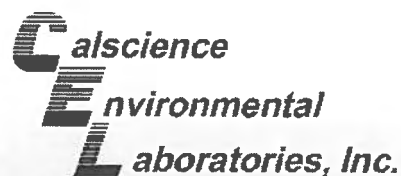


Appendix B

Results of the Sediment Conventional and Chemical Analyses: Laboratory Data Reports Submitted by Calscience



CALSCIENCE

WORK ORDER NUMBER: 13-04-0291

The difference is service



AIR : SOIL : WATER : MARINE CHEMISTRY

Analytical Report For

Client: Pacific Ecorisk

Client Project Name: Hercules Pipeline 20792

Attention: Jeff Cotsifas
2250 Cordelia Road
Fairfield, CA 94534-1912

Danielle Gonsman

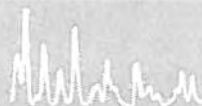
Approved for release on 04/19/2013 by:
Danielle Gonsman
Project Manager

ResultLink ▶

Email your PM ▶



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NELAP ID: 03220CA | DoD-ELAP ID: L10-41 | CSDLAC ID: 10109 | SCAQMD ID: 93LA0830

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 Work Order Number: 13-04-0291

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CASE NARRATIVE

Calscience Work Order No.: 13-04-0291

Project ID: Hercules Pipeline

Provided below is a narrative of our analytical effort, including any unique features or anomalies encountered as part of the analysis of the sediment samples.

Sample Condition on Receipt

One sediment sample was received for this project on April 4, 2013. The sample was transferred to the laboratory in an ice-chest with wet ice, following strict chain-of-custody (COC) procedures. The temperature of the sample upon receipt at the laboratory was 1.7°C. The samples were given laboratory identification numbers, logged into the Laboratory Information Management System (LIMS) and then stored under refrigeration pending sediment chemistry testing.

Tests Performed

Total Solids by SM 2540B (M)
TOC by EPA 9060A
Trace Metals by EPA 6020
Mercury by EPA 7471A
OC Pesticides by EPA 8081A
PCB Congeners by EPA 8270C SIM
PAHs by EPA 8270C SIM
Organotins by Krone et al.
Particle Size by ASTM D4464

Data Summary

The sample results and reporting limits were dry weight corrected.

All samples were homogenized prior to preparation and analysis.

Holding times

All holding times were met.

Calibration

Frequency and control criteria for initial and continuing calibration verifications were met.

Reporting Limits

All Method Detection Limits were met. The results were evaluated to the MDL, and where applicable, "J" flags were reported.





Blanks

Concentrations of target analytes in the method blank were found to be below reporting limits for all testing with the following exceptions.

Trace levels, below the RL but above the MDL, of two PAH analytes and Arsenic were found in the Method Blanks. The results have been flagged with the appropriate qualifiers.

Laboratory Control Samples

A Laboratory Control Sample (LCS) analysis was performed at the required frequencies, and unless otherwise noted, all parameters were within the established control limits.

Matrix Spikes

Matrix spike analyses were performed on project sample HP-Comp. All recoveries were within acceptable control limits for all analyses with the following exceptions.

The MS and/or MSD recoveries for Lead and Zinc were outside the established control limits. Since the PDS, LCS and LCSD recoveries were within the control limits, the results are released with no further action.

The MS recovery for Tetrabutyltin was below the control limits. However, the results are released as is since the MSD, LCS and LCSD recoveries were in control.

Several PAH MS/MSD recoveries were below the established control limits due to matrix interference. However, since the associated LCS and LCSD recoveries were in control, the results are released.

The RPDs and/or MS recoveries for two EPA 8081A analytes were out of control. The results have been flagged with the appropriate qualifiers and are released with no further action.

Surrogates

Surrogate recoveries for all applicable tests and samples were within the established control limits with the following exceptions

For PAHs by EPA 8270C SIM the 2-Fluorobiphenyl recovery was high in both samples. Since the other surrogate recoveries were in control, matrix interference is probable and so the data is released as is.

Laboratory Duplicate

A laboratory duplicate was created for this project with sample HP-Comp. The laboratory duplicate was analyzed for the requested analyses and the precision between the two samples was acceptable.

A handwritten signature in black ink, appearing to be "M. J. [unclear]".



Acronyms

LCS/LCSD- Laboratory Control Sample/Laboratory Control Sample Duplicate
MS/MSD- Matrix Spike/Matrix Spike Duplicate
RPD- Relative Percent Difference



Condition Upon Receipt:

Samples were received under Chain of Custody (COC) on 04/04/2013. They were assigned to Work Order 13-04-0291.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with an immediate holding time (HT $\leq$ 15 minutes --40CFR-136.3 Table II footnote 4), is considered a "field" test and reported samples results are not flagged unless the analysis is performed beyond 24 hours of the time of collection.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Subcontract Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: N/A
Method: EPA 9060A

Project: Hercules Pipeline 20792

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP	13-04-0291-1-A	03/25/13 08:45	Sediment	TOC 5	04/08/13	04/09/13 18:19	D0408TOCL1

Comment(s): -Results were evaluated to the MDL (DL), concentrations $\geq$ to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Units
Carbon, Total Organic	1.0	0.081	0.020	1		%

HP-COMP LAB DUP	13-04-0291-3-A	03/25/13 08:45	Sediment	TOC 5	04/08/13	04/09/13 18:19	D0408TOCL1
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Comment(s): -Results were evaluated to the MDL (DL), concentrations $\geq$ to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Units
Carbon, Total Organic	0.88	0.079	0.019	1		%

Method Blank	099-06-013-848	N/A	Solid	TOC 5	04/08/13	04/09/13 18:19	D0408TOCL1
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Comment(s): -Results were evaluated to the MDL (DL), concentrations $\geq$ to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Carbon, Total Organic	ND	0.050	0.012	1		%

RL - Reporting Limit DF - Dilution Factor Qual - Qualifiers

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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: N/A
Method: SM 2540 B (M)

Project: Hercules Pipeline 20792

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP	13-04-0291-1-A	03/25/13 08:45	Sediment	N/A	04/08/13	04/08/13 16:00	D0408TSB1

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Solids, Total	61.9	0.100	0.100	1		%

HP-COMP LAB DUP	13-04-0291-3-A	03/25/13 08:45	Sediment	N/A	04/08/13	04/08/13 16:00	D0408TSB1
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Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Solids, Total	63.3	0.100	0.100	1		%

Method Blank	099-05-019-2,199	N/A	Solid	N/A	04/08/13	04/08/13 16:00	D0408TSB1
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Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Solids, Total	ND	0.100	0.100	1		%

Return to Contents

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

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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: Hercules Pipeline 20792

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP	13-04-0291-1-B	03/25/13 08:45	Sediment	GC 51	04/08/13	04/10/13 11:33	130408L10

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Aldrin	ND	1.6	0.51	1		Endosulfan I	ND	1.6	0.42	1	
Alpha-BHC	ND	1.6	0.52	1		Endosulfan II	ND	1.6	0.45	1	
Beta-BHC	ND	1.6	0.43	1		Endosulfan Sulfate	ND	1.6	0.55	1	
Delta-BHC	ND	1.6	0.41	1		Endrin	ND	1.6	0.58	1	
Gamma-BHC	ND	1.6	0.56	1		Endrin Aldehyde	ND	1.6	0.39	1	
Chlordane	ND	1.6	5.3	1		Endrin Ketone	ND	1.6	0.56	1	
Dieldrin	ND	1.6	0.53	1		Heptachlor	ND	1.6	0.52	1	
Trans-nonachlor	ND	1.6	0.47	1		Heptachlor Epoxide	ND	1.6	0.57	1	
2,4'-DDD	ND	1.6	0.55	1		Methoxychlor	ND	1.6	0.52	1	
2,4'-DDE	ND	1.6	0.49	1		Toxaphene	ND	32	10	1	
2,4'-DDT	ND	1.6	0.49	1		Alpha Chlordane	ND	1.6	0.52	1	
4,4'-DDD	ND	1.6	0.51	1		Gamma Chlordane	ND	1.6	0.51	1	
4,4'-DDE	ND	1.6	0.48	1		Cis-nonachlor	ND	1.6	0.47	1	
4,4'-DDT	ND	1.6	0.54	1		Oxychlordane	ND	1.6	0.45	1	
Surrogates:	REC (%)	Control Limits	Qual			Surrogates:	REC (%)	Control Limits	Qual		
2,4,5,6-Tetrachloro-m-Xylene	90	50-130				Decachlorobiphenyl	105	50-130			

Return to Contents

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

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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: Hercules Pipeline 20792

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP LAB DUP	13-04-0291-3-B	03/25/13 08:45	Sediment	GC 51	04/08/13	04/10/13 11:47	130408L10

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Aldrin	ND	1.6	0.50	1		Endosulfan I	ND	1.6	0.41	1	
Alpha-BHC	ND	1.6	0.51	1		Endosulfan II	ND	1.6	0.44	1	
Beta-BHC	ND	1.6	0.42	1		Endosulfan Sulfate	ND	1.6	0.53	1	
Delta-BHC	ND	1.6	0.40	1		Endrin	ND	1.6	0.57	1	
Gamma-BHC	ND	1.6	0.55	1		Endrin Aldehyde	ND	1.6	0.39	1	
Chlordane	ND	16	5.2	1		Endrin Ketone	ND	1.6	0.55	1	
Dieldrin	ND	1.6	0.52	1		Heptachlor	ND	1.6	0.51	1	
Trans-nonachlor	ND	1.6	0.45	1		Heptachlor Epoxide	ND	1.6	0.56	1	
2,4'-DDD	ND	1.6	0.54	1		Methoxychlor	ND	1.6	0.51	1	
2,4'-DDE	ND	1.6	0.48	1		Toxaphene	ND	32	10	1	
2,4'-DDT	ND	1.6	0.47	1		Alpha Chlordane	ND	1.6	0.51	1	
4,4'-DDD	ND	1.6	0.50	1		Gamma Chlordane	ND	1.6	0.50	1	
4,4'-DDE	ND	1.6	0.47	1		Cis-nonachlor	ND	1.6	0.46	1	
4,4'-DDT	ND	1.6	0.53	1		Oxychlordane	ND	1.6	0.44	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	82	50-130		Decachlorobiphenyl	100	50-130	

Method Blank	099-12-858-197	N/A	Solid	GC 51	04/08/13	04/10/13 10:21	130408L10
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Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Aldrin	ND	1.0	0.31	1		Endosulfan I	ND	1.0	0.26	1	
Alpha-BHC	ND	1.0	0.32	1		Endosulfan II	ND	1.0	0.28	1	
Beta-BHC	ND	1.0	0.26	1		Endosulfan Sulfate	ND	1.0	0.34	1	
Delta-BHC	ND	1.0	0.26	1		Endrin	ND	1.0	0.36	1	
Gamma-BHC	ND	1.0	0.35	1		Endrin Aldehyde	ND	1.0	0.24	1	
Chlordane	ND	10	3.3	1		Endrin Ketone	ND	1.0	0.35	1	
Dieldrin	ND	1.0	0.33	1		Heptachlor	ND	1.0	0.32	1	
Trans-nonachlor	ND	1.0	0.29	1		Heptachlor Epoxide	ND	1.0	0.36	1	
2,4'-DDD	ND	1.0	0.34	1		Methoxychlor	ND	1.0	0.32	1	
2,4'-DDE	ND	1.0	0.31	1		Toxaphene	ND	20	6.3	1	
2,4'-DDT	ND	1.0	0.30	1		Alpha Chlordane	ND	1.0	0.32	1	
4,4'-DDD	ND	1.0	0.32	1		Gamma Chlordane	ND	1.0	0.32	1	
4,4'-DDE	ND	1.0	0.30	1		Cis-nonachlor	ND	1.0	0.29	1	
4,4'-DDT	ND	1.0	0.33	1		Oxychlordane	ND	1.0	0.28	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	110	50-130		Decachlorobiphenyl	106	50-130	

RL - Reporting Limit DF - Dilution Factor Qual - Qualifiers

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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8270C SIM PAHs
Units: ug/kg

Project: Hercules Pipeline 20792

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP	13-04-0291-1-B	03/25/13 08:45	Sediment	GC/MS AAA	04/08/13	04/11/13 00:47	130408L01

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acenaphthene	ND	16	2.9	1		Fluoranthene	60	16	1.6	1	
Acenaphthylene	12	16	2.4	1	J	Fluorene	6.0	16	2.4	1	J
Anthracene	41	16	1.3	1		Indeno (1,2,3-c,d) Pyrene	57	16	1.7	1	
Benzo (a) Anthracene	44	16	2.5	1		2-Methylnaphthalene	4.2	16	2.9	1	J
Benzo (a) Pyrene	61	16	1.6	1		1-Methylnaphthalene	ND	16	3.2	1	
Benzo (b) Fluoranthene	200	16	1.6	1		1-Methylphenanthrene	ND	16	2.6	1	
Benzo (e) Pyrene	130	16	2.4	1		Naphthalene	8.4	16	4.9	1	J
Benzo (g,h,i) Perylene	60	16	1.5	1		Perylene	40	16	2.8	1	
Benzo (k) Fluoranthene	160	16	2.3	1		Phenanthrene	26	16	1.6	1	
Biphenyl	2.5	16	2.2	1	J	Pyrene	200	16	1.6	1	B
Chrysene	66	16	1.9	1		1,6,7-Trimethylnaphthalene	ND	16	2.3	1	
Dibenz (a,h) Anthracene	15	16	1.7	1	J	Dibenzothiophene	2.6	16	2.2	1	J
2,6-Dimethylnaphthalene	11	16	2.7	1	J						
Surrogates:						Surrogates:					
	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>				<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		
2-Fluorobiphenyl	183	14-146	2,7			Nitrobenzene-d5	146	18-162			
p-Terphenyl-d14	107	34-148									

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

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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8270C SIM PAHs
Units: ug/kg

Project: Hercules Pipeline 20792

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP LAB DUP	13-04-0291-3-B	03/25/13 08:45	Sediment	GC/MS AAA	04/08/13	04/11/13 01:14	130408L01

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acenaphthene	3.0	16	2.8	1	J	Fluoranthene	70	16	1.6	1	
Acenaphthylene	9.3	16	2.4	1	J	Fluorene	5.9	16	2.3	1	J
Anthracene	28	16	1.3	1		Indeno (1,2,3-c,d) Pyrene	52	16	1.7	1	
Benzo (a) Anthracene	43	16	2.5	1		2-Methylnaphthalene	4.9	16	2.9	1	J
Benzo (a) Pyrene	62	16	1.6	1		1-Methylnaphthalene	3.2	16	3.2	1	B,J
Benzo (b) Fluoranthene	120	16	1.6	1		1-Methylphenanthrene	ND	16	2.6	1	
Benzo (e) Pyrene	91	16	2.4	1		Naphthalene	9.8	16	4.7	1	J
Benzo (g,h,i) Perylene	61	16	1.5	1		Perylene	47	16	2.7	1	
Benzo (k) Fluoranthene	95	16	2.2	1		Phenanthrene	33	16	1.6	1	
Biphenyl	3.0	16	2.2	1	J	Pyrene	150	16	1.6	1	B
Chrysene	54	16	1.8	1		1,6,7-Trimethylnaphthalene	2.8	16	2.2	1	J
Dibenz (a,h) Anthracene	13	16	1.6	1	J	Dibenzothiophene	3.2	16	2.1	1	J
2,6-Dimethylnaphthalene	14	16	2.6	1	J						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	166	14-146	2,7	Nitrobenzene-d5	144	18-162	
p-Terphenyl-d14	117	34-148					

Method Blank	099-14-437-50	N/A	Solid	GC/MS AAA	04/08/13	04/09/13 16:06	130408L01
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Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acenaphthene	ND	10	1.8	1		Fluoranthene	ND	10	0.98	1	
Acenaphthylene	ND	10	1.5	1		Fluorene	ND	10	1.5	1	
Anthracene	ND	10	0.81	1		Indeno (1,2,3-c,d) Pyrene	ND	10	1.1	1	
Benzo (a) Anthracene	ND	10	1.6	1		2-Methylnaphthalene	ND	10	1.8	1	
Benzo (a) Pyrene	ND	10	1.0	1		1-Methylnaphthalene	2.2	10	2.0	1	J
Benzo (b) Fluoranthene	ND	10	1.0	1		1-Methylphenanthrene	ND	10	1.6	1	
Benzo (e) Pyrene	ND	10	1.5	1		Naphthalene	ND	10	3.0	1	
Benzo (g,h,i) Perylene	ND	10	0.94	1		Perylene	ND	10	1.7	1	
Benzo (k) Fluoranthene	ND	10	1.4	1		Phenanthrene	ND	10	1.0	1	
Biphenyl	ND	10	1.4	1		Pyrene	1.1	10	0.99	1	J
Chrysene	ND	10	1.2	1		1,6,7-Trimethylnaphthalene	ND	10	1.4	1	
Dibenz (a,h) Anthracene	ND	10	1.0	1		Dibenzothiophene	ND	10	1.3	1	
2,6-Dimethylnaphthalene	ND	10	1.7	1							

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	101	14-146		Nitrobenzene-d5	102	18-162	
p-Terphenyl-d14	119	34-148					

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

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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: Hercules Pipeline 20792

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP	13-04-0291-1-B	03/25/13 08:45	Sediment	GC/MS HHH	04/08/13	04/10/13 15:36	130408L02

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
PCB008	ND	0.81	0.14	1		PCB118	1.6	0.81	0.21	1	
PCB018	ND	0.81	0.25	1		PCB128	0.53	0.81	0.17	1	J
PCB028	ND	0.81	0.16	1		PCB132	ND	0.81	0.27	1	
PCB031	ND	0.81	0.19	1		PCB138/158	2.0	1.6	0.33	1	
PCB033	ND	0.81	0.18	1		PCB141	0.31	0.81	0.18	1	J
PCB044	0.33	0.81	0.21	1	J	PCB149	1.2	0.81	0.14	1	
PCB049	0.61	0.81	0.19	1	J	PCB151	0.25	0.81	0.17	1	J
PCB052	0.73	0.81	0.16	1	J	PCB153	1.9	0.81	0.17	1	
PCB056	ND	0.81	0.22	1		PCB156	0.32	0.81	0.16	1	J
PCB060	ND	0.81	0.17	1		PCB170	0.33	0.81	0.15	1	J
PCB066	0.31	0.81	0.15	1	J	PCB174	0.27	0.81	0.17	1	J
PCB070	0.50	0.81	0.13	1	J	PCB177	ND	0.81	0.20	1	
PCB074	ND	0.81	0.15	1		PCB180	0.44	0.81	0.099	1	J
PCB087	0.41	0.81	0.16	1	J	PCB183	ND	0.81	0.18	1	
PCB095	1.3	0.81	0.27	1		PCB187	0.25	0.81	0.17	1	J
PCB097	0.70	0.81	0.22	1	J	PCB194	ND	0.81	0.15	1	
PCB099	0.81	0.81	0.14	1		PCB195	ND	0.81	0.085	1	
PCB101	1.9	0.81	0.13	1		PCB201	ND	0.81	0.092	1	
PCB105	0.56	0.81	0.17	1	J	PCB203	ND	0.81	0.17	1	
PCB110	1.7	0.81	0.17	1							

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	80	50-125		p-Terphenyl-d14	81	50-125	

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

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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: Hercules Pipeline 20792

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP LAB DUP	13-04-0291-3-B	03/25/13 08:45	Sediment	GC/MS HHH	04/08/13	04/10/13 16:05	130408L02

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
PCB008	ND	0.79	0.13	1		PCB118	1.5	0.79	0.21	1	
PCB018	ND	0.79	0.25	1		PCB128	0.28	0.79	0.16	1	J
PCB028	ND	0.79	0.16	1		PCB132	ND	0.79	0.26	1	
PCB031	ND	0.79	0.18	1		PCB138/158	1.7	1.6	0.32	1	
PCB033	ND	0.79	0.17	1		PCB141	0.45	0.79	0.18	1	J
PCB044	0.35	0.79	0.21	1	J	PCB149	1.1	0.79	0.14	1	
PCB049	0.51	0.79	0.19	1	J	PCB151	0.27	0.79	0.16	1	J
PCB052	0.59	0.79	0.15	1	J	PCB153	1.6	0.79	0.16	1	
PCB056	ND	0.79	0.22	1		PCB156	0.22	0.79	0.15	1	J
PCB060	ND	0.79	0.17	1		PCB170	0.26	0.79	0.15	1	J
PCB066	0.35	0.79	0.14	1	J	PCB174	0.20	0.79	0.17	1	J
PCB070	0.40	0.79	0.13	1	J	PCB177	ND	0.79	0.19	1	
PCB074	0.16	0.79	0.15	1	J	PCB180	0.45	0.79	0.097	1	J
PCB087	0.32	0.79	0.16	1	J	PCB183	ND	0.79	0.18	1	
PCB095	1.3	0.79	0.26	1		PCB187	0.26	0.79	0.17	1	J
PCB097	0.68	0.79	0.22	1	J	PCB194	ND	0.79	0.15	1	
PCB099	0.81	0.79	0.13	1		PCB195	ND	0.79	0.083	1	
PCB101	1.8	0.79	0.13	1		PCB201	ND	0.79	0.090	1	
PCB105	0.47	0.79	0.17	1	J	PCB203	ND	0.79	0.17	1	
PCB110	1.5	0.79	0.16	1							

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	53	50-125		p-Terphenyl-d14	59	50-125	

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



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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: Hercules Pipeline 20792

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-341-95	N/A	Solid	GC/MS HHH	04/08/13	04/10/13 14:15	130408L02

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
PCB008	ND	0.50	0.085	1		PCB118	ND	0.50	0.13	1	
PCB018	ND	0.50	0.16	1		PCB128	ND	0.50	0.10	1	
PCB028	ND	0.50	0.099	1		PCB132	ND	0.50	0.17	1	
PCB031	ND	0.50	0.12	1		PCB138/158	ND	1.0	0.20	1	
PCB033	ND	0.50	0.11	1		PCB141	ND	0.50	0.11	1	
PCB044	ND	0.50	0.13	1		PCB149	ND	0.50	0.089	1	
PCB049	ND	0.50	0.12	1		PCB151	ND	0.50	0.10	1	
PCB052	ND	0.50	0.097	1		PCB153	ND	0.50	0.10	1	
PCB056	ND	0.50	0.14	1		PCB156	ND	0.50	0.098	1	
PCB060	ND	0.50	0.11	1		PCB170	ND	0.50	0.093	1	
PCB066	ND	0.50	0.091	1		PCB174	ND	0.50	0.11	1	
PCB070	ND	0.50	0.082	1		PCB177	ND	0.50	0.12	1	
PCB074	ND	0.50	0.094	1		PCB180	ND	0.50	0.061	1	
PCB087	ND	0.50	0.10	1		PCB183	ND	0.50	0.11	1	
PCB095	ND	0.50	0.17	1		PCB187	ND	0.50	0.10	1	
PCB097	ND	0.50	0.14	1		PCB194	ND	0.50	0.096	1	
PCB099	ND	0.50	0.085	1		PCB195	ND	0.50	0.053	1	
PCB101	ND	0.50	0.081	1		PCB201	ND	0.50	0.057	1	
PCB105	ND	0.50	0.10	1		PCB203	ND	0.50	0.11	1	
PCB110	ND	0.50	0.10	1							

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	94	50-125		p-Terphenyl-d14	95	50-125	

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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.
Units: ug/kg

Project: Hercules Pipeline 20792

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP	13-04-0291-1-B	03/25/13 08:45	Sediment	GC/MS JJJ	04/08/13	04/15/13 19:55	130408L06

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Dibutyltin	ND	4.8	1.1	1		Tetrabutyltin	ND	4.8	1.2	1	
Monobutyltin	ND	4.8	1.1	1		Tributyltin	ND	4.8	0.93	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	81	48-126	

HP-COMP LAB DUP	13-04-0291-3-B	03/25/13 08:45	Sediment	GC/MS JJJ	04/08/13	04/15/13 20:24	130408L06
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Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Dibutyltin	ND	4.7	1.0	1		Tetrabutyltin	ND	4.7	1.2	1	
Monobutyltin	ND	4.7	1.0	1		Tributyltin	ND	4.7	0.91	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	99	48-126	

Method Blank	099-07-016-1,016	N/A	Solid	GC/MS JJJ	04/08/13	04/15/13 19:25	130408L06
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Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Dibutyltin	ND	3.0	0.65	1		Tetrabutyltin	ND	3.0	0.77	1	
Monobutyltin	ND	3.0	0.65	1		Tributyltin	ND	3.0	0.58	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	86	48-126	

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

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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: Hercules Pipeline 20792

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP	13-04-0291-1-A	03/25/13 08:45	Sediment	Mercury	04/04/13	04/05/13 16:02	130404L05E

Comment(s): -Results were evaluated to the MDL (DL), concentrations $\geq$ to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Units
Mercury	0.164	0.0324	0.00950	1		mg/kg

HP-COMP LAB DUP	13-04-0291-3-B	03/25/13 08:45	Sediment	Mercury	04/08/13	04/09/13 14:51	130408L05E
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Comment(s): -Results were evaluated to the MDL (DL), concentrations $\geq$ to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Units
Mercury	0.225	0.0317	0.00929	1		mg/kg

Method Blank	099-12-452-360	N/A	Solid	Mercury	04/04/13	04/05/13 15:51	130404L05E
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Comment(s): -Results were evaluated to the MDL (DL), concentrations $\geq$ to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Mercury	ND	0.0200	0.00588	1		mg/kg

Method Blank	099-12-452-362	N/A	Solid	Mercury	04/08/13	04/08/13 17:32	130408L05E
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Comment(s): -Results were evaluated to the MDL (DL), concentrations $\geq$ to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Mercury	ND	0.0200	0.00588	1		mg/kg

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

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Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: Hercules Pipeline 20792

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
HP-COMP	13-04-0291-1-B	03/25/13 08:45	Sediment	ICP/MS 03	04/05/13	04/06/13 01:28	130405L04E

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Arsenic	6.34	0.162	0.141	1		Nickel	37.0	0.162	0.0818	1	
Cadmium	0.438	0.162	0.0925	1		Selenium	ND	0.162	0.118	1	
Chromium	37.3	0.162	0.100	1		Silver	0.129	0.162	0.0506	1	J
Copper	25.0	0.162	0.0677	1		Zinc	59.3	1.62	1.28	1	
Lead	17.5	0.162	0.106	1							

HP-COMP LAB DUP	13-04-0291-3-B	03/25/13 08:45	Sediment	ICP/MS 03	04/09/13	04/09/13 21:38	130409L01E
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Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Arsenic	6.99	0.158	0.138	1	B	Nickel	34.1	0.158	0.0800	1	
Cadmium	0.380	0.158	0.0904	1		Selenium	0.179	0.158	0.115	1	
Chromium	31.8	0.158	0.0981	1		Silver	0.133	0.158	0.0494	1	J
Copper	24.7	0.158	0.0662	1		Zinc	56.7	1.58	1.26	1	
Lead	16.7	0.158	0.104	1							

Method Blank	099-15-254-95	N/A	Solid	ICP/MS 03	04/05/13	04/06/13 01:05	130405L04E
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Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Arsenic	ND	0.100	0.0873	1		Nickel	ND	0.100	0.0506	1	
Cadmium	ND	0.100	0.0572	1		Selenium	ND	0.100	0.0731	1	
Chromium	ND	0.100	0.0621	1		Silver	ND	0.100	0.0313	1	
Copper	ND	0.100	0.0419	1		Zinc	ND	1.00	0.795	1	
Lead	ND	0.100	0.0659	1							

Method Blank	099-15-254-96	N/A	Solid	ICP/MS 03	04/09/13	04/09/13 20:51	130409L01E
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Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Arsenic	0.123	0.100	0.0873	1		Nickel	ND	0.100	0.0506	1	
Cadmium	ND	0.100	0.0572	1		Selenium	ND	0.100	0.0731	1	
Chromium	ND	0.100	0.0621	1		Silver	ND	0.100	0.0313	1	
Copper	ND	0.100	0.0419	1		Zinc	ND	1.00	0.795	1	
Lead	ND	0.100	0.0659	1							

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

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PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific Ecorisk
 2250 Cordelia Road
 Fairfield, CA 94534-1912

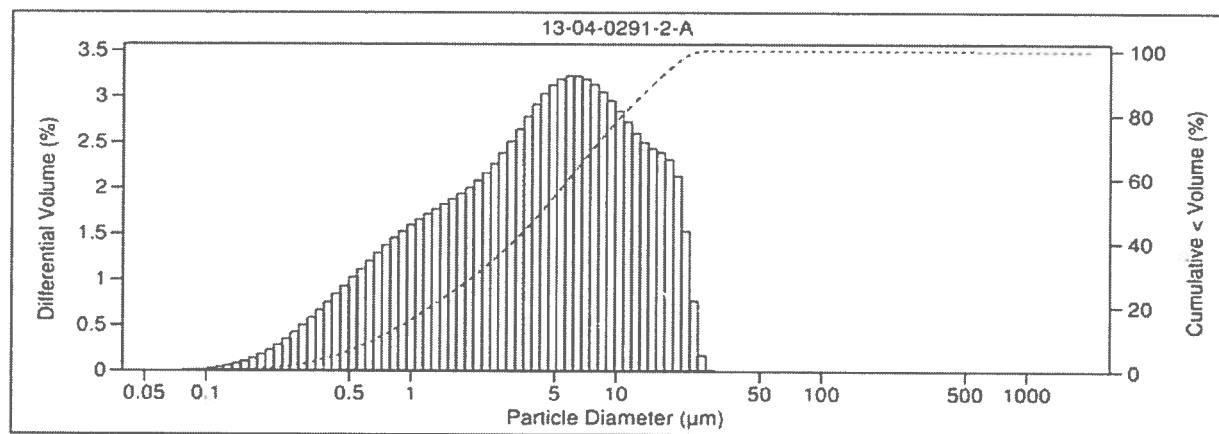
Date Sampled: 3/25/2013
 Date Received: 4/4/2013
 Work Order No: 13-04-0291
 Date Analyzed: 4/5/2013
 Method: ASTM D4464M

Project: 20792-Hercules Pipeline

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Sample ID	Depth ft	Description	Mean Grain Size mm
HP-COMP		Silt	0.006

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	0.00	0.00	0.00	53.09	46.91	100.00



[Handwritten signature]

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

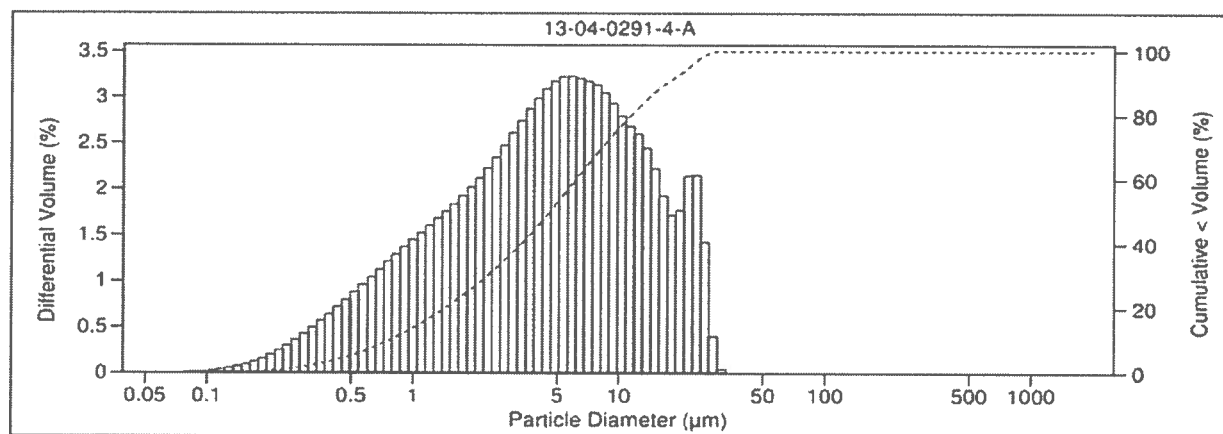
Date Sampled: 3/25/2013
Date Received: 4/4/2013
Work Order No: 13-04-0291
Date Analyzed: 4/5/2013
Method: ASTM D4464M

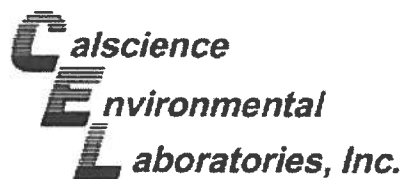
Project: 20792-Hercules Pipeline

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Sample ID	Depth ft	Description	Mean Grain Size mm
HP-COMP LAB DUP		Silt	0.006

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	0.00	0.00	0.00	55.17	44.83	100.00





Quality Control - Spike/Spike Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3050B
Method: EPA 6020

Project Hercules Pipeline 20792

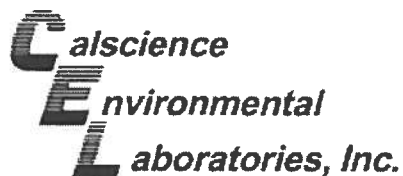
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
HP-COMP	Sediment	ICP/MS 03	04/05/13	04/06/13	130405S04

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	3.927	25.00	29.49	102	30.81	108	80-120	4	0-20	
Cadmium	0.2708	25.00	25.96	103	25.74	102	80-120	1	0-20	
Chromium	23.07	25.00	51.52	114	46.69	94	80-120	10	0-20	
Copper	15.46	25.00	41.42	104	41.84	106	80-120	1	0-20	
Lead	10.85	25.00	42.13	125	37.54	107	80-120	12	0-20	3
Nickel	22.90	25.00	48.51	102	50.11	109	80-120	3	0-20	
Selenium	ND	25.00	23.73	95	21.30	85	80-120	11	0-20	
Silver	ND	12.50	12.28	98	12.10	97	80-120	2	0-20	
Zinc	36.69	25.00	65.23	114	70.21	134	80-120	7	0-20	3

↑
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RPD - Relative Percent Difference, CL - Control Limit

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Quality Control - PDS / PDSD



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3050B
Method: EPA 6020

Project Hercules Pipeline 20792

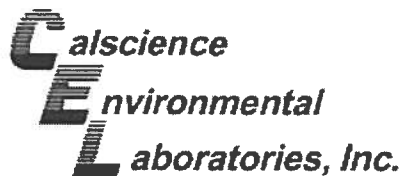
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS/PDSD Batch Number
HP-COMP	Sediment	ICP/MS 03	04/05/13	04/06/13	130405S04

Parameter	SAMPLE CONC	SPIKE ADDED	PDS CONC	PDS %REC	%REC CL	Qualifiers
Arsenic	3.927	25.00	29.55	102	75-125	
Cadmium	0.2708	25.00	25.33	100	75-125	
Chromium	23.07	25.00	43.35	81	75-125	
Copper	15.46	25.00	40.33	99	75-125	
Lead	10.85	25.00	35.29	98	75-125	
Nickel	22.90	25.00	46.26	93	75-125	
Selenium	ND	25.00	21.37	85	75-125	
Silver	ND	12.50	10.11	81	75-125	
Zinc	36.69	25.00	63.35	107	75-125	

Return to Customer

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - Spike/Spike Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3050B
Method: EPA 6020

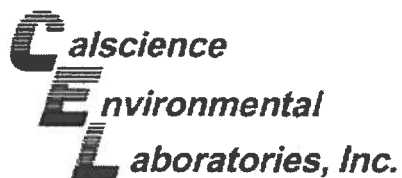
Project Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
HP-COMP LAB DUP	Sediment	ICP/MS 03	04/09/13	04/09/13	130409S01

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Arsenic	4.427	25.00	29.75	101	29.80	102	80-120	0	0-20	
Cadmium	0.2404	25.00	25.93	103	25.60	101	80-120	1	0-20	
Chromium	20.15	25.00	43.85	95	46.70	106	80-120	6	0-20	
Copper	15.64	25.00	40.10	98	40.70	100	80-120	1	0-20	
Lead	10.59	25.00	35.68	100	36.64	104	80-120	3	0-20	
Nickel	21.60	25.00	47.42	103	47.44	103	80-120	0	0-20	
Selenium	0.1132	25.00	23.04	92	23.65	94	80-120	3	0-20	
Silver	ND	12.50	12.82	103	12.82	103	80-120	0	0-20	
Zinc	35.92	25.00	65.66	119	62.85	108	80-120	4	0-20	

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - PDS / PDSO



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3050B
Method: EPA 6020

Project Hercules Pipeline 20792

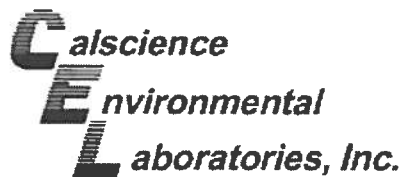
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS/PDSO Batch Number
HP-COMP LAB DUP	Sediment	ICP/MS 03	04/09/13	04/09/13	130409S01

Parameter	SAMPLE CONC	SPIKE ADDED	PDS CONC	PDS %REC	%REC CL	Qualifiers
Arsenic	4.427	25.00	30.18	103	75-125	
Cadmium	0.2404	25.00	25.14	100	75-125	
Chromium	20.15	25.00	44.73	98	75-125	
Copper	15.64	25.00	41.11	102	75-125	
Lead	10.59	25.00	36.40	103	75-125	
Nickel	21.60	25.00	46.88	101	75-125	
Selenium	0.1132	25.00	22.97	91	75-125	
Silver	ND	12.50	11.21	90	75-125	
Zinc	35.92	25.00	62.26	105	75-125	

Return to Client

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - Spike/Spike Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: N/A
Method: EPA 9060A

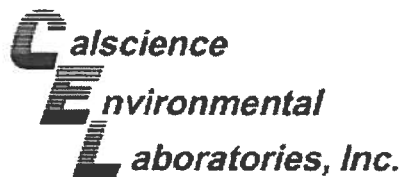
Project Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-04-0280-1	Sediment	TOC 5	04/08/13	04/09/13	D0408TOCS1

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Carbon, Total Organic	0.99	3.0	3.6	87	3.5	83	75-125	3	0-25	

RPD - Relative Percent Difference, CL - Control Limit

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Quality Control - Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: N/A
Method: SM 2540 B (M)

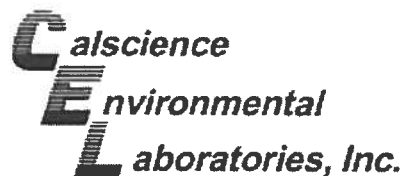
Project: Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
HP-COMP	Sediment	N/A	04/08/13	04/08/13	D0408TSD1

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total	61.9	62.4	1	0-10	

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - Spike/Spike Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 7471A Total
Method: EPA 7471A

Project Hercules Pipeline 20792

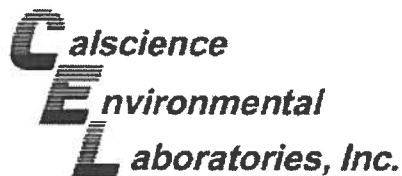
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
HP-COMP	Sediment	Mercury	04/04/13	04/05/13	130404S05

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Mercury	0.1018	0.8350	0.7942	83	0.8142	85	76-136	2	0-16	

Return to Contents

RPD - Relative Percent Difference, CL - Control Limit

7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL: (714) 895-5494 • FAX: (714) 894-7501



Quality Control - Spike/Spike Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 7471A Total
Method: EPA 7471A

Project Hercules Pipeline 20792

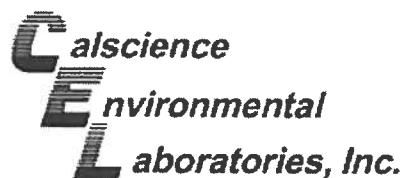
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-04-0508-17	Solid	Mercury	04/08/13	04/08/13	130408S05

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Mercury	ND	0.8350	0.7451	89	0.6961	83	71-137	7	0-14	

Return to Customer

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - Spike/Spike Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.

Project Hercules Pipeline 20792

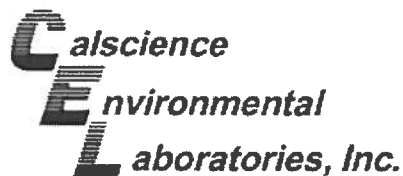
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
HP-COMP	Sediment	GC/MS JJJ	04/08/13	04/15/13	130408S06

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Tetrabutyltin	ND	100.0	77.34	77	99.80	100	79-175	25	0-31	3
Tributyltin	ND	100.0	76.57	77	98.39	98	69-135	25	0-29	

Return to Contact

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - Spike/Spike Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8081A

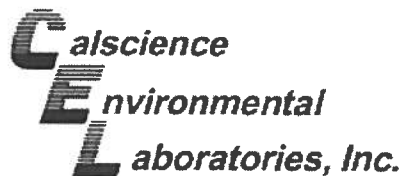
Project Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
HP-COMP	Sediment	GC 51	04/08/13	04/10/13	130408S10

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	ND	5.000	4.062	81	4.388	88	50-135	8	0-25	
Alpha-BHC	ND	5.000	4.683	94	4.665	93	50-135	0	0-25	
Beta-BHC	ND	5.000	4.779	96	4.615	92	50-135	3	0-25	
Delta-BHC	ND	5.000	4.529	91	4.553	91	50-135	1	0-25	
Gamma-BHC	ND	5.000	4.095	82	4.057	81	50-135	1	0-25	
Dieldrin	ND	5.000	4.422	88	4.445	89	50-135	1	0-25	
4,4'-DDD	ND	5.000	5.849	117	6.284	126	50-135	7	0-25	
4,4'-DDE	ND	5.000	4.917	98	4.892	98	50-135	1	0-25	
4,4'-DDT	ND	5.000	3.765	75	2.580	52	50-135	37	0-25	4
Endosulfan I	ND	5.000	4.109	82	4.055	81	50-135	1	0-25	
Endosulfan II	ND	5.000	4.405	88	4.364	87	50-135	1	0-25	
Endosulfan Sulfate	ND	5.000	4.660	93	4.725	94	50-135	1	0-25	
Endrin	ND	5.000	4.887	98	4.620	92	50-135	6	0-25	
Endrin Aldehyde	ND	5.000	4.167	83	4.116	82	50-135	1	0-25	
Endrin Ketone	ND	5.000	6.321	126	5.711	114	50-135	10	0-25	
Heptachlor	ND	5.000	4.318	86	3.777	76	50-135	13	0-25	
Heptachlor Epoxide	ND	5.000	4.363	87	4.416	88	50-135	1	0-25	
Methoxychlor	ND	5.000	3.442	69	1.833	37	50-135	61	0-25	3,4
Alpha Chlordane	ND	5.000	4.525	91	4.552	91	50-135	1	0-25	
Gamma Chlordane	ND	5.000	4.160	83	4.289	86	50-135	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - Spike/Spike Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

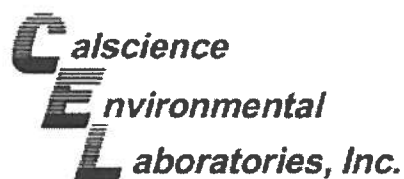
Project Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
HP-COMP	Sediment	GC/MS HHH	04/08/13	04/10/13	130408S02

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
PCB008	ND	25.00	20.35	81	16.86	67	50-125	19	0-30	
PCB018	ND	25.00	18.80	75	15.96	64	50-125	16	0-30	
PCB028	ND	25.00	18.91	76	16.05	64	50-125	16	0-30	
PCB044	ND	25.00	18.97	76	17.11	68	50-125	10	0-30	
PCB052	ND	25.00	19.45	78	17.87	71	50-125	8	0-30	
PCB066	ND	25.00	19.31	77	17.50	70	50-125	10	0-30	
PCB101	1.207	25.00	26.38	101	24.97	95	50-125	5	0-30	
PCB105	ND	25.00	20.75	83	18.75	75	50-125	10	0-30	
PCB118	1.018	25.00	27.67	107	26.14	100	50-125	6	0-30	
PCB128	ND	25.00	18.00	72	17.87	71	50-125	1	0-30	
PCB153	1.175	25.00	24.44	93	21.87	83	50-125	11	0-30	
PCB170	ND	25.00	16.83	67	15.88	64	50-125	6	0-30	
PCB180	ND	25.00	20.31	81	18.28	73	50-125	11	0-30	
PCB187	ND	25.00	18.28	73	16.45	66	50-125	11	0-30	
PCB195	ND	25.00	18.87	75	15.90	64	50-125	17	0-30	

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - Spike/Spike Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: 04/04/13
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8270C SIM PAHs

Project Hercules Pipeline 20792

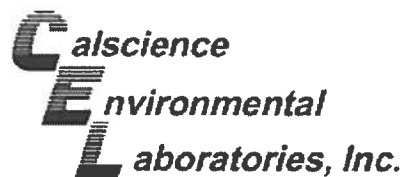
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
HP-COMP	Sediment	GC/MS AAA	04/08/13	04/09/13	130408S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Acenaphthene	ND	100.0	82.53	83	84.63	85	40-160	3	0-20	
Acenaphthylene	ND	100.0	80.82	81	82.66	83	40-160	2	0-20	
Anthracene	25.64	100.0	79.54	54	87.12	61	40-160	9	0-20	
Benzo (a) Anthracene	27.29	100.0	103.8	77	113.9	87	40-160	9	0-20	
Benzo (a) Pyrene	37.89	100.0	102.8	65	112.8	75	40-160	9	0-20	
Benzo (b) Fluoranthene	120.9	100.0	106.7	0	112.5	0	40-160	5	0-20	3
Benzo (g,h,i) Perylene	37.25	100.0	115.5	78	119.3	82	40-160	3	0-20	
Benzo (k) Fluoranthene	96.09	100.0	100.7	5	109.6	13	40-160	8	0-20	3
Chrysene	40.74	100.0	97.31	57	108.0	67	40-160	10	0-20	
Dibenz (a,h) Anthracene	ND	100.0	95.50	96	97.66	98	40-160	2	0-20	
Fluoranthene	36.89	100.0	110.6	74	122.3	85	40-160	10	0-20	
Fluorene	ND	100.0	82.45	82	84.38	84	40-160	2	0-20	
Indeno (1,2,3-c,d) Pyrene	35.25	100.0	111.7	76	116.6	81	40-160	4	0-20	
2-Methylnaphthalene	ND	100.0	83.97	84	90.18	90	40-160	7	0-20	
1-Methylnaphthalene	ND	100.0	85.65	86	90.10	90	40-160	5	0-20	
Naphthalene	ND	100.0	87.52	88	89.56	90	40-160	2	0-20	
Phenanthrene	15.85	100.0	94.09	78	105.7	90	40-160	12	0-20	
Pyrene	121.6	100.0	130.1	9	145.3	24	40-160	11	0-46	3

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL: (714) 895-5494 • FAX: (714) 894-7501



Quality Control - LCS/LCS Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: N/A
Work Order No: 13-04-0291
Preparation: EPA 3050B
Method: EPA 6020

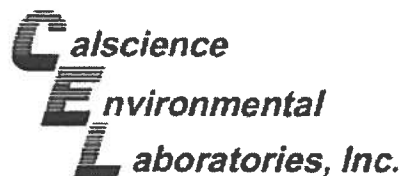
Project: Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-254-95	Solid	ICP/MS 03	04/05/13	04/06/13	130405L04E

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Arsenic	25.00	25.65	103	25.95	104	80-120	1	0-20	
Cadmium	25.00	24.46	98	25.78	103	80-120	5	0-20	
Chromium	25.00	24.72	99	24.21	97	80-120	2	0-20	
Copper	25.00	27.30	109	27.12	108	80-120	1	0-20	
Lead	25.00	24.76	99	25.94	104	80-120	5	0-20	
Nickel	25.00	26.47	106	26.67	107	80-120	1	0-20	
Selenium	25.00	22.64	91	21.22	85	80-120	6	0-20	
Silver	12.50	11.40	91	11.50	92	80-120	1	0-20	
Zinc	25.00	26.66	107	27.21	109	80-120	2	0-20	

RPD - Relative Percent Difference , CL - Control Limit

7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL: (714) 895-5494 • FAX: (714) 894-7501



Quality Control - LCS/LCS Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: N/A
Work Order No: 13-04-0291
Preparation: EPA 3050B
Method: EPA 6020

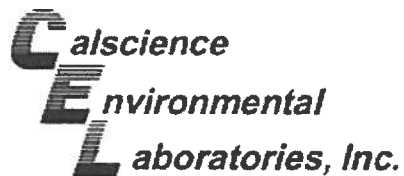
Project: Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
099-15-254-96	Solid	ICP/MS 03	04/09/13	04/09/13	130409L01E				

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Arsenic	25.00	24.93	100	24.54	98	80-120	2	0-20	
Cadmium	25.00	24.80	99	24.25	97	80-120	2	0-20	
Chromium	25.00	24.96	100	25.37	101	80-120	2	0-20	
Copper	25.00	27.85	111	27.30	109	80-120	2	0-20	
Lead	25.00	24.95	100	25.35	101	80-120	2	0-20	
Nickel	25.00	27.10	108	26.84	107	80-120	1	0-20	
Selenium	25.00	20.84	83	21.30	85	80-120	2	0-20	
Silver	12.50	11.15	89	10.92	87	80-120	2	0-20	
Zinc	25.00	27.59	110	27.21	109	80-120	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit

7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL: (714) 895-5494 • FAX: (714) 894-7501



Quality Control - LCS/LCS Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: N/A
Work Order No: 13-04-0291
Preparation: N/A
Method: EPA 9060A

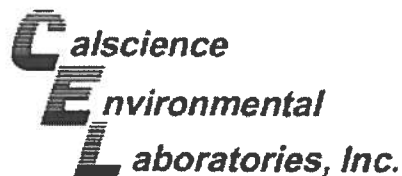
Project: Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-848	Solid	TOC 5	04/08/13	04/09/13	D0408TOCL1

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Carbon, Total Organic	0.60	0.58	96	0.56	93	80-120	3	0-20	

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - LCS/LCS Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: N/A
Work Order No: 13-04-0291
Preparation: EPA 7471A Total
Method: EPA 7471A

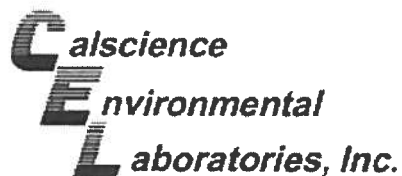
Project: Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-360	Solid	Mercury	04/04/13	04/05/13	130404L05E

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Mercury	0.8350	0.8579	103	0.8715	104	82-124	2	0-16	

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - LCS/LCS Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: N/A
Work Order No: 13-04-0291
Preparation: EPA 7471A Total
Method: EPA 7471A

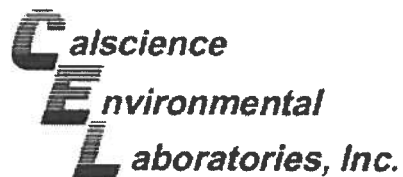
Project: Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-362	Solid	Mercury	04/08/13	04/09/13	130408L05E

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	0.8127	97	0.8252	99	82-124	2	0-16	

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - LCS/LCS Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: N/A
Work Order No: 13-04-0291
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.

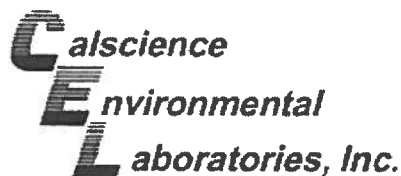
Project: Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-016-1,016	Solid	GC/MS JJJ	04/08/13	04/15/13	130408L06

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Tetrabutyltin	100.0	116.5	117	111.4	111	79-151	5	0-20	
Tributyltin	100.0	102.7	103	104.6	105	51-129	2	0-20	

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - LCS/LCS Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: N/A
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8081A

Project: Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-12-858-197	Solid	GC 51	04/08/13		04/10/13		130408L10			
Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	5.336	107	4.513	90	50-135	36-149	17	0-25	
Alpha-BHC	5.000	4.754	95	4.072	81	50-135	36-149	15	0-25	
Beta-BHC	5.000	5.162	103	4.462	89	50-135	36-149	15	0-25	
Delta-BHC	5.000	5.177	104	4.368	87	50-135	36-149	17	0-25	
Gamma-BHC	5.000	4.756	95	4.054	81	50-135	36-149	16	0-25	
Dieldrin	5.000	5.292	106	4.500	90	50-135	36-149	16	0-25	
4,4'-DDD	5.000	5.275	106	4.661	93	50-135	36-149	12	0-25	
4,4'-DDE	5.000	5.161	103	4.313	86	50-135	36-149	18	0-25	
4,4'-DDT	5.000	4.897	98	4.182	84	50-135	36-149	16	0-25	
Endosulfan I	5.000	5.249	105	4.544	91	50-135	36-149	14	0-25	
Endosulfan II	5.000	5.284	106	4.670	93	50-135	36-149	12	0-25	
Endosulfan Sulfate	5.000	5.152	103	4.360	87	50-135	36-149	17	0-25	
Endrin	5.000	5.259	105	4.091	82	50-135	36-149	25	0-25	
Endrin Aldehyde	5.000	5.505	110	4.705	94	50-135	36-149	16	0-25	
Endrin Ketone	5.000	5.463	109	4.828	97	50-135	36-149	12	0-25	
Heptachlor	5.000	5.281	106	4.505	90	50-135	36-149	16	0-25	
Heptachlor Epoxide	5.000	4.917	98	4.239	85	50-135	36-149	15	0-25	
Methoxychlor	5.000	4.893	98	4.072	81	50-135	36-149	18	0-25	
Alpha Chlordane	5.000	5.122	102	4.361	87	50-135	36-149	16	0-25	
Gamma Chlordane	5.000	4.954	99	4.230	85	50-135	36-149	16	0-25	

Total number of LCS compounds : 20

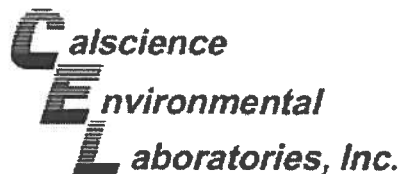
Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

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Quality Control - LCS/LCS Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: N/A
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project: Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-341-95	Solid	GC/MS HHH	04/08/13		04/10/13		130408L02			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
PCB008	25.00	20.14	81	19.81	79	50-125	38-138	2	0-30	
PCB018	25.00	19.22	77	19.16	77	50-125	38-138	0	0-30	
PCB028	25.00	18.93	76	18.74	75	50-125	38-138	1	0-30	
PCB044	25.00	19.60	78	19.68	79	50-125	38-138	0	0-30	
PCB052	25.00	17.99	72	18.23	73	50-125	38-138	1	0-30	
PCB066	25.00	19.55	78	19.50	78	50-125	38-138	0	0-30	
PCB101	25.00	20.10	80	20.26	81	50-125	38-138	1	0-30	
PCB105	25.00	17.59	70	19.41	78	50-125	38-138	10	0-30	
PCB118	25.00	21.29	85	22.30	89	50-125	38-138	5	0-30	
PCB128	25.00	15.80	63	18.50	74	50-125	38-138	16	0-30	
PCB153	25.00	17.17	69	18.43	74	50-125	38-138	7	0-30	
PCB170	25.00	17.67	71	17.39	70	50-125	38-138	2	0-30	
PCB180	25.00	16.23	65	19.06	76	50-125	38-138	16	0-30	
PCB187	25.00	16.05	64	18.43	74	50-125	38-138	14	0-30	
PCB195	25.00	18.35	73	17.96	72	50-125	38-138	2	0-30	

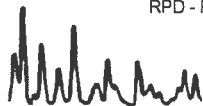
Total number of LCS compounds : 15

Total number of ME compounds : 0

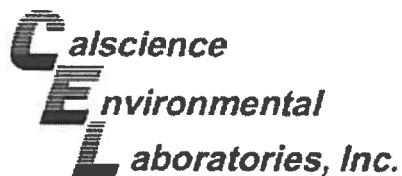
Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit



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Quality Control - LCS/LCS Duplicate



Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534-1912

Date Received: N/A
Work Order No: 13-04-0291
Preparation: EPA 3545
Method: EPA 8270C SIM PAHs

Project: Hercules Pipeline 20792

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-437-50	Solid	GC/MS AAA	04/08/13		04/09/13		130408L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifies</u>
Acenaphthene	100.0	83.24	83	90.27	90	48-108	38-118	8	0-11	
Acenaphthylene	100.0	82.22	82	87.90	88	40-160	20-180	7	0-20	
Anthracene	100.0	79.83	80	88.70	89	40-160	20-180	11	0-20	
Benzo (a) Anthracene	100.0	94.87	95	104.6	105	40-160	20-180	10	0-20	
Benzo (a) Pyrene	100.0	83.15	83	92.37	92	40-160	20-180	11	0-20	
Benzo (b) Fluoranthene	100.0	85.93	86	99.67	100	40-160	20-180	15	0-20	
Benzo (g,h,i) Perylene	100.0	89.15	89	95.17	95	40-160	20-180	7	0-20	
Benzo (k) Fluoranthene	100.0	84.29	84	96.55	97	40-160	20-180	14	0-20	
Chrysene	100.0	84.62	85	94.50	94	40-160	20-180	11	0-20	
Dibenz (a,h) Anthracene	100.0	88.20	88	100.8	101	40-160	20-180	13	0-20	
Fluoranthene	100.0	85.91	86	93.46	93	40-160	20-180	8	0-20	
Fluorene	100.0	80.01	80	87.28	87	40-160	20-180	9	0-20	
Indeno (1,2,3-c,d) Pyrene	100.0	91.17	91	105.0	105	40-160	20-180	14	0-20	
2-Methylnaphthalene	100.0	80.46	80	85.36	85	40-160	20-180	6	0-20	
1-Methylnaphthalene	100.0	87.39	87	94.34	94	40-160	20-180	8	0-20	
Naphthalene	100.0	83.71	84	89.24	89	40-160	20-180	6	0-20	
Phenanthrene	100.0	78.39	78	87.12	87	40-160	20-180	11	0-20	
Pyrene	100.0	93.49	93	102.9	103	40-160	20-180	10	0-16	

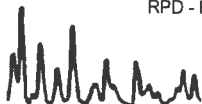
Total number of LCS compounds : 18

Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit



7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Work Order Number: 13-04-0291

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDS or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

For any analysis identified as a "field" test with a holding time (HT) $\leq$ 15 minutes where the sample is received outside of HT, Calscience will adhere to its internal HT of 24 hours. In cases where sample analysis does not meet Calscience's internal HT, results will be appropriately qualified.

Rejected by Customer



CHAIN OF CUSTODY RECORD

PACIFIC ECORISK
2250 Cordelia Rd
Fairfield, CA 94534
Ph: (707) 207-7760
Fax: (707) 207-7916
www.pacificcorisk.com

RESULTS TO:

Same

BILL TO:

Same

13-04-0291

Attn:

Jeff Catsifas

Phone:

Email:

Attn:

Cynthia Garcia

Phone:

Email:

PROJECT:

Hercules Pipeline 20792

ANALYSES REQUESTED

REMARKS

SAMPLE IDENTIFICATION

DATE

TIME

SAMPLE MATRIX

GRAB/COMP.

CONTAINERS/TYPE

See Attached List

HP-COMP

3/25/13

0845

Seal

C

1 11-L Jar

X

HP-COMP

3/25/13

0845

Seal

C

1 12-gal

X

METHOD OF SHIPMENT:

FedEx:

UPS:

HAND: *X*

OTHER:

COMMENTS:

Please freeze sample in glass jar upon receipt.

CODES:

RELINQUISHED BY: (SIGNATURE)

DATE

TIME

RECEIVED BY: (SIGNATURE)

DATE

TIME

PAGE #

Tom O'Malley

4/3/13

1300

Tom O'Malley

4/3/13

1300

1 OF 1

Tom O'Malley to G-50

4/3/13

1730

prey n. sea

4/4/13

10:30

WHITE - RETURN W/ SAMPLE

YELLOW - KEEP FOR YOUR RECORDS.

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

0291

Project Proponent:
Project #:
Site #:

Pacific EcoRisk
20792 - Hercules Pipeline
HP - COMP

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	160.3	0.10%	X
Total Organic Carbon	415.1	0.10%	X
Particle Size	ASTM 1992	0.10%	X
Arsenic	6020	2 mg/kg	X
Cadmium	6020	0.3 mg/kg	X
Chromium	6020	5 mg/kg	X
Copper	6020	5 mg/kg	X
Lead	6020	5 mg/kg	X
Nickel	6020	5 mg/kg	X
Silver	6020	0.2 mg/kg	X
Zinc	6020	1 mg/kg	X
Mercury	7471A	0.02 mg/kg	X
Selenium	7742	0.1 mg/kg	X
2,4'-DDD	8081 B	2 µg/kg	X
2,4'-DDE	8081 B	2 µg/kg	X
2,4'-DDT	8081 B	2 µg/kg	X
4,4'-DDD	8081 B	2 µg/kg	X
4,4'-DDE	8081 B	2 µg/kg	X
4,4'-DDT	8081 B	2 µg/kg	X
Aldrin	8081 B	2 µg/kg	X
alpha-BHC	8081 B	2 µg/kg	X
alpha-Chlordane	8081 B	2 µg/kg	X
beta-BHC	8081 B	2 µg/kg	X
Chlordane	8081 B	20 µg/kg	X
delta-BHC	8081 B	2 µg/kg	X
Dieldrin	8081 B	2 µg/kg	X
Endosulfan I	8081 B	2 µg/kg	X
Endosulfan II	8081 B	2 µg/kg	X
Endosulfan Sulfate	8081 B	2 µg/kg	X
Endrin	8081 B	2 µg/kg	X
Endrin Aldehyde	8081 B	2 µg/kg	X
gamma-BHC (Lindane)	8081 B	2 µg/kg	X
gamma-Chlordane	8081 B	2 µg/kg	X
Heptachlor	8081 B	2 µg/kg	X
Heptachlor Epoxide	8081 B	2 µg/kg	X
Toxaphene	8081 B	2 µg/kg	X
PCB 008	8082 ECD or 8270C	0.5 µg/kg	X
PCB 018	8082 ECD or 8270C	0.5 µg/kg	X
PCB 028	8082 ECD or 8270C	0.5 µg/kg	X
PCB 031	8082 ECD or 8270C	0.5 µg/kg	X
PCB 033	8082 ECD or 8270C	0.5 µg/kg	X
PCB 044	8082 ECD or 8270C	0.5 µg/kg	X
PCB 049	8082 ECD or 8270C	0.5 µg/kg	X
PCB 052	8082 ECD or 8270C	0.5 µg/kg	X
PCB 056	8082 ECD or 8270C	0.5 µg/kg	X
PCB 060	8082 ECD or 8270C	0.5 µg/kg	X
PCB 066	8082 ECD or 8270C	0.5 µg/kg	X
PCB 070	8082 ECD or 8270C	0.5 µg/kg	X
PCB 074	8082 ECD or 8270C	0.5 µg/kg	X
PCB 087	8082 ECD or 8270C	0.5 µg/kg	X
PCB 095	8082 ECD or 8270C	0.5 µg/kg	X
PCB 097	8082 ECD or 8270C	0.5 µg/kg	X
PCB 099	8082 ECD or 8270C	0.5 µg/kg	X
PCB 101	8082 ECD or 8270C	0.5 µg/kg	X
PCB 105	8082 ECD or 8270C	0.5 µg/kg	X
PCB 110	8082 ECD or 8270C	0.5 µg/kg	X
PCB 118	8082 ECD or 8270C	0.5 µg/kg	X
PCB 128	8082 ECD or 8270C	0.5 µg/kg	X
PCB 132	8082 ECD or 8270C	0.5 µg/kg	X
PCB 138	8082 ECD or 8270C	0.5 µg/kg	X
PCB 141	8082 ECD or 8270C	0.5 µg/kg	X
PCB 149	8082 ECD or 8270C	0.5 µg/kg	X



Return to Contents

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

0291

Project Proponent:

Pacific EcoRisk

Project #:

20792 - Hercules Pipeline

Site #:

HP - COMP

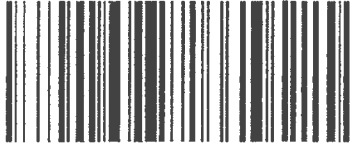
ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
PCB 151	8082 ECD or 8270C	0.5 µg/kg	X
PCB 153	8082 ECD or 8270C	0.5 µg/kg	X
PCB 156	8082 ECD or 8270C	0.5 µg/kg	X
PCB 158	8082 ECD or 8270C	0.5 µg/kg	X
PCB 170	8082 ECD or 8270C	0.5 µg/kg	X
PCB 174	8082 ECD or 8270C	0.5 µg/kg	X
PCB 177	8082 ECD or 8270C	0.5 µg/kg	X
PCB 180	8082 ECD or 8270C	0.5 µg/kg	X
PCB 183	8082 ECD or 8270C	0.5 µg/kg	X
PCB 187	8082 ECD or 8270C	0.5 µg/kg	X
PCB 194	8082 ECD or 8270C	0.5 µg/kg	X
PCB 195	8082 ECD or 8270C	0.5 µg/kg	X
PCB 201	8082 ECD or 8270C	0.5 µg/kg	X
PCB 203	8082 ECD or 8270C	0.5 µg/kg	X
Acenaphthene	8270C	20 µg/kg	X
Acenaphthylene	8270C	20 µg/kg	X
Anthracene	8270C	20 µg/kg	X
Benz(a)anthracene	8270C	20 µg/kg	X
Benzo(a)pyrene	8270C	20 µg/kg	X
Benzo(c)pyrene	8270C	20 µg/kg	X
Benzo(b)fluoranthene	8270C	20 µg/kg	X
Benzo(g,h,i)perylene	8270C	20 µg/kg	X
Benzo(k)fluoranthene	8270C	20 µg/kg	X
Biphenyl	8270C	20 µg/kg	X
Chrysene	8270C	20 µg/kg	X
Dibenz(a,h)anthracene	8270C	20 µg/kg	X
Dibenzothiophene	8270C	20 µg/kg	X
Dimethylnaphthalene 2, 6-	8270C	20 µg/kg	X
Fluoranthene	8270C	20 µg/kg	X
Fluorene	8270C	20 µg/kg	X
Indeno(1,2,3-cd)pyrene	8270C	20 µg/kg	X
Methylnaphthalene, 1-	8270C	20 µg/kg	X
Methylnaphthalene, 2-	8270C	20 µg/kg	X
Methylphenanthrene, 1-	8270C	20 µg/kg	X
Naphthalene	8270C	20 µg/kg	X
Perylene	8270C	20 µg/kg	X
Phenanthrene	8270C	20 µg/kg	X
Pyrene	8270C	20 µg/kg	X
Trimethylnaphthalene, 2, 3, 5-	8270C	20 µg/kg	X
Di-butyltin	Krone 1989	10 µg/kg	X
Mono-Butyltin	Krone 1989	10 µg/kg	X
Tetra-butyltin	Krone 1989	10 µg/kg	X
Tri-butyltin	Krone 1989	10 µg/kg	X
QA/QC			X

Please Perform Duplicate analysis, MS/MSD, etc. on the sample provided.

If you have any questions regarding this request as checked,
please call Jeff Cotsifas at (707)207-7760

Return to Consistency

0291

		< WebShip > > > > 800-322-5555 www.gso.com	
Ship From: ALAN KEMP CAL SCIENCE- CONCORD 5J63 COMMERCIAL CIRCLE #H CONCORD, CA 94520		Tracking #: 521475197 	NPS
Ship To: SAMPLE RECEIVING CEL 7440 LINCOLN WAY GARDEN GROVE, CA 92841		ORC GARDEN GROVE	
COD: \$0.00		A	
Reference: PHILLIPS 66, PACIFIC ECORISK Delivery Instructions:		D92841A  10766497	
Signature Type: SIGNATURE REQUIRED		Print Date : 04/03/13 14:30 PM	

Package 1 of 1

Send Label To Printer	☒ Print All	Edit Shipment	Finish
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LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.

STEP 1 - Use the "Send Label To Printer" button on this page to print the shipping label on a laser or inkjet printer.

STEP 2 - Fold this page in half.

STEP 3 - Securely attach this label to your package, do not cover the barcode.

STEP 4 - Request an on-call pickup for your package, if you do not have scheduled daily pickup service or Drop-off your package at the nearest GSO drop box. Locate nearest GSO dropbox locations using this link.

ADDITIONAL OPTIONS:

Send Label Via Email	Create Return Label
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TERMS AND CONDITIONS:

By giving us your shipment to deliver, you agree to all the service terms and conditions described in this section.

Our liability for loss or damage to any package is limited to your actual damages or \$100 whichever is less, unless you pay for and declare a higher authorized value. If you declare a higher value and pay the additional charge, our liability will be the lesser of your declared value or the actual value of your loss or damage. In any event, we will not be liable for any damage, whether direct, incidental, special or consequential, in excess of the declared value of a shipment whether or not we had knowledge that such damage might be incurred including but not limited to loss of income or profit. We will not be liable for your acts or omissions, including but not limited to improper or insufficient packaging, securing, marking or addressing. Also, we will not be liable if you or the recipient violates any of the terms of our agreement. We will not be liable for loss, damage or delay caused by events we cannot control, including but not limited to acts of God, perils of the air, weather conditions, act of public enemies, war, strikes, or civil commotion. The highest declared value for our GSO Priority Letter or GSO Priority Package is \$500. For other shipments the highest declared value is \$10,000 unless your package contains items of "extraordinary value", in which case the highest declared value we allow is \$500. Items of "extraordinary value" include, but are not limited to, artwork, jewelry, furs, precious metals, tickets, negotiable instruments and other items with intrinsic value.

WORK ORDER #: **13-04-0291****SAMPLE RECEIPT FORM**Cooler 1 of 1CLIENT: PACIFIC ECO RISKDATE: 04/04/13**TEMPERATURE:** Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)Temperature 1.9 °C - 0.2 °C (CF) = 1.7 °C ☒ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☐ Air ☐ FilterInitial: PS**CUSTODY SEALS INTACT:**☒ Cooler ☐ _____ ☐ No (Not Intact) ☐ Not Present ☐ N/AInitial: PS☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not PresentInitial: PS**SAMPLE CONDITION:**Chain-Of-Custody (COC) document(s) received with samples..... ☒ Yes ☐ No ☐ N/ACOC document(s) received complete..... ☒ Yes ☐ No ☐ N/A☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.Sampler's name indicated on COC..... ☐ Yes ☐ No ☒ N/ASample container label(s) consistent with COC..... ☒ Yes ☐ No ☐ N/ASample container(s) intact and good condition..... ☒ Yes ☐ No ☐ N/AProper containers and sufficient volume for analyses requested..... ☒ Yes ☐ No ☐ N/AAnalyses received within holding time..... ☒ Yes ☐ No ☐ N/ApH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours... ☐ Yes ☐ No ☒ N/AProper preservation noted on COC or sample container..... ☐ Yes ☐ No ☒ N/A☐ Unpreserved vials received for Volatiles analysisVolatile analysis container(s) free of headspace..... ☐ Yes ☐ No ☒ N/ATedlar bag(s) free of condensation..... ☐ Yes ☐ No ☒ N/A**CONTAINER TYPE:**Solid: ☐ 4ozCGJ ☒ 1 LITER 16ozCGJ ☐ 16ozCGJ ☐ Sleeve (____) ☐ EnCores® ☐ TerraCores® ☒ ZWater: ☐ VOA ☐ VOA_h ☐ VOA_{na2} ☐ 125AGB ☐ 125AGB_h ☐ 125AGB_p ☐ 1AGB ☐ 1AGB_{na2} ☐ 1AGB_s☐ 500AGB ☐ 500AGJ ☐ 500AGJ_s ☐ 250AGB ☐ 250CGB ☐ 250CGB_s ☐ 1PB ☐ 1PB_{na} ☐ 500PB☐ 250PB ☐ 250PB_n ☐ 125PB ☐ 125PB_{znna} ☐ 100PJ ☐ 100PJ_{na2} ☐ _____ ☐ _____ ☐ _____Air: ☐ Tedlar® ☐ Canister Other: ☐ _____ Trip Blank Lot#: _____ Labeled/Checked by: PSContainer: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: PSPreservative: h: HCL n: HNO₃ na₂: Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ u: Ultra-pure znna: ZnAc₂+NaOH f: Filtered Scanned by: PS