/17/03	J	
Molybdenum	EPA 6010B	3I16086	0.13	2.0	0.47	1	09/16/03	09/17/03	J	
Nickel	EPA 6010B	3I16086	0.26	2.0	6.0	1	09/16/03	09/17/03		
Selenium	EPA 6010B	3I16086	0.59	2.0	1.3	1	09/16/03	09/17/03	J	
Silver	EPA 6010B	3I16086	0.16	1.0	0.48	1	09/16/03	09/17/03	J	
Thallium	EPA 6010B	3I16086	0.40 <del>0.70</del>	10	ND	1	09/16/03	09/17/03	UJ *10, \$	
Vanadium	EPA 6010B	3I16086	0.17	1.0	24	1	09/16/03	09/17/03		
Zinc	EPA 6010B	3I16086	0.47	5.1	48	1	09/16/03	09/17/03		

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method ILM04  
QC Level: V<sup>1</sup>  
SDG: IMI0838  
Matrix: soil  
No. of Samples: 5  
Date Reviewed: January 07, 2004  
Reviewer: P. Meeks  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MT690, MT691, MT692, MT693, MT694

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The cooler was received within the temperature QC limits of 4°±2° C. The COC was signed and dated by field and laboratory personnel. The case narrative noted that the samples were received intact. No information was provided regarding the presence or integrity of custody seals on the cooler.</p> <p>The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	<p>Two solid method blanks were analyzed in association with the samples in this SDG. There were detects for Cd, Cr, Co, Cu, Ni, and Zn. The following results were also reported in the blank:</p> <p>Ag = -2.5 mg/kg Tl = -0.39 mg/kg</p>	Nondetected silver and thallium were qualified as estimated, "UJ," in all site samples. The remaining method blank detects were insufficient to qualify the site samples.

	Findings	Qualifications
5. <u>LCS/BS</u>	Two solid LCS samples were analyzed with the samples. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 85-120%.	No qualifications were required.
6. <u>Duplicates</u> None	None performed.	No qualifications were required.
7. <u>MS/MSDs</u> None	None performed.	No qualifications were required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted negative results for thallium in all site samples and a negative result for boron in MT692.</p>	The MDLs for these results were raised to the levels of interference and the results were qualified as estimated, "UJ."
11. <u>Field QC</u> FB: MT697 (SDG IMI0935) and MT711 (SDG IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) Field Duplicates: none	There were detects reported in all of the field QC samples but none at sufficient concentration to qualify the site samples in this SDG.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0838

Sampled: 09/15/03  
 Received: 09/15/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0838-01 (MT690 - Soil)									
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3I23070	6.4	11	16000	1	09/23/03	09/24/03	
Antimony	EPA 6010B	3I23070	0.58	11	ND	1	09/23/03	09/24/03	U
Arsenic	EPA 6010B	3I23070	0.53	2.2	5.7	1	09/23/03	09/24/03	
Barium	EPA 6010B	3I23070	0.39	1.1	150	1	09/23/03	09/24/03	
Beryllium	EPA 6010B	3I23070	0.087	0.56	0.61	1	09/23/03	09/24/03	
Boron	EPA 6010B	3I23070	1.0	5.6	1.7	1	09/23/03	09/24/03	J
Cadmium	EPA 6010B	3I23070	0.048	0.56	0.41	1	09/23/03	09/24/03	B, J
Chromium	EPA 6010B	3I23070	0.095	1.1	20	1	09/23/03	09/24/03	
Cobalt	EPA 6010B	3I23070	0.12	1.1	8.5	1	09/23/03	09/24/03	
Copper	EPA 6010B	3I23070	0.24	2.2	8.8	1	09/23/03	09/24/03	
Lead	EPA 6010B	3I23070	0.30	2.2	9.0	1	09/23/03	09/24/03	
Mercury	EPA 7471A	3I24047	0.0070	0.022	0.16	1	09/24/03	09/24/03	
Molybdenum	EPA 6010B	3I23070	0.14	2.2	0.79	1	09/23/03	09/24/03	J
Nickel	EPA 6010B	3I23070	0.28	2.2	12	1	09/23/03	09/24/03	
Selenium	EPA 6010B	3I23070	0.64	2.2	5.3	1	09/23/03	09/24/03	
Silver	EPA 6010B	3I23070	0.18	1.1	ND	1	09/23/03	09/24/03	UJ
Thallium	EPA 6010B	3I23070	0.43	11	ND	1	09/23/03	09/24/03	UJ
Vanadium	EPA 6010B	3I23070	0.19	1.1	40	1	09/23/03	09/24/03	
Zinc	EPA 6010B	3I23070	0.51	5.6	52	1	09/23/03	09/24/03	
Sample ID: IMI0838-02 (MT691 - Soil)									
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3I23070	6.3	11	12000	1	09/23/03	09/24/03	
Antimony	EPA 6010B	3I23070	0.57	11	ND	1	09/23/03	09/24/03	U
Arsenic	EPA 6010B	3I23070	0.52	2.2	5.1	1	09/23/03	09/24/03	
Barium	EPA 6010B	3I23070	0.38	1.1	84	1	09/23/03	09/24/03	
Beryllium	EPA 6010B	3I23070	0.085	0.54	0.49	1	09/23/03	09/24/03	J
Boron	EPA 6010B	3I23070	1.0	5.4	ND	1	09/23/03	09/24/03	U
Cadmium	EPA 6010B	3I23070	0.047	0.54	0.37	1	09/23/03	09/24/03	B, J
Chromium	EPA 6010B	3I23070	0.092	1.1	17	1	09/23/03	09/24/03	
Cobalt	EPA 6010B	3I23070	0.12	1.1	6.8	1	09/23/03	09/24/03	
Copper	EPA 6010B	3I23070	0.24	2.2	7.1	1	09/23/03	09/24/03	
Lead	EPA 6010B	3I23070	0.29	2.2	6.6	1	09/23/03	09/24/03	
Mercury	EPA 7471A	3I24047	0.0068	0.022	0.010	1	09/24/03	09/24/03	J
Molybdenum	EPA 6010B	3I23070	0.14	2.2	0.63	1	09/23/03	09/24/03	J
Nickel	EPA 6010B	3I23070	0.27	2.2	10	1	09/23/03	09/24/03	
Selenium	EPA 6010B	3I23070	0.63	2.2	4.7	1	09/23/03	09/24/03	
Silver	EPA 6010B	3I23070	0.17	1.1	ND	1	09/23/03	09/24/03	UJ
Thallium	EPA 6010B	3I23070	0.42	11	ND	1	09/23/03	09/24/03	UJ
Vanadium	EPA 6010B	3I23070	0.18	1.1	35	1	09/23/03	09/24/03	
Zinc	EPA 6010B	3I23070	0.50	5.4	59	1	09/23/03	09/24/03	

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 Michele Harper  
 Project Manager

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LEVEL V

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0838

Sampled: 09/15/03  
 Received: 09/15/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IMI0838-03 (MT692 - Soil)											
Reporting Units: mg/kg dry											
Aluminum	EPA 6010B	3I23070	6.2	11	11000	1	09/23/03	09/24/03			
Antimony	EPA 6010B	3I23070	0.56	11	ND	1	09/23/03	09/24/03		U	
Arsenic	EPA 6010B	3I23070	0.51	2.1	5.2	1	09/23/03	09/24/03			
Barium	EPA 6010B	3I23070	0.37	1.1	88	1	09/23/03	09/24/03			
Beryllium	EPA 6010B	3I23070	0.083	0.53	0.57	1	09/23/03	09/24/03			
Boron	EPA 6010B	3I23070	0.99	2.1	5.3	1	09/23/03	09/24/03		UJ	#10, \$
Cadmium	EPA 6010B	3I23070	0.046	0.53	0.33	1	09/23/03	09/24/03		B, J	
Chromium	EPA 6010B	3I23070	0.091	1.1	21	1	09/23/03	09/24/03			
Cobalt	EPA 6010B	3I23070	0.12	1.1	7.3	1	09/23/03	09/24/03			
Copper	EPA 6010B	3I23070	0.23	2.1	9.7	1	09/23/03	09/24/03			
Lead	EPA 6010B	3I23070	0.29	2.1	7.0	1	09/23/03	09/24/03			
Mercury	EPA 7471A	3I24047	0.0067	0.021	0.012	1	09/24/03	09/24/03		J	
Molybdenum	EPA 6010B	3I23070	0.14	2.1	0.71	1	09/23/03	09/24/03		J	
Nickel	EPA 6010B	3I23070	0.27	2.1	14	1	09/23/03	09/24/03			
Selenium	EPA 6010B	3I23070	0.62	2.1	4.6	1	09/23/03	09/24/03			
Silver	EPA 6010B	3I23070	0.17	1.1	ND	1	09/23/03	09/24/03		UJ	B
Thallium	EPA 6010B	3I23070	0.42	1.1	ND	1	09/23/03	09/24/03		UJ	B, #10
Vanadium	EPA 6010B	3I23070	0.18	1.1	39	1	09/23/03	09/24/03			
Zinc	EPA 6010B	3I23070	0.49	5.3	67	1	09/23/03	09/24/03			
Sample ID: IMI0838-04 (MT693 - Soil)											
Reporting Units: mg/kg dry											
Aluminum	EPA 6010B	3I23070	6.3	11	11000	1	09/23/03	09/25/03			
Antimony	EPA 6010B	3I23070	0.56	11	ND	1	09/23/03	09/24/03		U	
Arsenic	EPA 6010B	3I23070	0.52	2.2	3.8	1	09/23/03	09/24/03			
Barium	EPA 6010B	3I23070	0.38	1.1	72	1	09/23/03	09/24/03			
Beryllium	EPA 6010B	3I23070	0.084	0.54	0.46	1	09/23/03	09/24/03		J	
Boron	EPA 6010B	3I23070	1.0	5.4	ND	1	09/23/03	09/24/03		U	
Cadmium	EPA 6010B	3I23070	0.046	0.54	0.28	1	09/23/03	09/24/03		B, J	
Chromium	EPA 6010B	3I23070	0.092	1.1	13	1	09/23/03	09/24/03			
Cobalt	EPA 6010B	3I23070	0.12	1.1	4.6	1	09/23/03	09/24/03			
Copper	EPA 6010B	3I23070	0.24	2.2	5.2	1	09/23/03	09/24/03			
Lead	EPA 6010B	3I23070	0.29	2.2	4.6	1	09/23/03	09/24/03			
Mercury	EPA 7471A	3I24047	0.0068	0.022	0.010	1	09/24/03	09/24/03		J	
Molybdenum	EPA 6010B	3I23070	0.14	2.2	0.58	1	09/23/03	09/24/03		J	
Nickel	EPA 6010B	3I23070	0.27	2.2	7.9	1	09/23/03	09/24/03			
Selenium	EPA 6010B	3I23070	0.63	2.2	5.0	1	09/23/03	09/24/03			
Silver	EPA 6010B	3I23070	0.17	1.1	ND	1	09/23/03	09/24/03		UJ	B
Thallium	EPA 6010B	3I23070	0.42	1.1	ND	1	09/23/03	09/24/03		UJ	B, #10
Vanadium	EPA 6010B	3I23070	0.18	1.1	27	1	09/23/03	09/24/03			
Zinc	EPA 6010B	3I23070	0.50	5.4	55	1	09/23/03	09/24/03			

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-San Diego  
1230 Columbia Street, Suite 750  
San Diego, CA 92101  
Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
Boeing SSFL  
Report Number: IMI0838

Sampled: 09/15/03  
Received: 09/15/03

METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0838-05 (MT694 - Soil)									
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3I23070	6.0	10	14000	1	09/23/03	09/25/03	
Antimony	EPA 6010B	3I23070	0.54	10	0.85	1	09/23/03	09/24/03	J
Arsenic	EPA 6010B	3I23070	0.50	2.1	5.4	1	09/23/03	09/24/03	
Barium	EPA 6010B	3I23070	0.36	1.0	94	1	09/23/03	09/24/03	
Beryllium	EPA 6010B	3I23070	0.081	0.52	0.55	1	09/23/03	09/24/03	
Boron	EPA 6010B	3I23070	0.96	5.2	ND	1	09/23/03	09/24/03	U
Cadmium	EPA 6010B	3I23070	0.044	0.52	0.36	1	09/23/03	09/24/03	B, J
Chromium	EPA 6010B	3I23070	0.088	1.0	21	1	09/23/03	09/24/03	
Cobalt	EPA 6010B	3I23070	0.11	1.0	6.1	1	09/23/03	09/24/03	
Copper	EPA 6010B	3I23070	0.23	2.1	11	1	09/23/03	09/24/03	
Lead	EPA 6010B	3I23070	0.28	2.1	8.4	1	09/23/03	09/24/03	
Mercury	EPA 7471A	3I24047	0.013	0.041	1.7	2	09/24/03	09/24/03	
Molybdenum	EPA 6010B	3I23070	0.13	2.1	0.73	1	09/23/03	09/24/03	J
Nickel	EPA 6010B	3I23070	0.26	2.1	13	1	09/23/03	09/24/03	
Selenium	EPA 6010B	3I23070	0.60	2.1	4.0	1	09/23/03	09/24/03	
Silver	EPA 6010B	3I23070	0.17	1.0	ND	1	09/23/03	09/24/03	UJ B
Thallium	EPA 6010B	3I23070	0.40	2.0 10	ND	1	09/23/03	09/24/03	UJ B, #14
Vanadium	EPA 6010B	3I23070	0.18	1.0	38	1	09/23/03	09/24/03	
Zinc	EPA 6010B	3I23070	0.47	5.2	60	1	09/23/03	09/24/03	

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LEVEL V

PM 01/07/04

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method ILM04  
QC Level: V<sup>1</sup>  
SDG: IM11169  
Matrix: soil  
No. of Samples: 9  
Date Reviewed: January 06, 2004  
Reviewer: P. Meeks  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MT699, MT700, MT701, MT702, MT703, MT705, MT706, MT707, MT708

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	The cooler was received within the temperature QC limits of 4°±2° C. The COC was signed and dated by field and laboratory personnel. Sample MT704 was not received at the laboratory. The COC accounted for the remaining samples. The case narrative noted that the samples were received intact. No information was provided regarding the presence or integrity of custody seals on the cooler. The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.	No qualifications were required.
3. <u>Method Blanks</u>	Three solid method blanks were analyzed in association with the samples in this SDG. Detects were reported but none were at sufficient concentration to qualify the site samples.	No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	Three solid LCS samples were analyzed with the samples. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 85-120%.	No qualifications were required.
6. <u>Duplicates</u> None	None performed.	No qualifications were required.
7. <u>MS/MSDs</u> None	None performed.	No qualifications were required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted negative results for thallium in all site samples and boron in all site samples except MT699 and MT708. Negative silver results of -2.6, -1.9, and -2.9 mg/kg were also noted in the CCBs bracketing the site samples.</p>	The reporting limits and MDLs for nondetected silver were raised to the level of interference in the CCBs, 2.6 mg/kg and all silver results were qualified as estimated, "J," for detects and "UJ," for nondetects. The boron and thallium MDLs were raised to the levels of interference and the results were qualified as estimated, "UJ."
11. <u>Field QC</u> FB: MT697 (SDG IM10935) and MT711 (SDG IM11005) ER: MT696 (SDG IM10935) and MT710 (SDG IM11005) Field Duplicates: MT702/MT705	<p>There were detects reported in all of the field QC samples but none at sufficient concentration to qualify the site samples in this SDG.</p> <p>All detects were in common for the field duplicate pair and all RPDs were less than 50%.</p>	No qualifications were required.

	Findings	Qualifications
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI1169

Sampled: 09/16/03-09/17/03  
 Received: 09/17/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IMI1169-01 (MT699 - Soil)					Sampled: 09/16/03						
Reporting Units: mg/kg dry											
Aluminum	EPA 6010B	3I25057	6.2	11	15000	1	09/25/03	09/27/03			
Antimony	EPA 6010B	3I25057	0.56	11	ND	1	09/25/03	09/26/03	U		
Arsenic	EPA 6010B	3I25057	0.52	2.2	4.9	1	09/25/03	09/26/03			
Barium	EPA 6010B	3I25057	0.38	1.1	140	1	09/25/03	09/26/03			
Beryllium	EPA 6010B	3I25057	0.084	0.54	0.67	1	09/25/03	09/26/03			
Boron	EPA 6010B	3I25057	1.0	5.4	ND	1	09/25/03	09/26/03	U		
Cadmium	EPA 6010B	3I25057	0.046	0.54	0.43	1	09/25/03	09/26/03		J	
Chromium	EPA 6010B	3I25057	0.092	1.1	22	1	09/25/03	09/26/03			
Cobalt	EPA 6010B	3I25057	0.12	1.1	6.9	1	09/25/03	09/26/03			
Copper	EPA 6010B	3I25057	0.24	2.2	13	1	09/25/03	09/26/03			
Lead	EPA 6010B	3I25057	0.29	2.2	10	1	09/25/03	09/26/03			
Mercury	EPA 7471A	3I25098	0.0068	0.022	0.038	1	09/25/03	09/25/03			
Molybdenum	EPA 6010B	3I25057	0.14	2.2	0.88	1	09/25/03	09/26/03		J	
Nickel	EPA 6010B	3I25057	0.27	2.2	13	1	09/25/03	09/26/03			
Selenium	EPA 6010B	3I25057	0.62	2.2	4.4	1	09/25/03	09/26/03			
Silver	EPA 6010B	3I25057	0.17-2.6	1.1-2.6	ND	1	09/25/03	09/26/03	UJ		*10,\$
Thallium	EPA 6010B	3I25057	0.42-0.74	11	ND	1	09/25/03	09/26/03	UJ		*10,\$
Vanadium	EPA 6010B	3I25057	0.18	1.1	43	1	09/25/03	09/26/03			
Zinc	EPA 6010B	3I25057	0.50	5.4	60	1	09/25/03	09/26/03			

Sample ID: IMI1169-02 (MT700 - Soil)  
 Reporting Units: mg/kg dry

Sampled: 09/17/03

Aluminum	EPA 6010B	3I25057	6.0	10	14000	1	09/25/03	09/27/03			
Antimony	EPA 6010B	3I25057	0.54	10	ND	1	09/25/03	09/26/03	U		
Arsenic	EPA 6010B	3I25057	0.50	2.1	3.8	1	09/25/03	09/26/03			
Barium	EPA 6010B	3I25057	0.36	1.0	93	1	09/25/03	09/26/03			
Beryllium	EPA 6010B	3I25057	0.081	0.52	0.48	1	09/25/03	09/26/03		J	
Boron	EPA 6010B	3I25057	0.96-2.1	5.2	ND	1	09/25/03	09/26/03	UJ		*10,\$
Cadmium	EPA 6010B	3I25057	0.044	0.52	0.28	1	09/25/03	09/26/03		J	
Chromium	EPA 6010B	3I25057	0.088	1.0	17	1	09/25/03	09/26/03			
Cobalt	EPA 6010B	3I25057	0.11	1.0	5.1	1	09/25/03	09/26/03			
Copper	EPA 6010B	3I25057	0.23	2.1	7.3	1	09/25/03	09/26/03			
Lead	EPA 6010B	3I25057	0.28	2.1	6.0	1	09/25/03	09/26/03			
Mercury	EPA 7471A	3I25098	0.0065	0.021	0.011	1	09/25/03	09/25/03		J	
Molybdenum	EPA 6010B	3I25057	0.13	2.1	0.77	1	09/25/03	09/26/03		J	
Nickel	EPA 6010B	3I25057	0.26	2.1	10	1	09/25/03	09/26/03			
Selenium	EPA 6010B	3I25057	0.60	2.1	3.0	1	09/25/03	09/26/03			
Silver	EPA 6010B	3I25057	0.17-2.6	1.0-2.6	ND	1	09/25/03	09/26/03	UJ		*10,\$
Thallium	EPA 6010B	3I25057	0.40-1.2	10	ND	1	09/25/03	09/26/03	UJ		*10,\$
Vanadium	EPA 6010B	3I25057	0.18	1.0	32	1	09/25/03	09/26/03			
Zinc	EPA 6010B	3I25057	0.48	5.2	56	1	09/25/03	09/26/03			

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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**LEVEL V**

34

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI1169

Sampled: 09/16/03-09/17/03  
 Received: 09/17/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code	
Sample ID: IMI1169-03 (MT701 - Soil)					Sampled: 09/17/03							
Reporting Units: mg/kg dry												
Aluminum	EPA 6010B	3I25057	6.0	10	11000	1	09/25/03	09/27/03				
Antimony	EPA 6010B	3I25057	0.54	10	ND	1	09/25/03	09/26/03	U		#10, \$	
Arsenic	EPA 6010B	3I25057	0.50	2.1	3.3	1	09/25/03	09/26/03				
Barium	EPA 6010B	3I25057	0.36	1.0	66	1	09/25/03	09/26/03				
Beryllium	EPA 6010B	3I25057	0.081	0.52	0.40	1	09/25/03	09/26/03		J		
Boron	EPA 6010B	3I25057	0.96	5.2	ND	1	09/25/03	09/26/03	U		#10, \$	
Cadmium	EPA 6010B	3I25057	0.044	0.52	0.19	1	09/25/03	09/26/03		J		
Chromium	EPA 6010B	3I25057	0.088	1.0	9.0	1	09/25/03	09/26/03				
Cobalt	EPA 6010B	3I25057	0.11	1.0	3.5	1	09/25/03	09/26/03				
Copper	EPA 6010B	3I25057	0.23	2.1	5.2	1	09/25/03	09/26/03				
Lead	EPA 6010B	3I25057	0.28	2.1	4.4	1	09/25/03	09/26/03				
Mercury	EPA 7471A	3I25098	0.0065	0.021	0.010	1	09/25/03	09/25/03		J		
Molybdenum	EPA 6010B	3I25057	0.13	2.1	0.50	1	09/25/03	09/26/03		J		
Nickel	EPA 6010B	3I25057	0.26	2.1	6.2	1	09/25/03	09/26/03				
Selenium	EPA 6010B	3I25057	0.60	2.1	3.4	1	09/25/03	09/26/03				
Silver	EPA 6010B	3I25057	0.17	1.0	0.20	1	09/25/03	09/26/03		J	#10	
Thallium	EPA 6010B	3I25057	0.40	10	ND	1	09/25/03	09/26/03	U		#10, \$	
Vanadium	EPA 6010B	3I25057	0.18	1.0	19	1	09/25/03	09/26/03				
Zinc	EPA 6010B	3I25057	0.48	5.2	45	1	09/25/03	09/26/03				
Sample ID: IMI1169-04 (MT702 - Soil)					Sampled: 09/17/03							
Reporting Units: mg/kg dry												
Aluminum	EPA 6010B	3I25057	6.3	11	7300	1	09/25/03	09/27/03				
Antimony	EPA 6010B	3I25057	0.56	11	ND	1	09/25/03	09/26/03	U			
Arsenic	EPA 6010B	3I25057	0.52	2.2	3.4	1	09/25/03	09/26/03				
Barium	EPA 6010B	3I25057	0.38	1.1	63	1	09/25/03	09/26/03				
Beryllium	EPA 6010B	3I25057	0.085	0.54	0.26	1	09/25/03	09/26/03		J		
Boron	EPA 6010B	3I25057	1.0	5.4	ND	1	09/25/03	09/26/03	U		#10, \$	
Cadmium	EPA 6010B	3I25057	0.047	0.54	0.39	1	09/25/03	09/26/03		J		
Chromium	EPA 6010B	3I25057	0.092	1.1	13	1	09/25/03	09/26/03				
Cobalt	EPA 6010B	3I25057	0.12	1.1	4.0	1	09/25/03	09/26/03				
Copper	EPA 6010B	3I25057	0.24	2.2	7.4	1	09/25/03	09/26/03				
Lead	EPA 6010B	3I25057	0.29	2.2	9.0	1	09/25/03	09/26/03				
Mercury	EPA 7471A	3I25098	0.0068	0.022	0.085	1	09/25/03	09/25/03				
Molybdenum	EPA 6010B	3I25057	0.14	2.2	0.58	1	09/25/03	09/26/03		J		
Nickel	EPA 6010B	3I25057	0.27	2.2	7.9	1	09/25/03	09/26/03				
Selenium	EPA 6010B	3I25057	0.63	2.2	3.3	1	09/25/03	09/26/03				
Silver	EPA 6010B	3I25057	0.17	1.1	0.22	1	09/25/03	09/26/03		J	#10	
Thallium	EPA 6010B	3I25057	0.42	11	ND	1	09/25/03	09/26/03	U		#10, \$	
Vanadium	EPA 6010B	3I25057	0.18	1.1	24	1	09/25/03	09/26/03				
Zinc	EPA 6010B	3I25057	0.50	5.4	64	1	09/25/03	09/26/03				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

AMEC VALIDATED

LEVEL V

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI1169

Sampled: 09/16/03-09/17/03  
 Received: 09/17/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI1169-05 (MT703 - Soil)					Sampled: 09/16/03				
Reporting Units: mg/kg dry					Rev	Qual			
Aluminum	EPA 6010B	3I25057	6.5	11	19000	1	09/25/03	09/27/03	
Antimony	EPA 6010B	3I25057	0.58	11	ND	1	09/25/03	09/26/03	J
Arsenic	EPA 6010B	3I25057	0.54	2.2	5.6	1	09/25/03	09/26/03	J
Barium	EPA 6010B	3I25057	0.39	1.1	120	1	09/25/03	09/26/03	J
Beryllium	EPA 6010B	3I25057	0.087	0.56	0.74	1	09/25/03	09/26/03	J
Boron	EPA 6010B	3I25057	1.0	5.6	ND	1	09/25/03	09/26/03	UJ *10, \$
Cadmium	EPA 6010B	3I25057	0.048	0.56	0.30	1	09/25/03	09/26/03	J
Chromium	EPA 6010B	3I25057	0.095	1.1	24	1	09/25/03	09/26/03	J
Cobalt	EPA 6010B	3I25057	0.12	1.1	6.9	1	09/25/03	09/26/03	J
Copper	EPA 6010B	3I25057	0.25	2.2	12	1	09/25/03	09/26/03	J
Lead	EPA 6010B	3I25057	0.30	2.2	8.1	1	09/25/03	09/26/03	J
Mercury	EPA 7471A	3I26057	0.0070	0.022	0.010	1	09/26/03	09/26/03	J
Molybdenum	EPA 6010B	3I25057	0.15	2.2	0.74	1	09/25/03	09/26/03	J
Nickel	EPA 6010B	3I25057	0.28	2.2	13	1	09/25/03	09/26/03	J
Selenium	EPA 6010B	3I25057	0.65	2.2	3.0	1	09/25/03	09/26/03	J
Silver	EPA 6010B	3I25057	0.18	2.6	112.6	1	09/25/03	09/26/03	UJ *10, \$
Thallium	EPA 6010B	3I25057	0.44	1.4	11	1	09/25/03	09/26/03	UJ *10, \$
Vanadium	EPA 6010B	3I25057	0.19	1.1	45	1	09/25/03	09/26/03	J
Zinc	EPA 6010B	3I25057	0.51	5.6	47	1	09/25/03	09/26/03	J
Sample ID: IMI1169-06 (MT705 - Soil)					Sampled: 09/17/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3I25057	6.0	10	7300	1	09/25/03	09/27/03	
Antimony	EPA 6010B	3I25057	0.54	10	ND	1	09/25/03	09/26/03	U
Arsenic	EPA 6010B	3I25057	0.49	2.1	3.0	1	09/25/03	09/26/03	J
Barium	EPA 6010B	3I25057	0.36	1.0	62	1	09/25/03	09/26/03	J
Beryllium	EPA 6010B	3I25057	0.080	0.51	0.24	1	09/25/03	09/26/03	J
Boron	EPA 6010B	3I25057	0.96	4.7	5.1	1	09/25/03	09/26/03	UJ *10, \$
Cadmium	EPA 6010B	3I25057	0.044	0.51	0.22	1	09/25/03	09/26/03	J
Chromium	EPA 6010B	3I25057	0.087	1.0	9.7	1	09/25/03	09/26/03	J
Cobalt	EPA 6010B	3I25057	0.11	1.0	3.7	1	09/25/03	09/26/03	J
Copper	EPA 6010B	3I25057	0.23	2.1	4.1	1	09/25/03	09/26/03	J
Lead	EPA 6010B	3I25057	0.28	2.1	5.5	1	09/25/03	09/26/03	J
Mercury	EPA 7471A	3I26057	0.0065	0.021	0.0087	1	09/26/03	09/26/03	J
Molybdenum	EPA 6010B	3I25057	0.13	2.1	0.46	1	09/25/03	09/26/03	J
Nickel	EPA 6010B	3I25057	0.26	2.1	5.5	1	09/25/03	09/26/03	J
Selenium	EPA 6010B	3I25057	0.60	2.1	3.3	1	09/25/03	09/26/03	J
Silver	EPA 6010B	3I25057	0.16	1.0	0.16	1	09/25/03	09/26/03	J J *10
Thallium	EPA 6010B	3I25057	0.40	1.2	10	1	09/25/03	09/26/03	UJ *10, \$
Vanadium	EPA 6010B	3I25057	0.17	1.0	23	1	09/25/03	09/26/03	J
Zinc	EPA 6010B	3I25057	0.47	5.1	57	1	09/25/03	09/26/03	J

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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PM 01/01/04 LEVEL V

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI1169

Sampled: 09/16/03-09/17/03  
 Received: 09/17/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code	
Sample ID: IMI1169-07 (MT706 - Soil)					Sampled: 09/16/03							
Reporting Units: mg/kg dry												
Aluminum	EPA 6010B	3I25057	6.0	10	7000	1	09/25/03	09/27/03				
Antimony	EPA 6010B	3I25057	0.54	10	ND	1	09/25/03	09/26/03	U			
Arsenic	EPA 6010B	3I25057	0.49	2.1	3.4	1	09/25/03	09/26/03				
Barium	EPA 6010B	3I25057	0.36	1.0	71	1	09/25/03	09/26/03				
Beryllium	EPA 6010B	3I25057	0.080	0.52	0.30	1	09/25/03	09/26/03	J			
Boron	EPA 6010B	3I25057	0.9647	5.2	ND	1	09/25/03	09/26/03	UJ		#10, \$	
Cadmium	EPA 6010B	3I25057	0.044	0.52	0.21	1	09/25/03	09/26/03	J			
Chromium	EPA 6010B	3I25057	0.088	1.0	10	1	09/25/03	09/26/03				
Cobalt	EPA 6010B	3I25057	0.11	1.0	4.0	1	09/25/03	09/26/03				
Copper	EPA 6010B	3I25057	0.23	2.1	5.4	1	09/25/03	09/26/03				
Lead	EPA 6010B	3I25057	0.28	2.1	5.7	1	09/25/03	09/26/03				
Mercury	EPA 7471A	3I26057	0.0065	0.021	0.0088	1	09/26/03	09/26/03	J			
Molybdenum	EPA 6010B	3I25057	0.13	2.1	0.48	1	09/25/03	09/26/03	J			
Nickel	EPA 6010B	3I25057	0.26	2.1	6.6	1	09/25/03	09/26/03				
Selenium	EPA 6010B	3I25057	0.60	2.1	3.0	1	09/25/03	09/26/03				
Silver	EPA 6010B	3I25057	0.16	1.0	0.17	1	09/25/03	09/26/03	J J		#10	
Thallium	EPA 6010B	3I25057	0.4014	10	ND	1	09/25/03	09/26/03	UJ		#10, \$	
Vanadium	EPA 6010B	3I25057	0.18	1.0	23	1	09/25/03	09/26/03				
Zinc	EPA 6010B	3I25057	0.47	5.2	50	1	09/25/03	09/26/03				
Sample ID: IMI1169-08 (MT707 - Soil)					Sampled: 09/17/03							
Reporting Units: mg/kg dry												
Aluminum	EPA 6010B	3I25057	6.1	10	9400	1	09/25/03	09/27/03				
Antimony	EPA 6010B	3I25057	0.55	10	ND	1	09/25/03	09/26/03	U			
Arsenic	EPA 6010B	3I25057	0.50	2.1	3.3	1	09/25/03	09/26/03				
Barium	EPA 6010B	3I25057	0.37	1.0	80	1	09/25/03	09/26/03				
Beryllium	EPA 6010B	3I25057	0.082	0.52	0.36	1	09/25/03	09/26/03	J			
Boron	EPA 6010B	3I25057	0.9737	5.2	ND	1	09/25/03	09/26/03	UJ		#10, \$	
Cadmium	EPA 6010B	3I25057	0.045	0.52	0.22	1	09/25/03	09/26/03	J			
Chromium	EPA 6010B	3I25057	0.089	1.0	13	1	09/25/03	09/26/03				
Cobalt	EPA 6010B	3I25057	0.12	1.0	4.3	1	09/25/03	09/26/03				
Copper	EPA 6010B	3I25057	0.23	2.1	5.9	1	09/25/03	09/26/03				
Lead	EPA 6010B	3I25057	0.28	2.1	4.7	1	09/25/03	09/26/03				
Mercury	EPA 7471A	3I26057	0.0066	0.021	0.0096	1	09/26/03	09/26/03	J			
Molybdenum	EPA 6010B	3I25057	0.14	2.1	0.52	1	09/25/03	09/26/03	J			
Nickel	EPA 6010B	3I25057	0.26	2.1	7.6	1	09/25/03	09/26/03				
Selenium	EPA 6010B	3I25057	0.61	2.1	2.8	1	09/25/03	09/26/03				
Silver	EPA 6010B	3I25057	0.17	1.0	0.18	1	09/25/03	09/26/03	J J		#10	
Thallium	EPA 6010B	3I25057	0.4113	10	ND	1	09/25/03	09/26/03	UJ		#10, \$	
Vanadium	EPA 6010B	3I25057	0.18	1.0	25	1	09/25/03	09/26/03				
Zinc	EPA 6010B	3I25057	0.48	5.2	47	1	09/25/03	09/26/03				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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LEVEL 1

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI1169

Sampled: 09/16/03-09/17/03  
 Received: 09/17/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code	
Sample ID: IMI1169-09 (MT708 - Soil)					Sampled: 09/16/03							
Reporting Units: mg/kg dry												
Aluminum	EPA 6010B	3I25057	7.5	13	17000	1	09/25/03	09/27/03				
Antimony	EPA 6010B	3I25057	0.67	13	ND	1	09/25/03	09/26/03	U			
Arsenic	EPA 6010B	3I25057	0.62	2.6	5.8	1	09/25/03	09/26/03				
Barium	EPA 6010B	3I25057	0.45	1.3	130	1	09/25/03	09/26/03				
Beryllium	EPA 6010B	3I25057	0.10	0.65	0.69	1	09/25/03	09/26/03				
Boron	EPA 6010B	3I25057	1.2	6.5	1.7	1	09/25/03	09/26/03			J	
Cadmium	EPA 6010B	3I25057	0.056	0.65	0.43	1	09/25/03	09/26/03			J	
Chromium	EPA 6010B	3I25057	0.11	1.3	25	1	09/25/03	09/26/03				
Cobalt	EPA 6010B	3I25057	0.14	1.3	9.6	1	09/25/03	09/26/03				
Copper	EPA 6010B	3I25057	0.28	2.6	14	1	09/25/03	09/26/03				
Lead	EPA 6010B	3I25057	0.35	2.6	11	1	09/25/03	09/26/03				
Mercury	EPA 7471A	3I26057	0.0081	0.026	0.019	1	09/26/03	09/26/03			J	
Molybdenum	EPA 6010B	3I25057	0.17	2.6	1.0	1	09/25/03	09/26/03			J	
Nickel	EPA 6010B	3I25057	0.32	2.6	15	1	09/25/03	09/26/03				
Selenium	EPA 6010B	3I25057	0.75	2.6	3.5	1	09/25/03	09/26/03				
Silver	EPA 6010B	3I25057	0.21	2.6	ND	1	09/25/03	09/26/03	UJ		*10, \$	
Thallium	EPA 6010B	3I25057	0.50	1.9	ND	1	09/25/03	09/26/03	UJ		*10, \$	
Vanadium	EPA 6010B	3I25057	0.22	1.3	47	1	09/25/03	09/26/03				
Zinc	EPA 6010B	3I25057	0.59	6.5	56	1	09/25/03	09/26/03				

Pm 09/16/03

AMEC VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RF1  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method ILM04  
QC Level: V<sup>1</sup>  
SDG: IMI0247  
Matrix: soil  
No. of Samples: 7  
Date Reviewed: January 06, 2003  
Reviewer: P. Meeks  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MT534, MT535, MT536, MT537, MT538, MT539, MT540

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The cooler was received within the temperature QC limits of <math>4^{\circ}\pm 2^{\circ}</math> C. The COC was signed and dated by field and laboratory personnel. The case narrative noted that the samples were received intact. No information was provided regarding the presence or integrity of custody seals on the cooler. The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	<p>Two solid method blanks, 3110080-BLK1 and 3111093-BLK1, were analyzed in association with the samples in this SDG. Detects for Be, Cr, Co, Cu, Ni, and Zn were reported in the blanks. The following detects were also reported:</p> <p>Cd = 0.125 mg/kg Se = 0.890 mg/kg</p>	Cadmium detected in MT534 and selenium detected in MT534 and MT535 were qualified as estimated, "UJ." The remaining method blank detects were insufficient to qualify the site samples.

	Findings	Qualifications
5. <u>LCS/BS</u>	Two solid LCS samples, 3110080-BS1 and 3111093-BS1, were analyzed with the samples. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 85-120%.	No qualifications were required.
6. <u>Duplicates</u> None	None performed.	No qualifications were required.
7. <u>MS/MSDs</u> None	None performed.	No qualifications were required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted negative results for boron in MT534, MT536, and MT537, thallium in MT534 and MT535, and silver in MT536, MT537, MT538, MT539, and MT540.</p>	The reporting limits were raised to the levels of interference and the results were qualified as estimated, "UJ."
11. <u>Field QC</u> FB: MT697 (SDG IMI0935) and MT711 (SDG IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) Field Duplicates: none	Selenium was reported in MT710 at 0.0053 mg/L and antimony was reported in MT711 at 0.055 mg/L. There were other detects reported in all of the field QC samples but none at sufficient concentration to qualify the site samples in this SDG.	Selenium and antimony detected in sample MT536 were qualified as estimated, "J."
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0247

Sampled: 09/04/03  
 Received: 09/04/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code	
Sample ID: IMI0247-02 (MT534 - Soil)					Sampled: 09/04/03							
Reporting Units: mg/kg dry												
Aluminum	EPA 6010B	3I10080	6.2	11	12000	1	09/10/03	09/11/03				
Antimony	EPA 6010B	3I10080	0.56	11	ND	1	09/10/03	09/11/03	U			
Arsenic	EPA 6010B	3I10080	0.51	2.1	5.8	1	09/10/03	09/11/03				
Barium	EPA 6010B	3I10080	0.37	1.1	88	1	09/10/03	09/11/03				
Beryllium	EPA 6010B	3I10080	0.083	0.53	0.91	1	09/10/03	09/11/03		B		
Boron	EPA 6010B	3I10080	<del>0.99</del> 1.4	5.3	ND	1	09/10/03	09/11/03	UJ		*10, \$	
Cadmium	EPA 6010B	3I10080	0.046	0.53	0.56	1	09/10/03	09/11/03	UJ	B	B	
Chromium	EPA 6010B	3I10080	0.091	1.1	20	1	09/10/03	09/11/03				
Cobalt	EPA 6010B	3I10080	0.12	1.1	6.0	1	09/10/03	09/11/03				
Copper	EPA 6010B	3I10080	0.24	2.1	12	1	09/10/03	09/11/03				
Lead	EPA 6010B	3I10080	0.29	2.1	7.1	1	09/10/03	09/13/03				
Mercury	EPA 7471A	3I15059	0.0067	0.021	0.056	1	09/15/03	09/15/03				
Molybdenum	EPA 6010B	3I10080	0.14	2.1	0.76	1	09/10/03	09/11/03		J		
Nickel	EPA 6010B	3I10080	0.27	2.1	12	1	09/10/03	09/11/03				
Selenium	EPA 6010B	3I10080	0.62	2.1	2.0	1	09/10/03	09/11/03	UJ	B, J	B	
Silver	EPA 6010B	3I10080	0.17	1.1	ND	1	09/10/03	09/11/03	U			
Thallium	EPA 6010B	3I10080	<del>0.42</del> 1.3	11	ND	1	09/10/03	09/11/03	UJ		*10, \$	
Vanadium	EPA 6010B	3I10080	0.18	1.1	38	1	09/10/03	09/11/03				
Zinc	EPA 6010B	3I10080	0.49	5.3	66	1	09/10/03	09/11/03				

Sample ID: IMI0247-03 (MT535 - Soil)  
 Reporting Units: mg/kg dry

Sampled: 09/04/03

Aluminum	EPA 6010B	3I10080	6.4	11	12000	1	09/10/03	09/11/03			
Antimony	EPA 6010B	3I10080	0.57	11	ND	1	09/10/03	09/11/03	U		
Arsenic	EPA 6010B	3I10080	0.53	2.2	5.6	1	09/10/03	09/11/03			
Barium	EPA 6010B	3I10080	0.38	1.1	89	1	09/10/03	09/11/03			
Beryllium	EPA 6010B	3I10080	0.086	0.55	0.84	1	09/10/03	09/11/03		B	
Boron	EPA 6010B	3I10080	1.0	5.5	ND	1	09/10/03	09/11/03	U		
Cadmium	EPA 6010B	3I10080	0.047	0.55	0.67	1	09/10/03	09/11/03		B	
Chromium	EPA 6010B	3I10080	0.093	1.1	19	1	09/10/03	09/11/03			
Cobalt	EPA 6010B	3I10080	0.12	1.1	6.3	1	09/10/03	09/11/03			
Copper	EPA 6010B	3I10080	0.24	2.2	12	1	09/10/03	09/11/03			
Lead	EPA 6010B	3I10080	0.30	2.2	9.8	1	09/10/03	09/13/03			
Mercury	EPA 7471A	3I15059	0.0069	0.022	0.48	1	09/15/03	09/15/03			
Molybdenum	EPA 6010B	3I10080	0.14	2.2	0.85	1	09/10/03	09/11/03		J	
Nickel	EPA 6010B	3I10080	0.27	2.2	12	1	09/10/03	09/11/03			
Selenium	EPA 6010B	3I10080	0.64	2.2	2.7	1	09/10/03	09/11/03	UJ	B	B
Silver	EPA 6010B	3I10080	0.18	1.1	ND	1	09/10/03	09/11/03	U		
Thallium	EPA 6010B	3I10080	<del>0.43</del> 1.3	11	ND	1	09/10/03	09/11/03	UJ		*10, \$
Vanadium	EPA 6010B	3I10080	0.19	1.1	36	1	09/10/03	09/11/03			
Zinc	EPA 6010B	3I10080	0.51	5.5	73	1	09/10/03	09/11/03			

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 Michele Harper  
 Project Manager

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LEVEL V

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MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0247

Sampled: 09/04/03  
 Received: 09/04/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0247-04 (MT536 - Soil)					Sampled: 09/04/03				
Reporting Units: mg/kg dry					Rev Qual	Qual Code			
Aluminum	EPA 6010B	3I11093	6.3	11	13000	1	09/11/03	09/12/03	
Antimony	EPA 6010B	3I11093	0.57	11	0.66	1	09/11/03	09/12/03	J J F
Arsenic	EPA 6010B	3I11093	0.52	2.2	5.5	1	09/11/03	09/12/03	
Barium	EPA 6010B	3I11093	0.38	1.1	91	1	09/11/03	09/12/03	
Beryllium	EPA 6010B	3I11093	0.085	0.55	0.73	1	09/11/03	09/12/03	
Boron	EPA 6010B	3I11093	1.0	5.5	ND	1	09/11/03	09/12/03	U J *10, \$
Cadmium	EPA 6010B	3I11093	0.047	0.55	ND	1	09/11/03	09/12/03	U
Chromium	EPA 6010B	3I11093	0.093	1.1	20	1	09/11/03	09/12/03	
Cobalt	EPA 6010B	3I11093	0.12	1.1	5.4	1	09/11/03	09/12/03	
Copper	EPA 6010B	3I11093	0.24	2.2	11	1	09/11/03	09/12/03	
Lead	EPA 6010B	3I11093	0.29	2.2	8.2	1	09/11/03	09/12/03	
Mercury	EPA 7471A	3I15059	0.0069	0.022	0.058	1	09/15/03	09/15/03	
Molybdenum	EPA 6010B	3I11093	0.14	2.2	0.16	1	09/11/03	09/12/03	J
Nickel	EPA 6010B	3I11093	0.27	2.2	13	1	09/11/03	09/12/03	
Selenium	EPA 6010B	3I11093	0.63	2.2	0.63	1	09/11/03	09/12/03	J J F
Silver	EPA 6010B	3I11093	0.17	1.1	ND	1	09/11/03	09/12/03	U J *10, \$
Thallium	EPA 6010B	3I11093	0.43	11	ND	1	09/11/03	09/12/03	U
Vanadium	EPA 6010B	3I11093	0.19	1.1	37	1	09/11/03	09/12/03	
Zinc	EPA 6010B	3I11093	0.50	5.5	59	1	09/11/03	09/12/03	
Sample ID: IMI0247-05 (MT537 - Soil)					Sampled: 09/04/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3I11093	6.5	11	14000	1	09/11/03	09/12/03	
Antimony	EPA 6010B	3I11093	0.58	11	0.91	1	09/11/03	09/12/03	J
Arsenic	EPA 6010B	3I11093	0.54	2.2	5.4	1	09/11/03	09/12/03	
Barium	EPA 6010B	3I11093	0.39	1.1	97	1	09/11/03	09/12/03	
Beryllium	EPA 6010B	3I11093	0.087	0.56	0.76	1	09/11/03	09/12/03	
Boron	EPA 6010B	3I11093	1.0	5.6	ND	1	09/11/03	09/12/03	U J *10, \$
Cadmium	EPA 6010B	3I11093	0.048	0.56	ND	1	09/11/03	09/12/03	U
Chromium	EPA 6010B	3I11093	0.095	1.1	20	1	09/11/03	09/12/03	
Cobalt	EPA 6010B	3I11093	0.12	1.1	5.6	1	09/11/03	09/12/03	
Copper	EPA 6010B	3I11093	0.25	2.2	10	1	09/11/03	09/12/03	
Lead	EPA 6010B	3I11093	0.30	2.2	8.5	1	09/11/03	09/12/03	
Mercury	EPA 7471A	3I15059	0.0071	0.022	0.044	1	09/15/03	09/15/03	
Molybdenum	EPA 6010B	3I11093	0.15	2.2	0.15	1	09/11/03	09/12/03	J
Nickel	EPA 6010B	3I11093	0.28	2.2	13	1	09/11/03	09/12/03	
Selenium	EPA 6010B	3I11093	0.65	2.2	ND	1	09/11/03	09/12/03	U
Silver	EPA 6010B	3I11093	0.18	0.96	1.1	1	09/11/03	09/12/03	U J *10, \$
Thallium	EPA 6010B	3I11093	0.44	11	ND	1	09/11/03	09/12/03	U
Vanadium	EPA 6010B	3I11093	0.19	1.1	38	1	09/11/03	09/12/03	
Zinc	EPA 6010B	3I11093	0.52	5.6	130	1	09/11/03	09/12/03	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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*Am 01/01/04*

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0247

Sampled: 09/04/03  
 Received: 09/04/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0247-06 (MT538 - Soil)					Sampled: 09/04/03				
Reporting Units: mg/kg dry									Rev Qual
Aluminum	EPA 6010B	3I11093	6.0	10	13000	1	09/11/03	09/12/03	
Antimony	EPA 6010B	3I11093	0.54	10	1.2	1	09/11/03	09/12/03	J
Arsenic	EPA 6010B	3I11093	0.49	2.1	4.4	1	09/11/03	09/12/03	
Barium	EPA 6010B	3I11093	0.36	1.0	86	1	09/11/03	09/12/03	
Beryllium	EPA 6010B	3I11093	0.080	0.51	0.67	1	09/11/03	09/12/03	
Boron	EPA 6010B	3I11093	0.96	5.1	ND	1	09/11/03	09/12/03	U
Cadmium	EPA 6010B	3I11093	0.044	0.51	0.067	1	09/11/03	09/12/03	J
Chromium	EPA 6010B	3I11093	0.087	1.0	17	1	09/11/03	09/12/03	
Cobalt	EPA 6010B	3I11093	0.11	1.0	4.7	1	09/11/03	09/12/03	
Copper	EPA 6010B	3I11093	0.23	2.1	10	1	09/11/03	09/12/03	
Lead	EPA 6010B	3I11093	0.28	2.1	12	1	09/11/03	09/12/03	
Mercury	EPA 7471A	3I15059	0.0065	0.021	0.26	1	09/15/03	09/15/03	
Molybdenum	EPA 6010B	3I11093	0.13	2.1	0.19	1	09/11/03	09/12/03	J
Nickel	EPA 6010B	3I11093	0.26	2.1	11	1	09/11/03	09/12/03	
Selenium	EPA 6010B	3I11093	0.60	2.1	ND	1	09/11/03	09/12/03	U
Silver	EPA 6010B	3I11093	0.16	1.0	ND	1	09/11/03	09/12/03	U
Thallium	EPA 6010B	3I11093	0.40	10	ND	1	09/11/03	09/12/03	U
Vanadium	EPA 6010B	3I11093	0.17	1.0	34	1	09/11/03	09/12/03	
Zinc	EPA 6010B	3I11093	0.47	5.1	69	1	09/11/03	09/12/03	
Sample ID: IMI0247-07 (MT539 - Soil)					Sampled: 09/04/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3I11093	7.4	13	18000	1	09/11/03	09/12/03	
Antimony	EPA 6010B	3I11093	0.66	13	ND	1	09/11/03	09/12/03	U
Arsenic	EPA 6010B	3I11093	0.61	2.5	6.0	1	09/11/03	09/12/03	
Barium	EPA 6010B	3I11093	0.44	1.3	120	1	09/11/03	09/12/03	
Beryllium	EPA 6010B	3I11093	0.099	0.63	0.99	1	09/11/03	09/12/03	
Boron	EPA 6010B	3I11093	1.2	6.3	ND	1	09/11/03	09/12/03	U
Cadmium	EPA 6010B	3I11093	0.055	0.63	0.095	1	09/11/03	09/12/03	J
Chromium	EPA 6010B	3I11093	0.11	1.3	26	1	09/11/03	09/12/03	
Cobalt	EPA 6010B	3I11093	0.14	1.3	8.7	1	09/11/03	09/12/03	
Copper	EPA 6010B	3I11093	0.28	2.5	15	1	09/11/03	09/12/03	
Lead	EPA 6010B	3I11093	0.34	2.5	11	1	09/11/03	09/12/03	
Mercury	EPA 7471A	3I15059	0.0080	0.025	0.020	1	09/15/03	09/15/03	J
Molybdenum	EPA 6010B	3I11093	0.16	2.5	ND	1	09/11/03	09/12/03	U
Nickel	EPA 6010B	3I11093	0.32	2.5	19	1	09/11/03	09/12/03	
Selenium	EPA 6010B	3I11093	0.74	2.5	ND	1	09/11/03	09/12/03	U
Silver	EPA 6010B	3I11093	0.20	1.3	ND	1	09/11/03	09/12/03	U
Thallium	EPA 6010B	3I11093	0.49	13	ND	1	09/11/03	09/12/03	U
Vanadium	EPA 6010B	3I11093	0.22	1.3	49	1	09/11/03	09/12/03	
Zinc	EPA 6010B	3I11093	0.58	6.3	61	1	09/11/03	09/12/03	

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 Michele Harper  
 Project Manager

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MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0247

Sampled: 09/04/03  
 Received: 09/04/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IMI0247-08 (MT540 - Soil)					Sampled: 09/04/03					
Reporting Units: mg/kg dry									Rev Qual	Qual Code
Aluminum	EPA 6010B	3I11093	6.6	11	11000	1	09/11/03	09/12/03		
Antimony	EPA 6010B	3I11093	0.59	11	ND	1	09/11/03	09/12/03	U	
Arsenic	EPA 6010B	3I11093	0.54	2.3	4.1	1	09/11/03	09/12/03		
Barium	EPA 6010B	3I11093	0.40	1.1	74	1	09/11/03	09/12/03		
Beryllium	EPA 6010B	3I11093	0.088	0.56	0.62	1	09/11/03	09/12/03		
Boron	EPA 6010B	3I11093	1.1	5.6	ND	1	09/11/03	09/12/03	U	
Cadmium	EPA 6010B	3I11093	0.049	0.56	0.054	1	09/11/03	09/12/03		J
Chromium	EPA 6010B	3I11093	0.096	1.1	14	1	09/11/03	09/12/03		
Cobalt	EPA 6010B	3I11093	0.12	1.1	3.8	1	09/11/03	09/12/03		
Copper	EPA 6010B	3I11093	0.25	2.3	9.2	1	09/11/03	09/12/03		
Lead	EPA 6010B	3I11093	0.31	2.3	5.3	1	09/11/03	09/12/03		
Mercury	EPA 7471A	3I15059	0.0071	0.023	0.023	1	09/15/03	09/15/03		
Molybdenum	EPA 6010B	3I11093	0.15	2.3	0.34	1	09/11/03	09/12/03		J
Nickel	EPA 6010B	3I11093	0.28	2.3	9.4	1	09/11/03	09/12/03		
Selenium	EPA 6010B	3I11093	0.66	2.3	ND	1	09/11/03	09/12/03	U	
Silver	EPA 6010B	3I11093	0.18	1.1	ND	1	09/11/03	09/12/03	U	
Thallium	EPA 6010B	3I11093	0.44	11	ND	1	09/11/03	09/12/03	U	
Vanadium	EPA 6010B	3I11093	0.19	1.1	27	1	09/11/03	09/12/03		
Zinc	EPA 6010B	3I11093	0.52	5.6	49	1	09/11/03	09/12/03		

fm 01/07/04

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Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method ILM04  
QC Level: V<sup>1</sup>  
SDG: IMH1307  
Matrix: soil  
No. of Samples: 2  
Date Reviewed: January 06, 2004  
Reviewer: P. Meeks  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MT504, MT505

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The cooler was received within the temperature QC limits of <math>4^{\circ}\pm 2^{\circ}</math> C. The COC was signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in this SDG. The case narrative noted that the samples were received intact. No information was provided regarding the presence or integrity of custody seals on the cooler.</p> <p>The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	<p>A solid method blank, 3H26071-BLK1, was analyzed in association with the samples in this SDG. The following detects were reported:</p> <p>Co = 0.135 mg/kg Cu = 0.225 mg/kg Zn = 3.17 mg/kg</p>	The method blank detects were insufficient to qualify the site samples. No qualifications were required.

	Findings	Qualifications
5. <u>LCS/BS</u>	A solid LCS sample, 3H26071-BS1, was analyzed with the samples. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 85-120%.	No qualifications were required.
6. <u>Duplicates</u> None	None performed.	No qualifications were required.
7. <u>MS/MSDs</u> None	None performed.	No qualifications were required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.	No qualifications were required.
11. <u>Field QC</u> FB: MT697 (SDG IMI0935) and MT711 (SDG IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) Field Duplicates: none	There were detects reported in all of the field QC samples but none at sufficient concentration to qualify the site samples in this SDG.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMH1307

Sampled: 08/22/03  
 Received: 08/22/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qua Code
Sample ID: IMH1307-01 (MT504 - Soil)											
Reporting Units: mg/kg dry											
Aluminum	EPA 6010B	3H26071	6.1	11	15000	1	08/26/03	08/26/03			
Antimony	EPA 6010B	3H26071	0.55	11	ND	1	08/26/03	08/26/03	U		
Arsenic	EPA 6010B	3H26071	0.51	2.1	5.8	1	08/26/03	08/26/03			
Barium	EPA 6010B	3H26071	0.37	1.1	85	1	08/26/03	08/26/03			
Beryllium	EPA 6010B	3H26071	0.082	0.53	0.79	1	08/26/03	08/26/03			
Boron	EPA 6010B	3H26071	0.98	5.3	4.6	1	08/26/03	08/26/03			J
Cadmium	EPA 6010B	3H26071	0.045	0.53	0.49	1	08/26/03	08/26/03			J
Chromium	EPA 6010B	3H26071	0.090	1.1	22	1	08/26/03	08/26/03			
Cobalt	EPA 6010B	3H26071	0.12	1.1	5.5	1	08/26/03	08/26/03			
Copper	EPA 6010B	3H26071	0.23	2.1	11	1	08/26/03	08/26/03			
Lead	EPA 6010B	3H26071	0.28	2.1	8.7	1	08/26/03	08/26/03			
Mercury	EPA 7471A	3H28045	0.0066	0.021	0.039	1	08/28/03	08/28/03			
Molybdenum	EPA 6010B	3H26071	0.14	2.1	0.70	1	08/26/03	08/26/03			J
Nickel	EPA 6010B	3H26071	0.26	2.1	12	1	08/26/03	08/26/03			
Selenium	EPA 6010B	3H26071	0.61	2.1	1.8	1	08/26/03	08/26/03			J
Silver	EPA 6010B	3H26071	0.17	1.1	ND	1	08/26/03	08/26/03	U		
Thallium	EPA 6010B	3H26071	0.41	11	1.0	1	08/26/03	08/26/03			J
Vanadium	EPA 6010B	3H26071	0.18	1.1	40	1	08/26/03	08/26/03			
Zinc	EPA 6010B	3H26071	0.48	5.3	60	1	08/26/03	08/26/03			
Sample ID: IMH1307-02 (MT505 - Soil)											
Reporting Units: mg/kg dry											
Aluminum	EPA 6010B	3H26071	6.4	11	14000	1	08/26/03	08/26/03			
Antimony	EPA 6010B	3H26071	0.57	11	ND	1	08/26/03	08/26/03	U		
Arsenic	EPA 6010B	3H26071	0.53	2.2	4.2	1	08/26/03	08/26/03			
Barium	EPA 6010B	3H26071	0.38	1.1	93	1	08/26/03	08/26/03			
Beryllium	EPA 6010B	3H26071	0.086	0.55	0.77	1	08/26/03	08/26/03			
Boron	EPA 6010B	3H26071	1.0	5.5	4.2	1	08/26/03	08/26/03			J
Cadmium	EPA 6010B	3H26071	0.047	0.55	0.50	1	08/26/03	08/26/03			J
Chromium	EPA 6010B	3H26071	0.093	1.1	19	1	08/26/03	08/26/03			
Cobalt	EPA 6010B	3H26071	0.12	1.1	6.3	1	08/26/03	08/26/03			
Copper	EPA 6010B	3H26071	0.24	2.2	12	1	08/26/03	08/26/03			
Lead	EPA 6010B	3H26071	0.30	2.2	32	1	08/26/03	08/26/03			
Mercury	EPA 7471A	3H28045	0.0069	0.022	0.52	1	08/28/03	08/28/03			
Molybdenum	EPA 6010B	3H26071	0.14	2.2	0.72	1	08/26/03	08/26/03			J
Nickel	EPA 6010B	3H26071	0.27	2.2	11	1	08/26/03	08/26/03			
Selenium	EPA 6010B	3H26071	0.64	2.2	1.7	1	08/26/03	08/26/03			J
Silver	EPA 6010B	3H26071	0.18	1.1	ND	1	08/26/03	08/26/03	U		
Thallium	EPA 6010B	3H26071	0.43	11	0.83	1	08/26/03	08/26/03			J
Vanadium	EPA 6010B	3H26071	0.19	1.1	35	1	08/26/03	08/26/03			
Zinc	EPA 6010B	3H26071	0.50	5.5	65	1	08/26/03	08/26/03			

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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LEVEL V



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method ILM04  
QC Level: V<sup>1</sup>  
SDG: IM10405  
Matrix: soil  
No. of Samples: 6  
Date Reviewed: January 06, 2004  
Reviewer: P. Meeks  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MT541, MT542, MT543, MT544, MT545, MT546

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The cooler was received within the temperature QC limits of <math>4^{\circ}\pm 2^{\circ}</math> C. The COC was signed and dated by field and laboratory personnel. The case narrative noted that the samples were received intact. No information was provided regarding the presence or integrity of custody seals on the cooler.</p> <p>The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	Four solid method blanks were analyzed in association with the samples in this SDG. Several detects were reported in the method blanks, but none at sufficient concentration to qualify the site samples.	No qualifications were required.
5. <u>LCS/BS</u>	Four solid LCS samples were analyzed with the samples. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 85-120%.	No qualifications were required.

	Findings	Qualifications
6. <u>Duplicates</u> MT543	All RPDs were within the control limits of $\pm 20\%$ .	No qualifications were required.
7. <u>MS/MSDs</u> MT543	Antimony was recovered in the MS and MSD at 43% and 38%, respectively. All remaining recoveries were within the control limits of 75-135%.	Nondetected antimony in all site samples was qualified as estimated, "UJ."
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted negative results for thallium in MT542, boron in MT541 and MT542, and silver in all site samples.</p>	The reporting limit and MDL for boron in MT541 and the MDLs for the remaining results were raised to the levels of interference and the results were qualified as estimated, "UJ."
11. <u>Field QC</u> FB: MT697 (SDG IMI0935) and MT711 (SDG IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) Field Duplicates: MT542/MT545	<p>There were detects reported in all of the field QC samples but none at sufficient concentration to qualify the site samples in this SDG.</p> <p>Boron and cadmium were detected in MT545 but not in MT542. All other detects for the field duplicate pair were in common and all RPDs were less than 50%.</p>	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0405

Sampled: 09/05/03  
 Received: 09/05/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0405-02 (MT541 - Soil)					Sampled: 09/05/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3I12068	6.0	10	9100	1	09/12/03	09/13/03	
Antimony	EPA 6010B	3I12068	0.53	10	ND	1	09/12/03	09/13/03	UJ
Arsenic	EPA 6010B	3I12068	0.49	2.1	3.4	1	09/12/03	09/13/03	
Barium	EPA 6010B	3I12068	0.36	1.0	69	1	09/12/03	09/13/03	
Beryllium	EPA 6010B	3I12068	0.080	0.51	0.50	1	09/12/03	09/13/03	J
Boron	EPA 6010B	3I16072	<del>0.95</del> 5.3	5.3	ND	1	09/16/03	09/16/03	UJ
Cadmium	EPA 6010B	3I12068	0.044	0.51	0.27	1	09/12/03	09/13/03	J
Chromium	EPA 6010B	3I12068	0.087	1.0	13	1	09/12/03	09/13/03	
Cobalt	EPA 6010B	3I12068	0.11	1.0	3.7	1	09/12/03	09/13/03	
Copper	EPA 6010B	3I12068	0.23	2.1	7.5	1	09/12/03	09/13/03	
Lead	EPA 6010B	3I12068	0.28	2.1	19	1	09/12/03	09/13/03	
Mercury	EPA 7471A	3I15050	0.0065	0.021	0.22	1	09/15/03	09/15/03	
Molybdenum	EPA 6010B	3I12068	0.13	2.1	0.13	1	09/12/03	09/13/03	J
Nickel	EPA 6010B	3I12068	0.26	2.1	9.1	1	09/12/03	09/13/03	
Selenium	EPA 6010B	3I12068	0.60	2.1	ND	1	09/12/03	09/13/03	UJ
Silver	EPA 6010B	3I12068	<del>0.16</del> 0.95	1.0	ND	1	09/12/03	09/13/03	UJ
Thallium	EPA 6010B	3I12068	0.40	10	ND	1	09/12/03	09/13/03	
Vanadium	EPA 6010B	3I12068	0.17	1.0	26	1	09/12/03	09/13/03	
Zinc	EPA 6010B	3I12068	0.47	5.1	73	1	09/12/03	09/13/03	

Sample ID: IMI0405-03 (MT542 - Soil)  
 Reporting Units: mg/kg dry

Sampled: 09/05/03

Aluminum	EPA 6010B	3I12068	6.7	12	14000	1	09/12/03	09/13/03	
Antimony	EPA 6010B	3I12068	0.60	12	ND	1	09/12/03	09/13/03	UJ
Arsenic	EPA 6010B	3I12068	0.56	2.3	5.2	1	09/12/03	09/13/03	
Barium	EPA 6010B	3I12068	0.41	1.2	110	1	09/12/03	09/13/03	
Beryllium	EPA 6010B	3I12068	0.090	0.58	0.81	1	09/12/03	09/13/03	
Boron	EPA 6010B	3I16072	<del>1.15</del> 5.8	5.8	ND	1	09/16/03	09/16/03	UJ
Cadmium	EPA 6010B	3I12068	0.050	0.58	ND	1	09/12/03	09/13/03	
Chromium	EPA 6010B	3I12068	0.099	1.2	20	1	09/12/03	09/13/03	
Cobalt	EPA 6010B	3I12068	0.13	1.2	5.8	1	09/12/03	09/13/03	
Copper	EPA 6010B	3I12068	0.26	2.3	12	1	09/12/03	09/13/03	
Lead	EPA 6010B	3I12068	0.31	2.3	9.2	1	09/12/03	09/13/03	
Mercury	EPA 7471A	3I15050	0.0073	0.023	0.023	1	09/15/03	09/15/03	
Molybdenum	EPA 6010B	3I12068	0.15	2.3	0.21	1	09/12/03	09/13/03	J
Nickel	EPA 6010B	3I12068	0.29	2.3	13	1	09/12/03	09/13/03	
Selenium	EPA 6010B	3I12068	0.67	2.3	ND	1	09/12/03	09/13/03	UJ
Silver	EPA 6010B	3I12068	<del>0.19</del> 1.1	1.2	ND	1	09/12/03	09/13/03	UJ
Thallium	EPA 6010B	3I12068	<del>0.45</del> 0.73	12	ND	1	09/12/03	09/13/03	
Vanadium	EPA 6010B	3I12068	0.20	1.2	36	1	09/12/03	09/13/03	
Zinc	EPA 6010B	3I12068	0.53	5.8	53	1	09/12/03	09/13/03	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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LEVEL V

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MWH-San Diego
1230 Columbia Street, Suite 750
San Diego, CA 92101
Attention: Lisa J. Tucker

Project ID: Building 56 Landfill
Boeing SSFL
Report Number: IMI0405

Sampled: 09/05/03
Received: 09/05/03

METALS

Table with columns: Analyte, Method, Batch, MDL Limit, Reporting Limit, Sample Result, Dilution Factor, Date Extracted, Date Analyzed, Data Qualifiers. Includes sample ID IMI0405-04 (MT543 - Soil) and reporting units mg/kg dry.

Sample ID: IMI0405-05 (MT544 - Soil)
Reporting Units: mg/kg dry

Sampled: 09/05/03

Table with columns: Analyte, Method, Batch, MDL Limit, Reporting Limit, Sample Result, Dilution Factor, Date Extracted, Date Analyzed, Data Qualifiers. Includes sample ID IMI0405-05 (MT544 - Soil) and reporting units mg/kg dry.

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Michelle Harper
Project Manager

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pm 01/01/04

LEVEL V



MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0405

Sampled: 09/05/03  
 Received: 09/05/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0405-06 (MT545 - Soil)					Sampled: 09/05/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3I12092	6.1	10	12000	1	09/12/03	09/13/03	
Antimony	EPA 6010B	3I12092	0.55	10	ND	1	09/12/03	09/13/03	
Arsenic	EPA 6010B	3I12092	0.50	2.1	3.8	1	09/12/03	09/13/03	
Barium	EPA 6010B	3I12092	0.37	1.0	96	1	09/12/03	09/13/03	
Beryllium	EPA 6010B	3I12092	0.082	0.52	0.74	1	09/12/03	09/13/03	
Boron	EPA 6010B	3I12092	0.97	5.2	4.6	1	09/12/03	09/13/03	J
Cadmium	EPA 6010B	3I12092	0.045	0.52	0.076	1	09/12/03	09/13/03	J
Chromium	EPA 6010B	3I12092	0.089	1.0	16	1	09/12/03	09/13/03	
Cobalt	EPA 6010B	3I12092	0.12	1.0	5.8	1	09/12/03	09/13/03	
Copper	EPA 6010B	3I12092	0.23	2.1	9.7	1	09/12/03	09/13/03	
Lead	EPA 6010B	3I12092	0.28	2.1	7.8	1	09/12/03	09/13/03	
Mercury	EPA 7471A	3I15050	0.0066	0.021	0.016	1	09/15/03	09/15/03	J
Molybdenum	EPA 6010B	3I12092	0.14	2.1	0.47	1	09/12/03	09/13/03	J
Nickel	EPA 6010B	3I12092	0.26	2.1	11	1	09/12/03	09/13/03	
Selenium	EPA 6010B	3I12092	0.61	2.1	ND	1	09/12/03	09/13/03	
Silver	EPA 6010B	3I12092	0.176.49	1.0	ND	1	09/12/03	09/13/03	
Thallium	EPA 6010B	3I12092	0.41	10	ND	1	09/12/03	09/13/03	
Vanadium	EPA 6010B	3I12092	0.18	1.0	31	1	09/12/03	09/13/03	
Zinc	EPA 6010B	3I12092	0.48	5.2	41	1	09/12/03	09/13/03	

Sample ID: IMI0405-07 (MT546 - Soil)

Sampled: 09/05/03

Reporting Units: mg/kg dry

Aluminum	EPA 6010B	3I12092	6.3	11	15000	1	09/12/03	09/13/03	
Antimony	EPA 6010B	3I12092	0.56	11	ND	1	09/12/03	09/13/03	
Arsenic	EPA 6010B	3I12092	0.52	2.2	6.2	1	09/12/03	09/13/03	
Barium	EPA 6010B	3I12092	0.38	1.1	95	1	09/12/03	09/13/03	
Beryllium	EPA 6010B	3I12092	0.084	0.54	0.77	1	09/12/03	09/13/03	
Boron	EPA 6010B	3I12092	1.0	5.4	5.3	1	09/12/03	09/13/03	J
Cadmium	EPA 6010B	3I12092	0.046	0.54	ND	1	09/12/03	09/13/03	
Chromium	EPA 6010B	3I12092	0.092	1.1	17	1	09/12/03	09/13/03	
Cobalt	EPA 6010B	3I12092	0.12	1.1	4.8	1	09/12/03	09/13/03	
Copper	EPA 6010B	3I12092	0.24	2.2	10	1	09/12/03	09/13/03	
Lead	EPA 6010B	3I12092	0.29	2.2	12	1	09/12/03	09/13/03	
Mercury	EPA 7471A	3I16046	0.0068	0.022	0.023	1	09/16/03	09/16/03	
Molybdenum	EPA 6010B	3I12092	0.14	2.2	0.37	1	09/12/03	09/13/03	J
Nickel	EPA 6010B	3I12092	0.27	2.2	11	1	09/12/03	09/13/03	
Selenium	EPA 6010B	3I12092	0.63	2.2	ND	1	09/12/03	09/13/03	
Silver	EPA 6010B	3I12092	0.170.68	1.1	ND	1	09/12/03	09/13/03	
Thallium	EPA 6010B	3I12092	0.42	11	ND	1	09/12/03	09/13/03	
Vanadium	EPA 6010B	3I12092	0.18	1.1	34	1	09/12/03	09/13/03	
Zinc	EPA 6010B	3I12092	0.50	5.4	48	1	09/12/03	09/13/03	

Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

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PM 01/07/04

**LEVEL V**



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## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method ILM04  
QC Level: V<sup>1</sup>  
SDG: MF003  
Matrix: soil  
No. of Samples: 1  
Date Reviewed: January 06, 2004  
Reviewer: P. Meeks  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MF005

### Data Validation Findings

	Findings	Qualifications
I. <u>Sample Management</u>	<p>The cooler was received within the temperature QC limits of <math>4^{\circ}\pm 2^{\circ}</math> C. The COC was signed and dated by field and laboratory personnel. The sample's EPA ID was hand-corrected on the COC. Per a telephone conversation with E. Sarao of MWH, the ID was corrected by the field crew and reflected the proper ID.</p> <p>The case narrative noted that the sample was received intact. No custody seals were present on the cooler. The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.</p>	No qualifications were required.

	Findings	Qualifications
3. <u>Method Blanks</u>	<p>A solid method blank, PBS01, was analyzed in association with the sample in this SDG. Detects or negative results were reported for As, Ca, Cr, Pb, Mn, Na, Ag, and Zn. Other reported detects were:</p> <p>Mo = 0.080 mg/kg            Se = -0.671 mg/kg</p> <p>Additionally, the reviewer noted a detect for sodium of 992.5 µg/L in CCB2.</p>	<p>Molybdenum detected in MF005 was qualified, "UJ," and selenium detected in MF005 was qualified "J." The remaining method blank detects were insufficient to qualify the site samples.</p> <p>Sodium detected in MF005 was qualified "UJ."</p>
5. <u>LCS/BS</u>	<p>A solid LCS sample was analyzed with the sample. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 85-120%.</p>	<p>No qualifications were required.</p>
6. <u>Duplicates</u> None	<p>None performed.</p>	<p>No qualifications were required.</p>
7. <u>MS/MSDs</u> None	<p>None performed.</p>	<p>No qualifications were required.</p>
9. <u>ICP Serial Dilution</u>	<p>None.</p>	<p>No qualifications were required.</p>
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted that the laboratory incorrectly reported silver and cadmium as detects.</p> <p>The reviewer noted negative results greater than the IDL but less than the CRDL for silver, cadmium, antimony, and thallium in MF005.</p>	<p>The reporting limits for these analytes were raised to the levels of interference and the results were qualified as estimated, "UJ."</p>

	Findings	Qualifications
<u>II. Field QC</u> FB: M1697 (SDG IM10935) and M1711 (SDG IM11005) ER: M1696 (SDG IM10935) and M1710 (SDG IM11005) Field Duplicates: none	There were detects reported in all of the field QC samples but none at sufficient concentration to qualify the site samples in this SDG.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

**TOTAL METALS**

-1-

**INORGANIC ANALYSES DATA SHEET**

EPA SAMPLE NO.

MF005

Lab Name: Ceimic Corporation Contract: Boeing SSFL  
 Lab Code: CEIMIC Case No.: BOEING SAS No.: \_\_\_\_\_ SDG No.: MF003  
 Matrix (soil/water): SOIL Lab Sample ID: 031290-03  
 Level (low/med): LOW Date Received: 9/19/2003  
 % Solids: 86.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Rev Qual	Qual Code
7429-90-5	Aluminum	17300	B		P		
7440-36-0	Antimony	2.7 <del>0.12</del>	U		P	UJ	*10, \$
7440-38-2	Arsenic	5.2			P		
7440-39-3	Barium	96.9	B		P		
7440-41-7	Beryllium	1.9			P		
7440-42-8	Boron	11.8	B		P		
7440-43-9	Cadmium	0.18 0.017	B		P		UJ *10, \$
7440-70-2	Calcium	4910	B		P		
7440-47-3	Chromium	18.0	B		P		
7440-48-4	Cobalt	7.4	B		P		
7440-50-8	Copper	8.5	B		P		
7439-89-6	Iron	19500	B		P		
7439-92-1	Lead	5.6	B		P		
7439-95-4	Magnesium	4420	B		P		
7439-96-5	Manganese	299	B		P		
7439-97-6	Mercury	0.050	U		CV	U	
7439-98-7	Molybdenum	0.074	B		P	UJ	B
7440-02-0	Nickel	11.7			P		
7440-09-7	Potassium	2730	B		P		
7782-49-2	Selenium	1.1	B		P	J	B
7440-22-4	Silver	1.9 <del>0.051</del>	B		P	UJ	*10, \$
7440-23-5	Sodium	93.9	B		P	UJ	B
7440-28-0	Thallium	1.5 <del>0.16</del>	U		P	UJ	*10, \$
7440-62-2	Vanadium	35.0	B		P		
7440-66-6	Zinc	59.4	B		P		

*PM 01/07/04*

Color Before: brown Clarity Before: n/a Texture: sand  
 Color After: yellow Clarity After: n/a Artifacts: \_\_\_\_\_

Comments:

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**LEVEL V**



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
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## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method ILM04  
QC Level: V<sup>1</sup>  
SDG: MF001  
Matrix: soil  
No. of Samples: 1  
Date Reviewed: January 06, 2004  
Reviewer: P. Meeks  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MF001

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The cooler was received within the temperature QC limits of <math>4^{\circ}\pm 2^{\circ}</math> C. The COC was signed and dated by field and laboratory personnel. The case narrative noted that the sample was received intact. No custody seals were present on the cooler. The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	<p>A solid method blank, PBS01, was analyzed in association with the sample in this SDG. The following detects were reported:</p> <p>Ca = 8.777 mg/kg Pb = 0.208 mg/kg Mn = 0.084 mg/kg K = 4.677 mg/kg Na = -5.937 mg/kg Tl = 0.432 mg/kg</p> <p>Additionally, the reviewer noted an antimony detect of 3.8 <math>\mu\text{g/L}</math> in CCB3 and a negative result for sodium of <math>-481.9 \mu\text{g/L}</math> in CCB4.</p>	<p>Thallium was not detected in the site sample and the remaining method blank detects were insufficient to qualify the site sample.</p> <p>Antimony detected in MF001 was qualified, "UJ," and sodium detected in MF001 was qualified "J."</p>

	Findings	Qualifications
5. <u>LCS/BS</u>	A solid LCS sample was analyzed with the sample. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 85-120%.	No qualifications were required.
6. <u>Duplicates</u> None	None performed.	No qualifications were required.
7. <u>MS/MSDs</u> None	None performed.	No qualifications were required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted negative results greater than the IDL but less than the CRDL for silver and thallium in MF001.</p>	The reporting limits for silver and thallium were raised to the levels of interference and the results were qualified as estimated, "UJ."
11. <u>Field QC</u> FB: MT697 (SDG IMI0935) and MT711 (SDG IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) Field Duplicates: none	There were detects reported in all of the field QC samples but none at sufficient concentration to qualify the site samples in this SDG.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

TOTAL METALS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MF001

Lab Name: Ceimic Corporation Contract: Boeing SSFL  
 Lab Code: CEIMIC Case No.: BOEING SAS No.: \_\_\_\_\_ SDG No.: MF001  
 Matrix (soil/water): SOIL Lab Sample ID: 031213-01  
 Level (low/med): LOW Date Received: 9/6/2003  
 % Solids: 96.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Res Qual	Qual Code
7429-90-5	Aluminum	10500			P	A	*#
7440-36-0	Antimony	0.97	B		P	UJ	B
7440-38-2	Arsenic	5.4			P		
7440-39-3	Barium	99.6			P		
7440-41-7	Beryllium	1.1			P		
7440-42-8	Boron	13.4	B		P		
7440-43-9	Cadmium	0.45			P		
7440-70-2	Calcium	5330			P	A	*#
7440-47-3	Chromium	16.8			P		
7440-48-4	Cobalt	7.7			P		
7440-50-8	Copper	11.3			P		
7439-89-6	Iron	17300			P	A	*#
7439-92-1	Lead	42.3			P		
7439-95-4	Magnesium	3880			P		
7439-96-5	Manganese	315			P		
7439-98-7	Molybdenum	0.10	B		P		
7439-97-6	Mercury	0.12			CV		
7440-02-0	Nickel	11.2			P		
7440-09-7	Potassium	3120			P		
7782-49-2	Selenium	0.26	U		P	U	
7440-22-4	Silver	1.2-0.035	U		P	UJ	*10
7440-23-5	Sodium	74.4	B		P	J	B
7440-28-0	Thallium	-5.1-0.11	U		P	UJ	*10, \$
7440-62-2	Vanadium	30.5			P		
7440-66-6	Zinc	80.2			P		

pm 01/04/04

Color Before: brown Clarity Before: n/a Texture: medium  
 Color After: yellow Clarity After: n/a Artifacts: \_\_\_\_\_

Comments: \_\_\_\_\_

AMEC VALIDATED

LEVEL V



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method 6010B and 7470A  
QC Level: V<sup>1</sup>  
SDG: IMI0763  
Matrix: Soil  
No. of Samples: 4  
Date Reviewed: December 31, 2003  
Reviewer: A. Lamirato  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MT685, MT686, MT687, MT688

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The cooler was received within the temperature QC limits of 4°±2° C. The COC was signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in this SDG. The case narrative noted that the samples were received intact. No information was provided regarding the presence or integrity of custody seals on the cooler.</p> <p>The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	<p>A solid method blank was analyzed in association with the samples in this SDG. The following detects were reported:</p> <p>Co = 0.220 mg/L Cu = 0.258 mg/L Se = 0.580 mg/L Zn = 1.62 mg/L</p>	Selenium detected in all samples was qualified as estimated, "UJ."

	Findings	Qualifications
5. <u>LCS/BS</u>	A solid LCS sample was analyzed with the samples. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 90-115%.	No qualifications were required.
6. <u>Duplicates</u> None	None performed.	No qualifications required.
7. <u>MS/MSDs</u> None	None performed.	No qualifications required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted negative results for boron in all site samples and thallium in MT685, MT687, and MT688.</p>	<p>No qualifications were required.</p> <p>The reporting limits and MDLs for boron in all samples and the MDLs for the remaining results were raised to the levels of interference and the results were qualified as estimated, "UJ."</p>
11. <u>Field QC</u> FB: MT697 (SDG IMI0935) and MT711 (SDG IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) Field Duplicates: none	There were detects reported in all of the field QC samples but none at sufficient concentration to qualify the site samples in this SDG.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0763

Sampled: 09/08/03-09/11/03  
 Received: 09/12/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0763-21 (MT685 - Soil)					Sampled: 09/11/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3119100	6.0	10	8500	1	09/19/03	09/20/03	
Antimony	EPA 6010B	3119100	0.54	10	ND	1	09/19/03	09/20/03	
Arsenic	EPA 6010B	3119100	0.50	2.1	3.1	1	09/19/03	09/20/03	
Barium	EPA 6010B	3119100	0.36	1.0	66	1	09/19/03	09/20/03	
Beryllium	EPA 6010B	3119100	0.081	0.52	0.39	1	09/19/03	09/20/03	J
Boron	EPA 6010B	3119100	0.96	5.2	ND	1	09/19/03	09/20/03	
Cadmium	EPA 6010B	3119100	0.045	0.52	0.20	1	09/19/03	09/20/03	J
Chromium	EPA 6010B	3119100	0.088	1.0	11	1	09/19/03	09/20/03	
Cobalt	EPA 6010B	3119100	0.11	1.0	4.1	1	09/19/03	09/20/03	
Copper	EPA 6010B	3119100	0.23	2.1	4.9	1	09/19/03	09/20/03	
Lead	EPA 6010B	3119100	0.28	2.1	3.9	1	09/19/03	09/20/03	
Mercury	EPA 7471A	3123059	0.0065	0.021	0.0095	1	09/23/03	09/23/03	J
Molybdenum	EPA 6010B	3119100	0.13	2.1	0.57	1	09/19/03	09/20/03	J
Nickel	EPA 6010B	3119100	0.26	2.1	6.5	1	09/19/03	09/20/03	
Selenium	EPA 6010B	3119100	0.60	2.1	1.6	1	09/19/03	09/20/03	B, J
Silver	EPA 6010B	3119100	0.17	1.0	ND	1	09/19/03	09/20/03	
Thallium	EPA 6010B	3119100	0.40	10	ND	1	09/19/03	09/20/03	
Vanadium	EPA 6010B	3119100	0.18	1.0	25	1	09/19/03	09/20/03	
Zinc	EPA 6010B	3119100	0.48	5.2	53	1	09/19/03	09/20/03	

Sample ID: IMI0763-22 (MT686 - Soil)  
 Reporting Units: mg/kg dry

Sampled: 09/11/03

Aluminum	EPA 6010B	3119100	6.0	10	12000	1	09/19/03	09/20/03	
Antimony	EPA 6010B	3119100	0.54	10	ND	1	09/19/03	09/20/03	
Arsenic	EPA 6010B	3119100	0.50	2.1	4.8	1	09/19/03	09/20/03	
Barium	EPA 6010B	3119100	0.36	1.0	89	1	09/19/03	09/20/03	
Beryllium	EPA 6010B	3119100	0.081	0.52	0.58	1	09/19/03	09/20/03	
Boron	EPA 6010B	3119100	0.96	5.2	ND	1	09/19/03	09/20/03	
Cadmium	EPA 6010B	3119100	0.044	0.52	0.30	1	09/19/03	09/20/03	J
Chromium	EPA 6010B	3119100	0.088	1.0	16	1	09/19/03	09/20/03	
Cobalt	EPA 6010B	3119100	0.11	1.0	5.5	1	09/19/03	09/20/03	
Copper	EPA 6010B	3119100	0.23	2.1	8.5	1	09/19/03	09/20/03	
Lead	EPA 6010B	3119100	0.28	2.1	7.7	1	09/19/03	09/20/03	
Mercury	EPA 7471A	3123059	0.0065	0.021	0.013	1	09/23/03	09/23/03	J
Molybdenum	EPA 6010B	3119100	0.13	2.1	0.73	1	09/19/03	09/20/03	J
Nickel	EPA 6010B	3119100	0.26	2.1	9.5	1	09/19/03	09/20/03	
Selenium	EPA 6010B	3119100	0.60	2.1	2.8	1	09/19/03	09/20/03	B
Silver	EPA 6010B	3119100	0.17	1.0	ND	1	09/19/03	09/20/03	
Thallium	EPA 6010B	3119100	0.40	10	ND	1	09/19/03	09/20/03	
Vanadium	EPA 6010B	3119100	0.18	1.0	33	1	09/19/03	09/20/03	
Zinc	EPA 6010B	3119100	0.48	5.2	64	1	09/19/03	09/20/03	

Del Mar Analytical, Irvine  
 Fred Haley For Michele Harper  
 Project Manager

PM 01/07/04

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MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0763

Sampled: 09/08/03-09/11/03  
 Received: 09/12/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0763-23 (MT687 - Soil)					Sampled: 09/11/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3I19100	6.3	11	9300	1	09/19/03	09/20/03	
Antimony	EPA 6010B	3I19100	0.56	11	ND	1	09/19/03	09/20/03	
Arsenic	EPA 6010B	3I19100	0.52	2.2	5.5	1	09/19/03	09/20/03	
Barium	EPA 6010B	3I19100	0.38	1.1	71	1	09/19/03	09/20/03	
Beryllium	EPA 6010B	3I19100	0.084	0.54	0.49	1	09/19/03	09/20/03	J
Boron	EPA 6010B	3I19100	<del>1.0</del> 7.0	<del>5.4</del> 7.0	ND	1	09/19/03	09/20/03	J
Cadmium	EPA 6010B	3I19100	0.047	0.54	0.24	1	09/19/03	09/20/03	J
Chromium	EPA 6010B	3I19100	0.092	1.1	15	1	09/19/03	09/20/03	
Cobalt	EPA 6010B	3I19100	0.12	1.1	5.8	1	09/19/03	09/20/03	
Copper	EPA 6010B	3I19100	0.24	2.2	7.5	1	09/19/03	09/20/03	
Lead	EPA 6010B	3I19100	0.29	2.2	5.3	1	09/19/03	09/20/03	
Mercury	EPA 7471A	3I23059	0.0068	0.022	0.016	1	09/23/03	09/23/03	J
Molybdenum	EPA 6010B	3I19100	0.14	2.2	0.67	1	09/19/03	09/20/03	J
Nickel	EPA 6010B	3I19100	0.27	2.2	8.9	1	09/19/03	09/20/03	
Selenium	EPA 6010B	3I19100	0.63	2.2	2.1	1	09/19/03	09/20/03	B, J
Silver	EPA 6010B	3I19100	0.17	1.1	ND	1	09/19/03	09/20/03	
Thallium	EPA 6010B	3I19100	<del>0.42</del> 1.4	11	ND	1	09/19/03	09/20/03	J
Vanadium	EPA 6010B	3I19100	0.18	1.1	31	1	09/19/03	09/20/03	
Zinc	EPA 6010B	3I19100	0.50	5.4	51	1	09/19/03	09/20/03	

Sample ID: IMI0763-24 (MT688 - Soil)  
 Reporting Units: mg/kg dry

Sampled: 09/11/03

Aluminum	EPA 6010B	3I19100	5.9	10	6700	1	09/19/03	09/20/03	
Antimony	EPA 6010B	3I19100	0.53	10	ND	1	09/19/03	09/20/03	
Arsenic	EPA 6010B	3I19100	0.49	2.0	2.9	1	09/19/03	09/20/03	
Barium	EPA 6010B	3I19100	0.35	1.0	55	1	09/19/03	09/20/03	
Beryllium	EPA 6010B	3I19100	0.079	0.51	0.36	1	09/19/03	09/20/03	J
Boron	EPA 6010B	3I19100	<del>0.94</del> 6.8	<del>5.1</del> 6.8	ND	1	09/19/03	09/20/03	J
Cadmium	EPA 6010B	3I19100	0.044	0.51	0.18	1	09/19/03	09/20/03	J
Chromium	EPA 6010B	3I19100	0.086	1.0	8.5	1	09/19/03	09/20/03	
Cobalt	EPA 6010B	3I19100	0.11	1.0	3.4	1	09/19/03	09/20/03	
Copper	EPA 6010B	3I19100	0.22	2.0	4.2	1	09/19/03	09/20/03	
Lead	EPA 6010B	3I19100	0.27	2.0	3.6	1	09/19/03	09/20/03	
Mercury	EPA 7471A	3I23059	0.0064	0.020	0.0098	1	09/23/03	09/23/03	J
Molybdenum	EPA 6010B	3I19100	0.13	2.0	0.46	1	09/19/03	09/20/03	J
Nickel	EPA 6010B	3I19100	0.25	2.0	5.2	1	09/19/03	09/20/03	
Selenium	EPA 6010B	3I19100	0.59	2.0	2.7	1	09/19/03	09/20/03	B
Silver	EPA 6010B	3I19100	0.16	1.0	ND	1	09/19/03	09/20/03	
Thallium	EPA 6010B	3I19100	<del>0.39</del> 1.0	10	ND	1	09/19/03	09/20/03	J
Vanadium	EPA 6010B	3I19100	0.17	1.0	20	1	09/19/03	09/20/03	
Zinc	EPA 6010B	3I19100	0.47	5.1	47	1	09/19/03	09/20/03	

Del Mar Analytical, Irvine  
 Fred Haley For Michele Harper  
 Project Manager

PM 01/07/04



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method 6010B and 7471A  
QC Level: V<sup>1</sup>  
SDG: IM10126  
Matrix: Soil  
No. of Samples: 3  
Date Reviewed: December 31, 2003  
Reviewer: A. Lamirato  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MT522, MT523, MT524

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The cooler was received within the temperature QC limits of <math>4^{\circ}\pm 2^{\circ}</math> C. The COC was signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in this SDG. The case narrative noted that the samples were received intact. No information was provided regarding the presence or integrity of custody seals on the cooler.</p> <p>The analyses were performed within the six-month holding time for the ICP and ICP/MS metals and 28 days for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	<p>A solid method blank was analyzed in association with the samples in this SDG. The following detects were reported:</p> <p>Cd = 0.112 mg/L Co = 0.182 mg/L Cu = 0.495 mg/L Ni = 0.362 mg/L Zn = 2.16 mg/L</p>	Cadmium detected in all samples was qualified as estimated, "UJ."

	Findings	Qualifications
5. <u>LCS/BS</u>	Solid LCS samples were analyzed with the samples. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 90-115%.	No qualifications were required.
6. <u>Duplicates</u> None	None performed.	No qualifications required.
7. <u>MS/MSDs</u> None	None performed.	No qualifications required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted negative results for boron and thallium in all site samples.</p>	<p>No qualifications were required.</p> <p>The reporting limits and MDLs for boron in MT522 and MT523 and the MDLs for the remaining results were raised to the levels of interference and the results were qualified as estimated, "UJ."</p>
11. <u>Field QC</u> FB: MT697 (SDG: IMI0935) ER: MT696 (SDG: IMI0935) Field Duplicates: none	There were detects in the field QC samples; however, they were not at high enough concentrations to qualify the data in this package.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

MWH-San Diego 1230 Columbia Street, Suite 750 San Diego, CA 92101 Attention: Lisa J. Tucker	Project ID: Building 561 Landfill Boeing SSFL Report Number: IMI0126	Sampled: 09/02/03 Received: 09/03/03
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### METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0126-02 (MT522-Soil)					Sampled: 09/02/03				
Reporting Units: mg/kg dry									Rev Qual   Qual Code
Aluminum	EPA6010B	3115085	5.9	10	8800	1	09/15/03	09/16/03	U
Antimony	EPA6010B	3115085	0.53	10	ND	1	09/15/03	09/16/03	U
Arsenic	EPA6010B	3115085	0.49	2.1	3.2	1	09/15/03	09/16/03	U
Barium	EPA6010B	3115085	0.36	1.0	71	1	09/15/03	09/16/03	U
Beryllium	EPA6010B	3115085	0.080	0.51	0.41	1	09/15/03	09/16/03	J
Boron	EPA6010B	3115085	<del>0.95</del> 7.1	<del>5.1</del> 7.1	ND	1	09/15/03	09/16/03	U
Cadmium	EPA6010B	3115085	0.044	0.51	0.35	1	09/15/03	09/16/03	U, B, J
Chromium	EPA6010B	3115085	0.087	1.0	11	1	09/15/03	09/16/03	U
Cobalt	EPA6010B	3115085	0.11	1.0	4.0	1	09/15/03	09/16/03	U
Copper	EPA6010B	3115085	0.23	2.1	5.3	1	09/15/03	09/16/03	U
Lead	EPA6010B	3115085	0.28	2.1	4.0	1	09/15/03	09/16/03	U
Mercury	EPA7471A	3117053	0.0065	0.021	ND	1	09/17/03	09/17/03	U
Molybdenum	EPA6010B	3115085	0.13	2.1	0.43	1	09/15/03	09/16/03	J
Nickel	EPA6010B	3115085	0.26	2.1	6.3	1	09/15/03	09/16/03	U
Selenium	EPA6010B	3115085	0.59	2.1	2.5	1	09/15/03	09/16/03	U
Silver	EPA6010B	3115085	0.16	1.0	ND	1	09/15/03	09/16/03	U
Thallium	EPA6010B	3115085	<del>0.40</del> 1.4	10	ND	1	09/15/03	09/16/03	U
Vanadium	EPA6010B	3115085	0.17	1.0	26	1	09/15/03	09/16/03	U
Zinc	EPA6010B	3115085	0.47	5.1	61	1	09/15/03	09/16/03	U
Sample ID: IMI0126-03 (MT523-Soil)					Sampled: 09/02/03				
Reporting Units: mg/kg dry									
Aluminum	EPA6010B	3115085	6.0	10	12000	1	09/15/03	09/16/03	U
Antimony	EPA6010B	3115085	0.54	10	ND	1	09/15/03	09/16/03	U
Arsenic	EPA6010B	3115085	0.50	2.1	4.0	1	09/15/03	09/16/03	U
Barium	EPA6010B	3115085	0.36	1.0	82	1	09/15/03	09/16/03	U
Beryllium	EPA6010B	3115085	0.080	0.52	0.54	1	09/15/03	09/16/03	J
Boron	EPA6010B	3115085	<del>0.96</del> 5.3	<del>5.2</del> 5.3	ND	1	09/15/03	09/16/03	U
Cadmium	EPA6010B	3115085	0.044	0.52	0.42	1	09/15/03	09/16/03	U, B, J
Chromium	EPA6010B	3115085	0.088	1.0	15	1	09/15/03	09/16/03	U
Cobalt	EPA6010B	3115085	0.11	1.0	5.0	1	09/15/03	09/16/03	U
Copper	EPA6010B	3115085	0.23	2.1	8.2	1	09/15/03	09/16/03	U
Lead	EPA6010B	3115085	0.28	2.1	5.9	1	09/15/03	09/16/03	U
Mercury	EPA7471A	3117053	0.0065	0.021	0.021	1	09/17/03	09/17/03	U
Molybdenum	EPA6010B	3115085	0.13	2.1	0.75	1	09/15/03	09/16/03	J
Nickel	EPA6010B	3115085	0.26	2.1	9.6	1	09/15/03	09/16/03	U
Selenium	EPA6010B	3115085	0.60	2.1	2.8	1	09/15/03	09/16/03	U
Silver	EPA6010B	3115085	0.17	1.0	0.17	1	09/15/03	09/16/03	U
Thallium	EPA6010B	3115085	<del>0.40</del> 0.92	10	ND	1	09/15/03	09/16/03	U
Vanadium	EPA6010B	3115085	0.18	1.0	31	1	09/15/03	09/16/03	U
Zinc	EPA6010B	3115085	0.47	5.2	61	1	09/15/03	09/16/03	U

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

 Project ID Building 56 Landfill  
 Boring SSFL  
 Report Number IMI0126

 Sampled 09/02/03  
 Received 09/03/03

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rw Qual	Qual Code	
Sample ID: IMI0126-04 (MT524-Soil)					Sampled: 09/02/03							
Reporting Units: mg/kg dry												
Aluminum	EPA6010B	3115085	6.2	11	14000	1	09/15/03	09/16/03				
Antimony	EPA6010B	3115085	0.55	11	ND	1	09/15/03	09/16/03		U		
Arsenic	EPA6010B	3115085	0.51	2.1	4.4	1	09/15/03	09/16/03				
Barium	EPA6010B	3115085	0.37	1.1	100	1	09/15/03	09/16/03				
Beryllium	EPA6010B	3115085	0.083	0.53	0.64	1	09/15/03	09/16/03				
Boron	EPA6010B	3115085	<del>0.99</del> 5.2	5.3	ND	1	09/15/03	09/16/03		UT	*10, \$	
Cadmium	EPA6010B	3115085	0.046	0.53	0.46	1	09/15/03	09/16/03		UT B, J	B	
Chromium	EPA6010B	3115085	0.090	1.1	19	1	09/15/03	09/16/03				
Cobalt	EPA6010B	3115085	0.12	1.1	6.8	1	09/15/03	09/16/03				
Copper	EPA6010B	3115085	0.23	2.1	11	1	09/15/03	09/16/03				
Lead	EPA6010B	3115085	0.29	2.1	7.6	1	09/15/03	09/16/03				
Mercury	EPA7471A	3117053	0.0067	0.021	0.012	1	09/17/03	09/17/03		J		
Molybdenum	EPA6010B	3115085	0.14	2.1	0.98	1	09/15/03	09/16/03		J		
Nickel	EPA6010B	3115085	0.27	2.1	12	1	09/15/03	09/16/03				
Selenium	EPA6010B	3115085	0.62	2.1	2.6	1	09/15/03	09/16/03				
Silver	EPA6010B	3115085	0.17	1.1	ND	1	09/15/03	09/16/03		U		
Thallium	EPA6010B	3115085	<del>0.41</del> 0.90	11	ND	1	09/15/03	09/16/03		UT	*10, \$	
Vanadium	EPA6010B	3115085	0.18	1.1	38	1	09/15/03	09/16/03				
Zinc	EPA6010B	3115085	0.49	5.3	51	1	09/15/03	09/16/03				

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**LEVEL V**

 Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method 6010B and 7470A  
QC Level: V<sup>1</sup>  
SDG: IMI0125  
Matrix: Soil  
No. of Samples: 6  
Date Reviewed: December 31, 2003  
Reviewer: A. Lamirato  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MT526, MT527, MT528, MT529, MT530, MT531

### Data Validation Findings

	Findings	Qualifications												
1. <u>Sample Management</u>	<p>The cooler was received within the temperature QC limits of <math>4^{\circ}\pm 2^{\circ}</math> C. The COC was signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in this SDG. The case narrative noted that the samples were received intact. No information was provided regarding the presence or integrity of custody seals on the cooler.</p> <p>The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.</p>	No qualifications were required.												
3. <u>Method Blanks</u>	<p>Two solid method blanks were analyzed in association with the samples in this SDG. The following detects were reported:</p> <table><tbody><tr><td>9/15</td><td>9/16</td></tr><tr><td>B = 2.31 mg/L</td><td>Cd = 0.112 mg/L</td></tr><tr><td>Cu = 0.558 mg/L</td><td>Co = 0.182 mg/L</td></tr><tr><td>Ni = 0.278 mg/L</td><td>Cu = 0.495 mg/L</td></tr><tr><td>Zn = 1.84 mg/L</td><td>Ni = 0.362 mg/L</td></tr><tr><td></td><td>Zn = 2.16 mg/L</td></tr></tbody></table>	9/15	9/16	B = 2.31 mg/L	Cd = 0.112 mg/L	Cu = 0.558 mg/L	Co = 0.182 mg/L	Ni = 0.278 mg/L	Cu = 0.495 mg/L	Zn = 1.84 mg/L	Ni = 0.362 mg/L		Zn = 2.16 mg/L	Boron detected in MT526 was qualified as estimated, "UJ." Cadmium detected in MT527, MT528, MT529, MT530, and MT531 was qualified as estimated, "UJ."
9/15	9/16													
B = 2.31 mg/L	Cd = 0.112 mg/L													
Cu = 0.558 mg/L	Co = 0.182 mg/L													
Ni = 0.278 mg/L	Cu = 0.495 mg/L													
Zn = 1.84 mg/L	Ni = 0.362 mg/L													
	Zn = 2.16 mg/L													

	Findings	Qualifications
5. <u>LCS/BS</u>	Solid LCS samples were analyzed with the samples. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 90-115%.	No qualifications were required.
6. <u>Duplicates</u> MT526, MT527	The aluminum RPD for MT527 was above the control limit of 25% at 26%. All other RPDs were within the control limit.	Aluminum detected in samples MT527, MT528, MT529, MT530, and MT531 was qualified as estimated, "J."
7. <u>MS/MSDs</u> MT526, MT527	The antimony MS %Rs were below the control limits of 75-125% at 41% and 46%, respectively. All other MS/MSD %Rs were within the control limits.	Nondetected antimony in all samples was qualified as estimated, "UJ."
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted negative results for thallium in all site samples except MT526 and MT528, boron in all site samples except MT526, and silver in MT526.</p>	<p>No qualifications were required.</p> <p>The reporting limit and MDL for boron in MT527 and the MDLs for the remaining results were raised to the levels of interference and the results were qualified as estimated, "UJ."</p>
11. <u>Field QC</u> FB: MT697 (SDG: IMI0935), MT710 (SDG: IMI1005) ER: MT696 (SDG: IMI0935), MT711 (SDG: IMI1005) Field Duplicates: none	There were detects in the field QC samples; however, they were not at high enough concentrations to qualify the data in this package.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



MWH-San Diego  
1230 Columbia Street, Suite 750  
San Diego, CA 92101  
Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
Boeing SSFL  
Report Number: IMI0125

Sampled: 09/03/03  
Received: 09/03/03

METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0125-02 (MT526 - Soil)					Sampled: 09/03/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3115077	6.0	10	8100	1	09/15/03	09/15/03	M-HA
Antimony	EPA 6010B	3115077	0.54	10	ND	1	09/15/03	09/15/03	M2
Arsenic	EPA 6010B	3115077	0.50	2.1	2.9	1	09/15/03	09/15/03	
Barium	EPA 6010B	3115077	0.36	1.0	61	1	09/15/03	09/15/03	
Beryllium	EPA 6010B	3115077	0.081	0.52	0.44	1	09/15/03	09/15/03	J
Boron	EPA 6010B	3115077	0.96	5.2	1.9	1	09/15/03	09/15/03	B, J
Cadmium	EPA 6010B	3115077	0.045	0.52	ND	1	09/15/03	09/15/03	
Chromium	EPA 6010B	3115077	0.088	1.0	10	1	09/15/03	09/15/03	
Cobalt	EPA 6010B	3115077	0.11	1.0	3.2	1	09/15/03	09/15/03	
Copper	EPA 6010B	3115077	0.23	2.1	4.8	1	09/15/03	09/15/03	B
Lead	EPA 6010B	3115077	0.28	2.1	8.3	1	09/15/03	09/15/03	
Mercury	EPA 7471A	3116052	0.0065	0.021	0.015	1	09/16/03	09/16/03	J
Molybdenum	EPA 6010B	3115077	0.13	2.1	ND	1	09/15/03	09/15/03	
Nickel	EPA 6010B	3115077	0.26	2.1	6.4	1	09/15/03	09/15/03	
Selenium	EPA 6010B	3115077	0.60	2.1	ND	1	09/15/03	09/15/03	
Silver	EPA 6010B	3115077	<del>0.17</del> 0.87	1.0	ND	1	09/15/03	09/15/03	J, X
Thallium	EPA 6010B	3115077	0.40	10	ND	1	09/15/03	09/15/03	
Vanadium	EPA 6010B	3115077	0.18	1.0	23	1	09/15/03	09/15/03	
Zinc	EPA 6010B	3115077	0.48	5.2	49	1	09/15/03	09/15/03	

Sample ID: IMI0125-03 (MT527 - Soil)  
Reporting Units: mg/kg dry

Sampled: 09/03/03

Aluminum	EPA 6010B	3115085	6.1	11	9400	1	09/15/03	09/16/03	M-HA
Antimony	EPA 6010B	3115085	0.55	11	ND	1	09/15/03	09/16/03	M2
Arsenic	EPA 6010B	3115085	0.50	2.1	3.8	1	09/15/03	09/16/03	
Barium	EPA 6010B	3115085	0.37	1.1	72	1	09/15/03	09/16/03	
Beryllium	EPA 6010B	3115085	0.082	0.53	0.45	1	09/15/03	09/16/03	J
Boron	EPA 6010B	3115085	<del>0.98</del> 7.3	<del>5.3</del> 7.3	ND	1	09/15/03	09/16/03	M2
Cadmium	EPA 6010B	3115085	0.045	0.53	0.39	1	09/15/03	09/16/03	B, J
Chromium	EPA 6010B	3115085	0.089	1.1	12	1	09/15/03	09/16/03	
Cobalt	EPA 6010B	3115085	0.12	1.1	4.7	1	09/15/03	09/16/03	
Copper	EPA 6010B	3115085	0.23	2.1	7.0	1	09/15/03	09/16/03	
Lead	EPA 6010B	3115085	0.28	2.1	5.9	1	09/15/03	09/16/03	
Mercury	EPA 7471A	3116052	0.0066	0.021	0.0098	1	09/16/03	09/16/03	J
Molybdenum	EPA 6010B	3115085	0.14	2.1	0.65	1	09/15/03	09/16/03	J
Nickel	EPA 6010B	3115085	0.26	2.1	7.7	1	09/15/03	09/16/03	
Selenium	EPA 6010B	3115085	0.61	2.1	1.9	1	09/15/03	09/16/03	J
Silver	EPA 6010B	3115085	0.17	1.1	ND	1	09/15/03	09/16/03	
Thallium	EPA 6010B	3115085	<del>0.44</del> 1.5	11	ND	1	09/15/03	09/16/03	J, X
Vanadium	EPA 6010B	3115085	0.18	1.1	28	1	09/15/03	09/16/03	
Zinc	EPA 6010B	3115085	0.48	5.3	54	1	09/15/03	09/16/03	

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Being SSFL  
 Report Number: IMI0125

Sampled: 09-03-03  
 Received: 09-03-03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0125-04 (MT528 - Soil)					Sampled: 09/03/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3115085	5.0	10	10000	1	09/15/03	09/16/03	
Antimony	EPA 6010B	3115085	0.54	10	ND	1	09/15/03	09/16/03	
Arsenic	EPA 6010B	3115085	0.50	2.1	3.1	1	09/15/03	09/16/03	
Barium	EPA 6010B	3115085	0.36	1.0	77	1	09/15/03	09/16/03	
Beryllium	EPA 6010B	3115085	0.081	0.52	0.42	1	09/15/03	09/16/03	J
Boron	EPA 6010B	3115085	0.96	5.2	10	1	09/15/03	09/16/03	
Cadmium	EPA 6010B	3115085	0.044	0.52	0.36	1	09/15/03	09/16/03	B, J
Chromium	EPA 6010B	3115085	0.088	1.0	11	1	09/15/03	09/16/03	
Cobalt	EPA 6010B	3115085	0.11	1.0	4.5	1	09/15/03	09/16/03	
Copper	EPA 6010B	3115085	0.23	2.1	5.6	1	09/15/03	09/16/03	
Lead	EPA 6010B	3115085	0.28	2.1	4.6	1	09/15/03	09/16/03	
Mercury	EPA 7471A	3116052	0.0065	0.021	0.0094	1	09/16/03	09/16/03	J
Molybdenum	EPA 6010B	3115085	0.13	2.1	0.53	1	09/15/03	09/16/03	J
Nickel	EPA 6010B	3115085	0.26	2.1	6.7	1	09/15/03	09/16/03	
Selenium	EPA 6010B	3115085	0.60	2.1	2.2	1	09/15/03	09/16/03	
Silver	EPA 6010B	3115085	0.17	1.0	ND	1	09/15/03	09/16/03	
Thallium	EPA 6010B	3115085	<del>0.40</del> 0.93	1.0	ND	1	09/15/03	09/16/03	J, J*
Vanadium	EPA 6010B	3115085	0.18	1.0	25	1	09/15/03	09/16/03	
Zinc	EPA 6010B	3115085	0.48	5.2	57	1	09/15/03	09/16/03	

Sample ID: IMI0125-05 (MT529 - Soil)  
 Reporting Units: mg/kg dry

Sampled: 09/03/03

Aluminum	EPA 6010B	3115085	6.1	11	9600	1	09/15/03	09/16/03	
Antimony	EPA 6010B	3115085	<del>0.55</del> 0.56	11	ND	1	09/15/03	09/16/03	
Arsenic	EPA 6010B	3115085	0.51	2.1	3.4	1	09/15/03	09/16/03	
Barium	EPA 6010B	3115085	0.37	1.1	71	1	09/15/03	09/16/03	
Beryllium	EPA 6010B	3115085	0.082	0.53	0.41	1	09/15/03	09/16/03	J
Boron	EPA 6010B	3115085	<del>0.98</del> 1.9	5.3	ND	1	09/15/03	09/16/03	J*
Cadmium	EPA 6010B	3115085	0.045	0.53	0.37	1	09/15/03	09/16/03	B, J
Chromium	EPA 6010B	3115085	0.089	1.1	13	1	09/15/03	09/16/03	
Cobalt	EPA 6010B	3115085	0.12	1.1	4.4	1	09/15/03	09/16/03	
Copper	EPA 6010B	3115085	0.23	2.1	6.0	1	09/15/03	09/16/03	
Lead	EPA 6010B	3115085	0.28	2.1	13	1	09/15/03	09/16/03	
Mercury	EPA 7471A	3116052	0.0066	0.021	0.012	1	09/16/03	09/16/03	J
Molybdenum	EPA 6010B	3115085	0.14	2.1	0.58	1	09/15/03	09/16/03	J
Nickel	EPA 6010B	3115085	0.26	2.1	6.8	1	09/15/03	09/16/03	
Selenium	EPA 6010B	3115085	0.61	2.1	1.6	1	09/15/03	09/16/03	J
Silver	EPA 6010B	3115085	0.17	1.1	ND	1	09/15/03	09/16/03	
Thallium	EPA 6010B	3115085	<del>0.41</del> 1.4	1.1	ND	1	09/15/03	09/16/03	J*
Vanadium	EPA 6010B	3115085	0.18	1.1	28	1	09/15/03	09/16/03	
Zinc	EPA 6010B	3115085	0.48	5.3	60	1	09/15/03	09/16/03	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Being SSFL  
 Report Number: IMI0125

Sampled: 09.03.03  
 Received: 09-03-03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IMI0125-06 (MT530 - Soil)					Sampled: 09/03/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3115085	6.4	11	17000	1	09/15/03	09/16/03	
Antimony	EPA 6010B	3115085	0.58	11	ND	1	09/15/03	09/16/03	
Arsenic	EPA 6010B	3115085	0.53	2.2	5.6	1	09/15/03	09/16/03	
Barium	EPA 6010B	3115085	0.39	1.1	80	1	09/15/03	09/16/03	
Beryllium	EPA 6010B	3115085	0.086	0.55	0.72	1	09/15/03	09/16/03	
Boron	EPA 6010B	3115085	<del>10</del> 3.1	5.5	ND	1	09/15/03	09/16/03	
Cadmium	EPA 6010B	3115085	0.048	0.55	0.37	1	09/15/03	09/16/03	B, J
Chromium	EPA 6010B	3115085	0.094	1.1	16	1	09/15/03	09/16/03	
Cobalt	EPA 6010B	3115085	0.12	1.1	5.1	1	09/15/03	09/16/03	
Copper	EPA 6010B	3115085	0.24	2.2	7.4	1	09/15/03	09/16/03	
Lead	EPA 6010B	3115085	0.30	2.2	6.3	1	09/15/03	09/16/03	
Mercury	EPA 7471A	3116052	0.0070	0.022	0.028	1	09/16/03	09/16/03	
Molybdenum	EPA 6010B	3115085	0.14	2.2	0.95	1	09/15/03	09/16/03	J
Nickel	EPA 6010B	3115085	0.28	2.2	9.4	1	09/15/03	09/16/03	
Selenium	EPA 6010B	3115085	0.64	2.2	2.1	1	09/15/03	09/16/03	J
Silver	EPA 6010B	3115085	0.18	1.1	ND	1	09/15/03	09/16/03	
Thallium	EPA 6010B	3115085	<del>0.43</del> 1.4	11	ND	1	09/15/03	09/16/03	
Vanadium	EPA 6010B	3115085	0.19	1.1	36	1	09/15/03	09/16/03	
Zinc	EPA 6010B	3115085	0.51	5.5	54	1	09/15/03	09/16/03	

Sample ID: IMI0125-07 (MT531 - Soil)					Sampled: 09/03/03				
Reporting Units: mg/kg dry									
Aluminum	EPA 6010B	3115085	6.2	11	15000	1	09/15/03	09/16/03	
Antimony	EPA 6010B	3115085	0.56	11	ND	1	09/15/03	09/16/03	
Arsenic	EPA 6010B	3115085	0.52	2.2	3.9	1	09/15/03	09/16/03	
Barium	EPA 6010B	3115085	0.38	1.1	110	1	09/15/03	09/16/03	
Beryllium	EPA 6010B	3115085	0.084	0.54	0.67	1	09/15/03	09/16/03	
Boron	EPA 6010B	3115085	<del>10</del> 3.1	5.4	ND	1	09/15/03	09/16/03	
Cadmium	EPA 6010B	3115085	0.046	0.54	0.33	1	09/15/03	09/16/03	B, J
Chromium	EPA 6010B	3115085	0.091	1.1	15	1	09/15/03	09/16/03	
Cobalt	EPA 6010B	3115085	0.12	1.1	5.4	1	09/15/03	09/16/03	
Copper	EPA 6010B	3115085	0.24	2.2	5.7	1	09/15/03	09/16/03	
Lead	EPA 6010B	3115085	0.29	2.2	6.0	1	09/15/03	09/16/03	
Mercury	EPA 7471A	3116052	0.0068	0.022	0.018	1	09/16/03	09/16/03	J
Molybdenum	EPA 6010B	3115085	0.14	2.2	1.1	1	09/15/03	09/16/03	J
Nickel	EPA 6010B	3115085	0.27	2.2	8.4	1	09/15/03	09/16/03	
Selenium	EPA 6010B	3115085	0.62	2.2	1.4	1	09/15/03	09/16/03	J
Silver	EPA 6010B	3115085	0.17	1.1	ND	1	09/15/03	09/16/03	
Thallium	EPA 6010B	3115085	<del>0.42</del> 1.3	11	ND	1	09/15/03	09/16/03	
Vanadium	EPA 6010B	3115085	0.18	1.1	32	1	09/15/03	09/16/03	
Zinc	EPA 6010B	3115085	0.49	5.4	47	1	09/15/03	09/16/03	

Del Mar Analytical  
 Michele Harper  
 Project Manager

### AMEC VALIDATED

### LEVEL V

pm 01/07/04



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method ILM04  
QC Level: V<sup>1</sup>  
SDG: IMI0124  
Matrix: soil  
No. of Samples: 3  
Date Reviewed: December 16, 2003  
Reviewer: P. Meeks  
Reference: USEPA SW-846 Methods 6010B, 7470A  
Samples Reviewed: MT509, MT511, MT512

### Data Validation Findings

	Findings	Qualifications
I. <u>Sample Management</u>	<p>The cooler was received within the temperature QC limits of <math>4^{\circ}\pm 2^{\circ}</math> C. The COC was signed and dated by field and laboratory personnel. Samples MT509, MT510, MT511, and MT512 were listed on the COC on HOLD. A memo from MWH personnel dated 9/03/03 released samples MT509, MT511 and MT512 from HOLD and requested the metal analyses.</p> <p>The case narrative noted that the samples were received intact. No information was provided regarding the presence or integrity of custody seals on the cooler.</p> <p>The analyses were performed within the six-month holding time for the ICP metals and 28 days for mercury.</p>	No qualifications were required.

	Findings	Qualifications
3. <u>Method Blanks</u>	<p>A solid method blank, 3109076-BLK 1, was analyzed in association with the samples in this SDG. The following detects were reported:</p> <p>Be = 0.130 mg/kg            Cd = 0.185 mg/kg            Cr = 0.165 mg/kg            Co = 0.340 mg/kg            Cu = 0.422 mg/kg            Ni = 0.272 mg/kg            Tl = 0.420 mg/kg            Zn = 1.23 mg/kg</p>	<p>Nondetected thallium was qualified as estimated, "UJ," in all site samples. Beryllium detected in sample MT509 and cadmium detected in samples MT511 and MT512 were qualified as estimated, "UJ." The remaining method blank detects were insufficient to qualify the site samples.</p>
5. <u>LCS/BS</u>	<p>A solid LCS sample was analyzed with the samples. The ICP recoveries were within the 80-120% control limits, and the mercury LCS recovery was within the laboratory established control limits of 85-120%.</p>	<p>No qualifications were required.</p>
6. <u>Duplicates</u> None	<p>None performed.</p>	<p>No qualifications were required.</p>
7. <u>MS/MSDs</u> None	<p>None performed.</p>	<p>No qualifications were required.</p>
9. <u>ICP Serial Dilution</u>	<p>None.</p>	<p>No qualifications were required.</p>
10. <u>Other</u>	<p>At a Level V validation, site samples are not usually assessed for the laboratory QC samples that evaluate instrument performance. The QC samples, which are not assessed, include initial and continuing calibration information, initial and continuing calibration blank information, and the ICP Interference Check Solution, ICS.</p> <p>The reviewer noted negative result for thallium in all site samples and negative results for boron in site sample MT509 and MT511.</p>	<p>The MDLs for these results were raised to the levels of interference and the results were qualified as estimated, "J."</p>

	Findings	Qualifications
<u>11. Field QC</u> FB: MT697 (SDG IMI0935) and MT711 (SDG IMI1005) ER: MT696 (SDG IMI0935) and MT710 (SDG IMI1005) Field Duplicates: none	There were detects reported in all of the field QC samples but none at sufficient concentration to qualify the site samples in this SDG.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



MWH-San Diego  
 1230 Columbia Street, Suite 750  
 San Diego, CA 92101  
 Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
 Boeing SSFL  
 Report Number: IMI0124

Sampled: 08/26/03  
 Received: 09/03/03

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IMI0124-01 (MT509 - Soil)											
Reporting Units: mg/kg dry											
Aluminum	EPA 6010B	3I09076	6.5	11	5500	1	09/09/03	09/10/03			
Antimony	EPA 6010B	3I09076	0.58	11	ND	1	09/09/03	09/10/03	U		
Arsenic	EPA 6010B	3I09076	0.54	2.2	2.8	1	09/09/03	09/10/03			
Barium	EPA 6010B	3I09076	0.39	1.1	58	1	09/09/03	09/10/03			
Beryllium	EPA 6010B	3I09076	0.087	0.56	0.41	1	09/09/03	09/10/03	UJ	J	B
Boron	EPA 6010B	3I09076	<del>1.0</del> 2.0	5.6	ND	1	09/09/03	09/10/03	UJ		#10, \$
Cadmium	EPA 6010B	3I09076	0.048	0.56	1.3	1	09/09/03	09/10/03			
Chromium	EPA 6010B	3I09076	0.095	1.1	42	1	09/09/03	09/10/03			
Cobalt	EPA 6010B	3I09076	0.12	1.1	4.9	1	09/09/03	09/10/03			
Copper	EPA 6010B	3I09076	0.25	2.2	130	1	09/09/03	09/10/03			
Lead	EPA 6010B	3I09076	0.30	2.2	94	1	09/09/03	09/10/03			
Mercury	EPA 7471A	3I15050	0.0070	0.022	0.11	1	09/15/03	09/15/03			
Molybdenum	EPA 6010B	3I09076	0.15	2.2	7.5	1	09/09/03	09/10/03			
Nickel	EPA 6010B	3I09076	0.28	2.2	24	1	09/09/03	09/10/03			
Selenium	EPA 6010B	3I09076	0.65	2.2	1.0	1	09/09/03	09/10/03		J	
Silver	EPA 6010B	3I09076	0.18	1.1	ND	1	09/09/03	09/10/03	U		
Thallium	EPA 6010B	3I09076	<del>0.4</del> 1.2	11	ND	1	09/09/03	09/10/03	UJ		B, #10, \$
Vanadium	EPA 6010B	3I09076	0.19	1.1	22	1	09/09/03	09/10/03			
Zinc	EPA 6010B	3I09076	0.51	5.6	140	1	09/09/03	09/10/03			
Sample ID: IMI0124-02 (MT511 - Soil)											
Reporting Units: mg/kg dry											
Aluminum	EPA 6010B	3I09076	6.1	10	8300	1	09/09/03	09/10/03			
Antimony	EPA 6010B	3I09076	0.54	10	ND	1	09/09/03	09/10/03	U		
Arsenic	EPA 6010B	3I09076	0.50	2.1	3.8	1	09/09/03	09/10/03			
Barium	EPA 6010B	3I09076	0.37	1.0	69	1	09/09/03	09/10/03			
Beryllium	EPA 6010B	3I09076	0.081	0.52	0.67	1	09/09/03	09/10/03			
Boron	EPA 6010B	3I09076	<del>0.97</del> 4.0	5.2	ND	1	09/09/03	09/10/03	UJ		#10, \$
Cadmium	EPA 6010B	3I09076	0.045	0.52	0.51	1	09/09/03	09/10/03	UJ	J	B
Chromium	EPA 6010B	3I09076	0.089	1.0	13	1	09/09/03	09/10/03			
Cobalt	EPA 6010B	3I09076	0.11	1.0	7.0	1	09/09/03	09/10/03			
Copper	EPA 6010B	3I09076	0.23	2.1	5.8	1	09/09/03	09/10/03			
Lead	EPA 6010B	3I09076	0.28	2.1	5.7	1	09/09/03	09/10/03			
Mercury	EPA 7471A	3I15050	0.0066	0.021	0.015	1	09/15/03	09/15/03		J	
Molybdenum	EPA 6010B	3I09076	0.14	2.1	0.69	1	09/09/03	09/10/03		J	
Nickel	EPA 6010B	3I09076	0.26	2.1	8.3	1	09/09/03	09/10/03			
Selenium	EPA 6010B	3I09076	0.61	2.1	1.5	1	09/09/03	09/10/03		J	
Silver	EPA 6010B	3I09076	0.17	1.0	ND	1	09/09/03	09/10/03	U		
Thallium	EPA 6010B	3I09076	<del>0.4</del> 1.2	10	ND	1	09/09/03	09/10/03	UJ		B, #10, \$
Vanadium	EPA 6010B	3I09076	0.18	1.0	26	1	09/09/03	09/10/03			
Zinc	EPA 6010B	3I09076	0.48	5.2	48	1	09/09/03	09/10/03			

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

# LEVEL V

# ANALYZED

PM 01/07/04



MWH-San Diego  
1230 Columbia Street, Suite 750  
San Diego, CA 92101  
Attention: Lisa J. Tucker

Project ID: Building 56 Landfill  
Boeing SSFL  
Report Number: IMI0124

Sampled: 08/26/03  
Received: 09/03/03

METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Raw Qual	Qual Code
Sample ID: IMI0124-03 (MT512 - Soil)										
Reporting Units: mg/kg dry										
Aluminum	EPA 6010B	3I09076	6.2	11	13000	1	09/09/03	09/10/03		
Antimony	EPA 6010B	3I09076	0.56	11	ND	1	09/09/03	09/10/03	U	
Arsenic	EPA 6010B	3I09076	0.52	2.2	4.8	1	09/09/03	09/10/03		
Barium	EPA 6010B	3I09076	0.38	1.1	88	1	09/09/03	09/10/03		
Beryllium	EPA 6010B	3I09076	0.084	0.54	0.83	1	09/09/03	09/10/03		
Boron	EPA 6010B	3I09076	1.0	5.4	ND	1	09/09/03	09/10/03	U	
Cadmium	EPA 6010B	3I09076	0.046	0.54	0.60	1	09/09/03	09/10/03	UJ	B
Chromium	EPA 6010B	3I09076	0.092	1.1	19	1	09/09/03	09/10/03		
Cobalt	EPA 6010B	3I09076	0.12	1.1	6.5	1	09/09/03	09/10/03		
Copper	EPA 6010B	3I09076	0.24	2.2	9.0	1	09/09/03	09/10/03		
Lead	EPA 6010B	3I09076	0.29	2.2	6.4	1	09/09/03	09/10/03		
Mercury	EPA 7471A	3I15050	0.0068	0.022	0.015	1	09/15/03	09/15/03		J
Molybdenum	EPA 6010B	3I09076	0.14	2.2	0.79	1	09/09/03	09/10/03		J
Nickel	EPA 6010B	3I09076	0.27	2.2	11	1	09/09/03	09/10/03		
Selenium	EPA 6010B	3I09076	0.62	2.2	1.3	1	09/09/03	09/10/03		J
Silver	EPA 6010B	3I09076	0.17	1.1	ND	1	09/09/03	09/10/03	U	
Thallium	EPA 6010B	3I09076	0.421.3	11	ND	1	09/09/03	09/10/03	UJ	B, K10, S
Vanadium	EPA 6010B	3I09076	0.18	1.1	34	1	09/09/03	09/10/03		
Zinc	EPA 6010B	3I09076	0.50	5.4	48	1	09/09/03	09/10/03		

IM 01/01/04

ANES VALLEY  
LEVEL V

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager





# DATA VALIDATION REPORT

Rocketdyne  
SSFL RFI Program

ANALYSIS: GENERAL MINERALS  
SAMPLE DELIVERY GROUP: DJ3160265

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: Rocketdyne SSFL RFI Program  
Contract Task Order #: 313150010  
Sample Delivery Group #: DJ3160265  
Project Manager: D. Hambrick  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: October 24, 2003

The samples listed in Table 1 were validated based on the guidelines outlined in the USEPA SW-846 Method 8321, and validation guidelines outlined in the USEPA CLP National Functional Guidelines For Organic Data Review (2/94). Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

EPA ID	Client ID	Laboratory ID	Matrix	COC Method
MT678	BLLS05S01	D3J160265-001	water	perchlorate by 8321
MT680	BLLS01S01	D3J160265-002	water	perchlorate by 8321

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at both laboratories within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. No qualifications were required.

#### 2.1.2 Chain of Custody

The samples in this SDG were originally received at APPL. The original COC was signed and dated by field and laboratory personnel and accounted for the samples in this SDG. Per a request from AMEC-Denver personnel, the samples were transferred to Severn Trent Laboratory in Denver (STL-Denver). The transfer COC was signed and dated by personnel from both laboratories, and accounted for the samples and analyses presented in this SDG. No custody seal information was provided by either laboratory. No qualifications were required.

#### 2.1.3 Holding Times

Both samples in this SDG were received at STL-Denver outside the 28-day analytical holding time; therefore, both sample results were qualified as estimated, "UJ." No further qualifications were required.

### 2.2 CALIBRATION

#### 2.2.1 Initial Calibration

One six-point initial calibration was associated with the samples in SDG, analyzed 10/17/03. The  $r^2$  value for perchlorate was  $\geq 0.995$ . The reviewer was unable to exactly recalculate the calibration curve as it was weighted by the laboratory.

An initial calibration verification standard (ICV) at a concentration of  $1.0 \mu\text{g/L}$  was analyzed immediately following the initial calibration. The %D for perchlorate in the ICV was greater than the method control limit of  $\pm 15\%$ , at 20%; however as perchlorate was not detected in either sample, no qualifications were required.

### 2.2.2 Continuing Calibration

Three continuing calibration verification (CCV) standards analyzed at concentrations of 0.2 µg/L, 1.0 µg/L, and 1.0 µg/L, respectively, bracketed the sample analyses. All %Ds for perchlorate exceeded the method control limit of ±15%; however, as perchlorate was not detected in either sample no qualifications were required.

### 2.3 BLANKS

One aqueous method blank (R3J170000-211MB) was extracted and analyzed with the samples in this SDG. Perchlorate was not reported in the method blank. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One aqueous blank spike (R3J170000-211LCS) was extracted and analyzed with the samples in this SDG. The recovery for perchlorate was within the laboratory-established QC limits of 70-130%, at 98%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the perchlorate analyses.

### 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample MT678. The recoveries for perchlorate were within the laboratory-established control limits of 50-150%, at 74% and 64%. The RPD was within the QC limit of ±40%.

In addition to the MS/MSD analyses, an aliquot of MT680 was spiked with perchlorate to check for possible detection suppression due to sample matrix. The recovery was within the QC limits of 50-150%, at 84%. No qualifications were required.

### 2.7 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG were associated with field blank ML088 (SDG IMG1031) and equipment rinsate ML087 (SDG IMG1031), analyzed by method 314.0. Perchlorate was not detected in either field QC sample and no qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in this SDG.

## 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by LC/MS for perchlorate. Although the result summary forms stated the samples were analyzed by HPLC, the case narrative for this SDG indicated that sample analyses were correctly performed by LC/MS. A review of the raw data revealed no compound identification problems. No transcription errors were observed. The raw data was checked for false negatives and none were found. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Review of the raw data revealed no compound quantitation problems. No calculation or transcription errors were noted. The nominal reporting limit for perchlorate was supported by the MDL study performed September 2002, and by the lower levels of the initial calibration. According to the case narrative, both samples were analyzed at 10× dilutions to reduce matrix interference. The sample reporting limits were adjusted accordingly. No qualifications were required.

AMEC EARTH & ENVIRONMENTAL INC

Client Sample ID: MT678

HPLC

Lot-Sample #...: D3J160265-001 Work Order #...: F2N9D1AA Matrix.....: WATER  
Date Sampled...: 09/10/03 09:10 Date Received...: 10/16/03  
Prep Date.....: 10/17/03 Analysis Date...: 10/17/03  
Prep Batch #...: 3290211 Analysis Time...: 12:46  
Dilution Factor: 10

Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Perchlorate	ND	2.0	ug/L

<u>Rev Qual</u>	<u>Qual Code</u>
US	H/K

PM 10/29/03

Rev 1 11/17/03  
KS

AMEC VALIDATED  
LEVEL IV

AMEC EARTH & ENVIRONMENTAL INC

Client Sample ID: MT680

HPLC

Lot-Sample #...: D3J160265-002 Work Order #...: F2N9F1AA Matrix.....: WATER  
Date Sampled...: 09/08/03 09:35 Date Received...: 10/16/03  
Prep Date.....: 10/17/03 Analysis Date...: 10/17/03  
Prep Batch #...: 3290211 Analysis Time...: 12:12  
Dilution Factor: 10

Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>Rev Qual</u>	<u>Qual Code</u>
Perchlorate	ND	2.0	ug/L	WJ	HJK

PM 10/29/03  
KS Den  
11/14/03

AMEC VALIDATED  
LEVEL I

### DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: General Minerals by Method 9045  
QC Level: V<sup>1</sup>  
SDG: L9902672  
Matrix: Soil  
No. of Samples: 12  
Date Reviewed: September 7, 2000  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: RS287, RS288, RS289, RS290, RS291, RS292, RS874, RS875, RS876, RS878, RS879, RS880

#### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Cooler temperature acceptable. Holding time exceeded for pH analyses.	Sample pH results qualified "U."
3. <u>Method Blanks</u>	Not applicable to this analysis.	No qualifications were required.
5. <u>LCS/BS</u>	Not applicable to this analysis.	No qualifications were required.
6. <u>Duplicates</u>  Performed on sample RS875 and RS287.	Acceptable as reviewed.	No qualifications were required.
7. <u>MSMSDs</u>	Not applicable to this analysis.	No qualifications were required.
10. <u>Other</u>	None	No qualifications were required.
11. <u>Field QC Samples</u>	Not applicable to this analysis.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
Date Collected: 6/17/99  
Date Received: 6/17/99

Inorganic Parameters

Sample Name: RS287  
Lab Code: L9902672-004  
Test Notes:

Basis: Dry

Analyte	Rev Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/18/99	6/18/99	8.1	

Approved By:  
1544/021397p

*Eydie Schwartz*

Date:

*7/19/99*

**OGDEN VALIDATED**

**LEVEL V**

**11003**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Inorganic Parameters

**Sample Name:** RS288  
**Lab Code:** L9902672-005  
**Test Notes:**

Basis: Dry

Analyte	Rev Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/18/99	6/18/99	8.2	

Approved By: Eydie Schwartz  
1S44/021397p

Date: 7/19/99

**OGDEN VALIDATED**

**LEVEL V**

11004

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Inorganic Parameters

Sample Name: RS289  
Lab Code: L9902672-006  
Test Notes:

Basis: Dry

Analyte	Rev Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/18/99	6/18/99	8.4	

Approved By:  
1544/b21397p

*Eydie Schwartz*

Date:

*7/19/99*

**OGDEN VALIDATED**

**LEVEL V**

11005

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Inorganic Parameters

Sample Name: RS290  
Lab Code: L9902672-007  
Test Notes:

Basis: Dry

Analyte	Raw Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/18/99	6/18/99	8.2	

Approved By:  
1544/021397p

*Eydie Schwartz*

Date:

*7/19/99*

**OGDEN VALIDATED**

**LEVEL V**

**11006**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Inorganic Parameters

Sample Name: RS291  
Lab Code: L9902672-008  
Test Notes:

Basis: Dry

Analyte	Raw Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/18/99	6/18/99	7.2	

Approved By:  
IS44/021397p

*Eydie Schwartz*

Date: 7/19/99

**OGDEN VALIDATED**

**LEVEL V**

**11007**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
Date Collected: 6/17/99  
Date Received: 6/17/99

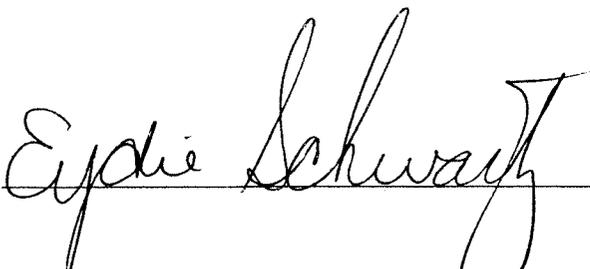
Inorganic Parameters

Sample Name: RS292  
Lab Code: L9902672-009  
Test Notes:

Basis: Dry

Analyte	Rev Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/18/99	6/18/99	7.6	

Approved By:  
1544/021397p



Date:

7/19/99

**OGDEN VALIDATED**

**LEVEL V**

11008

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
Date Collected: 6/14/99  
Date Received: 6/14/99

Inorganic Parameters

Sample Name: RS874  
Lab Code: L9902672-001  
Test Notes:

Basis: Dry

Analyte	Rev Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/16/99	6/16/99	8.7	

Approved By:  
IS44/021397p

*Eydie Schwartz*

Date:

*7/19/99*

**OGDEN VALIDATED**

**LEVEL V**

**11000**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/14/99  
**Date Received:** 6/14/99

Inorganic Parameters

**Sample Name:** RS875  
**Lab Code:** L9902672-002  
**Test Notes:**

Basis: Dry

Analyte	Rev Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/16/99	6/16/99	7.6	

Approved By:  
1544/021397p

*Eydie Schwartz*

Date:

*7/19/99*

**OGDEN VALIDATED**

**LEVEL V**

**11001**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
Date Collected: 6/14/99  
Date Received: 6/14/99

Inorganic Parameters

Sample Name: RS876  
Lab Code: L9902672-003  
Test Notes:

Basis: Dry

Analyte	Rev Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/16/99	6/16/99	7.8	

Approved By:  
1844/021397p

*Eydie Schwartz*

Date:

*7/19/99*

**OGDEN VALIDATED**

**LEVEL V**

11002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Inorganic Parameters

Sample Name: RS878  
Lab Code: L9902672-017  
Test Notes:

Basis: Dry

Analyte	Res Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/18/99	6/18/99	7.1	

Approved By: *Eydie Schwarz*  
1544/021397p

Date: *7/19/99*

OGDEN VALIDATED

LEVEL V

11008

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
Date Collected: 6/17/99  
Date Received: 6/17/99

Inorganic Parameters

Sample Name: RS879  
Lab Code: L9902672-018  
Test Notes:

Basis: Dry

Analyte	Rev Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/18/99	6/18/99	7.9	

Approved By  
1S44/b21397p

*Eydie Schwarz*

Date: 7/19/99

**OGDEN VALIDATED**

**LEVEL V**

11010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Inorganic Parameters

Sample Name: RS880  
Lab Code: L9902672-019  
Test Notes:

Basis: Dry

Analyte	Rev Qual	Qual Code	Units	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
pH	J	H	pH UNITS	9045C	0.1	1	6/18/99	6/18/99	7.4	

Approved By:  
IS44/021397p

*Eydie Schwartz*

Date:

*7/19/99*

**OGDEN VALIDATED**

**LEVEL V**

**11011**



**DATA ASSESSMENT FORM**

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis/Method: Total Fuel Hydrocarbons by GC/EPA Method 8015M  
QC Level: V<sup>1</sup>  
SDG: L9902672  
Matrix: Soil  
No. of Samples: 19  
Date Reviewed: August 9, 2000  
Reviewer: L. Calvin  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: RS287, RS288, RS289, RS290, RS291, RS292, RS293, RS294, RS295, RS296, RS297, RS298, RS874, RS875, RS876, RS878, RS879, RS880, RS881

**Data Validation Findings**

	Findings	Qualifications
1. <u>Sample Management</u>	The COCs were signed by field and laboratory personnel, and all samples were correctly listed on the COC. According to the COCs, samples were received intact. The cooler temperatures were within the limits of 4°C ± 2°C.  All samples were extracted within 14 days of collection and analyzed within 40 days of extraction.	No qualifications were required.
3. <u>Method Blanks</u>	One soil method blank was analyzed with this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
4. <u>LCS/BS</u>	One soil LCS was analyzed in this SDG. The percent recovery for diesel was within the laboratory QC limits of 78-122%.	No qualifications were required.
5. <u>Surrogates</u>	The surrogate recoveries for all samples were within the laboratory QC limits of 41-140% for p-terphenyl.	No qualifications were required.

	Findings	Qualifications
6. <u>MS/MSDs</u>	Soil MS/MSD analyses were performed on sample RS292. Recoveries were within the laboratory QC limits of 73-130% for diesel. The laboratory did not provide an RPD limit; however, the RPD was deemed acceptable by the reviewer.	No qualifications were required.
7. <u>Field QC Samples</u> ER: None FB: None FD: None	No associated field QC samples were identified for this SDG. No evaluation of the site samples was made based on field QC.	No qualifications were required.
8. <u>Other</u>	Reporting limits and reported results were adjusted for percent moisture and dilution when applicable. Samples RS288, RS293, and RS881 were analyzed at 5× dilutions for high concentrations of target compounds.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS287  
 Lab Code: L9902672-004  
 Test Notes: X

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	qual	code
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U	u	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	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 Schwartz Date: 7/19/99 05004

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS288  
 Lab Code: L9902672-005  
 Test Notes: X/C2A

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result		
								Notes	rev qual	qual lead
C8 - C11 GRO	EPA 3550M	8015M	54	5	6/28/99	6/29/99	54	U	u	
C11 - C14 KRO	EPA 3550M	8015M	54	5	6/28/99	6/29/99	54	U	↓	
C14 - C20 DRO	EPA 3550M	8015M	54	5	6/28/99	6/29/99	76			
C20 - C30 LORO	EPA 3550M	8015M	54	5	6/28/99	6/29/99	250			

GRO Gasoline Range Organics  
 KRO Kerosene Range Organics  
 DRO Diesel Range Organics  
 LRO Lubricating Oil Range Organics  
 X Quantified with diesel fuel

C2A MRL is elevated because of matrix interferences and because the sample required diluting.

**OGDEN VALIDATED**  
**LEVEL V**

Approved By: Eydie Schwartz Date: 7/19/99

05005

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS289  
 Lab Code: L9902672-006  
 Test Notes: X

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	ver qual	qual cod
C8 - C11 GRO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	U	u	
C11 - C14 KRO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	U	↓	
C14 - C20 DRO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	U	↓	
C20 - C30 LORO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	39			

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 Schwartz Date: 7/19/99

05006  
 Page No.:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Ogden Environmental  
**Project:** Rocketdyne/313150002  
**Sample Matrix:** Soil  
**Batch Number:** GC06062899S

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Hydrocarbon Scan / Fuel Characterization

**Sample Name:** RS290  
**Lab Code:** L9902672-007  
**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	6/28/99	6/29/99	11	U	u	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U	↓	
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	42			

**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 Schwartz Date: 7/19/99

**05007**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental
Project: Rocketdyne/313150002
Sample Matrix: Soil
Batch Number: GC06062899S

Service Request: L9902672
Date Collected: 6/17/99
Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS291
Lab Code: L9902672-008
Test Notes: X

Units: MG/KG
Basis: Dry

Table with columns: Analyte, Prep Method, Analysis Method, PQL, Dilution Factor, Date Extracted, Date Analyzed, Result, Result Notes, and handwritten quality code.

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 Schwartz Date: 7/19/99 05008
1S22/020597p
02672SOH.SC1 - Sample (8/7/16/99)
Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS292  
 Lab Code: L9902672-009  
 Test Notes: X

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	vet qual	qual code
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U	u	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	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 Schuyf

Date: 7/19/99

05009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS293  
 Lab Code: L9902672-010  
 Test Notes: X/C2A

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	qual	qual
C8 - C11 GRO	EPA 3550M	8015M	52	5	6/28/99	6/29/99	52	U	u	
C11 - C14 KRO	EPA 3550M	8015M	52	5	6/28/99	6/29/99	89			
C14 - C20 DRO	EPA 3550M	8015M	52	5	6/28/99	6/29/99	700			
C20 - C30 LORO	EPA 3550M	8015M	52	5	6/28/99	6/29/99	720			

OGDEN VALIDATED  
 LEVEL V

GRO Gasoline Range Organics  
 KRO Kerosene Range Organics  
 DRO Diesel Range Organics  
 LRO Lubricating Oil Range Organics  
 X Quantified with diesel fuel

C2A MRL is elevated because of matrix interferences and because the sample required diluting.

Approved By: Eydie Schwartz Date: 7/19/99

05010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS294  
 Lab Code: L9902672-011  
 Test Notes: X

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	rel qual	qual Occur
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U	u	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	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 Schwant Date: 7/19/99 05011

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS295  
 Lab Code: L9902672-012  
 Test Notes: X

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	qual	qual
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U	u	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	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 Schwartz Date: 7/19/99

05012

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Ogden Environmental  
**Project:** Rocketdyne/313150002  
**Sample Matrix:** Soil  
**Batch Number:** GC06062899S

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Hydrocarbon Scan / Fuel Characterization

**Sample Name:** RS296  
**Lab Code:** L9902672-013  
**Test Notes:** X

**Units:** MG/KG  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result	
								Notes	rel/qual
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U	u
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U	↓
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U	↓
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	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 Schwarz Date: 7/19/99 **05013**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS297  
 Lab Code: L9902672-014  
 Test Notes: X

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result	
								Notes	qual code
C8 - C11 GRO	EPA 3550M	8015M	12	1	6/28/99	6/28/99	12	U	u
C11 - C14 KRO	EPA 3550M	8015M	12	1	6/28/99	6/28/99	12	U	↓
C14 - C20 DRO	EPA 3550M	8015M	12	1	6/28/99	6/28/99	12	U	↓
C20 - C30 LORO	EPA 3550M	8015M	12	1	6/28/99	6/28/99	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 Schuuff Date: 7/19/99 **05014**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS298  
 Lab Code: L9902672-015  
 Test Notes: X

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result	
								Notes	qual Code
C8 - C11 GRO	EPA 3550M	8015M	12	1	6/28/99	6/28/99	12	U	u
C11 - C14 KRO	EPA 3550M	8015M	12	1	6/28/99	6/28/99	12	U	↓
C14 - C20 DRO	EPA 3550M	8015M	12	1	6/28/99	6/28/99	12	U	↓
C20 - C30 LORO	EPA 3550M	8015M	12	1	6/28/99	6/28/99	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 Schwarz Date: 7/19/99

05015

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/14/99  
 Date Received: 6/14/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS874  
 Lab Code: L9902672-001  
 Test Notes: X

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	qual	qual code
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U	u	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U		
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	11	U		
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/28/99	6/28/99	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 Schwartz Date: 7/19/99

05001

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/14/99  
 Date Received: 6/14/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS875  
 Lab Code: L9902672-002  
 Test Notes: X/D2

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Quality Code
C8 - C11 GRO	EPA 3550M	8015M	14	1	6/28/99	6/29/99	14	U	u
C11 - C14 KRO	EPA 3550M	8015M	14	1	6/28/99	6/29/99	14	U	↓
C14 - C20 DRO	EPA 3550M	8015M	14	1	6/28/99	6/29/99	14	U	↓
C20 - C30 LORO	EPA 3550M	8015M	14	1	6/28/99	6/29/99	14	U	↓

GRO Gasoline Range Organics  
 KRO Kerosene Range Organics  
 DRO Diesel Range Organics  
 LRO Lubricating Oil Range Organics  
 X Quantified with diesel fuel  
 D2 Sample was analyzed 1 day past the end of the recommended maximum holding time.

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwarz Date: 7/19/99

05002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/14/99  
 Date Received: 6/14/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS876  
 Lab Code: L9902672-003  
 Test Notes: X/D2

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result		qual code
								Notes	qual	
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U	u	
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U	↓	
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U	↓	
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	26			

GRO Gasoline Range Organics  
 KRO Kerosene Range Organics  
 DRO Diesel Range Organics  
 LRO Lubricating Oil Range Organics  
 X Quantified with diesel fuel  
 D2 Sample was analyzed 1 day past the end of the recommended maximum holding time.

**OGDEN VALIDATED**  
**LEVEL V**

Approved By: Eydie Schwarz Date: 7/19/99 **05003**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS878  
 Lab Code: L9902672-017  
 Test Notes: X

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result	
								Notes	Quality Code
C8 - C11 GRO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	U	u
C11 - C14 KRO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	U	↓
C14 - C20 DRO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	U	↓
C20 - C30 LORO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	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 Schwarz Date: 7/19/99

05016

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Ogden Environmental  
 Project: Rocketdyne/313150002  
 Sample Matrix: Soil  
 Batch Number: GC06062899S

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Hydrocarbon Scan / Fuel Characterization

Sample Name: RS879  
 Lab Code: L9902672-018  
 Test Notes: X

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result	
								Notes	qual code
C8 - C11 GRO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	U	u
C11 - C14 KRO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	U	↓
C14 - C20 DRO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	U	↓
C20 - C30 LORO	EPA 3550M	8015M	10	1	6/28/99	6/29/99	10	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 Schwan Date: 7/19/99

05017

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client:** Ogden Environmental  
**Project:** Rocketdyne/313150002  
**Sample Matrix:** Soil  
**Batch Number:** GC06062899S

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Hydrocarbon Scan / Fuel Characterization

**Sample Name:** RS880  
**Lab Code:** L9902672-019  
**Test Notes:** X

**Units:** MG/KG  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result	
								Notes	qual code
C8 - C11 GRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U	u
C11 - C14 KRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U	↓
C14 - C20 DRO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	11	U	↓
C20 - C30 LORO	EPA 3550M	8015M	11	1	6/28/99	6/29/99	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 Schwartz Date: 7/19/99

05018

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Ogden Environmental  
**Project:** Rocketdyne/313150002  
**Sample Matrix:** Soil  
**Batch Number:** GC06062899S

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Hydrocarbon Scan / Fuel Characterization

**Sample Name:** RS881  
**Lab Code:** L9902672-020  
**Test Notes:** X/C2A

**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	53	5	6/28/99	6/29/99	53	U	u
C11 - C14 KRO	EPA 3550M	8015M	53	5	6/28/99	6/29/99	53	U	↓
C14 - C20 DRO	EPA 3550M	8015M	53	5	6/28/99	6/29/99	53	U	↓
C20 - C30 LORO	EPA 3550M	8015M	53	5	6/28/99	6/29/99	95		

**OGDEN VALIDATED**

**LEVEL V**

**GRO** Gasoline Range Organics  
**KRO** Kerosene Range Organics  
**DRO** Diesel Range Organics  
**LRO** Lubricating Oil Range Organics  
**X** Quantified with diesel fuel

**C2A** MRL is elevated because of matrix interferences and because the sample required diluting.

Approved By: Eydie Schwartz Date: 7/19/99

**05019**

### DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: 15471  
Matrix: Soil  
No. of samples: 4  
Dilution/Reanalyses: 0  
Date Reviewed: April 26, 2001  
Reviewer: H. White  
Reference: National Functional Guidelines for Organic Data Review (2/94)  
Samples Reviewed: RS905, RS906, RS907, RS908

#### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by both field and laboratory personnel. The COC noted that the samples were received intact with custody seals present on the cooler; however, the cooler temperature was not recorded on the COC. The case narrative for this SDG noted that the sample containers were received chilled.</p> <p>According to the extraction and analysis dates on the sample result form, the samples were extracted within 14 days of collection and analyzed within 40 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with the samples in this SDG. No target compound detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil LCS fortified with Aroclor-1242 was extracted and analyzed with the samples in this SDG. The percent recovery for Aroclor-1242 was within the laboratory QC limits of 75-127%.	No qualifications were required.

	Findings	Qualifications
6. <u>Surrogates</u>	The surrogate recoveries for the site sample and all QC samples were within the laboratory QC limits of 50-150% .	No qualifications were required.
7. <u>M S/M SDs</u>	The M S/M SD analyses were performed on sample RS908 . The laboratory utilized the RPD of the M S and M SD concentrations of Aroclor-1242 to demonstrate method precision ; however, percent recoveries and recovery limits were not provided on the M S/M SD summary . The RPD was less than the laboratory QC limit of 24% .	No qualifications were required.
8. <u>Field QC Samples</u>  ER : None TB : None FB : None FD : None	There were no identified field QC samples associated with the sample in this SDG . No evaluation of possible field contamination was performed.	No qualifications were required.
9. <u>Other</u>	The samples in this SDG did not require dilution . Reporting limits were not adjusted for sample percent moisture .	No qualifications were required.
<u>Comments</u>	None.	None.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only . The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed .



(800) 798-9336

null = "space"

**EPA 8082 - PCBs**

Client: Ogdan  
 Project: Rocketdyne  
 Job No.: 15471  
 Matrix: Soil  
 Analyst: TPW

Date Sampled: 09/28/99  
 Date Received: 09/29/99  
 Date Extracted: 09/30/99  
 Date Analyzed: 09/30/99  
 Batch Number: PCBS0300

Sample Number: BLK0300 15471-1 15471-2 15471-3 15471-4 15471-4-ms  
 Dilution Factor: 1 1 1 1 1  
 Date & Time Run: 9909302205 9909300054 9909300137 9909300419 9909300301 9909302041

Compounds	Sample ID: DL	BLK0300 *	RS905	RS906	RS907	RS908	MS0300 *
		mg/Kg Q	mg/Kg Q	mg/Kg Q	mg/Kg Q	mg/Kg Q	mg/Kg Q
Aroclor 1016	0.05	ND	ND	ND	ND	ND	ND
Aroclor 1221	0.05	ND	ND	ND	ND	ND	ND
Aroclor 1232	0.05	ND	ND	ND	ND	ND	ND
Aroclor 1242	0.05	ND	ND	ND	ND	ND	0.0503
Aroclor 1248	0.05	ND	ND	ND	ND	ND	ND
Aroclor 1254	0.05	ND	ND	ND	ND	ND	ND
Aroclor 1260	0.05	ND	ND	ND	ND	ND	ND

Rev Date Code  
 Rev Date Code  
 Rev Date Code  
 Rev Date Code

Surrogates (% recovery) Limits: 50 - 150

Sample ID: BLK0300	RS905	RS906	RS907	RS908	MS0300
TCMX 10	73	75	70	71	66

\* Not Validated

**OGDEN VALIDATED**

**LEVEL V**



(800) 798-9336

null = "space"

### EPA 8082 - PCBs

Client:	Ogden	Date Sampled:	09/28/99
Project:	Rocketdyne	Date Received:	09/29/99
Job No.:	15471	Date Extracted:	09/30/99
Matrix:	Soil	Date Analyzed:	09/30/99
Analyst:	TPW	Batch Number:	PCBS0300

Sample Number 15471-4-ms

Dilution Factor 1

Date & Time Run 9909302123

Compounds	DL	Sample ID: MSD0300 *	mg/Kg	Q
Aroclor 1016	0.05		ND	U
Aroclor 1221	0.05		ND	U
Aroclor 1232	0.05		ND	U
Aroclor 1242	0.05		0.0526	U
Aroclor 1248	0.05		ND	U
Aroclor 1254	0.05		ND	U
Aroclor 1260	0.05		ND	U

Surrogates (% recovery) Limits: 50 - 150

Sample ID: MSD0300

TCMX	10	64	U
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\* Not Validated

# OGDEN VALIDATED LEVEL V

## DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: L9902672  
Matrix: Soil  
No. of Samples: 6  
No. of Reanalyses/Dilutions: 1  
Date Reviewed: March 27, 2001  
Reviewer: P. Meeks  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: RS288, RS293, RS294, RS874, RS875, RS875RE, RS876

## Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC was signed by field and laboratory personnel, and the samples were correctly listed on the COC. According to the COC, the sample was received intact. The cooler temperatures were within the limits of 4°C ± 2°C.</p> <p>The samples were extracted within the holding time of 14 days from collection, except for RS875RE. The samples were analyzed within 40 days of extraction.</p>	As the results for RS875RE were later rejected (see section 8), no qualifications were required.
3. <u>Method Blanks</u>	Two soil method blanks were analyzed with this SDG. No target analyte detects were reported in the method blanks.	No qualifications were required.
4. <u>LCS/BS</u>	Two soil LCSs were analyzed with this SDG. The percent recoveries for the target compound were within the laboratory QC limits of 78-140%.	No qualifications were required.
5. <u>Surrogates</u>	The surrogate recoveries for all samples were within the laboratory QC limits of 53-164% for tetrachloro-m-xylene.	No qualifications were required.

	Findings	Qualifications
6. <u>M S/M SD s</u>  <u>Performed for RS294 and RS876</u>	The M S/M SD recoveries were within the laboratory QC limits of 55-180% , with RPD s of 0% .	No qualifications were required.
7. <u>Field Q C Sam ples</u>  ER : N one FB : N one FD : N one	There were no field Q C sam ples associated with the sam ples in this SD G .	No qualifications were required.
8. <u>O ther</u>	To confirm the reported detect for A roclor 1248 , sam ple RS875 w as reextracted outside of the holding tim e and reanalyzed yielding sim ilar results. Neither of the sam ple chrom atogram s supported the presence of an A roclor-1248 pattern within the retention tim e w indow .	The results for RS875RE were rejected, "R," in favor of the results for the original analysis. A roclor-1248 w as determ ined to be a false positive in RS875, and the reporting lim it w as raised to the level of interference.
<u>Com m ents</u>	N one	N one

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Polychlorinated Biphenyls (PCBs)

Sample Name: RS288  
 Lab Code: L9902672-005  
 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
									Qual	Code	
Aroclor 1016	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U	U		
Aroclor 1221	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U			
Aroclor 1232	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U			
Aroclor 1242	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U			
Aroclor 1248	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U			
Aroclor 1254	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U			
Aroclor 1260	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U			

OGDEN VALIDATED  
 LEVEL V

Approved By: 7XL Date: 8/16/99

03008

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Polychlorinated Biphenyls (PCBs)

Sample Name: RS293  
 Lab Code: L9902672-010  
 Test Notes:

Units: UG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	fw	Qual
									Qual	Code
Aroclor 1016	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U	U	
Aroclor 1221	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		
Aroclor 1232	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		
Aroclor 1242	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		
Aroclor 1248	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		
Aroclor 1254	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		
Aroclor 1260	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		

**OGDEN VALIDATED**  
**LEVEL V**

Approved By: \_\_\_\_\_  
1S-44/021397p

5XL

Date: 8/16/99

03009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Polychlorinated Biphenyls (PCBs)

Sample Name: RS294  
 Lab Code: L9902672-011  
 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
Aroclor 1016	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U	U	
Aroclor 1221	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		
Aroclor 1232	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		
Aroclor 1242	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		
Aroclor 1248	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		
Aroclor 1254	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		
Aroclor 1260	EPA 3550	8082	110	1	7/15/99	7/21/99	110	U		

OGDEN VALIDATED  
 LEVEL V

Approved By: DXL Date: 8/16/99

03010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/14/99  
 Date Received: 6/14/99

Polychlorinated Biphenyls (PCBs)

Sample Name: RS874  
 Lab Code: L9902672-001  
 Test Notes:

Units: UG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Pass/Fail	Qual Code
Aroclor 1016	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U	U	
Aroclor 1221	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		
Aroclor 1232	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		
Aroclor 1242	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		
Aroclor 1248	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		
Aroclor 1254	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		
Aroclor 1260	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		

CODEN VALIDATED

LEVEL V

Approved By  
 1S44021397p

*Eydie Schwartz*

Date: 7/19/99 03001

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/14/99  
 Date Received: 6/14/99

Polychlorinated Biphenyls (PCBs)

Sample Name: RS875  
 Lab Code: L9902672-002  
 Test Notes:

Units: UG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	As Found	As Corrected
Aroclor 1016	EPA 3550	8082	140	1	6/18/99	7/8/99	140	U	U	
Aroclor 1221	EPA 3550	8082	140	1	6/18/99	7/8/99	140	U	U	
Aroclor 1232	EPA 3550	8082	140	1	6/18/99	7/8/99	140	U	U	
Aroclor 1242	EPA 3550	8082	140	1	6/18/99	7/8/99	140	U	U	
Aroclor 1248	EPA 3550	8082	140	1	6/18/99	7/8/99	270	U	U	+
Aroclor 1254	EPA 3550	8082	140	1	6/18/99	7/8/99	140	U	U	
Aroclor 1260	EPA 3550	8082	140	1	6/18/99	7/8/99	140	U	U	

pm 07/12/02

OGDEN VALIDATED

LE EL V

Approved By: *Eydie Schwarz*

Date: 7/19/99

03002

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/14/99  
**Date Received:** 6/14/99

Polychlorinated Biphenyls (PCBs)

**Sample Name:** RS875RE  
**Lab Code:** L9902672-021  
**Test Notes:**

**Units:** UG/KG  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Qual	
									Per Qual	Code
Aroclor 1016	EPA 3550	8082	140	1	7/15/99	7/21/99	140	U	R	D
Aroclor 1221	EPA 3550	8082	140	1	7/15/99	7/21/99	140	U	↓	↓
Aroclor 1232	EPA 3550	8082	140	1	7/15/99	7/21/99	140	U	↓	↓
Aroclor 1242	EPA 3550	8082	140	1	7/15/99	7/21/99	140	U	↓	↓
Aroclor 1248	EPA 3550	8082	140	1	7/15/99	7/21/99	220	U	↓	↓
Aroclor 1254	EPA 3550	8082	140	1	7/15/99	7/21/99	140	U	↓	↓
Aroclor 1260	EPA 3550	8082	140	1	7/15/99	7/21/99	140	U	↓	↓

**OGDEN VALIDATED**

**LEVEL V**

Approved By: JKR Date: 8/16/99

**03011**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/14/99  
 Date Received: 6/14/99

Polychlorinated Biphenyls (PCBs)

Sample Name: RS876  
 Lab Code: L9902672-003  
 Test Notes:

Units: UG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev Qual	SPR CODE
Aroclor 1016	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U	U	
Aroclor 1221	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		
Aroclor 1232	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		
Aroclor 1242	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		
Aroclor 1248	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		
Aroclor 1254	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		
Aroclor 1260	EPA 3550	8082	110	1	6/18/99	7/8/99	110	U		

OGDEN VALIDATED

LEVEL V

Approved By: *Eydie Schwartz*

Date: 7/19/99

03003

### DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: PAHs/EPA Method 8270-SIM  
QC Level: V<sup>1</sup>  
SDG: L9902672  
Matrix: Soil  
No. of Samples: 12  
Date Reviewed: July 14, 2000  
Reviewer: H. Chang  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: RS287, RS288DL, RS289DL, RS290, RS291, RS292, RS874, RS875DL, RS876DL, RS878, RS879, and RS880

#### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>According to the COCs, there were no broken sample containers and the COC matches the samples. The samples were received at cooler temperatures of 2 °C and 4 °C.</p> <p>All samples were extracted within 14 days of sample collection and analyzed within 40 days of the extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	Two soil method blanks were analyzed in this SDG. No target analyte detects were reported in any of the method blanks.	No qualifications were required.
5. <u>LCS/BS</u>	Two soil LCSs were extracted and analyzed in this SDG. All percent recoveries were within the laboratory QC limits.	No qualifications were required.
6. <u>Surrogates</u>	The surrogate recoveries for all samples except RS288DL were within the laboratory QC. Sample RS288DL was analyzed at a 100x dilution and the surrogates were diluted out in the sample.	No qualifications were required.
7. <u>M S/M SDs</u>	M S/M SD analyses were performed on sample RS874. All percent recoveries and RPDs were within the laboratory QC limits.	No qualifications were required.

	Findings	Qualifications
8. <u>Field QC Samples</u>  ER : RS300 FB : None FD : None	No associated field QC samples were identified for this SDG . No evaluation of the site samples was made based on field QC .	No qualifications were required.
9. <u>Other</u>	Reporting limits were adjusted for % moisture and dilution factor.	None
<u>Comments</u>	RS288DL,RS289DL,RS875DL, and RS876DL were analyzed at dilutions. The laboratory did not provide the undiluted analyses of these samples.	None

<sup>1</sup> Level V validation consists of a cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

Sample Name: RS287  
 Lab Code: L9902672-004  
 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. Grade
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/27/99	7/2/99	2	U	U	
Naphthalene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Acenaphthylene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Acenaphthene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Diethyl Phthalate	EPA 3550	8270SIM	100	1	6/27/99	7/2/99	100	U		
Fluorene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Phenanthrene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Anthracene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Di-n-butylPhthalate	EPA 3550	8270SIM	100	1	6/27/99	7/2/99	100	U		
Fluoranthene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Pyrene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Benz(a)anthracene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	100	1	6/27/99	7/2/99	100	U		
Chrysene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Benzo(b)fluoranthene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Benzo(k)fluoranthene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Benzo(a)pyrene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Dibenz(a,h)anthracene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
Benzo(g,h,i)perylene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		
N-Nitrosodiphenylamine	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U		

N-Nitrosodimethylamine Reported Method Detection Limit

**OGDEN VALIDATED**

**LEVEL V**

Approved By:

*Eydie Schwartz*

Date:

*7/19/99*

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

**Sample Name:** RS288DL  
**Lab Code:** L9902672-005  
**Test Notes:** C4A

**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	220	100	6/27/99	7/3/99	220	U
Naphthalene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Acenaphthylene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Acenaphthene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Diethyl Phthalate	EPA 3550	8270SIM	11000	100	6/27/99	7/3/99	11000	U
Fluorene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Phenanthrene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Anthracene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Di-n-butylPhthalate	EPA 3550	8270SIM	11000	100	6/27/99	7/3/99	11000	U
Fluoranthene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Pyrene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Benz(a)anthracene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	11000	100	6/27/99	7/3/99	11000	U
Chrysene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Benzo(b)fluoranthene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Benzo(k)fluoranthene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Benzo(a)pyrene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Dibenz(a,h)anthracene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
Benzo(g,h,i)perylene	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U
N-Nitrosodiphenylamine	EPA 3550	8270SIM	3200	100	6/27/99	7/3/99	3200	U

Rev. Anal  
 Date

N-Nitrosodimethylamine      Reported Method Detection Limit

C4A      PQL is elevated because of matrix interferences and because the sample required diluting.

**OGDEN VALIDATED**

**LEVEL V**

Approved By:

*Eydie Schwartz*

Date:

7/19/99

1S22/020597p

**01006**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

**Sample Name:** RS289DL  
**Lab Code:** L9902672-006  
**Test Notes:** C4A

**Units:** UG/KG  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	REV QUAL	QUAL CODE
									U	
N-Nitrosodimethylamine	EPA 3550	8270SIM	21	10	6/27/99	7/2/99	21	U	U	
Naphthalene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Acenaphthylene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Acenaphthene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Diethyl Phthalate	EPA 3550	8270SIM	1100	10	6/27/99	7/2/99	1100	U		
Fluorene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Phenanthrene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Anthracene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Di-n-butylPhthalate	EPA 3550	8270SIM	1100	10	6/27/99	7/2/99	1100	U		
Fluoranthene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Pyrene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Benz(a)anthracene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	1100	10	6/27/99	7/2/99	1100	U		
Chrysene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Benzo(b)fluoranthene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Benzo(k)fluoranthene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Benzo(a)pyrene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Dibenz(a,h)anthracene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
Benzo(g,h,i)perylene	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		
N-Nitrosodiphenylamine	EPA 3550	8270SIM	320	10	6/27/99	7/2/99	320	U		

N-Nitrosodimethylamine      Reported Method Detection Limit

C4A      PQL is elevated because of matrix interferences and because the sample required diluting.

**OGDEN VALIDATED**

**LEVEL V**

Approved By:

*Eydie Schwartz*

Date:

*7/19/99*

1S22/020597p

**01007**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

Sample Name: RS290  
 Lab Code: L9902672-007  
 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
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/27/99	7/3/99	2	U			u
Naphthalene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Acenaphthylene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Acenaphthene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/27/99	7/3/99	110	U			
Fluorene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Phenanthrene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Anthracene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Di-n-butylPhthalate	EPA 3550	8270SIM	110	1	6/27/99	7/3/99	110	U			
Fluoranthene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Pyrene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Benz(a)anthracene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/27/99	7/3/99	110	U			
Chrysene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Benzo(b)fluoranthene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Benzo(k)fluoranthene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Benzo(a)pyrene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Dibenz(a,h)anthracene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
Benzo(g,h,i)perylene	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			
N-Nitrosodiphenylamine	EPA 3550	8270SIM	33	1	6/27/99	7/3/99	33	U			✓

N-Nitrosodimethylamine Reported Method Detection Limit

**OGDEN VALIDATED**

**LEVEL V**

Approved By:

*Eydie Schwartz*

Date:

*7/19/99*

1S22/020597p

02672SOA.AA2 - Sample (4) 7/16/99

**01008**

Page No.:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

**Sample Name:** RS291  
**Lab Code:** L9902672-008  
**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	6/27/99	7/2/99	2	U	u
Naphthalene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Acenaphthylene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Acenaphthene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/27/99	7/2/99	110	U	
Fluorene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Phenanthrene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Anthracene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Di-n-butylPhthalate	EPA 3550	8270SIM	110	1	6/27/99	7/2/99	110	U	
Fluoranthene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Pyrene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Benz(a)anthracene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/27/99	7/2/99	110	U	
Chrysene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Benzo(b)fluoranthene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Benzo(k)fluoranthene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Benzo(a)pyrene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Dibenz(a,h)anthracene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
Benzo(g,h,i)perylene	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	
N-Nitrosodiphenylamine	EPA 3550	8270SIM	32	1	6/27/99	7/2/99	32	U	

N-Nitrosodimethylamine      Reported Method Detection Limit

**OGDEN VALIDATED**

**LEVEL V**

Approved By: Eydie Schwartz

Date: 7/9/99

1S22/020597p

**01009**

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

Sample Name: RS292  
 Lab Code: L9902672-009  
 Test Notes:

Units: UG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev. Check	Print
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/27/99	7/3/99	2	U	U	
Naphthalene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Acenaphthylene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Acenaphthene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Diethyl Phthalate	EPA 3550	8270SIM	120	1	6/27/99	7/3/99	120	U		
Fluorene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Phenanthrene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Anthracene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Di-n-butylPhthalate	EPA 3550	8270SIM	120	1	6/27/99	7/3/99	120	U		
Fluoranthene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Pyrene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Benz(a)anthracene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	120	1	6/27/99	7/3/99	120	U		
Chrysene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Benzo(b)fluoranthene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Benzo(k)fluoranthene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Benzo(a)pyrene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Dibenz(a,h)anthracene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
Benzo(g,h,i)perylene	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		
N-Nitrosodiphenylamine	EPA 3550	8270SIM	34	1	6/27/99	7/3/99	34	U		

N-Nitrosodimethylamine Reported Method Detection Limit

**OGDEN VALIDATED**

**LEVEL V**

Approved By

*Eyde Schwarz*

Date: 7/19/99

1S22/020597p

**01010**

Page No.:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/14/99  
**Date Received:** 6/14/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

**Sample Name:** RS874  
**Lab Code:** L9902672-001  
**Test Notes:**

**Units:** UG/KG  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev. Quod
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/18/99	6/29/99	2	U	u
Naphthalene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Acenaphthylene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Acenaphthene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/18/99	6/29/99	110	U	
Fluorene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Phenanthrene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Anthracene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Di-n-butylPhthalate	EPA 3550	8270SIM	110	1	6/18/99	6/29/99	110	U	
Fluoranthene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Pyrene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Benz(a)anthracene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/18/99	6/29/99	110	U	
Chrysene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Benzo(b)fluoranthene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Benzo(k)fluoranthene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Benzo(a)pyrene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Dibenz(a,h)anthracene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
Benzo(g,h,i)perylene	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	
N-Nitrosodiphenylamine	EPA 3550	8270SIM	33	1	6/18/99	6/29/99	33	U	

N-Nitrosodimethylamine      Reported Method Detection Limit

**OGDEN VALIDATED**

**LEVEL V**

Approved By: Eydie Schwarz

Date: 7/19/99 **01002**

1S22/020597p

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/14/99  
**Date Received:** 6/14/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

**Sample Name:** RS875DL  
**Lab Code:** L9902672-002  
**Test Notes:** C4A

**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	28	10	6/18/99	6/29/99	28	U	u
Naphthalene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Acenaphthylene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Acenaphthene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Diethyl Phthalate	EPA 3550	8270SIM	1400	10	6/18/99	6/29/99	1400	U	
Fluorene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Phenanthrene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Anthracene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Di-n-butylPhthalate	EPA 3550	8270SIM	1400	10	6/18/99	6/29/99	1400	U	
Fluoranthene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Pyrene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Benz(a)anthracene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	1400	10	6/18/99	6/29/99	1400	U	
Chrysene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Benzo(b)fluoranthene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Benzo(k)fluoranthene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Benzo(a)pyrene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Dibenz(a,h)anthracene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
Benzo(g,h,i)perylene	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	
N-Nitrosodiphenylamine	EPA 3550	8270SIM	420	10	6/18/99	6/29/99	420	U	

N-Nitrosodimethylamine Reported Method Detection Limit

C4A PQL is elevated because of matrix interferences and because the sample required diluting.

**OGDEN VALIDATED**

**LEVEL V**

Approved By: Eydie Schwartz

Date: 7/19/99

**01003**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/14/99  
 Date Received: 6/14/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

Sample Name: RS876DL  
 Lab Code: L9902672-003  
 Test Notes: C4A

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	21	10	6/18/99	6/29/99	21	U	u
Naphthalene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Acenaphthylene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Acenaphthene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Diethyl Phthalate	EPA 3550	8270SIM	1100	10	6/18/99	6/29/99	1100	U	
Fluorene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Phenanthrene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Anthracene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Di-n-butylPhthalate	EPA 3550	8270SIM	1100	10	6/18/99	6/29/99	1100	U	
Fluoranthene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Pyrene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Benz(a)anthracene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	1100	10	6/18/99	6/29/99	1100	U	
Chrysene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Benzo(b)fluoranthene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Benzo(k)fluoranthene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Benzo(a)pyrene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Dibenz(a,h)anthracene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
Benzo(g,h,i)perylene	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	
N-Nitrosodiphenylamine	EPA 3550	8270SIM	320	10	6/18/99	6/29/99	320	U	

N-Nitrosodimethylamine Reported Method Detection Limit

C4A PQL is elevated because of matrix interferences and because the sample required diluting.

**OGDEN VALIDATED**

**LEVEL V**

Approved By:

*Eydie Schwartz*

Date:

7/19/99

01004

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

Sample Name: RS878  
 Lab Code: L9902672-017  
 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
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/27/99	7/2/99	2	U	u	
Naphthalene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Acenaphthylene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Acenaphthene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Diethyl Phthalate	EPA 3550	8270SIM	100	1	6/27/99	7/2/99	100	U		
Fluorene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Phenanthrene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Anthracene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Di-n-butylPhthalate	EPA 3550	8270SIM	100	1	6/27/99	7/2/99	100	U		
Fluoranthene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Pyrene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Benz(a)anthracene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	100	1	6/27/99	7/2/99	100	U		
Chrysene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Benzo(b)fluoranthene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Benzo(k)fluoranthene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Benzo(a)pyrene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Dibenz(a,h)anthracene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
Benzo(g,h,i)perylene	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		
N-Nitrosodiphenylamine	EPA 3550	8270SIM	31	1	6/27/99	7/2/99	31	U		

N-Nitrosodimethylamine Reported Method Detection Limit

**OGDEN VALIDATED**

**LEVEL V**

Approved By: Eydie Schwartz

Date: 7/19/99

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

**Sample Name:** RS879  
**Lab Code:** L9902672-018  
**Test Notes:**

**Units:** UG/KG  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes	Rev. Code	Qual Code
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/27/99	7/3/99	2	U	u	
Naphthalene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Acenaphthylene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Acenaphthene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Diethyl Phthalate	EPA 3550	8270SIM	100	1	6/27/99	7/3/99	100	U		
Fluorene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Phenanthrene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Anthracene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Di-n-butylPhthalate	EPA 3550	8270SIM	100	1	6/27/99	7/3/99	100	U		
Fluoranthene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Pyrene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Benz(a)anthracene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	100	1	6/27/99	7/3/99	100	U		
Chrysene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Benzo(b)fluoranthene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Benzo(k)fluoranthene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Benzo(a)pyrene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Dibenz(a,h)anthracene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
Benzo(g,h,i)perylene	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		
N-Nitrosodiphenylamine	EPA 3550	8270SIM	31	1	6/27/99	7/3/99	31	U		

N-Nitrosodimethylamine Reported Method Detection Limit

**OGDEN VALIDATED**

**LEVEL V**

Approved By: Eydie Schwarz Date: 7/19/99

1S22/020597p

**01012**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Selected Ion Monitoring (SIM)  
 Base Neutral Semivolatile Organic Compounds

**Sample Name:** RS880  
**Lab Code:** L9902672-019  
**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
N-Nitrosodimethylamine	EPA 3550	8270SIM	2	1	6/27/99	7/2/99	2	U	U	
Naphthalene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Acenaphthylene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Acenaphthene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Diethyl Phthalate	EPA 3550	8270SIM	110	1	6/27/99	7/2/99	110	U		
Fluorene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Phenanthrene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Anthracene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Di-n-butylPhthalate	EPA 3550	8270SIM	110	1	6/27/99	7/2/99	110	U		
Fluoranthene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Pyrene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Benz(a)anthracene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Bis(2-ethylhexyl) Phthalate	EPA 3550	8270SIM	110	1	6/27/99	7/2/99	110	U		
Chrysene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Benzo(b)fluoranthene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Benzo(k)fluoranthene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Benzo(a)pyrene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Indeno(1,2,3-cd)pyrene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Dibenz(a,h)anthracene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
Benzo(g,h,i)perylene	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		
N-Nitrosodiphenylamine	EPA 3550	8270SIM	34	1	6/27/99	7/2/99	34	U		

N-Nitrosodimethylamine      Reported Method Detection Limit

**OGDEN VALIDATED**

**LEVEL V**

Approved By:

*Eydie Schwarz*

Date:

*7/19/99*

1S22/020597p

**01013**

### DATA ASSESSMENT FORM

Project Title: Rocketdyne SSFL RFI  
Project Manager: D. Hambrick  
Analysis Method: Metals by EPA Methods SW 6010B, SW 7060, SW 7471, SW 7740, and SW 7841  
QC Level: V<sup>1</sup>  
SDG: L9902672  
Matrix: Soil  
No. of Samples: 12  
Date Reviewed: September 18, 2000  
Reviewer: K. O'Kozak-Lowry  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994)  
Samples Reviewed: RS874, RS875, RS876, RS287, RS288, RS289, RS290, RS291, RS292, RS878, RS879, RS880

#### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	The COC was signed by the field and laboratory personnel and accounted for the analyses presented in the data package. Per the COCs, there was no cooler custody seal present for cooler containing samples RS874, RS875, and RS876. Sample containers were intact, and the sample analyses were performed within holding times. The samples were received within temperature control limits at 4°C and 2°C.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed for each method in this SDG. No target analyte detects were reported in the method blanks.	No qualifications were required.
5. <u>LCS/BS</u>	An aqueous LCS sample was analyzed for each method performed for this SDG. The LCS data was calculated and reported in solid units. All percent recoveries were within the method QC limits.	No qualifications were required.

	Findings	Qualifications
<p>7. <u>M S/M SD s</u>   Performed on Sample RS291</p>	<p>Sb - M S 38% R / M SD 43% R  As - M S 72% R / M SD 97% R  Se - M S 54% R / M SD at 94% R</p> <p>All other spike recoveries were within the 75-125% R control limit.</p> <p>Precision: The % RPD s between the M S/M SD spike results were within the 20% RPD control limit, with the exception of As, Se, and Tl with RPD s of 24% , 55% , and 24% , respectively.</p>	<p>The Sb and Se nondetects for all the site samples were qualified "UJ" for the low spike recoveries.</p> <p>The arsenic detects were qualified "J," and the arsenic nondetects were qualified "UJ" for the low spike recovery.</p> <p>The arsenic detect for sample RS291 was qualified "J" due to the precision between the spiked aliquots.</p> <p>Nondetects in the site samples are not qualified due to precision; therefore, the selenium and thallium nondetects in all the site samples were not qualified due to the M S/M SD precision.</p>
<p>8. <u>Furnace Atomic absorption Q C</u></p>	<p>A post digestion spike analysis was performed on site sample RS874 for the GFAA As, Tl, and Se analyses. The spike recoveries were within the 85-115% R control limit.</p>	<p>No qualifications were required.</p>
<p>9. <u>ICP Serial Dilution</u>   Performed on Sample RS878</p>	<p>Zn at 15% D</p> <p>Al, Ba, and Zn were the only analytes reported by the lab on the Serial Dilution Result QA/QC Report Form. It was not clear at validation what criteria the laboratory used in determining that these were the analytes that needed to be assessed for the serial dilution criteria. The barium and aluminum serial dilution results were within the 10% D control limit.</p>	<p>The Zn detects for the site samples were qualified as estimated, "J."</p>
<p>10. <u>Other</u></p>	<p>At the Level V validation, site samples are not assessed for the laboratory QC samples that evaluate instrument performance. The QC samples which are not assessed include initial and continuing calibration samples, initial and continuing calibration blank samples, and the ICP Interference Check Solution, ICS, sample analyses.</p>	<p>None</p>
<p>11. <u>Field Q C Samples</u>   ER: RS300 (SDG L9902687)  FB: None  Field Duplicates: None</p>	<p>Al and B were detected in ER sample RS300, but no site sample qualifications were required.</p>	<p>No qualifications were required.</p>

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	Findings	Qualifications
12. <u>Comments</u>	None	None

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<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Metals

Sample Name: RS287  
 Lab Code: L9902672-004  
 Test Notes:

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qual Code
Aluminum	EPA 3050	6010	11	1	6/29/99	6/30/99	12000			
Antimony	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	Q
Arsenic	EPA 3050	7060	5	1	6/29/99	6/29/99	5	U	u	Q
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	89			
Beryllium	EPA 3050	6010	0.5	1	6/29/99	6/30/99	0.6			
Boron	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	14			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	6			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	9			
Lead	EPA 3050	6010	5	1	6/29/99	6/30/99	8			
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Nickel	EPA 3050	6010	5	1	6/29/99	6/30/99	10			
Selenium	EPA 3050	7740	5	1	6/29/99	6/29/99	5	U	u	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Thallium	EPA 3050	7841	5	1	6/29/99	6/29/99	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	29			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	61		J	A

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz Date: 7/19/99

00004

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Metals

Sample Name: RS288  
 Lab Code: L9902672-005  
 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	11	1	6/29/99	6/30/99	21000	U	u J	Q
Antimony	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u J	Q
Arsenic	EPA 3050	7060	5	1	6/29/99	6/29/99	5			
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	113			
Beryllium	EPA 3050	6010	0.5	1	6/29/99	6/30/99	0.9			
Boron	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	25			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	9			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	14			
Lead	EPA 3050	6010	5	1	6/29/99	6/30/99	12			
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Nickel	EPA 3050	6010	5	1	6/29/99	6/30/99	22			
Selenium	EPA 3050	7740	5	1	6/29/99	6/29/99	5	U	u J	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Thallium	EPA 3050	7841	5	1	6/29/99	6/29/99	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	57			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	66		J	A

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Scherz Date: 7/19/99

09005

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Metals

Sample Name: RS289  
 Lab Code: L9902672-006  
 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	10	1	6/29/99	6/30/99	13000			
Antimony	EPA 3050	6010	10	1	6/29/99	6/30/99	10	U	UJ	Q
Arsenic	EPA 3050	7060	5	1	6/29/99	6/29/99	5	U	UJ	Q
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	100			
Beryllium	EPA 3050	6010	0.5	1	6/29/99	6/30/99	0.6			
Boron	EPA 3050	6010	10	1	6/29/99	6/30/99	10	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	19			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	7			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	10			
Lead	EPA 3050	6010	5	1	6/29/99	6/30/99	7			
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2			
Molybdenum	EPA 3050	6010	10	1	6/29/99	6/30/99	10	U	u	
Nickel	EPA 3050	6010	5	1	6/29/99	6/30/99	12			
Selenium	EPA 3050	7740	5	1	6/29/99	6/29/99	5	U	UJ	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	3			
Thallium	EPA 3050	7841	5	1	6/29/99	6/29/99	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	33			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	72		J	A

OGDEN VALIDATED

LEVEL V

Approved By:

*Eydie Schwartz*

Date:

*7/19/99*

09006

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Metals

**Sample Name:** RS290  
**Lab Code:** L9902672-007  
**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	6/29/99	6/30/99	19000			
Antimony	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	UT	Q
Arsenic	EPA 3050	7060	6	1	6/29/99	6/29/99	6	U	UT	Q
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	110			
Beryllium	EPA 3050	6010	0.6	1	6/29/99	6/30/99	0.8			
Boron	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	24			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	9			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	21			
Lead	EPA 3050	6010	6	1	6/29/99	6/30/99	13			
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2			
Molybdenum	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Nickel	EPA 3050	6010	6	1	6/29/99	6/30/99	17			
Selenium	EPA 3050	7740	6	1	6/29/99	6/29/99	6	U	UT	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Thallium	EPA 3050	7841	6	1	6/29/99	6/29/99	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	46			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	74		J	A

**OGDEN VALIDATED**

**LEVEL V**

Approved By:  
1544/021397p

*Eydie Schwarz*

Date:

*7/19/99*

**09007**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Metals

**Sample Name:** RS291  
**Lab Code:** L9902672-008  
**Test Notes:**

**Units:** MG/KG  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Rev		Qual Code
								Notes	Qual	
Aluminum	EPA 3050	6010	11	1	6/29/99	6/30/99	9200			
Antimony	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	uJ	Q
Arsenic	EPA 3050	7060	5	1	6/29/99	6/29/99	4	J	J	Q, E
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	61			
Beryllium	EPA 3050	6010	0.5	1	6/29/99	6/30/99	0.5	U	u	
Boron	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	15			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	7			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	6			
Lead	EPA 3050	6010	5	1	6/29/99	6/30/99	5	U	u	
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Nickel	EPA 3050	6010	5	1	6/29/99	6/30/99	8			
Selenium	EPA 3050	7740	5	1	6/29/99	6/29/99	5	U	uJ	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Thallium	EPA 3050	7841	5	1	6/29/99	6/29/99	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	26			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	41		J	A

**LEVEL V**

**OGDEN VALIDATED**

Approved By: Eydie Schwartz  
1544/021397p

Date: 7/19/99

09008

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Metals

**Sample Name:** RS292  
**Lab Code:** L9902672-009  
**Test Notes:**

**Units:** MG/KG  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Qual	Qcpt Code
Aluminum	EPA 3050	6010	11	1	6/29/99	6/30/99	17000			
Antimony	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	uJ	Q
Arsenic	EPA 3050	7060	6	1	6/29/99	6/29/99	6	U	uJ	Q
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	54			
Beryllium	EPA 3050	6010	0.6	1	6/29/99	6/30/99	0.6			
Boron	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	11			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	3			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	3			
Lead	EPA 3050	6010	6	1	6/29/99	6/30/99	6	U	u	
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Nickel	EPA 3050	6010	6	1	6/29/99	6/30/99	6	U	u	
Selenium	EPA 3050	7740	6	1	6/29/99	6/29/99	6	U	uJ	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Thallium	EPA 3050	7841	6	1	6/29/99	6/29/99	6	U	u	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	25			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	36		J	A

**LEVEL V**

**OGDEN VALIDATED**

Approved By: Eydie Schwartz Date: 7/19/99  
 1544/021397p

09009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/14/99  
 Date Received: 6/14/99

Metals

Sample Name: RS874  
 Lab Code: L9902672-001  
 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 Code
Aluminum	EPA 3050	6010	11	1	6/29/99	6/30/99	8500			
Antimony	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	uJ	BQ
Arsenic	EPA 3050	7060	5	1	6/29/99	6/29/99	5	U	uJ	Q
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	69			
Beryllium	EPA 3050	6010	0.5	1	6/29/99	6/30/99	0.5	U	u	
Boron	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	11			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	5			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	6			
Lead	EPA 3050	6010	5	1	6/29/99	6/30/99	5	U	u	
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Nickel	EPA 3050	6010	5	1	6/29/99	6/30/99	7			
Selenium	EPA 3050	7740	5	1	6/29/99	6/29/99	5	U	uJ	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Thallium	EPA 3050	7841	5	1	6/29/99	6/29/99	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	25			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	49		J	A

**OGDEN VALIDATED**

**LEVEL V**

*WZL*  
 9/11/00

Approved By: *Eydie Schwartz*

Date: *7/19/99*

09001

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/14/99  
 Date Received: 6/14/99

Metals

Sample Name: RS875  
 Lab Code: L9902672-002  
 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	14	1	6/29/99	6/30/99	14000			
Antimony	EPA 3050	6010	14	1	6/29/99	6/30/99	14	U	uJ	Q
Arsenic	EPA 3050	7060	7	1	6/29/99	6/29/99	7	U	uJ	Q
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	95			
Beryllium	EPA 3050	6010	0.7	1	6/29/99	6/30/99	0.7	U	u	
Boron	EPA 3050	6010	14	1	6/29/99	6/30/99	14	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	3	1	6/29/99	6/30/99	18			
Cobalt	EPA 3050	6010	3	1	6/29/99	6/30/99	7			
Copper	EPA 3050	6010	3	1	6/29/99	6/30/99	13			
Lead	EPA 3050	6010	7	1	6/29/99	6/30/99	12			
Mercury	EPA 7471	7471	0.3	1	6/23/99	6/23/99	0.3	U	u	
Molybdenum	EPA 3050	6010	14	1	6/29/99	6/30/99	14	U	u	
Nickel	EPA 3050	6010	7	1	6/29/99	6/30/99	13			
Selenium	EPA 3050	7740	7	1	6/29/99	6/29/99	7	U	uJ	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Thallium	EPA 3050	7841	7	1	6/29/99	6/29/99	7	U	u	
Vanadium	EPA 3050	6010	3	1	6/29/99	6/30/99	38			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	130		J	A

OGDEN VALIDATED

LEVEL V

Approved By  
 1844/021397p

*Eydie Schwartz*

Date:

*7/19/99*

09002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/14/99  
 Date Received: 6/14/99

Metals

Sample Name: RS876  
 Lab Code: L9902672-003  
 Test Notes:

Units: MG/KG  
 Basis: Dry

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes	Rev Anal	Qual Codes
Aluminum	EPA 3050	6010	11	1	6/29/99	6/30/99	7700			
Antimony	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	uJ	Q
Arsenic	EPA 3050	7060	5	1	6/29/99	6/29/99	5	U	uJ	Q
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	64			
Beryllium	EPA 3050	6010	0.5	1	6/29/99	6/30/99	0.5	U	u	
Boron	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	12			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	5			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	8			
Lead	EPA 3050	6010	5	1	6/29/99	6/30/99	6			
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2	U	u	
Molybdenum	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	u	
Nickel	EPA 3050	6010	5	1	6/29/99	6/30/99	9			
Selenium	EPA 3050	7740	5	1	6/29/99	6/29/99	5	U	uJ	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Thallium	EPA 3050	7841	5	1	6/29/99	6/29/99	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	25			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	51		J	A

OGDEN VALIDATED

LEVEL V

Approved By: Eydie Schwartz Date: 7/19/99  
 1544/021397p

00003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Metals

Sample Name: RS878  
 Lab Code: L9902672-017  
 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	10	1	6/29/99	6/30/99	11000			
Antimony	EPA 3050	6010	10	1	6/29/99	6/30/99	10	U	uJ	Q
Arsenic	EPA 3050	7060	5	1	6/29/99	6/29/99	5	U	uJ	Q
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	83			
Beryllium	EPA 3050	6010	0.5	1	6/29/99	6/30/99	0.5	U	u	
Boron	EPA 3050	6010	10	1	6/29/99	6/30/99	10	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	17			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	6			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	8			
Lead	EPA 3050	6010	5	1	6/29/99	6/30/99	13			
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2	U	u	
Molybdenum	EPA 3050	6010	10	1	6/29/99	6/30/99	10	U	u	
Nickel	EPA 3050	6010	5	1	6/29/99	6/30/99	11			
Selenium	EPA 3050	7740	5	1	6/29/99	6/29/99	5	U	uJ	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Thallium	EPA 3050	7841	5	1	6/29/99	6/29/99	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	34			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	54		J	A

LEVEL V

OGDEN VALIDATED

Approved By:  
1S44/021397p

*Eydie Schwartz*

Date:

*7/19/99*

09010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: L9902672  
 Date Collected: 6/17/99  
 Date Received: 6/17/99

Metals

Sample Name: RS879  
 Lab Code: L9902672-018  
 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	10	1	6/29/99	6/30/99	11000			
Antimony	EPA 3050	6010	10	1	6/29/99	6/30/99	10	U	UJ	Q
Arsenic	EPA 3050	7060	5	1	6/29/99	6/29/99	5	U	UJ	Q
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	75			
Beryllium	EPA 3050	6010	0.5	1	6/29/99	6/30/99	0.5			
Boron	EPA 3050	6010	10	1	6/29/99	6/30/99	10	U	u	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	14			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	5.2			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	7			
Lead	EPA 3050	6010	5	1	6/29/99	6/30/99	5			
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2	U	u	
Molybdenum	EPA 3050	6010	10	1	6/29/99	6/30/99	10	U	u	
Nickel	EPA 3050	6010	5	1	6/29/99	6/30/99	10			
Selenium	EPA 3050	7740	5	1	6/29/99	6/29/99	5	U	UJ	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	u	
Thallium	EPA 3050	7841	5	1	6/29/99	6/29/99	5	U	u	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	26			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	45		J	A

LEVEL V

OGDEN VALIDATED

Approved By: Eydie Schwartz Date: 7/19/99

09011

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** L9902672  
**Date Collected:** 6/17/99  
**Date Received:** 6/17/99

Metals

**Sample Name:** RS880  
**Lab Code:** L9902672-019  
**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	6/29/99	6/30/99	18000			Q
Antimony	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	UJ	Q
Arsenic	EPA 3050	7060	6	1	6/29/99	6/29/99	6	U	UJ	Q
Barium	EPA 3050	6010	1	1	6/29/99	6/30/99	140			
Beryllium	EPA 3050	6010	0.5	1	6/29/99	6/30/99	0.8			
Boron	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	U	
Cadmium	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	U	
Chromium	EPA 3050	6010	2	1	6/29/99	6/30/99	22			
Cobalt	EPA 3050	6010	2	1	6/29/99	6/30/99	8			
Copper	EPA 3050	6010	2	1	6/29/99	6/30/99	26			
Lead	EPA 3050	6010	6	1	6/29/99	6/30/99	7			
Mercury	EPA 7471	7471	0.2	1	6/23/99	6/23/99	0.2	U	U	
Molybdenum	EPA 3050	6010	11	1	6/29/99	6/30/99	11	U	U	
Nickel	EPA 3050	6010	6	1	6/29/99	6/30/99	16			
Selenium	EPA 3050	7740	6	1	6/29/99	6/29/99	6	U	UJ	Q
Silver	EPA 3050	6010	1	1	6/29/99	6/30/99	1	U	U	
Thallium	EPA 3050	7841	6	1	6/29/99	6/29/99	6	U	U	
Vanadium	EPA 3050	6010	2	1	6/29/99	6/30/99	42			
Zinc	EPA 3050	6010	1	1	6/29/99	6/30/99	67		J	A

**LEVEL V**

**OGDEN VALIDATED**

Approved By: Eydie Schwartz Date: 7/19/99

09012